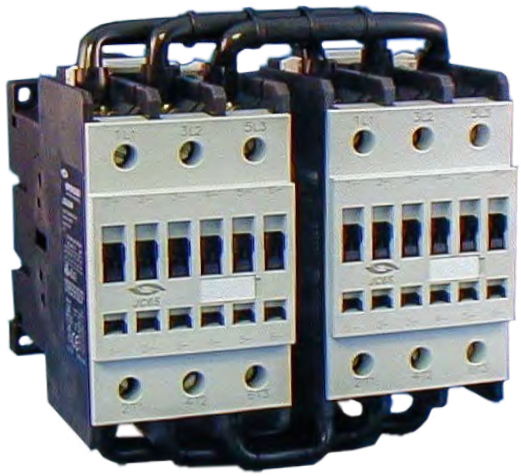
Industrial Electrical Controls

SPRINGER controls company

ELECTRICAL CONTACTORS & STARTERS



IEC CONTACTOR / RELAYS

- IEC Mini-Contactors / Overload Relays
- IEC Standard Contactors / Overload Relays
- IEC Reversing Contactors
- IEC Control Relays / Mini- Relays & Standard Relays

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INDEX

Springer Controls carries a complete line of IEC contactors and relays up through 700 amp and 500 HP. All products are available as open devices or as an enclosed AC starter package.

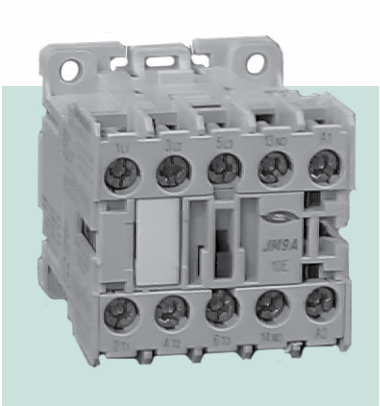
MINI-CONTACTORS;
9 amp

Description / Features....4
Non-reversing & Reversing AC, DC, 3 pole, 9 amp....5
Overload Relays....6
Open Starters / Accessories....7
Engineering Data....8
Dimensions....9
Wiring Diagrams....36

STANDARD CONTACTORS;
9 amp through 700 amp

Description / Features....10
Non-reversing AC, DC, 3 & 4 pole, 9 - 32 amp....11
Overload Relays, Open Starters; 9 - 32 amp....12
Non-reversing AC, DC, 3 & 4 pole, 50 - 105 amp....13
Overload Relays, Open Starters; 50 - 105 amp....14
Non-reversing AC, DC, 3 pole; 150 - 700 amp....15
Overload Relay, Open Starters; 150 - 700 amp....16
Reversing AC, DC, 3 pole; 9 - 32 amp....17
Reversing AC, DC, 3 pole; 50 - 700 amp....18
Control Relays....19
IEC Accessories....21-23
Horsepower Motor Ratings....24
Kilowatt Motor Ratings....25
Engineering Data....26-29
Dimensions....30-35
Wiring Diagrams....36

MINI-CONTACTORS - DESCRIPTION & FEATURES



Low coil power consumption greatly expands application flexibility. Standard AC coils require only 1.4 watts and standard DC coils require 3 watts; this translates into low control power supply requirements and low heat losses inside the enclosure. Two special 24 volt PLC interface coil versions are also available to allow coils to be directly operated by PLC outputs.

Description

Mini Contactors — The JM family of mini-contactors and the JM family of control relays offer the user and equipment designer a compact, reliable and versatile solution to today's demanding requirement of high performance in a confined space. In such applications, PLC compatibility is playing an ever-increasing role.

Contactors and control relays are available in either AC- or DC-controlled forms, and offer application flexibility through a wide variety of modular accessories. These devices are CE marked and dual-rated for worldwide acceptance by complying with UL, cUL and IEC 947 standards. Contactors and control relays may be conveniently mounted using a 35mm DIN rail or by affixing with screws to a base plate.

Featuring a conveniently compact size, a mechanical life rated at 10 million operations, and an electrical life (AC-3) rated in excess of 1 million operations at rated current. The JM mini-contactor family is suitable for a wide variety of applications—including pumps, fans, door operators, hoists, conveyers, commercial laundry equipment, machine tools, food-mixing equipment, irrigation systems and other utilizations.

Overload Relays — The Class 10 overload relay features include loss of phase sensitivity, ambient temperature compensation, choice of automatic or manual reset, trip indication (tripped "0", operational "1"), trip test, separate stop (red), and reset (blue) buttons.
Installation and wiring is simplified; the contactor holding interlock terminal (14) is fed through the overload relay for additional wiring convenience and simplification.
Optional overload relay accessories include an addable snap-on normally open signaling contact and a separate mount base/terminal assembly for applications where in-line installation is not convenient. The separate mounting base is suitable for either screw or DIN rail mounting.

Features

Modular design — One of the most attractive features of this product family is its modularity. Various configurations can be created by combining the JM contactors and JM control relays with the wide selection of accessories.

Compact size — The contactor/relay mounting profile is approximately 1 3/4″ X 1 7/8″

Long Life — The JM family of contactors and relays offers superior performance. Mechanical life is rated at 10,000,000 operations. Contactor motor ratings (AC-3) are in excess of 1,000,000 electrical operations.

Reliable Operation — These products are manufactured with the latest advancements in materials technology and designed to ensure long, dependable operation. (Coils are designed for protection against burnout during demanding brownout conditions.)

Flexible mounting — Mounting is not restricted for contactor and relay applications; contactors may be horizontal-, tabletop-, or ceiling-mounted. Mounting flexibility is provided by a dual mounting system using either 35mm DIN rail or two #8 screws in opposite diagonal corners. The DIN rail release is located at the top, providing easy access when configured as a starter. Accessories are easily assembled to the JM contactors and relays, saving time while affording maximum versatility.

Easy Installation — Captive universal slot screws are standard on all contactors, relays, overloads, and accessories allowing installation with flat, star and phillips screwdrivers. All terminals are in the open position for production line and installation efficiency. Accessories are designed for fast installation on either contactors or relays.

Safety Features — Finger and back-of-hand protection are provided. All screw and quick connect type terminals are clearly marked with dual markings where applicable, for easy identification and wiring convenience. UL and CSA approved.

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NON-REVERSING MINI-CONTACTORS

SPRINGER controls company

Non-reversing AC, DC, 3 pole; 9 amp

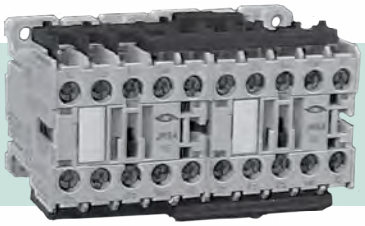
Open Type, Non-Reversing JM Contactor - (AC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		SCC Catalog No.	GE Catalog No.
Ind. AC3	Res. AC1	1 Phase 115V	1 Phase 230V	3 Phase 200V	3 Phase 230V	3 Phase 460V	3 Phase 575V		N.O.	N.C.		
9	20	½	1 ½	3	3	5	5	Screw	1 0	0 1	JM9A310AT - * JM9A301AT - *	MC1A310AT* MC1A301AT*

Open Type, Non-Reversing JM Contactor - (DC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		SCC Catalog No.	GE Catalog No.
Ind. AC3	Res. AC1	1 Phase 115V	1 Phase 230V	3 Phase 200V	3 Phase 230V	3 Phase 460V	3 Phase 575V		N.O.	N.C.		
9	20	½	1 ½	3	3	5	5	Screw	1 0	0 1	JM9C310AT - • JM9C301AT - •	MC1C310AT• MC1C301AT•

Reversing AC, DC, 3 pole; 9 amp



Open Type, Reversing JM Contactor - (AC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		SCC Catalog No.
Ind.AC3	Res. AC1	1 Phase 115V	1 Phase 230V	3 Phase 200V	3 Phase 230V	3 Phase 460V	3 Phase 575V		N.O.	N.C.	
9	20	½	1 ½	3	3	5	5	Screw	0	1	RJM9A301AT - *

Open Type, Reversing JM Contactor - (DC Coil)

Ampere Rating		Horsepower Rating						Terminal Type	Auxiliary Contact		SCC Catalog No.
Ind.AC3	Res. AC1	1 Phase 115V	1 Phase 230V	3 Phase 200V	3 Phase 230V	3 Phase 460V	3 Phase 575V		N.O.	N.C.	
9	20	½	1 ½	3	3	5	5	Screw	0	1	RJM9C301AT - •

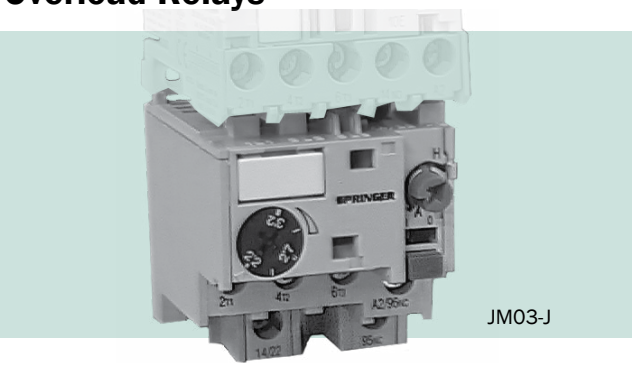
ORDERING INFORMATION

- **Use complete catalog number. Replace the (*) with the suffix from the coil table.**
- **Accessories page 7**
- **Engineering Data page 8**
- **Dimension page 9**

JM SERIES COIL TABLE

*AC Voltage	Suffix	*AC Voltage	Suffix	• DC Voltage	Suffix
24	C	240/277	N	12	B
120	J	480	W	24	D
208/220	M	600	Y	48	G
				120	K

Overload Relays



JM03-J

- Class 10A trip
- Ambient temperature compensation
- Differential phase loss sensitivity
- Trip indication
- Manual trip test
- Stop button (red)
- Reset button (blue), two positions: manual (H) and automatic (A)
- Pre-wired coil and NC contact connection
- Auxiliary contact feed-through wire, to facilitate installation
- Direct mounting or panel mount with base
- Separate panel mount use #MVE0T and #MVB0T
  (see accessories on page 6)

Full Load Current Range		Starter Suffix	SCC Catalog No.	GE Catalog No.
Min. A.	Max. A.			
0.43	0.65	D	JM03-D	MT03D
0.65	1.0	E	JM03-E	MT03E
0.85	1.3	F	JM03-F	MT03F
1.1	1.6	G	JM03-G	MT03G
1.35	2.0	H	JM03-H	MT03H
2.2	3.2	J	JM03J	MT03J
2.5	4	R	JM03-R	MT03R
3.0	4.7	K	JM03-K	MT03K
4.0	6.3	L	JM03-L	MT03L
5.5	8.0	M	JM03-M	MT03M
7.5	10.5	N	JM03-N	MT03N
10	14	P	JM03-P	MT03P

MINI-CONTACTOR - OPEN STARTER

JM Starters; 9 amp *(Open starter = Contactor + Overload Relay)*

Type JM Contactor (AC)

Horsepower Rating (Full Load Amps, 3 Phase)				Open Type Contactor
200V	240V	480V	575V	SCC Catalog No.
3 (7.8A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	JM9A310AT - *

Ordering Example: 5hp, 480V, 3 phase, 7.6 FLA
Part# JM9A310AT-WN
(9amp mini-contactor, 480V coil, 7.5-10.5 overload, assembled)

+

Overload Relay - Type JM (Suffix Letter)

Full Load Current Range		Starter Suffix	SCC Catalog No.
Min. A.	Max. A.		
0.43	0.65	D	JM03-D
0.65	1.0	E	JM03-E
0.85	1.3	F	JM03-F
1.1	1.6	G	JM03-G
1.35	2.0	H	JM03-H
2.2	3.2	J	JM03-J
2.5	4	R	JM03-R
3.0	4.7	K	JM03-K
4.0	6.3	L	JM03-L
5.5	8.0	M	JM03-M
7.5	10.5	N	JM03-N
10	14	P	JM03-P

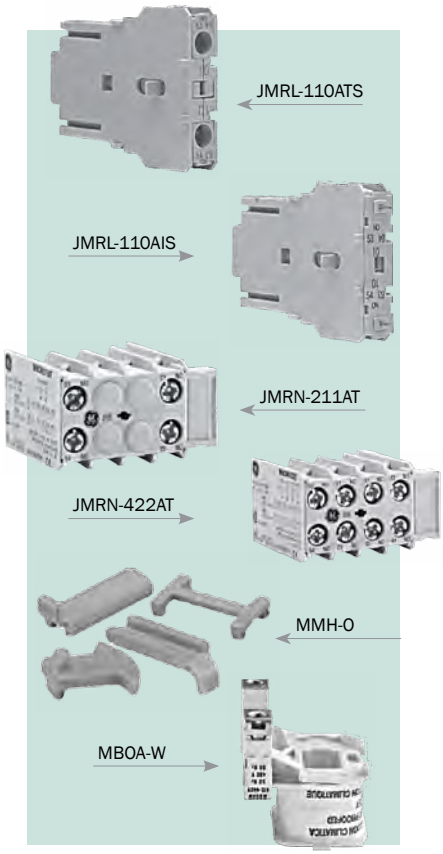
*See coil table page 5
- See page 36 for wiring diagram

OPEN STARTERS

SPRINGER controls company

Accessories

Description		Contacts N.O.	Contacts N.C	SCC Catalog No.	GE Catalog No.
Auxiliary Contact Blocks[1]	Side Mount Screw Terminal	1 0	0 1	JMRL-110ATS JMRL-101ATS	MARL110ATS MARL101ATS
	Top Mount Two Pole Block	2 1	0 1	JMRN-220AT JMRN-211AT	MARN220AT MARN211AT
	Top Mount Four Pole Block	4 2	0 2	JMRN-440AT JMRN-422AT	MARN440AT MARN422AT
Voltage Suppressor 12-60 Vold AC 72-240 Vold AC Mechanical Interlock - For reversing contactor assemblies Coil Kits AC Coil Kits DC Coil Kits				 MPOAAE1 MPOAAE2 MMHO MBOA - * MBOC - *	 MPOAAE1 MPOAAE2 MMHO MBOA - * MBOC - *
Overload Relay - JM03 Series					
Line Terminal - For separate mounting DIN/Mounting Base - For separate mounting Auxiliary Contact Block - N.O.				MVEOT MVBOT JMTV10AT	MVEOT MVBOT MATV10AT
Reversing Jumpers				WKMIU	WKMIU



[1] Front mount auxiliary contacts may be combined with side mount auxiliary contacts for a total maximum number of six added auxiliary contacts.

*COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix	DC Voltage	Suffix
24	C	240/277	N	12	B
120	J	480	W	24	D
208/220	M	600	Y	48	G
				120	K

TECHNICAL DATA - JM SERIES

General

		JM9...
Rated thermal current Ith θ≤ 60° (1)	(A)	20
Rated operational current Ie(2) (3 x 440V, 50/60 Hz, AC-3)	(A)	9
Maximum number of poles		4
Rated insulation current Ui	(V)	750
Rated operational current Ue	(V)	690

(1) Insulated therminal type B2.8 x 0.8 with wire 1mm²
Ie= 8A, design DIN 46 247
(2) Max. operational current AC3, 3-phases≤ 440V, according to IEC 947-4-1

Vibration resistance (IEC 68-2-6)

Continuously closed (at 08Us)	
Admissible acceleration	15 g
Sweep between	10 - 200 Hz
Continuously opened (no voltage)	
Admissible acceleration	5 g (AC) - 35 g (DC)
Sweep between	10 - 200 Hz

Ambient conditions

Storage temperature		-67°F to +176°F
Operation temperature -40°F to +140°F		
Altitude	up to 3000 m from 3000 up to 4000m from 4000 up to 5000m	Normal values 90%Ie 80%Ue 80%Ie 75%Ue

Climatic resistance

Continuous tests 40 / 125 / 56		
Cold (72 h)		
	Temperature	-40°F
Dry heat (96 h)		
	Temperature	+257°F
	Relative Humidity	< 50%
Humid heat (56 h)		
	Temperature	+104°F
	Relative humidity	95%

Approvals

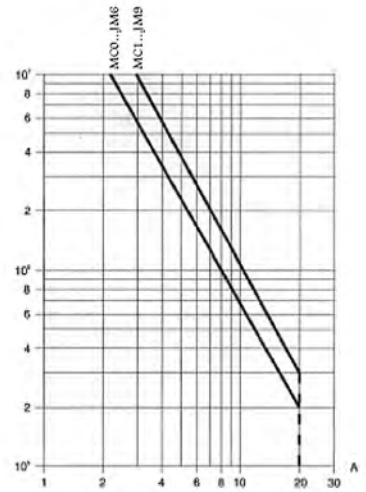
Engineering Data; JM Series

			JM9
Rated insulation voltage (Ui) (acc. IEC947-4)		(V)	750
Rated thermal current (Ith) q< 60½ C (1)		(A)	20
Frequency limits		(Hz)	0...400
Making capacity (r.m.s.) Ue< 690V 50/60Hz		(A)	160
Breaking capacity (r.m.s.) Ue < 440V		(A)	106
Ue = 500V		(A)	90
Ue = 690V		(A)	80
Short-time currect	0.3 sec,	(A)	470
	1.0 sec,	(A)	250
	5.0 sec,	(A)	125
	10.0 sec,	(A)	95
	30.0 sec,	(A)	70
	1.0 min,	(A)	50
	3.0 min,	(A)	40
Recovery time		(min.)	10
Protection against short-circuits (IEC 947-4) Coordination type "2"	aM/gl	(A)	12/20
Without welding contacts	aM/gl	(A)	10/16
Circuit-breaker rating (characteristics G CEE 19.1)			20
Impedance per pole		(MΩ)	1.59
Power dissipation per pole	AC1	(W)	0.6
	AC3	(W)	0.128
Insulation resistance			
Between adjacent poles		(MΩ)	>10
Between pole and earth		(MΩ)	>10
Between input and output		(MΩ)	>10
Guaranteed no overlap between NO and NC contacts			
Space		(mm)	1
Time		(ms)	>2

Electrical Endurance

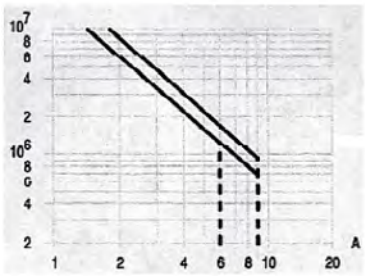
Category AC1

Number of Operations



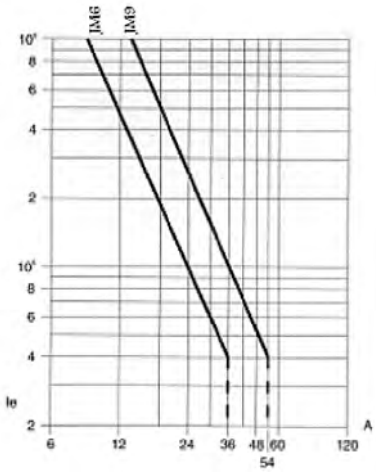
Category AC3

Number of Operations



Category AC4

Number of Operations

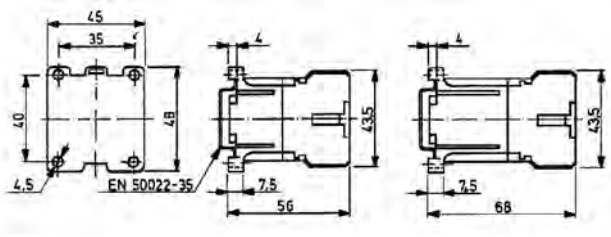


Terminal Capacity

Terminal with M 3.5 screw (with pozidrive head and safety flange)		Tightening torque 0.8Nm - 7Lb-1n
Solid wire	Ømm	0.75 to 2 x 2 w
Flexible wire without terminal	mm²	0.75 to 2.5 x 2 w
Flexible wire with terminal with cap	mm²	0.75 to 2.5 x 1 w
	mm²	0.75 to 1 x 2 w

(1) Insulated terminal type B 2.8 x 0.8 with wire 1 mm² Ie = 8A acc, to DIN 46247

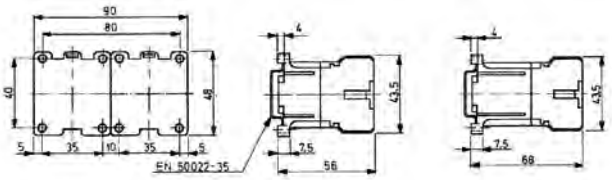
Contactors & Relays - Types JM & JMRA



4 Mounting Holes for #8 Screws

	Dimensions - Approximate Inches and (Millimeters)						Coil VA	
Type	A	B	C	D	E	F	Sealed	Inrush
JM9A JMRA	1.77 (45)	1.89 (48)	2.20 (56)	1.38 (35)	1.57 (40)	.39 (9.8)	4.9VA	34.2VA
JM9C JMRC	1.77 (45)	1.89 (48)	2.68 (68)	1.38 (35)	1.57 (40)	.39 (9.8)	3W	3W

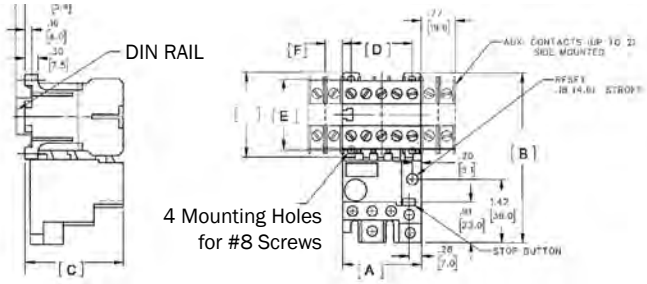
Reversing Contactors & Relays - Type JM



4 Mounting Holes for #8 Screws

	Dimensions - Approximate Inches and (Millimeters)							Coil VA	
Type	A	B	C	D	E	F	G	Sealed	Inrush
JM9A	3.54 (90)	.39 (10)	2.2 (56)	1.38 (35)	1.89 (48)	1.57 (40)	1.77 (45)	4.9VA	34.2VA

Starters - Type JM



	Dimensions - Approximate Inches and (Millimeters)						Coil VA	
Type	A	B	C	D	E	F	Sealed	Inrush
JM9A	1.77 (45)	3.9 (99)	2.20 (56)	1.38 (35)	1.57 (40)	.39 (9.8)	4.9VA	34.2VA

Standard IEC Contactors; 9amp through 700amp

Description

Contactors are most commonly used to switch motor loads in applications where running over current protection is either not required or is provided separately. Contactors consist of a magnetically actuated switch which can be remotely operated by a push button station or pilot device such as a proximity switch, limit switch, auxiliary contacts, etc.

Standard contactor components are loaded with features that make them easy to install, allow more flexible configurations, lower inventory requirements, and make better use of panel space — and their performance is second to none.

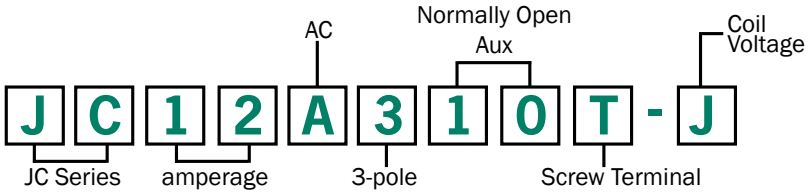
Features

- Power circuit (AC): up to 690v
- UL listed and CSA certified
- Screws protected against accidental contact in accordance with VOE 0106.
- Full compliment of accessories; overload relays, auxiliary top and side mount contacts, mechanical interlocks, electronic timer blocks, pneumatic timer blocks, pole terminated protection.
- AC coils (both 50 Hz and 60 Hz versions) and DC coils are available for a wide range of voltages for flexibility.

Sizing of Contactors

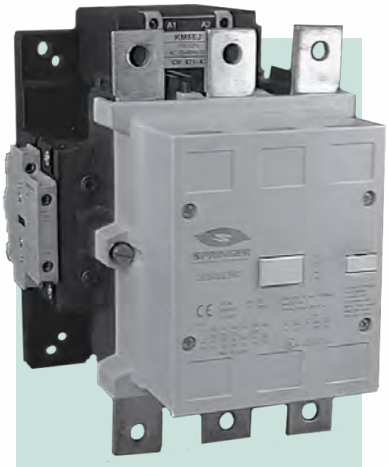
- See pages 24 & 25 for NEC Horsepower or Kilowatt Motor Ratings
- Amp rating in AC3 (Inductive load) and AC1 (resistive load)

Nomenclature



JC12A310T-J

JC50A300M-S


J250BE311-J

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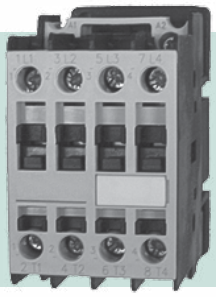
NON-REVERSING CONTACTORS; 9 amp - 32 amp

JC12A310T-J



JC18A400T-J

Non-Reversing Open Type JC Contactors - (AC Coil) 3 & 4 pole, 9amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		SCC Catalog No.	GE Catalog No.	Nema Cross Reference Size
Ind.	Res.	1 Phase		3 Phase										
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.			
9	25	0.75	1.5	3	3	5	7.5	3	0	1	0	JC09A310T - *	CL00A310T*	00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	JC12A310T - *	CL01A310T*	00
18	32	1	3	5	5	10	15	3 3 4	0 0 0	1 0 0	0 1 0	JC18A310T - * JC18A301T - * JC18A400T - *	CL02A310T* CL02A301T* CL02A400T*	0
25	45	2	3	7.5	7.5	15	20	3	0	1	0	JC25A310M - *	CL03A310M*	1
32	60	2	5	10	10	20	25	3 3 4	0 0 0	1 0 0	0 1 0	JC32A310M - * JC32A301M - * JC32A400M - *	CL04A310M* CL04A301M* CL04A400M*	1

Notes: Consult factory for 4 pole (2 N.O. / 2 N.C.) units. Dimensions located on page 30

Non-Reversing Open Type JC Contactors - (DC Coil) 3 pole, 9amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		SCC Catalog No.	GE Catalog No.	Nema Cross Reference Size
Ind.	Res.	1 Phase		3 Phase										
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.			
9	25	0.5	1.5	3	3	5	7.5	3	0	1	0	JC09D310T - •	CL00D310T •	00
12	25	0.75	2	3	3	7.5	10	3	0	1	0	JC12D310T - •	CL01D310T •	00
18	32	1	3	5	5	10	15	3	0	1	0	JC18D310T - •	CL02D310T •	0
25	45	2	3	7.5	7.5	15	20	3	0	1	0	JC25D310M - •	CL03D310M •	1
32	54	2	5	10	10	20	25	3	0	1	0	JC32D310M - •	CL04D310M •	1

Notes: Consult factory for 4 pole (4 N.O.) units. Dimensions located on page 31

ORDERING INFORMATION

- **Use complete catalog number. Replace the (*) with the suffix from the coil table.**
- **Accessories pages 21 - 23**
- **Engineering Data pages 26 - 29**
- **Dimensions pages 30 - 35**

COIL TABLE

* AC Voltage	Suffix	* AC Voltage	Suffix	• DC Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N	12	B
120 (50-60Hz)	J	415 (50Hz)	W	24	D
208 (60Hz)	L	480 (60Hz)	U(15)	48	G
240 (60Hz)	S (7)	380 (50Hz)	U	125	K
277 (60Hz)	N	600 (60Hz)	Y	250	T

Overload Relays; Type JL1 (.16 - 40amp range)

JL1-M

JL1 overload relays (class 10A, bimetallic) provide motor overload protection through fixed bimetal heaters. These relays are ambient compensated and utilize a differential mechanism for single phase sensitivity. The trip setting is adjustable for the range listed.

Overload relays may be set for 4 different operational modes: manual reset only, automatic reset only, manual reset/stop or automatic reset/stop. Stop is initiated by pushing the reset button which interrupts the holding circuit in the latter two listed modes (see page 29).

Overload relays feature visible trip indication, reset on the upstroke, weld check, and trip test.

Overload Relay - Type JL

Full Load Current Range			SCC	GE
Min. A.	Max. A.	Starter Suffix	Catalog No.	Catalog No.
0.65	1.1	F	JL1-F	RT1F
1	1.5	G	JL1-G	RT1G
1.3	1.9	H	JL1-H	RT1H
1.8	2.7	J	JL1-J	RT1J
2.5	4	K	JL1-K	RT1K
4	6.3	L	JL1-L	RT1L
5.5	8.5	M	JL1-M	RT1M
8	12	N	JL1-N	RT1N
10	16	P	JL1-P	RT1P
14.5	18	S	JL1-S	RT1S
17.5	22	T	JL1-T	RT1T
21	26	U	JL1-U	RT1U
25	32	V	JL1-V	RT1V
30	40	W	JL1-W	RT1W

* Separate, stand-alone overload relays available by adding part #JLXP (Accessories page 23)

JC Series Open Starters; 9 - 32amp

Starter consists of Type JC Contactor (AC)

Horsepower Rating (Full Load Amps) 3 Phase				Open Type Contactor
200V	230V	460V	575V	SCC Catalog No.
3 (7.8)	3 (6.2)	5 (7.6)	7.5 (9)	JC09A310T - *
3 (11)	3 (9.6)	7.5 (11)	10 (11)	JC12A310T - *
5 (62)	5 (68)	10 (65)	15 (62)	JC18A310T - *
7.5 (22)	7.5 (22)	15 (21)	20 (27)	JC25A310M - *
10 (32.2)	10 (28)	21 (27)	25 (27)	JC32A310M- *

Notes: Dimensions located on page 30

+

Overload Relay - Type JL1

Full Load Current Range			SCC
Min. A.	Max. A.	Starter Suffix	Catalog No.
0.16	0.26	B	JL1-B
0.25	0.41	C	JL1-C
0.4	0.65	D	JL1-D
0.65	1.1	F	JL1-F
1	1.5	G	JL1-G
1.3	1.9	H	JL1-H
1.8	2.7	J	JL1-J
2.5	4	K	JL1-K
4	6.3	L	JL1-L
5.5	8.5	M	JL1-M
8	12	N	JL1-N
10	16	P	JL1-P
14.5	18	S	JL1-S
17.5	22	T	JL1-T
21	26	U	JL1-U
25	32	V	JL1-V
30	40	W	JL1-W

COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N
120 (50-60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

ORDERING EXAMPLE

10hp, 230V, 3 phase, 28.0 FLA
Part # JC32A310M-SV
(32amp contactor, 230V coil, 25-32 amp overload, assembled)

NON-REVERSING CONTACTORS; 50 amp - 105 amp

JC65A400M-J

Non-Reversing Open Type JC Contactors - (AC Coil) 3 pole & 4 pole , 50amp - 105 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		SCC Catalog No..	GE Catalog No.	Nema Cross Reference Size
Ind.	Res.	1 Phase		3 Phase										
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.			
50	90	5	7.5	15	15	40	40	3	0	0	0	JC50A300M - *	CL05A300M*	2
65	110	5	10	20	20	50	50	3 4	0 0	0 0	0 0	JC65A300M - * JC65A400M - *	CL07A300M* CL07A400M*	2
80	110	7.5	15	20	25	50	60	3	0	0	0	JC80A300M - *	CL08A300M*	2
95	140	7.5	15	25	30	60	60	3 4	0 0	0 0	0 0	JC95A300M - * JC95A400M - *	CL09A300M* CL09A400M*	3
105	140	10	20	30	40	75	75	3	0	0	0	JCC5A300M - *	CL10A300M*	3

Notes: Four power poles consisting of 2 N.O./2 N.C. are available upon request. Consult factory for part number and pricing.
Dimensions located on page 30
Frequently purchased with JC series contactor: JCAL11 Side Mount Auxiliary or JCAF10 Top Mount Auxiliary (page 22)

Non-Reversing Open Type JC Contactors - (AC/DC Electronic Coil) 3 pole, 50amp - 105amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact		SCC Catalog No.	GE Catalog No.	Nema Cross Reference Size
Ind.	Res.	1 Phase		3 Phase										
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.			
50	90	5	7.5	15	15	40	40	3	0	0	0	JC50E300M -•	CL05A300M•	2
65	110	5	10	20	20	50	50	3	0	0	0	JC65E300M - •	CL07E300M•	2
80	110	7.5	15	20	25	50	60	3	0	0	0	JC80E300M - •	CL08E300M•	2
95	140	7.5	15	25	30	60	60	3	0	0	0	JC95E300M - •	CL09E300M•	3

Notes: Four power poles consisting of 4 N.O. or 2 N.O./2 N.C. are available upon request. Consult factory for part number and pricing.

*AC COIL TABLE

AC Voltage	Suffix	60Hz Voltage	Suffix	AC Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N	380 (50Hz)	U
120 (50-60Hz)	J	230 (50Hz)	N	600 (60Hz)	Y
208 (60Hz)	L	415 (50Hz)	W		
240 (60Hz)	S	480 (60Hz)	U		

•AC/DC COIL TABLE

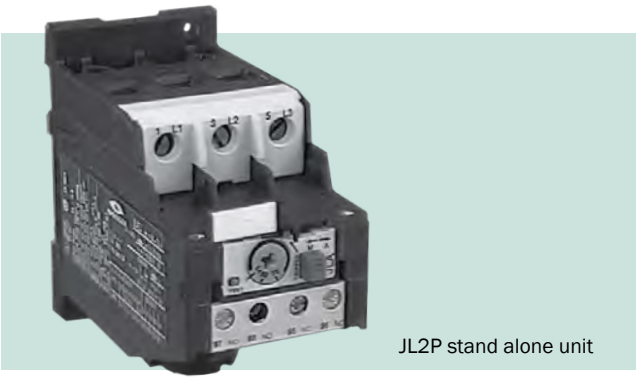
Voltage	Suffix
24-28	D
42-48	F
110-125	J
220-250	N
440-500	Y

JL2 Series Overload Relays

JL2-Series to be used with JC50 through JCC5 contactors

Overload Relay - Type JL2

Full Load Current Range		Starter Suffix	SCC Catalog No.	GE Catalog No.
Min. A.	Max. A.			
30	43	E	JL2-E	RT2E
42	55	G	JL2-G	RT2G
54	65	H	JL2-H	RT2H
64	82	J	JL2-J	RT2J
78	97	L	JL2-L	RT2L
90	110	M	JL2-M	RT2M



JL2P stand alone unit

Separate Mounted Overload Relay

Type of Mounting	Rated Current (Amps)		SCC Catalog No.
	Min. A.	Max. A.	
Separate or Back-Panel Mount	30	43	JL2P-E
	42	55	JL2P-G
	54	65	JL2P-H
	64	82	JL2P-J
	78	97	JL2P-L
	90	110	JL2P-M

JC Series Open Starters; 50 amp - 105 amp

Starter consists of Type JC Contactor

Horsepower Rating				Open Type Contactor
200V	230V	460V	575V	Catalog No.
15	15	40	40	JC50A300M - *
20	20	50	50	JC65A300M - *
20	25	50	60	JC80A300M - *
25	30	60	60	JC95A300M - *
30	40	75	75	JCC5A300M - *

Notes: Dimensions are located on page 32

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Overload Relay - Type JL2

Full Load Current Range		Starter Suffix	SCC Catalog No.
Min. A.	Max. A.		
30	43	E	JL2-E
42	55	G	JL2-G
54	65	H	JL2-H
64	82	J	JL2-J
78	97	L	JL2-L
90	110	M	JL2-M

*AC COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix
24 (50 60Hz)	1	230 (50Hz)	N
120 (50 60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

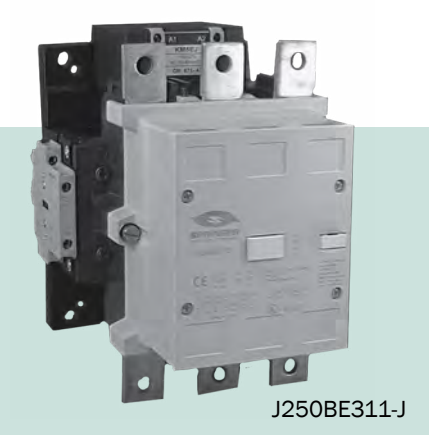
ORDERING EXAMPLE

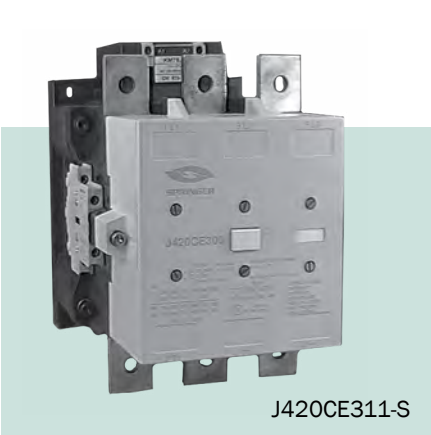
20hp, 240V, 3 phase, 54.0 FLA

Part # JC65A300M-SH

(65amp contactor, 240V coil, 54-65 amp overload, assembled)

Non-reversing Open Type JC Contactors - 3 pole, AC & DC 150 amp - 700 amp


J250BE311-J


J420CE311-S

J700BE311-U

Amp Rating		Horsepower Rating (Full Load Amps)				Control Circuit	Auxiliary Contact		SCC Catalog No.	GE Catalog No.	Nema Cross Reference Size
Ind.	Res.	3 Phase									
AC3	AC1	200V	230V	460V	575V	3 Pole	N.O.	N.C.			
150	250	50	50 (130)	125 (156)	125 (125)	AC AC/DC	1 1	1 1	J150CA311 - * J150CE311 - •	CK75CA311* CK75CE311•	4
185	250	50	60 (154)	150 (180)	150 (144)	AC AC/DC	1 1	1 1	J185CA311 - * J185CE311 - •	CK08CA311* CK08CE311•	4
250	315	60	75 (192	150 (180)	150 (144)	AC/DC	1	1	J250BE311 - •	CK09BE311•	5
309	450	100	100 (248)	250 (302)	300 (289)	AC/DC	1	1	J309BE311 - •	CK95BE311•	5
420	600	125	150 (360)	300 (361)	400 (382)	AC/DC	1	1	J420CE311 - •	CK10CE311•	6
550	700	150	200 (480)	400 (477)	500 (472)	AC/DC	1	1	J550CE311 - •	CK11CE311•	6
700	1,000	200	250	500 (590)	600	AC/DC	1	1	J700BE311 - •	CK12BE311•	6

Notes: Dimensions located on page 32, 33

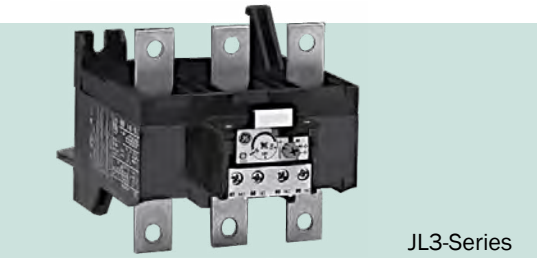
*AC COIL TABLE

AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50 60Hz)	1	277 (60Hz)	N
120 (50 60Hz)	J	480 (60Hz)	U
208 (60Hz)	L		
240 (60Hz)	S		

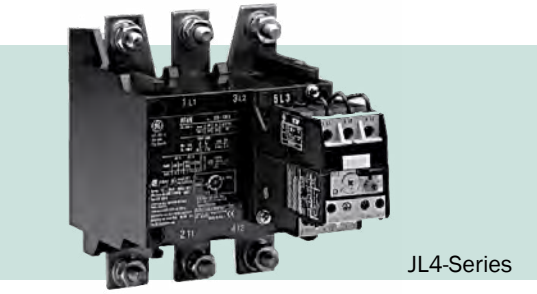
•AC/DC COIL TABLE

Voltage	Suffix
24V-28V	D
110V-127V	J
220V-250V	N
440V-500V	Y

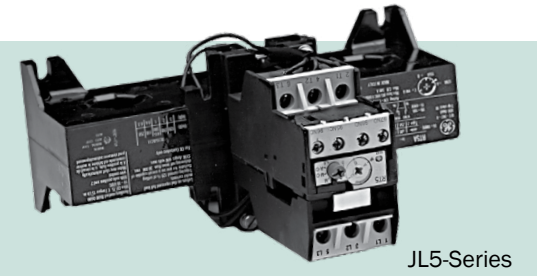
Overload-Relays; Types JL3, JL4, JL5



JL3-Series



JL4-Series



JL5-Series

JL-3 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		SCC Catalog No.	Starter Suffix	GE Catalog No.
		Min.	Max.			
J150 or J185	Direct or Separate Mount	55	80	JL3-B	B	RT3B
		63	90	JL3-C	C	RT3C
		90	120	JL3-D	D	RT3D
		110	140	JL3-E	E	RT3E
		140	190	JL3-F	F	RT3F

JL-4 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		SCC Catalog No.	Starter Suffix	GE Catalog No.
		Min.	Max.			
J250 or J309	Separate Mount	175	280	JL4-P	P	RT4P
		200	310	JL4-R	R	RT4R

JL-5 Overload Relay

For Use With	Type of Mounting	Rated Current (Amps)		SCC Catalog No.	Starter Suffix	GE Catalog No.
		Min.	Max.			
J420 or J550 or J700	Separate Mount	250	400	JL5-C	C	RT5C
		315	500	JL5-D	D	RT5D
		430	700	JL5-E	E	RT5E

JC Series Open Starters; 150amp - 700amp

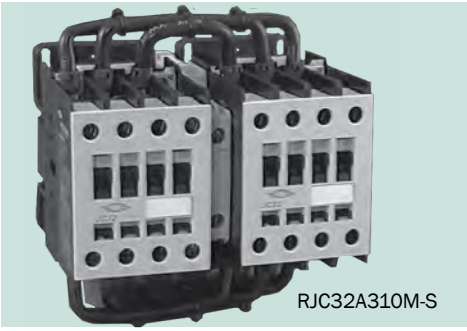
Open Type, JC Contactor - (AC/DC Coil) + Overload Relay

Ind. AC3 Rating	Horsepower Rating (Full Load Amps)				Open Type Contactor Catalog No.	Overload Relay
	200V	230V	460V	575V		
150	50	50 (130)	125 (156)	125 (125)	J150CE311 - *	+ **JL3 Series Overload** (see above starter suffix)
185	50	60 (154)	150 (180)	150 (144)	J185CE311 - *	
250	60	75 (192)	150 (180)	150 (144)	J250BE311 - •	+ **JL4 Series Overload** (see above starter suffix)
309	100	100 (248)	250 (302)	300 (289)	J309BE311 - •	
420	125	150 (360)	300 (361)	400 (382)	J420CE311 - •	+ **JL5 Series Overload** (see above starter suffix)
550	150	200 (480)	400 (477)	500 (473)	J550CE311 - •	
700	200	250	500 (590)	600	J700BE311 - •	

Ordering Example

250hp , 460V, 3 phase = Catalog # J309BE311-YR
(309amp contactor, 460V Coil, 200-310 overload, assembled)

REVERSING CONTACTORS; 9 amp - 32 amp


RJC32A310M-S

Reversing Open Type JC Contactors - (AC Coil) 3 pole, 9 amp - 32 amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact *		SCC Catalog No.
Ind.	Res.	1 Phase		3 Phase								
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.	
9	25	0.75	1.5	3	3	5	7.5	3	0	2	2	RJC09A322T - *
12	25	0.75	2	3	3	7.5	10	3	0	2	2	RJC12A322T - *
18	32	1	3	5	5	10	15	3	0	2	2	RJC18A322T - *
25	45	2	3	7.5	7.5	15	20	3	0	2	2	RJC25A322M - *
32	60	2	5	10	10	20	25	3	0	2	2	RJC32A322M - *

* Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page 12

Reversing Open Type JC Contactors - (DC Coil) 3 pole, 9amp - 32amp

Amp Rating		Horsepower Rating						Power Poles		Auxiliary Contact *		SCC Catalog No.
Ind.	Res.	1 Phase		3 Phase								
AC3	AC1	115V	230V	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.	
9	25	0.5	1.5	3	3	5	7.5	3	0	2	2	RJC09D322T - •
12	25	0.75	2	3	3	7.5	10	3	0	2	2	RJC12D322T - •
18	32	1	3	5	5	10	15	3	0	2	2	RJC18D322T - •
25	45	2	3	7.5	7.5	15	20	3	0	2	2	RJC25D322M - •
32	54	2	5	10	10	20	25	3	0	2	2	RJC32D322M - •

* Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page 12

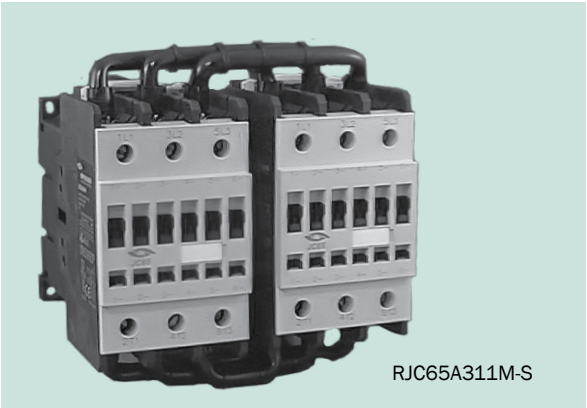
* AC COIL TABLE

AC Voltage	Suffix	AC Voltage	Suffix	AC Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N	380 (50Hz)	U
120 (50-60Hz)	J	230 (50Hz)	N	600 (60Hz)	Y
208 (60Hz)	L	415 (50Hz)	W		
240 (60Hz)	S	480 (60Hz)	U		

• DC COIL TABLE

DC Voltage	Suffix
12	B
24	D
48	G
125	K
250	T

Reversing Open Type JC Contactors - (AC, AC/DC Coil) 3 pole, 50 amp - 700 amp



RJC65A311M-S

Amp Rating		Horsepower Rating				Power Poles		Auxiliary Contact *		SCC Catalog No.
Ind.	Res.	3 Phase								
AC3	AC1	200V	230V	460V	575V	N.O.	N.C.	N.O.	N.C.	
50	90	15	15	40	40	3	0	0	2	RJC50A302M - *
65	110	20	20	50	50	3	0	0	2	RJC65A302M - *
80	110	20	25	50	60	3	0	0	2	RJC80A302M - *
95	140	20	30	60	60	3	0	0	2	RJC95A302M - *
105	140	30	40	75	75	3	0	0	2	RJCC5A302M - *
150	250	50	50	125	125	3	0	0	2	RJ150CA302M - *
185	250	50	60	150	150	3	0	0	2	RJ185CA302M - *
250	315	60	75	150	150	3	0	0	2	RJC250BE302M - •
309	500	100	100	250	300	3	0	0	2	RJ309BE302M - •
420	600	125	150	300	400	3	0	0	2	RJ420CE302M - •
550	700	150	200	400	500	3	0	0	2	RJ550CE302M - •
700	1000	200	250	500	600	3	0	0	2	RJ700BE302M - •

* Notes: All reversers come standard with a mechanical interlock that consists of 2 normally closed auxiliaries along with the unit pre-wired for "reversing" application. To add overload relay see page 14

* AC COIL TABLE

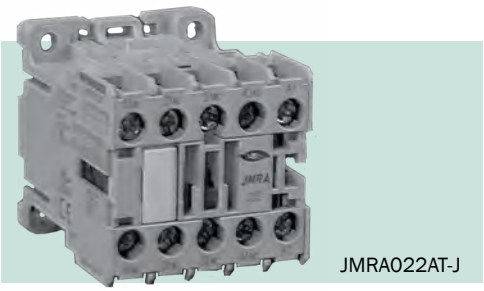
AC Voltage	Suffix	60Hz Voltage	Suffix
24 (50-60Hz)	1	277 (60Hz)	N
120 (50-60Hz)	J	480 (60Hz)	U
208 (60Hz)	L		
240 (60Hz)	S		

• AC/DC COIL TABLE

Voltage	Suffix
24V-28V	D
110V-127V	J
220V-250V	N
440V-500V	Y

SPRINGER controls company

Mini Control Relays


JMRA022AT-J

- Relays are suitable for use on alternating current (ac) control circuits up to 600 volts, and dc control circuits up to 240 volts.
- Control relays may be mounted on 35mm DIN rail EN50022-35, or may be panel-mounted using two or four #8 screws in diagonal corners.
- Screw and quick-connect terminals are protected against accidental contact in accordance with VDE0106T.100 and VBG4.
- Low-coil wattage requirement makes relay ideal for most applications.
- A wide range of accessories, including front-mounted auxiliary contact blocks, side-mounted auxiliary contact blocks, a timer, and surge suppressors, are easily installed on relays.
- 10 amp rated (AC)
- DC Rating: 120V (7 amp), 48V (2 amp), 24V (4 amp)

Control Relays - Type JMRA Ratings A600 & Q300

Contact Arrangement N.O.	Contact Arrangement N.C.	SCC Catalog No.	AC Coil	GE Catalog No.	SCC Catalog No.	DC Coil	GE Catalog No.
4	0	JMRA040AT -	*	MCRA040AT	JMRC040AT -	•	MCRC040AT
3	1	JMRA031AT -	*	MCRA031AT	JMRC031AT -	•	MCRC031AT
2	2	JMRA022AT -	*	MCRA022AT	JMRC022AT -	•	MCRC022AT
0	4	JMRA004AT -	*	MCRA004AT			

- * Coil Selection for AC & DC coils - page 5

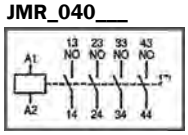
Control Circuit		JMRA...	JMRC... MCRC...
Rated insulation voltage (Ui)	(V)	750	750
Standard voltages (US)			
50 Hz	(V)	24...690	-
60 Hz	(V)	6...600	-
DC	(V)	-	6...440
Voltage(1)			
Operating limits	xUS	0.8...1.1	0.8...1.1
Drop-out	xUS	0.35...0.55	0.15...0.3
Consumption			
Pick-up	(VA)	26	-
Seal	(VA)	4	-
DC	(VA)	-	3
Power factor			
Pick-up	(cosφ)	0.8	-
Seal	(cosφ)	0.35	-
Power dissipation	(W)	1.4	3
Opening and closing times			
Values between ± % US	%	+10...-20	+10...-20
Time at energisation NO	(ms)	6...13	22...36
Time at de-energisation NC	(ms)	8...16	9...12
Time at energisation NC	(ms)	5...11	18...27
Time at de-energisation NO	(ms)	6...13	5...7

		JMRA...	JMRC... MCRC...
Values at Us			
Time at energisation NO	(ms)	7...12	24...27
Time at de-energisation NC	(ms)	8...16	9...11
Time at energisation NC	(ms)	6...10	20...26
Time at de-energisation NO	(ms)	6...13	5...8
Maximum time without voltage (without effecting the closed magnetic circuit)	(ms)	3	3
Mechanical endurance			
Mono-frequency	x10^6 ops.	15	-
Dual-frequency	x10^6 ops.	10	-
DC	x10^6 ops.	-	10
Maximum rate (no load)			
Mono-frequency	n°ops./h	9000	-
Dual-frequency	n°ops./h	3600	-
DC	n°ops./h	-	9000

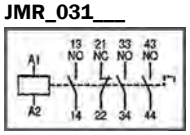
Terminal numbering

Auxiliary contactors. According to EN 50011

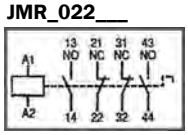
JMR_040___



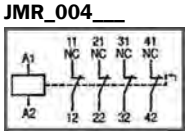
JMR_031___



JMR_022___

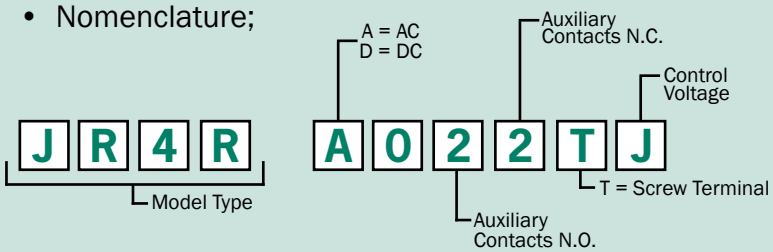


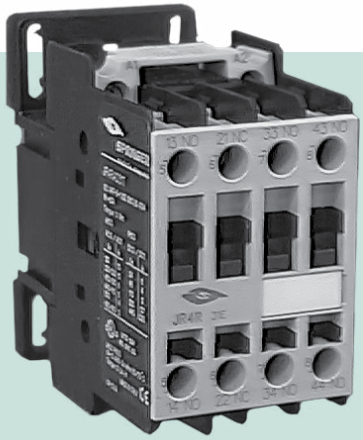
JMR_004___



Control Relays

- AC voltage up to 690V, DC voltage up to 440V
- Fixed or din-rail mountable
- Full line of accessories available
- Nomenclature;





JR4RA022T-J

I.E. Control Relay; AC, 2 Normally Open & 2 Normally Closed Contacts, Screw Terminals, 120V Coil

Control Relay - Type JR4R (Ratings A600 & P600)

JR4RA040T-J

Contact Arrangement		AC Coil		DC Coil	
N.O.	N.C.	SCC Catalog No.	GE Catalog No.	SCC Catalog No.	GE Catalog No.
4	0	JR4RA040T - *	RL4RA040T	JR4RD040T - •	RL4RD040T
2	2	JR4RA022T - *	RL4RA022T	JR4RD022T - •	RL4RD022T
0	4	JR4RA004T - *	RL4RA004T	JR4RD004T - •	RL4RD004T

Contact Ratings

NEMA Rating Design	Max. Volts	Amperes			Voltamperes	
		Make	Break	Continuous	Make	Break
Maximum AC Contact Rating Per Pole, 50 or 60 Herz						
A600	120	60	6	10	7200	720
	240	30	3	10	7200	720
	480	15	1.5	10	7200	720
	600	12	1.2	10	7200	720
Maximum DC Contact Rating Per Pole, 50 or 60 Herz						
Q600	125	.55	.55	2.5	69	69
	250	.27	.27	2.5	69	69
	600	.1	.1	2.5	-	-
P600	125	1.1	1.1	5	138	138
	250	.55	.55	5	138	138
	600	.2	.2	5	-	-

ORDERING INFORMATION

- Accessories page 22
- Dimensions page 30

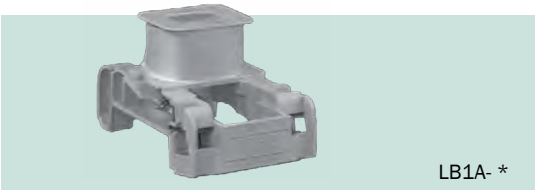
* AC COIL TABLE

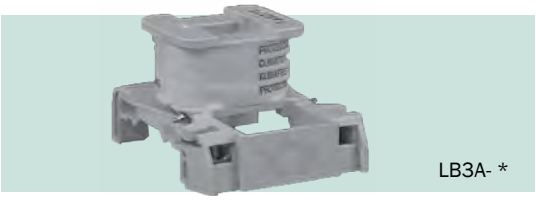
* AC Voltage	Suffix	*AC Voltage	Suffix
24	1	277	N
120	J	480	U
208	L	600	Y
240	S		

• DC COIL

• DC Voltage	Suffix
24	D
48	G
125	K
250	T

Accessories; Coils


LB1A- *


LB3A- *

LB4A- *

C12168- *

KB4E- • + KM4E - •

AC & DC Coils for JC Contactors

For Use With	Coil Frequency	SCC Catalog No.
JC09 JC12 JC18	AC	LB1A - *
JC25 JC32	AC	LB3A - *
JC50 JC65 JC80 JC95 JCC5	AC AC / DC	LB4A - * Electronic = LB4E - •
JC09 JC12 JC18	DC	LB1D - #
JC25 JC32	DC	LB3D - #

AC Coils for Standard Type J Contactors

For Use With	Coil Frequency	SCC Catalog No.
J150CA J185CA	AC	C12168 - *

AC/DC Electronic Coils; J150CE - J700BE

For Use With	Coil Frequency	SCC Coil No.	SCC Module No.
J150CE J185CE	AC/DC	KB4E- •	KM4E - •
J250BE J309BE	AC/DC	KB5E- •	KM5E - •
J420CE J550CE	AC/DC	KB7E- •	KM7E - •
J700BE	AC/DC	KB6E- •	KM6E- •

Notes: Both **Coil No**. and **Module No.** must be used together

*AC COIL TABLE

Voltage	Suffix	Voltage	Suffix
24 (50-60Hz)	1	230 (50Hz)	N
120 (50-60Hz)	J	415 (50Hz)	W
208 (60Hz)	L	480 (60Hz)	U
240 (60Hz)	S	380 (50Hz)	U
277 (60Hz)	N	600 (60Hz)	Y

DC COIL TABLE

DC Voltage	Suffix
12	B
24	D
48	G
125	K
250	T

• AC & DC ELECTRONIC COIL TABLE

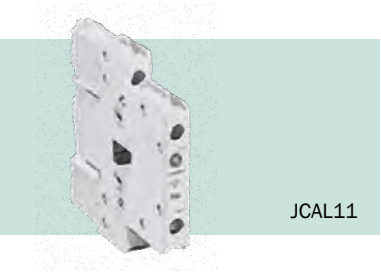
Voltage	Suffix
24V - 28V	D
110V - 127V	J
220V - 250V	N
440V - 500V	Y

IEC ACCESSORIES

JCAF10

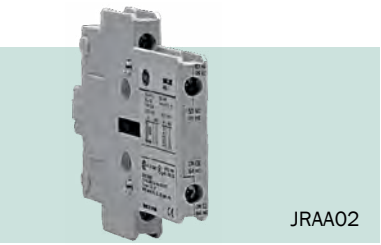
Front-Mount Auxiliary Contact Block*

Description		Contacts N.O.	Contacts N.C.	SCC Catalog No	GE Catalog No
For Use With- All JC Contactors JC09-JCC5		1 0	0 1	JCAF10 JCAF01	BCLF10 BCLF01
	Overlapping	1 0	0 1	JCAF10G JCAF01G	BCLF10G BCLF01G


JCAL11

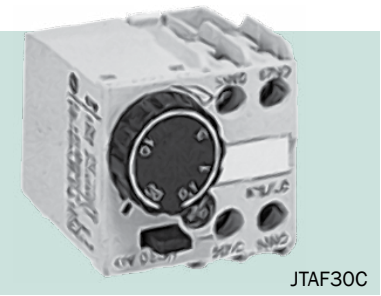
Side-Mount Auxiliary Contact Block*

Description		Contacts N.O.	Contacts N.C.	SCC Catalog No	GE Catalog No
For Use With- All JC Contactors JC09-J700	*Base Block*	1 2	1 0	JCAL11 JCAL20	BCLL11 BCLL20
	Adder Block	1 2	1 0	JRAL11 JRAL20	BRLL11 BRLL20


JRAA02

Mechanical Interlocks

Contactor Size	Contacts	SCC Catalog No	GE Catalog No
For Use With - JC09, JC12, JC18, JC22, JC25, JC32, JC34, JC50, JC65, JC80, JC95, JCC5	Without built-in contacts	JRAA	BELA
	With 2 built-in N.C. contacts	JRAA02	BELA02
J150-J700	Horizontal	BEKHJ	BEKH
J150-J309	Vertical	BEKVSJ	BEKVS1
J420-J700	Vertical	BEKVAJ	BEKVA1


JTAF30C

Pneumatic Timers

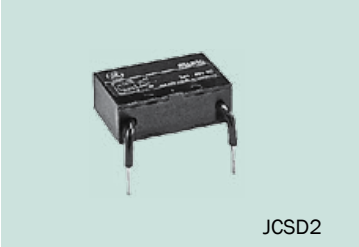
Description	Time Delay	Time Range	Contacts N.O.	Contacts N.C.	SCC Catalog No	GE Catalog No
For use with JC Contactors JC09-JCC5. (5-75 HP, 460V)	On	1 - 30 Sec. 10-60 Sec.	1 1	1 1	JTAF30C JTAF60C	BTLF30C BTLF60C
	Off	1 - 30 Sec. 10-60 Sec.	1 1	1 1	JTAF30D JTAF60D	BTLF30D BTLF60D

ORDERING INFORMATION

*MAXIMUM # OF AUXILIARY CONTACT BLOCKS PER EACH CONTACTOR

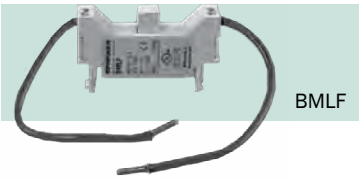
For Use With	Maximum Numbers of Aux. Contact Blocks	Arrangement of Aux. Contact Blocks
5-15 Hp contactors; JC09 JC12, JC18	4	4 Front-Mount, or 1 Side-Mount on each side
20-25 Hp contactors; JC25, JC32	6	4 Front-Mount plus 1 Side-Mount, or 2 Front-Mount plus 1 Side-Mount on each side
30-75 Hp contactors; JC50, JC65, JC80, JC95, JCC5	8	6 Front-Mount plus 1 side Mount, or 2 Side-Mount on each side

JCSR2R


JCSD2

JLXP

Din Rail


BMLF

WKL104P

Surge Suppressor

Surge Suppressor Type		Horsepower	Voltage	SCC Catalog No.	GE Catalog No.
RC	For Use With- JC09, JC12, JC18, JC32 contactors	5-25 hp AC	12-48 VAC 50-127 VAC 130-240 VAC	JCSR2G JCSR2K JCSR2R	BSLR2G BSLR2K BSLR2R
RC	For Use With- JC50, JC65, JC80, JC95, JCC5 contactors	30-75 hp AC	24-48 VAC 50-127 VAC 130-240 VAC	JCSR3G JCSR3K JCSR3R	BSLR3G BSLR3K BSLR3R

Misc. Accessories

Description		SCC Catalog No.	GE Catalog No.
Overload Base - Separate Mounting	JL1 Series	JLXP	RTXP
	JL2 Series	JL2XP	RT2XP
DIN Rail 3 ft. Length (1 meter)		DINRAIL	-
Start Contact Block (JC09 - JC32 Starters)		BMLF	BMLF

Reversing Wire Kits

Description	SCC Catalog No	GE Catalog No
JC09 - JC18	WKL102P	CLXC01
JC25 - KC32	WKL104P	CLXC21
JC50 - JC80	WKL107P	CLXC41
JC95 - KCC5	WKL0608	CLXC51

Contact Kits type JC & J

Main Contact Kit - Includes 3 sets of Contacts and Springs for:	SCC Catalog No.
JC50A311M / CL06	V31206B
JC65A311M / CL07	V31207B
JC80A311M / CL08	V31208B
JC95A311M / CL09	V31209B
JCC5A311M / LC10	V31210B

Main Contact Kit - Includes 1 set of Contacts and Springs for:	SCC Catalog No.
J150CA311 / CK75C	V1175CA
J185CA311 / CK08C	V1108CA
J250BE311 / CK09B	V1109BA
J309BE311 / CK95B	V1195BA
J420CE311 / CK10C	V1110CE
J550CE311 / CK11C	V1111CE
J700BE311 / CK12B	V1112BA

Full-Load Motor-Running Currents in Amperes Corresponding to Various A.C. Horsepower Motor Ratings

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values

	110V - 120V		220V - 240V		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KV
H.P.	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Three Phase	Three Phase
1/10	3.0	---	1.5	---	---	---	---	---	---	---	---	---
1/8	3.8	---	1.9	---	---	---	---	---	---	---	---	---
1/6	4.4	---	2.2	---	1.4	---	---	---	---	---	---	---
1/4	5.8	---	2.9	---	1.85	---	--	---	---	---	---	---
1/3	7.2	---	3.6	---	2.32	---	---	---	---	---	---	---
1/2	9.8	4.4	4.9	2.2	3.19	1.28	2.5	1.1	2.0	0.9	---	---
3/4	13.8	6.4	6.9	3.2	4.47	1.78	3.5	1.6	2.8	1.3	---	---
1	16.0	8.4	8.0	4.2	5.12	2.30	4.0	2.1	3.2	1.7	---	---
1.5	20.0	12.0	10.0	6.0	6.38	3.32	5.0	3.0	4.0	2.4	---	---
2	24.0	13.6	12.0	6.8	7.66	4.34	6.0	3.4	4.8	2.7	---	---
3	34.0	19.2	17.0	9.6	10.87	6.14	8.5	4.8	6.8	3.9	---	---
5	56.0	30.4	28.0	15.2	17.90	9.71	14.0	7.6	11.2	6.1	---	---
7.5	80.0	44.0	40.0	22.0	26.80	14.00	21.0	11.0	16.0	9.0	---	---
10	100.0	56.0	50.0	28.0	33.2	17.90	26.0	14.0	20.0	11.0	---	---
15	135.0	84.0	68.0	42.0	---	26.80	34.0	21.0	27.0	17.0	---	---
20	---	108.0	88.0	54.0	---	34.50	44.0	27.0	35.0	22.0	---	---
25	---	136.0	110.0	68.0	---	43.50	55.0	34.0	44.0	27.0	---	---
30	---	160.0	136.0	80.0	---	51.20	68.0	40.0	54.0	32.0	---	--
40	---	208.0	176.0	104.0	---	66.50	88.0	52.0	70.0	41.0	---	---
50	---	260.0	216.0	130.0	---	83.10	108.0	65.0	86.0	52.0	---	---
60	---	---	---	154.0	---	103.0	---	77.0	---	62.0	16.	9.
75	---	---	---	192.0	---	128.0	---	96.0	---	77.0	20.	11.
100	---	---	---	248.0	---	165.0	---	124.0	---	99.0	26.	14.3
125	---	---	---	312.0	---	208.0	---	156.0	---	125.0	31.	17.
150	---	---	---	360.0	---	240.0	---	180.0	---	144.0	37.	20.
200	---	---	---	480.0	---	320.0	---	240.0	---	192.0	49.	27.
250	---	---	---	602.0	---	403.0	---	302.0	---	242.0	60.	33.
300	---	---	---	---	---	482.0	---	361.0	---	289.0	72.	40.
350	---	---	---	---	---	560.0	---	414.0	---	336.0	83.	46.
400	---	---	---	---	---	636.0	---	477.0	---	382.0	95.	52.
500	---	---	---	---	---	786.0	---	590.0	---	472.0	118.	65.

Notes:

1. To obtain F.L.C. for 200 and 208 volt motors multiply 230 volts values by 1.15 and 1.10 respectively.
2. To obtain F.L.C. for 265 and 277 volt motors multiply 230 volts values by .87 and .83 respectively.

KILOWATT MOTOR RATINGS

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values

	Single-Phase Motor		Three-Phase Motor					
Power	**120V**	**240V**	**230V**	**400V**	**415V**	**440V**	**500V**	**690V**
Kilowatts	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
0.37	3.9	3.6	2	.98	---	0.99	1	---
0.55	5.2	4.8	2.8	1.5	---	1.36	1.21	---
0.75	6.6	6.1	3.6	1.9	2	1.68	1.5	---
1.1	9.6	8.8	5.2	2.5	2.5	2.37	2	---
1.5	12.7	11.7	6.8	3.4	3.5	3.06	2.6	---
1.8	15.7	14.4	---	---	---	---	---	---
2.2	18.6	17.1	9.6	4.8	5	4.42	3.8	–
3	24.3	22.2	---	6.3	6.5	5.77	5	3.5
3.7	---	---	15.2	---	---	---	---	---
4	29.6	27.1	---	8.1	8.4	7.9	6.5	4.9
4.4	34.7	31.8	---	---	---	---	---	---
5.2	39.8	36.5	---	---	---	---	---	---
5.5	42.2	38.7	22	11	11	10.4	9	6.7
6	44.5	40.8	---	---	---	---	---	---
7	49.5	45.4	---	---	---	---	---	---
7.5	54.4	50	28	14.8	14	13.7	12	9
9	---	---	---	18.1	17	16.9	13.9	10.5
11	---	---	42	21	21	20.1	18.4	12.1
15	---	---	54	28.5	28	26.5	23	16.5
18.5	---	---	68	35	35	32.8	28.5	20.2
22	---	---	80	42	40	39	33	24.2
30	---	---	104	57	55	51.5	45	33
37	---	---	130	69	66	640	55	40
45	---	---	154	81	80	76	65	46.8
55	---	---	192	100	100	90	80	58
75	---	---	248	131	135	125	105	75.7
90	---	---	312	162	165	146	129	94
110	---	---	360	195	200	178	156	113
132	---	---	---	233	240	215	187	135
---	---	---	480	222	260	236	207	---
160	---	---	---	285	280	256	220	165
---	---	---	600	---	---	---	---	---
200	---	---	---	352	340	321	281	203
220	---	---	720	388	385	353	310	224
250	---	---	840	437	425	401	360	253
280	---	---	---	---	---	---	---	---
315	---	---	---	555	535	505	445	321
---	---	---	1080	---	---	---	---	---
355	---	---	---	605	580	549	500	350
---	---	---	1200	---	---	---	---	---
400	---	---	---	675	650	611	540	390
450	---	---	1440	---	---	---	---	---
500	---	---	---	855	820	780	680	494
560	---	---	---	950	920	870	760	549
630	---	---	---	1045	1020	965	850	605
710	---	---	---	1200	1140	1075	960	694
800	---	---	---	---	1320	1250	1100	790
900	---	---	---	---	1470	1390	1220	880

Power Circuit JC09 - JCC5 Series

Three-pole version		JC09	JC12	JC18	JC25	JC32	JC50	JC65	JC80	JC95	JCC5
Rated thermal current Ith at q <55½ C	(A)	25	25	32	45	60	90	110	110	140	140
Rated operational current Ie	(A)	9	12	18	25	32	50	65	80	95	105
Rated operational voltage Ue	(V)	690	690	690	690	690	690	690	690	690	690
Four-pole version (4 N.O., 2 N.O. + 2 N.C.)			**JC12**	**JC18**	**JC25**	**JC32**		**JC65**	**JC80**	**JC95**	
Rated thermal current Ith at q <55½ C	(A)		25	32	45	60		110	110	140	
Rated operational current Ie	(V)		690	690	690	690		690	690	690	
			(1) 2 NO + 2 NC only								
			(2) 4 NO only								
Three-Pole and Four-Pole Version		**JC09**	**JC12**	**JC18**	**JC25**	**JC32**	**JC50**	**JC65**	**JC80**	**JC95**	**JCC5**
Rated insulation voltage Ui	(V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Maximum continuous current AC1	(A)	25	25	32	45	60	90	110	110	140	140
Frequency limits (Hz)		25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
Making capacity (RMS) (acc. IEC 947)	(A)	450	450	450	550	550	1000	1000	1000	1280	1280
Breaking capacity (RMS) (acc. IEC 947)											
Ue < 400V	(A)	250	250	250	450	450	920	920	920	1050	1050
Ue = 500V	(A)	250	250	250	450	450	920	920	920	1050	1050
Ue = 690V	(A)	130	130	130	205	205	780	780	780	950	950
Short-time current											
1 sec.	(A)	455	455	570	1010	1010	1580	2530	2530	3300	3300
5 sec.	(A)	205	205	254	450	450	710	1130	1130	1485	1485
10 sec.	(A)	144	144	180	320	320	500	800	800	1050	1050
30 sec.	(A)	85	85	104	185	185	290	460	460	600	600
1 min.	(A)	60	60	74	130	130	205	325	325	430	430
3 min.	(A)	35	35	45	90	90	120	185	185	250	250
Recovery time	(min.)	10	10	10	10	10	10	10	10	10	10
Protection against short-circuit with fuses											
Coordination type "2"											
aM	(A)	10	12	20	25	35	50	80	80	125	160
gL-gG	(A)	25	35	35	63	63	100	160	160	200	200
Without welding											
aM	(A)	8	8	16	20	20	40	50	50	80	80
gL-gG	(A)	10	10	25	35	35	80	100	100	160	160
Impedance per pole	mΩ	2.35	2.35	2.41	1.28	1.28	0.85	0.86	0.86	0.76	0.76
Power dissipation per pole											
AC1	(W)	1.47	1.47	2.46	2.59	4.6	6.89	10.4	10.4	14.89	14.89
AC3	(W)	0.19	0.34	0.78	0.80	1.31	2.12	3.63	5.5	6.86	8.37
Insulation resistance											
Between adjacent poles	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Between poles and earth	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Between input and output	mΩ	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10

Power Circuit J150 - J700 Series

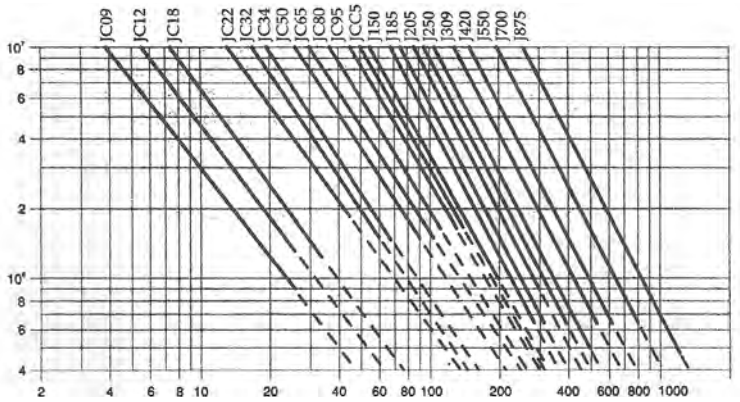
Three-pole contactors		J150	J185		J250	J309	J420	J550	J700
Rated thermal current Ith at q <40½ C	(A)	250	250		315	450	600	700	1000
Rated operational current Ie AC3	(A)	150	185		250	309	420	550	700
Rated operational voltage Ue	(V)	1000	1000		1000	1000	1000	1000	1000
Raged insulation voltage Ui	(V)	1000	1000		1000	1000	1000	1000	1000
Maximum continuous current AC1	(A)	250	250		315	450	600	700	1000
Frequency limits	(Hz)	25...400	25...400		25...400	25...400	25...400	25...400	25...400
Breaking capacity (RMS)									
Ue < 400V	(A)	1600	1600		3500	3500	5600	5600	7300
Ue = 500V	(A)	1600	1600		3500	3500	5600	5600	7300
Ue = 690V	(A)	100	100		2200	2200	3500	3500	6700
Ue = 1000V	(A)	350	350		1100	1100	2000	2000	3500
Short-time current									
1 sec.	(A)	2500	2500		5500	5500	7500	7500	9700
5 sec.	(A)	2500	2500		3500	3500	5200	5200	7700
10 sec.	(A)	2300	2300		2500	2500	4000	4000	6100
30 sec.	(A)	1250	1250		1600	1600	2800	2800	4400
1 min.	(A)	900	900		1200	1200	1800	1800	3500
3 min.	(A)	600	600		900	900	1200	1200	2300
Recovery time	(min.)	10	10		10	10	10	10	10
Short-circuit protection with fuses									
Coordination type "2"									
aM	(A)	160	200		250	315	400	500	630
gL-gG	(A)	250	250		400	500	630	800	1000
Impedance per pole	(mΩ)	0.30	0.30		0.28	0.28	0.15	0.13	0.14
Power dissipation per pole									
AC1	(W)	19	19		27.7	56.7	54.3	63.7	140
AC3	(W)	6.8	10.3		17.5	26.7	26.5	45.3	68.6
Insulation resistance									
Between adjacent poles	(mΩ)	>10	>10		>10	>10	>10	>10	>10
Between poles and earth	(mΩ)	>10	>10		>10	>10	>10	>10	>10
Between input and output	(mΩ)	>10	>10		>10	>10	>10	>10	>10

Four-pole contactors		J185	J250	J309	J420	J550	J700		
Rated thermal current Ith at q <40½ C	(A)	325	400	500	600	700	1000		
Rated operational voltage Ue	(V)	1000	1000	1000	1000	1000	1000		
Raged insulation voltage Ui	(V)	1000	1000	1000	1000	1000	1000		
Maximum continuous current AC1	(A)	325	400	500	600	700	100		
Frequency limits	(Hz)	25...400	25...400	25...400	25...400	25...400	25...400		
Making capacity (RMS)	(A)	1850	2500	3700	6500	6500	6700		
Breaking capacity (RMS)									
Ue < 400V	(A)	1600	3500	3500	5600	5600	6700		
Ue = 500V	(A)	1600	3500	3500	5600	5600	6700		
Ue = 690V	(A)	1000	2200	2200	5000	5000	6000		
Ue = 1000V	(A)	350	1100	1100	300	300	3500		
Short-time current									
1 sec.	(A)	2500	5500	5500	7500	7500	9700		
5 sec.	(A)	2500	3500	3500	5200	5200	7700		
10 sec.	(A)	2300	2500	2500	4000	4000	6100		
30 sec.	(A)	1250	1600	1600	2800	2800	4400		
1 min.	(A)	900	1200	1200	1800	1800	3500		
3 min.	(A)	600	900	800	1200	1200	2300		
Recovery time	(min.)	10	10	10	10	10	10		
Short-circuit protection with fuses									
Coordination type "2"									
gL-gG	(A)	400	500	500	6300	800	1000		
Impedance per pole	(mΩ)	0.32	0.28	0.28	0.15	0.13	0.14		
Power dissipation per pole									
AC1	(W)	33.8	44.8	56.7	61.2	68.6	140		
Insulation resistance									
Between adjacent poles	(mΩ)	>10	>10	>10	>10	>10	>10		
Between poles and earth	(mΩ)	>10	>10	>10	>10	>10	>10		
Between input and output	(mΩ)	>10	>10	>10	>10	>10	>10		

Life Curves - AC Contactors; JC09 - J700

AC-1: Non-inductive, or lightly inductive loads, e.g., resistance furnaces

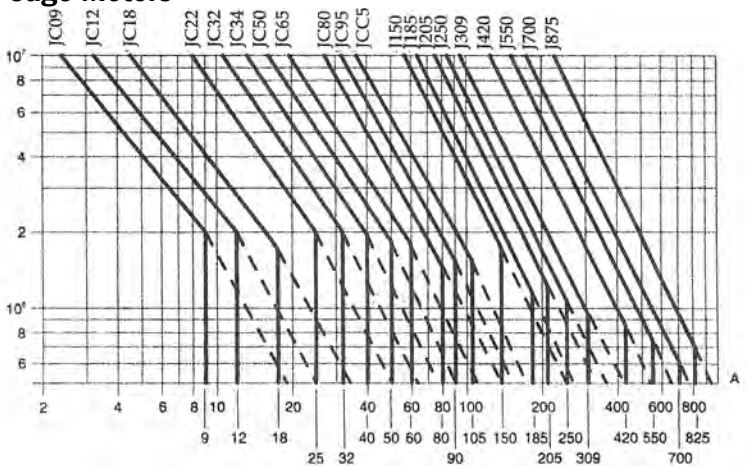
ELECTRICAL ENDURANCE
Operation



RATED CURRENT Ie
For all voltages

AC-3: Interruption of Running Squirrel - Cage Motors

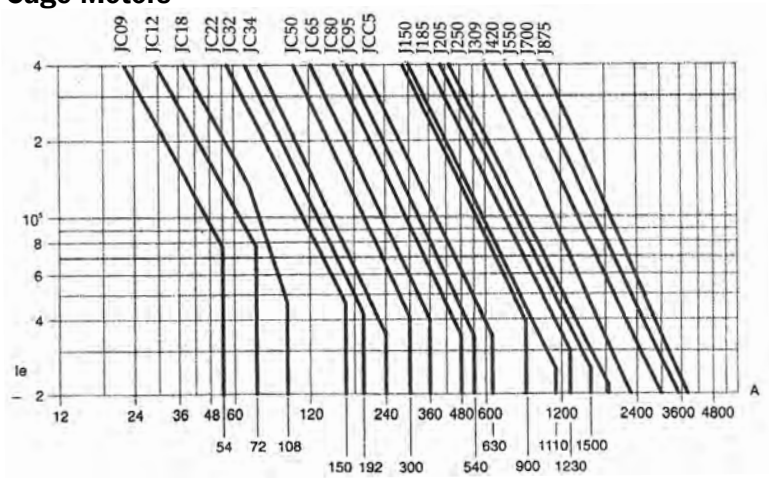
ELECTRICAL ENDURANCE
Operation



RATED CURRENT Ie
(Ue ≤ 440V)

AC-4: Inching (Jogging) of Squirrel - Cage Motors

ELECTRICAL ENDURANCE
Operation



RATED CURRENT Ie
(Ue ≤ 440V)

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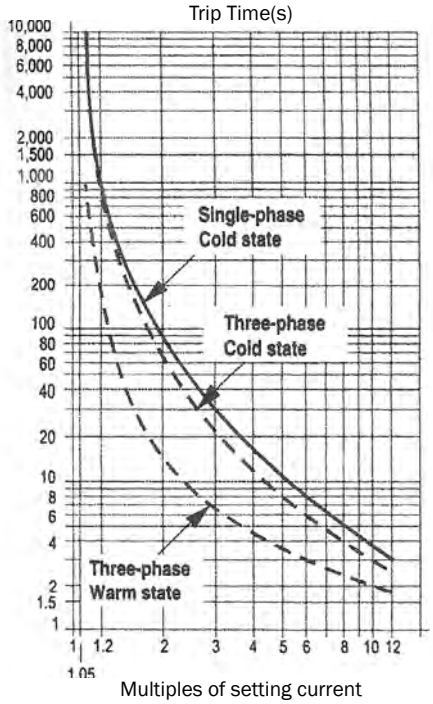
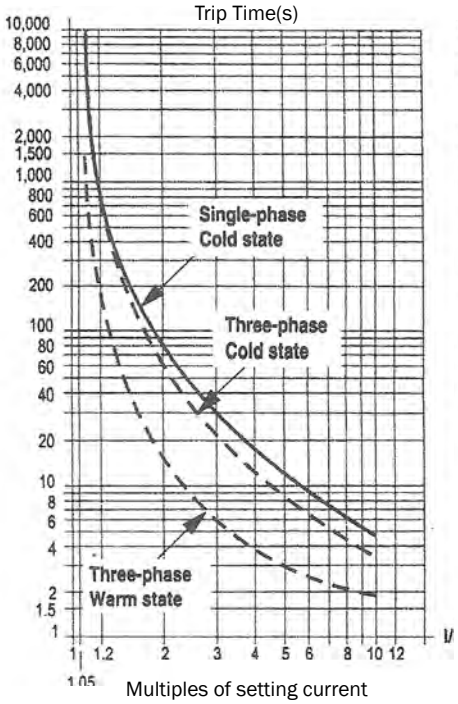
IEC Overload Relays

Tripping Curves

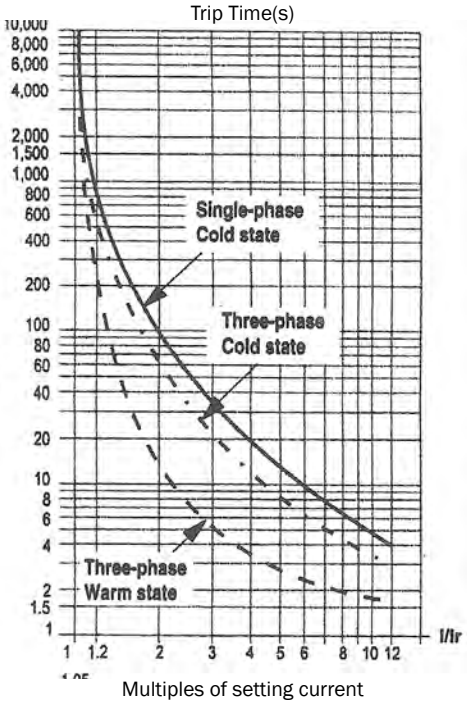
JL1 Class 10A



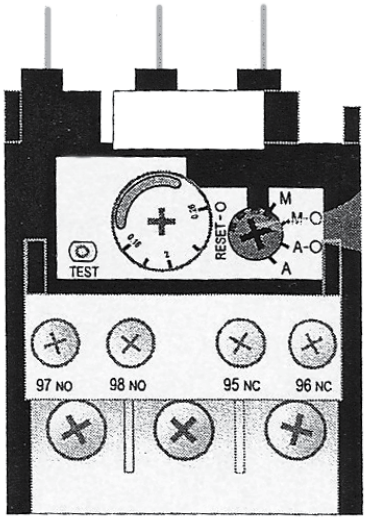
JL2 Class 10A



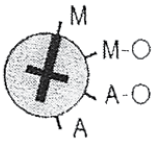
JL3 Class 10A



Functions of the reset-button

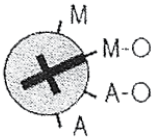


* Recommended setting



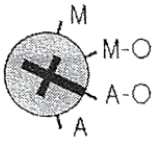
Manual RESET

(Operator must manually reset O/L relay when tripped)



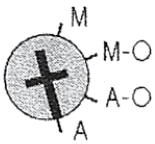
*Manual RESET and STOP

(Operator must manually reset O/L relay when tripped. STOP can also be initiated by pushing the reset button which interrupts the holding circuit)



Automatic RESET and STOP

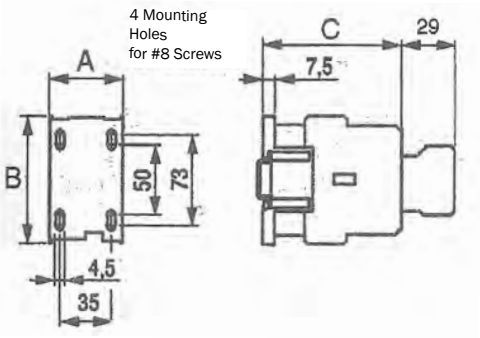
(After tripping, O/L relay will automatically turn on when proper temperature is met. STOP can also be initiated by pushing the reset button which interrupts the holding circuit.)



Automatic RESET no STOP

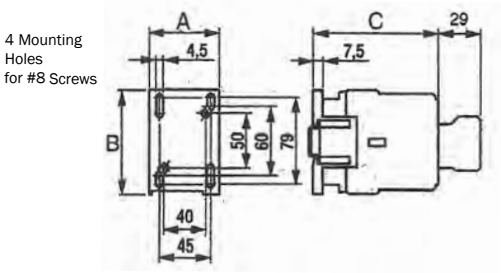
(After tripping, O/L relay will automatically turn on when proper temperature is met.)

Contactors & Relays - Types JC & JR4R / JC09 - JC18



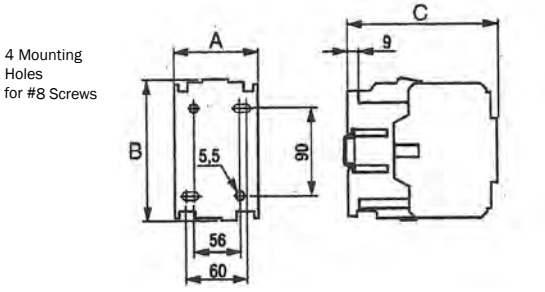
	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC09A JC12A JC18A JR4R	1.77 (45)	3.1 (81)	3.34 (85)	1.38 (35)	2.8 (73)	1.97 (50)	.18 (4.5)	6VA	45VA Operating Load 15VA

Contactors - Type JC / JC25 - JC32



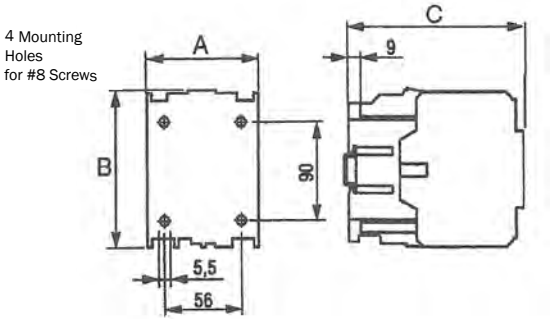
	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC25A JC32A	2.17 (55)	3.43 (87)	3.86 (98)	1.77 (45)	3.11 (79)	1.97 (50)	.18 (4.5)	9VA	88VA Operating Load 30VA

Contactors - Type JC / JC50 - JC80



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC50A JC65A JC80A	2.6 (66)	4.6 (117.5)	4.57 (116)	3.54 (90)	2.38 (60)	2.2 (56)	.22 (5.5)	15.5VA	191VA Operating Load 75VA

Contactors - Type JC / JC95 - JCC5



	Dimensions - Approximate Inches and (Millimeters)						Coil	VA
Type	A	B	C	D	E	F	Sealed	Inrush
JC95A JCC5A	2.95 (75)	4.63 (117.5)	4.96 (126)	3.54 (90)	2.2 (56)	.22 (5.5)	15.5VA	191VA Operating Load 75VA

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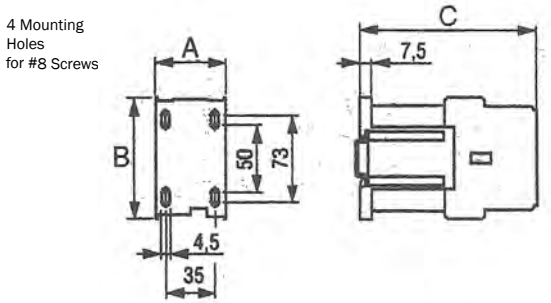
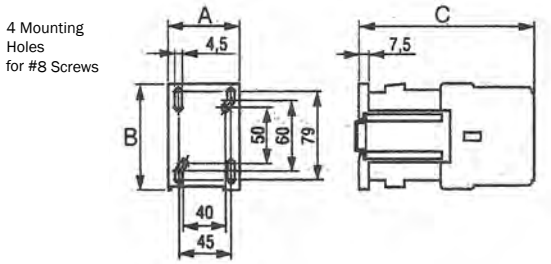
Contactors - Types JC (DC) / JC09D - JC18D



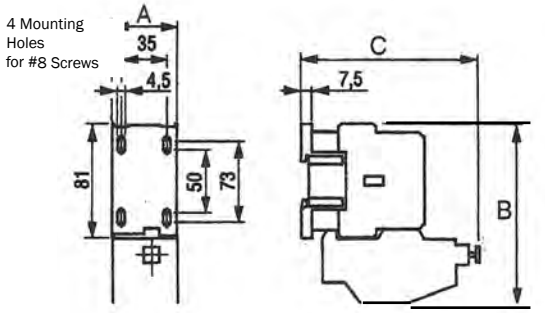
	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC09D JC12D JC18D	1.77 (45)	3.1 (81)	4.53 (115)	1.38 (35)	2.8 (73)	1.97 (50)	.18 (4.5)	5.5W	5.5W

Contactors - Types JC (DC) / JC25D - JC32D



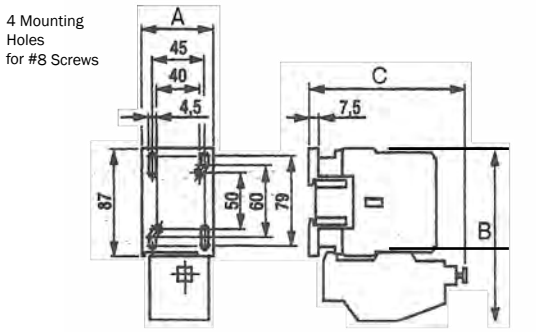
	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC25D JC32D	2.17 (55)	3.43 (87)	5.26 (134)	1.77 (45)	3.11 (79)	1.97 (50)	.18 (4.5)	7.5W	7.5W

Open Starters - Types JC / JC09 - JC18



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC09 JC12 JC18	1.77 (45)	5.03 (128)	4.3 (108)	1.38 (35)	2.72 (70)	1.97 (50)	.18 (4.5)	6VA	45VA

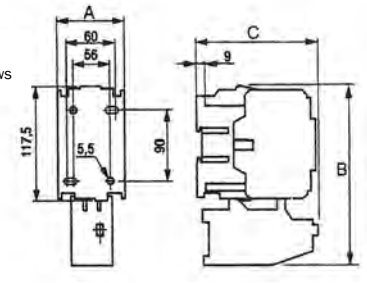
Open Starters - Types JC / JC25 - JC32



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC25 JC32	2.17 (55)	5.27 (134)	4.06 (103)	1.77 (45)	1.97 (50)	3.11 (79)	.18 (4.5)	9VA	88VA

Starters - Type JC / JC50-JC80

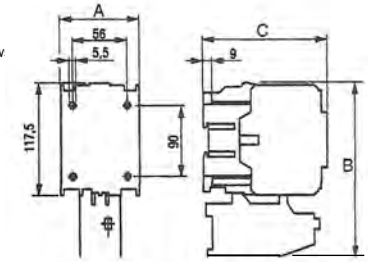
4 Mounting Holes for #10 Screws



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
JC50A JC65A JC80A	2.6 (66)	7.23 (188)	4.57 (117)	3.54 (90)	2.38 (60)	2.2 (56)	.22 (5.5)	15.5VA	191VA

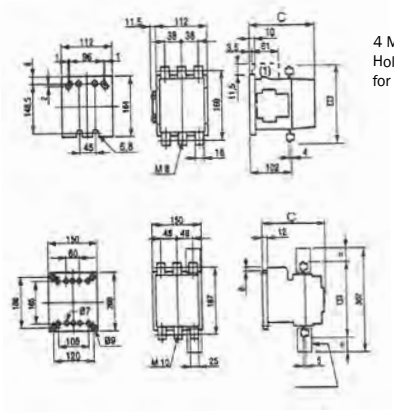
Starters - Type JC / JC95 - JCC5

4 Mounting Holes for #10 Screw



	Dimensions - Approximate Inches and (Millimeters)						Coil	VA
Type	A	B	C	D	E	F	Sealed	Inrush
JC95A JCC5A	2.95 (66)	7.43 (188.5)	4.96 (126)	3.54 (90)	2.2 (56)	022 (5.5)	15.5VA	191VA

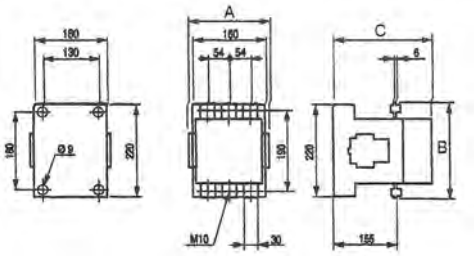
Contactors - Type JC / J150 - J309



4 Mounting Holes for #1/4" Bolts

	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
J150C J185C	4.4 (112)	7.0 (178)	6.5 (166)	6.3 (160)	5.8 (148.5)	3.5 (96)	6.45 (164)	32VA	400VA Operating Load 150VA
J250B J309B	5.9 (150)	8.33 (211.6)	8.2 (208)	7.4 (187)	7.08 (180)	4.72 (120)	7.86 (200)	60VA 13VA	830VA 340VA Operating Load 200VA

Contactors - Type JC / J420 - J550



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
J420C J550C	7.2 (183)	8.97 (228)	8.97 (228)	7.48 (190)	7.09 (180)	5.12 (130)	8.66 (220)	23VA	680VA Operating Load 150VA

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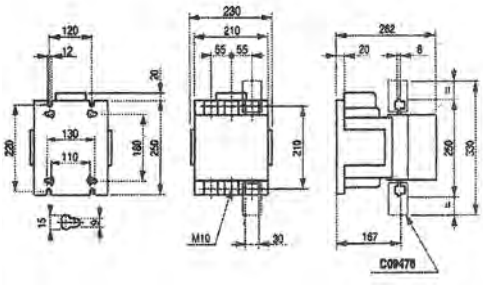
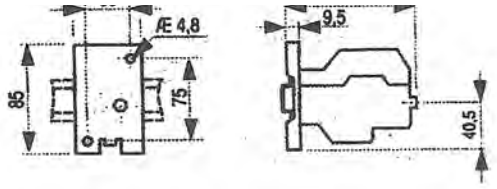
Contactors - Type JC / J700



	Dimensions - Approximate Inches and (Millimeters)							Coil	VA
Type	A	B	C	D	E	F	G	Sealed	Inrush
J700B	9.06 (230)	9.84 (250)	10.31 (262)	8.27 (210)	8.66 (220)	4.72 (120)	.47 (12)	25VA	750VA Operating Load 150VA

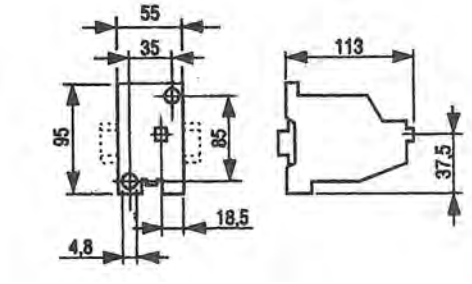
Overload Relays - Separate Panel Mount

2 Mounting Holes
for #8 Screws



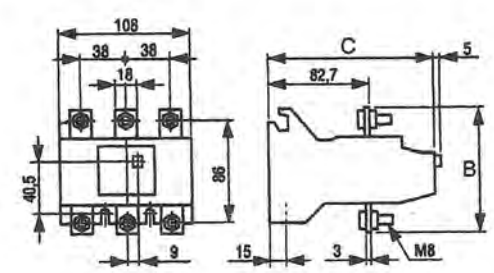
	Dimensions - Approximate Inches and (Millimeters)						
Type	A	B	C	D	E	F	G
JL1 JLXP	1.77 (45)	3.38 (85.8)	4.24 (107.7)	1.38 (35)	2.97 (75)	1.8 (45.7)	.55 (13.5)

2 Mounting Holes
for #8 Screws



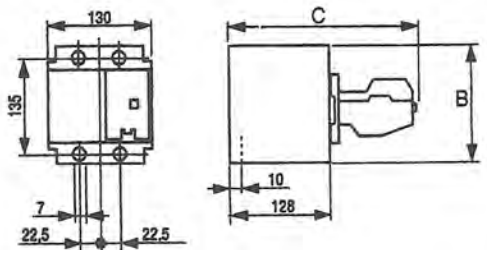
	Dimensions - Approximate Inches and (Millimeters)						
Type	A	B	C	D	E	F	G
JL2P	2.16 (54.9)	3.75 (95.2)	4.4 (113)	1.38 (35)	3.34 (84.8)	1.83 (46.2)	1.42 (37)

Overload Relays - Separate Panel Mount (JL3 - JL5)



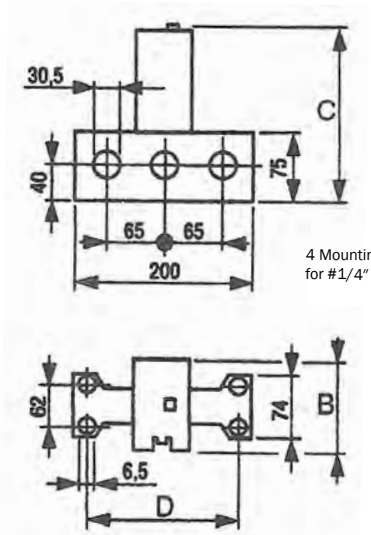
4 Mounting Slots
for #1/4″ Bolts

	Dimensions - Approximate Inches and (Millimeters)							
Type	A	B	C	D	E	F	G	H
JL3	4.25 (108)	4.14 (105)	5.4 (137)	1.34 (34)	.47 (12)	1.57 (40.5)	2.48 (62.9)	2.75 (70)



4 Mounting Slots
for #1/4″ Bolts

	Dimensions - Approximate Inches and (Millimeters)						
Type	A	B	C	D	E	F	G
JL4	5.08 (129.2)	6.90 (177)	9.12 (231.6)	1.67 (42.4)	5.35 (13.5)	3.51 (89.2)	1.85 (46.9)

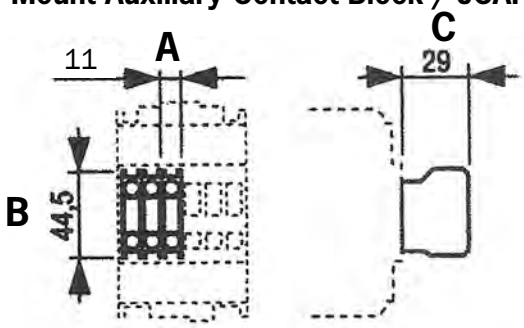


4 Mounting Slots
for #1/4″ Bolts

	Dimensions - Approximate Inches and (Millimeters)						
Type	A	B	C	D	E	F	G
JL5	7.9 (200)	3.25 (82)	7.05 (179)	7.13 (181)	2.38 (60.4)	2.93 (74)	.26 (6.5)

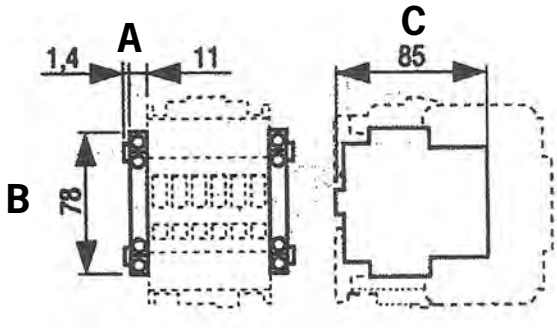
Accessories

Front - Mount Auxiliary Contact Block / JCAF_ _



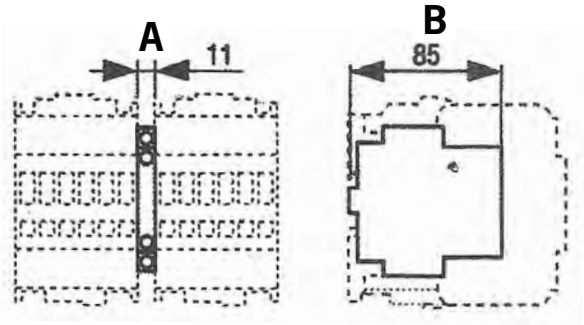
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	1.77 (44.5)	1.25 (29)

Side - Mount Auxiliary Contact Block / JCAL_ _



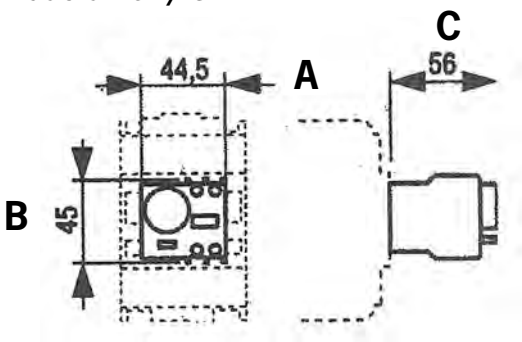
Dimensions - Approximate Inches and (Millimeters)		
A	B	C
.44 (11)	3.11 (78)	3.32 (85)

Mechanical Interlock / JRAA, JRAA02



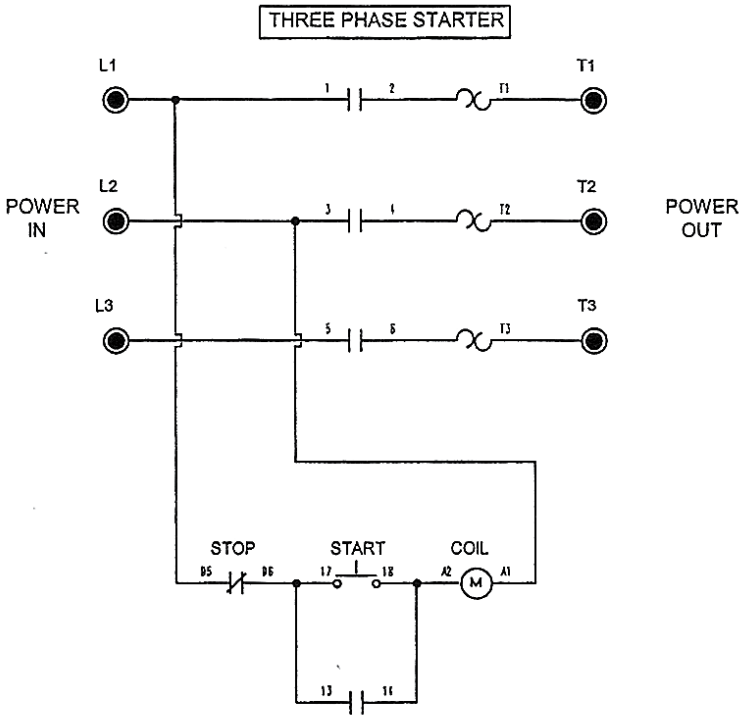
Dimensions - Approximate Inches and (Millimeters)	
A	B
.44 (11)	3.32 (85)

Pneumatic timer / JTAF

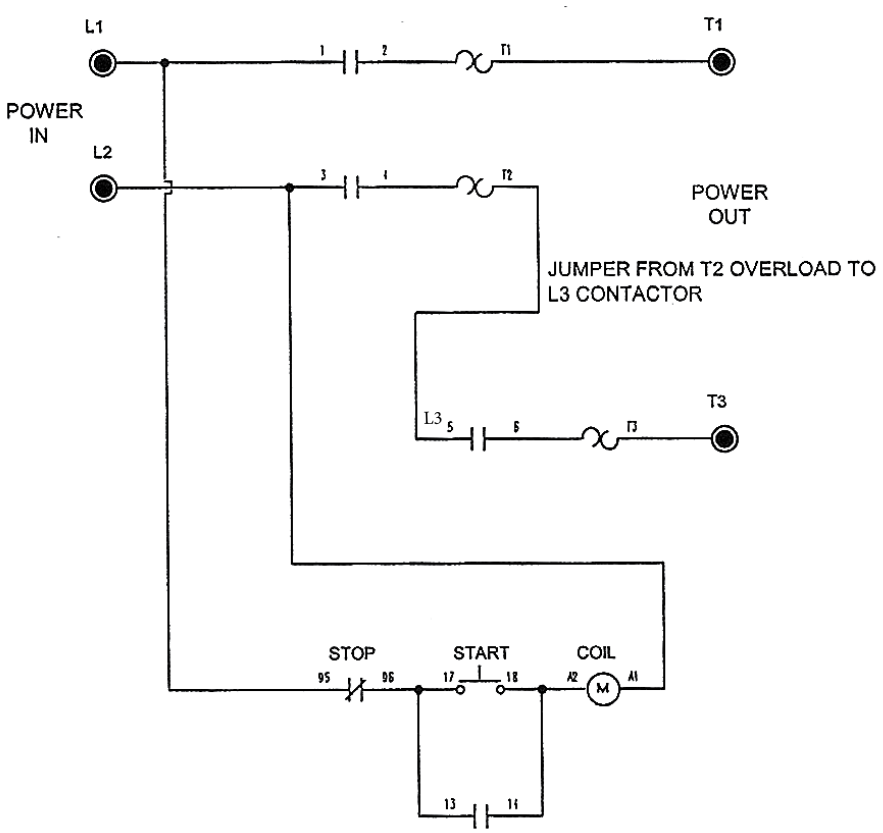


Dimensions - Approximate Inches and (Millimeters)		
A	B	C
1.77 (44.5)	1.8 (45)	2.2 (56)

3-Phase Starter



1-Phase Starter



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Industrial Electrical Controls

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ELECTRICAL CONTACTORS & STARTERS

MANUAL MOTOR STARTERS

- GMK Manual Motor Starters (up to 32 amps)
- Available as open or enclosed (surface or flush mount)

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INDEX

Springer Controls represents the FANOX line of manual motor starters (MMS). The MMS units are 3-pole horsepower rated switches that combine motor thermal overload protection and magnetic short circuit protection in one compact unit. The switches offer motor protection circuit breaker up to 32 amps.

MANUAL MOTOR STARTERS;

Description / Features 4

GMK Manual Motor Starters (up to 32 amps) 5

Engineering Data 6

Wiring Diagrams 7

Dimensions 8

Open Manual Motor Starter

Surface Mount Starter (IP55)

Flush Mount Starter (IP55)

Description

Model GMK Motor Protection Switch is a three pole horsepower rated switch which combines motor thermal overload protection and magnetic short circuit protection in one compact unit. Incorporates a manual disconnect switch and instantaneous magnetic trip mechanism in one compact device. The GMK is ideal for applications requiring multi-motor operation.

UL permits Group Fusing for motors up to 10 amperes full load current. This provides the option for grouping a number of motors under one branch circuit disconnect and fuse set. This saves panel space and additional component cost.

Remote control operation and low voltage protection can be provided by adding a Type “JM” Contactor in series with the motor protection switch.

Features

- Interrupt Rating = 5kA at 480 V.
- Motor protection circuit breaker up to 32 amps.
- Manual operation using start-stop push buttons.
- All poles open for both thermal and magnetic trips.
- Differential protection against asymmetrical overloads (single phase protection).
- Class 10 overload protection.
- Ambient temperature compensation between 23° F and 104°F (-5°C and +40°C.)
- Instant magnetic trip when the current passing through the relay reaches 12 times maximum value of the thermal setting.
- Easily accessible Terminals protected against accidental contact.
- Easy Din Rail mounting or panel mounting with screws.
- UL Listed, CSA Approved and meets international standards.

GMK MANUAL MOTOR STARTER

Manual Motor Starter - Type GMK

Motor Full Load Current Range		Maximum Single Phase Horsepower			Maximum Three Phase Horsepower			Magnetic Tripping Current Ampere	UL Requirements		SCC Catalog No.	GE Catalog No.
Min.A	Max.A	115V	200V	230V	230V	460V	575V		Individual Motor Class K5 Max. Fuse Ampere	Group Fusing Max. Fuse Ampere		
0.1	0.16	---	---	---	---	---	---	1.9	15	100	GMKO-A	SFK0A
0.16	0.25	---	---	---	---	---	---	3.0	15	100	GMKO-B	SFK0B
0.25	0.4	---	---	---	---	---	---	4.8	15	100	GMKO-C	SFK0C
0.4	0.63	---	---	---	---	---	---	7.5	15	100	GMKO-D	SFK0D
0.63	1.0	---	---	---	---	1/2	1/2	12	15	100	GMKO-E	SFK0E
1.0	1.6	---	---	1/10	---	3/4	1	19	15	100	GMKO-F	SFK0F
1.6	2.5	---	1/8	1/6	1/2	1	1½	30	15	100	GMKO-G	SFK0G
2.5	4.0	1/8	1/4	1/3	1	2	3	48	15	45	GMKO-H	SFK0H
4.0	6.3	1/4	1/2	1/2	1½	3	5	75	20	45	GMKO-I	SFK0I
6.3	10.0	1/2	1	1½	3	5	7½	120	35	80	GMKO-J	SFK0J
10.0	16.0	1	2	2	5	10	10	190	60	---	GMKO-K	SFK0K
16.0	20.0	1½	3	3	---	---	15	240	80	---	GMKO-L	SFK0L
20.0	25.0	2	---	---	7½	15	20	300	90	---	GMKO-M	SFK0M
25.0	32.0	2	---	5	10	20	25	380	90	---	GMKO-N	SFK0N

Note:
1. Single phase horsepower ratings are based on wiring the 3 starter poles in series.
2. For group motor installations, use lowest maximum fuse size for the group of starters.

ORDERING INFORMATION

- Select starter based on the overload current range required for a given motor. This current range is determined from the motor Full Load Ampere rating and Motor Service Factor usually found on the motor nameplate.
- Engineering data page 6
- Wiring schematics page 7
- Dimension page 8

Enclosures and Accessories

Surface or Enclosed Mounting

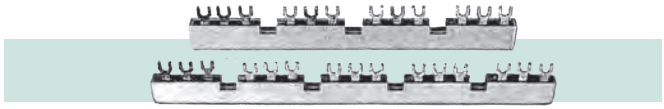
Flush Mounting

Enclosures

- Made in thermoplastic material.
- Equipped with four cable entries (PG16) and one neutral connection.

			SCC Catalog No.	GE Catalog No.
Surface Mount	Dust & Water Protection	IP55	GMS05	SFS05
Flush Mount	Dust & Water Protection	IP55	GME05	SFE05

Three Phase Busbar Block



	SCC Catalog No.	GE Catalog No
4 units Ui 660V Ie 80A - length 207mm	GMVE4	GPB104A
5 units Ui 660V Ie 80A - length 261mm	GMVE5	GPB105A
Plastic cover for unused 3 terminatals	GMVEP	GPB1GA

Auxiliary Contact Blocks Side Mounting

	SCC Catalog No.	GE Catalog No.
1 NO + 1NC	GMAL11N	SFAL11N
2 NO	GMAL20N	SFAL20N

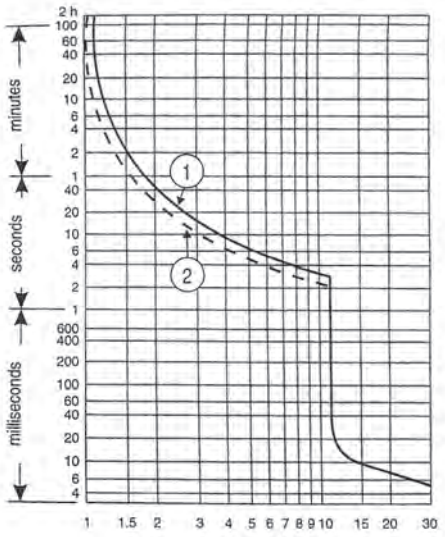
General

Conformity to Standards			IEC 947-2, IEC 947-4-1, VDE 0660
Approvals			US, CSA
Rated Thermal Current (Ith) at 40°C			25A
Rated Insulation Voltage (Ui)			690V
Rated Operational Voltage (Ue)		AC	690V, 40/60Hz
		DC	220V, with or without earth connection
(See Application Diagram)			
Terminal Type			M4, Pozidriv, safety flange screws
Wiring Capacity	Rigid Wire	min,	2 wires of 0.75 mm²
		max.	2 wires of 6 mm²
	Flexible Wire	min.	2 wires of 0.75 mm²
		max.	2 wires of 4 mm²

Main Circuit

Category		AC3, DC4
Operational Frequency Limits		40 to 60Hz
Opening Time		aprox. 7ms
Mechanical Endurance		10^5 operations
Electrical Endurance Category AC3		10^5 operations
Maximum Operating Rate		40 operations/hour
Total Dissipated power at Rated Thermal Current and Hot State		6W
Tripping Characteristics		
Thermal	Symmetrical Overloads	Class 10 (see curve 1, tripping curve)
	Asymmetrical Overloads (phase failure)	To IEC 947-4-1 (see curve 2, tripping curve)
	Temperature Compensation	23 to 104°F (-5 to +40°C)
Magnetic		12 x Ie (Ie = max. thermal setting value)
Stunt Release	Operating voltage limits	0.7 - 1.2 Ue 100% ED
	Consumption AC	2.2 VA
	DC	1W
Undervoltage Release	Operational Voltages Limits	0.85 - 1,1 Ue 100% ED
	Breaking Voltage Limits	0.75 - 0.35 Ue
	Consumption	2.2 VA 1W
	Short Circuit Capacity	600V AC, 5kA

Tripping Curve

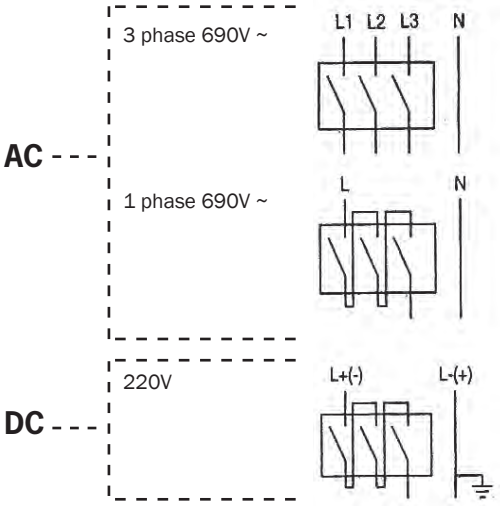


x max adjustable thermal current

① Thermal trip, operating with 3-phases

② Thermal-differential trip (from cold) operating with 2-phases

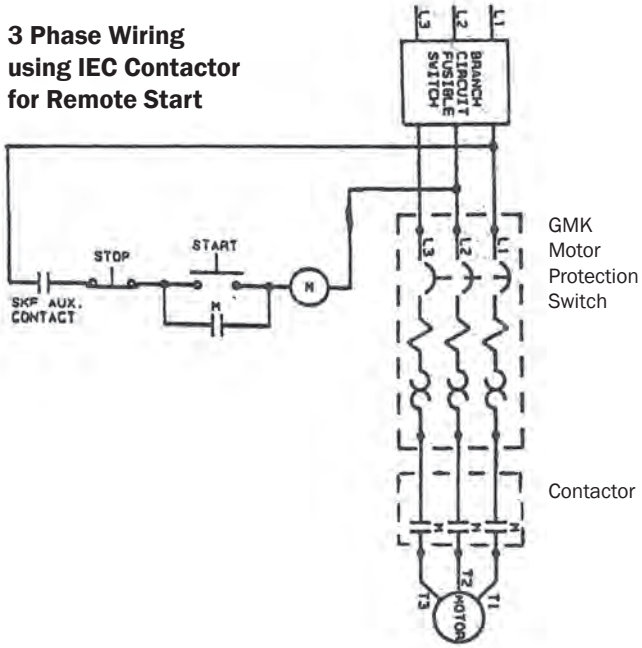
Wiring Diagram



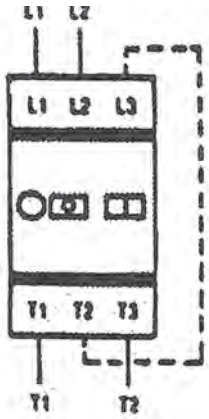
WIRING DIAGRAMS

It is recommended to include auxiliary contact number GMAL11N in the control circuit, when using motor protection switches along with a magnetic contactor. It will ensure that the contactor coil is disconnected when the motor protection switch is off. This contact can be wired as shown in the diagram.

3 Phase Wiring using IEC Contactor for Remote Start

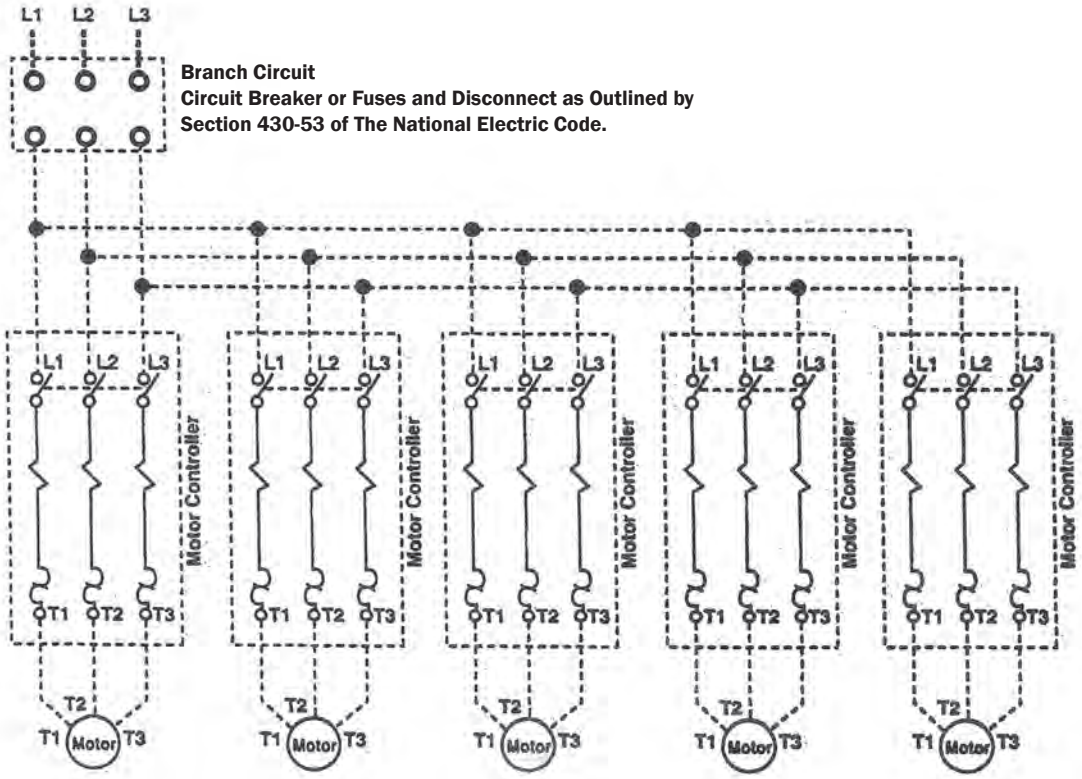


Single Phase Wiring



For single phase motors, the 3 poles of the starter must be wired in series by adding a jumper between terminals L3 and T2 as shown.

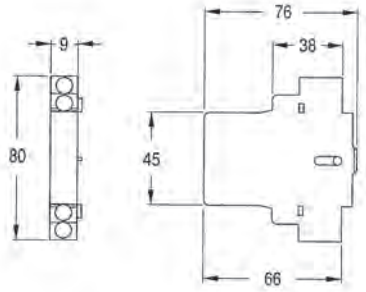
Group Fusing Application



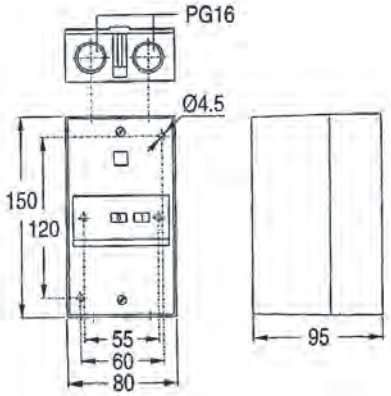
Typical Schematic Diagram; Group Installation of Manual Motor Controller

Motor Protection Circuit Breaker

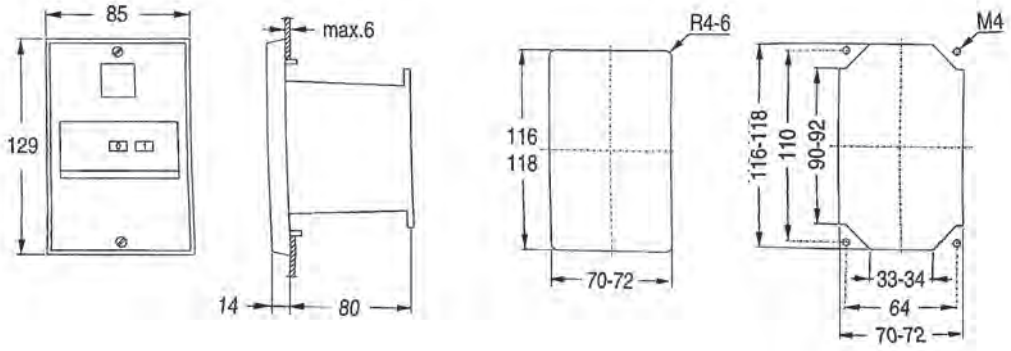
Auxiliary Contact Block



Surface Mounting Enclosure (GMSO_)



Flush Mounting Enclosure (GMEO_)



Fixing by clip

Fixing by screw

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ELECTRICAL CONTACTORS & STARTERS

ENCLOSED AC & DC MOTOR STARTERS

- IEC 9 amp through 105 amp Enclosed AC Motor Starters
- IEC AC & DC Custom Motor Starters
  (UL certified - 508A)

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INDEX

IN STOCK
SHIPS IMMEDIATELY

Springer Controls carries a complete line of IEC enclosed, direct on-line, along with separate control voltage, AC & DC motor starters up to 60 HP or 80 amp. **Springer Controls** is UL certified (508A), to build starters and custom control panels up to 500 HP. (Contact Springer Controls for custom built starters.)

Description/Features/Ordering Instructions.....4

Nomenclature - Part Number.....5

Single Phase, Full Voltage Starters (9 amp - 80 amp).....6

Three Phase, Full Voltage Starters (9 amp - 32 amp).....7

Three Phase, Full Voltage Starters (50 amp - 105 amp).....8

Wiring Diagrams.....9

Horsepower Motor Ratings.....10

Kilowatt Motor Ratings.....11

ENCLOSED AC/ DC MOTOR STARTERS; DESCRIPTION & FEATURES

Shown without cover

Part# **JC1206P1G-SN**

- 12 amp AC Starter
- 3-phase
- Poly Enclosure - N4x
- Start-Stop Buttons
- Dimensions; 7" x 3½" X 5½"
- 240V AC coil
- Overload Relay; 8-12 amps

Description and Features

- AC Motor Starters in polycarbonate enclosure.
  Rated Nema 1, 12, 4 & 4x, IP65
- All contactors and overload relays are UL approved.
- AC3 Inductive Motor rating from 9 amp through 105 amp (Contact factory for specs above 105 amp)
- Fully assembled single and three phase starters.
- No cover wiring required.
- Full selection of coil voltages and overload relays.
- "Start-Stop" or "Reset" external buttons come standard.
  (Blank cover or no buttons available on request)
- Direct On-Line AC Starters or AC Starters with separate control voltage

Ordering Information

- Determine single or three phase application.
- Determine motor HORSEPOWER or FULL LOAD AMPS (FLA) of the motor.
- Select complete Part Number for 1-phase direct on-line starters on page 6. Use page 7 & 8 for 3-phase direct on-line starters.
- For AC starters with separate control voltage use "Nomenclature" table on page 5. Contact factory for pricing.
- For DC Motor Starters and Motor Starters with more "complex" features, call factory for quote.

Part# **JC6506P1K-SH**

- 65 amp AC Starter
- 3-phase
- Poly Enclosure - N4x
- Start-Stop Buttons
- Dimensions; 12" x 10" X 6"
- 240V AC coil
- Overload Relay; 54-65 amps

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Nomenclature; AC Starters

Example Part #: **#JC0916P1G-JM**

Description: 9 amp contactor, wired 1-phase, compact polycarbonate enclosure with start-stop button, 120volt AC coil, 5.5 - 8.5 current range.

J C Ø 9 1 6 P 1 G – J M

Contactor Size	
JC09	9 amp
JC12	12 amp
JC18	18 amp
JC25	25 amp
JC32	32 amp
JC50	50 amp
JC65	65 amp
JC80	80 amp
JC95	95 amp
JCC5	105 amp

Wiring	
0	Three Phase
1	Single Phase

Enclosure Type	
6	Poly Encl.

Button Configuration	
P	Start-Stop Buttons
R	Reset Button Only
S	No Cover Buttons

Wiring Configuration	
1	Direct-On Line Voltage
2	Separate Control Power - different Voltage
3	Terminals for Remote Start
4	Both #2 and #3

Overload Relay* (9 amp - 32 amp)	
Current Range	**Suffix**
2.5 - 4.0	K
4.0 - 6.3	L
5.5 - 8.5	M
8.0 - 12.0	N
10.0 - 16.0	P
14.5 - 18.0	S
17.5 - 22.0	T
21.0 - 26.0	U
25.0 - 32.0	V
30.0 - 40.0	W

Overload Relay* (50 amp - 105 amp)	
Current Range	**Suffix**
30 - 43	E
42 - 55	G
54 - 65	H
64 - 82	J
78 - 97	L
90 - 110	M

AC Coils	
1	24V
J	120V
L	208V
S	240V
N	277V
U	480V

Compact Enclosure*; Polycarbonate, Nema 4X, IP65		
	Enclosure Size; H x W x D (in.)	**Contactor Size (amps)**
G	7.0 x 3.5 x 5.5	9, 12, 18
B	7.5 x 4.0 x 6.0	25, 32

or

Full Size Enclosure*; Polycarbonate, Nema 4X, IP66/68		
	Enclosure Size; H x W x D (in.)	**Contactor Size (amps)**
M	10.0 x 8.0 x 6.0	9, 12, 18, 25, 32
K	12.0 x 10.0 x 6.0	50, 65, 80
L	14.0 x 12.0 x 6.0	95, 105

*** Contact factory for painted steel or stainless steel enclosures**

Single Phase, Full Voltage, Direct On-Line Starters; 9 amp - 80 amp

Compact 9 amp Starter;
"Start-Stop" Button

Compact 9 amp Starter;
"Reset only" Button

Full size 65 amp Starter;
"Start + Stop" Buttons

Horsepower Single Phase (Full Load Amps) 115V	230V	Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button	
---	1/4	JC09	2.5 - 4.0	115V	---	---	COMPACT ENCLOSURE
---	(2.9)		(JL1K)	230V	JC0916P1G-SK	JC0916R1G-SK	
1/6	1/2	JC09	4.0 - 6.3	115V	JC0916P1G-JL	JC0916R1G-JL	
(4.4)	(4.9)		(JL1L)	230V	JC0916P1G-SL	JC0916R1G-SL	
1/3	3/4	JC09	5.5 - 8.5	115V	JC0916P1G-JM	JC0916R1G-JM	
(7.2)	(6.9)		(JL1M)	230V	JC0916P1G-SM	JC0916R1G-SM	
1/2	1.0	JC09	8.0 - 12.0	115V	JC0916P1G-JN	JC0916R1G-JN	
(9.8)	(8.0)		(JL1N)	230V	JC0916P1G-SN	JC0916R1G-SN	
---	1.5	JC12	8.0 - 12.0	115V	---	---	
---	(10.0)		(JL1N)	230V	JC1216P1G-SN	JC1216R1G-SN	
---	2.0	JC12	10.0 - 16.0	115V	---	---	
---	(12.0)		(JL1P)	230V	JC1216P1G-SP	JC1216R1G-SP	
3/4	---	JC18	10.0 - 16.0	115V	JC1816P1G-JP	JC1816R1G-JP	
(13.8)	---		(JL1P)	230V	---	---	
1.0	3.0	JC18	14.5 -18.0	115V	JC1816P1G-JS	JC1816R1G-JS	
(16.0)	(17.0)		(JL1S)	230V	JC1816P1G-SS	JC1816R1G-SS	
1.5	---	JC25	17.5 - 22.0	115V	JC2516P1B-JT	JC2516R1B-JT	
(20.0)	---		(JL1T)	230V	---	---	
2.0	---	JC25	21.0 - 26.0	115V	JC2516P1B-JU	JC2516R1B-JU	
(24.0)	---		(JL1U)	230V	---	---	
---	5.0	JC32	25.0 - 32.0	115V	---	---	
---	(28.0)		(JL1V)	230V	JC3216P1B-SV	JC3216R1B-SV	
3.0	7.5	JC50	30.0 - 43.0	115V	JC5016P1K-JE	JC5016R1K-JE	FULL SIZE ENCLOSURE
(34.0)	(40.0)		(JL2E)	230V	JC5016P1K-SE	JC5016R1K-SE	
---	10	JC65	42.0 - 55.0	115V	---	---	
---	(50.0)		(JL2G)	230V	JC6516P1K-SG	JC6516R1K-SG	
5.0	---	JC65	54.0 - 65.0	115V	JC6516P1K-JH	JC6516R1K-JH	
(56.0)	---		(JL2H)	230V	---	---	
7.5	---	JC80	64.0 - 82.0	115V	JC8016P1K-JJ	JC8016R1K-JJ	
(80.0)	---		(JL2J)	230V	---	---	

*See "Nomenclature" page 5 for enclosure size.

SPRINGER controls company

Three Phase, Full Voltage, Direct On-Line Starters; 9 amp - 32 amp

Horsepower Three Phase (Full Load Amps) 115V	230V	460V	Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button
---	---	1/2 (1.1)	JC09	1.0 - 1.5 (JL1G)	115V	---	---
					230V	---	---
					460V	JC0906P1G-UG	JC0906R1G-UG
---	---	3/4 (1.6)	JC09	1.3 - 1.9 (JL1H)	115V	---	---
					230V	---	---
					460V	JC0906P1G-UH	JC0906R1G-UG
---	1/2 (2.2)	1.0 (2.1)	JC09	1.8 - 2.7 (JL1J)	115V	---	---
					230V	JC0906P1G-SJ	JC0906R1G-SJ
					460V	JC0906P1G-UJ	JC0906R1G-UJ
---	3/4 (3.2)	1.5/2.0 (3.4)	JC09	2.5 - 4.0 (JL1K)	115V	---	---
					230V	JC0906P1G-SK	JC0906R1G-SK
					460V	JC0906P1G-UK	JC0906R1G-UK
---	1.0 (4.2)	3.0 (4.8)	JC09	4.0 - 6.3 (JL1L)	115V	JC0906P1G-JL	JC0906R1G-JL
					230V	JC0906P1G-SL	JC0906R1G-SL
					460V	JC0906P1G-UL	JC0906R1G-UL
---	1.5/2.0 (6.8)	5.0 (7.6)	JC09	5.5 - 8.5 (JL1M)	115V	JC0906P1G-JM	JC0906R1G-JM
					230V	JC0906P1G-SM	JC0906R1G-SM
					460V	JC0906P1G-UM	JC0906R1G-UM
---	3.0 (9.6)	7.5 (11.0)	JC12	8.0 - 12.0 (JL1N)	115V	JC1206P1G-JN	JC1206R1G-JN
					230V	JC1206P1G-SN	JC1206R1G-SN
					460V	JC1206P1G-UN	JC1206R1G-UN
---	---	10.0 (14.0)	JC18	10.0 - 16.0 (JL1P)	115V	JC1806P1G-JP	JC1806R1G-JP
					230V	---	---
					460V	JC1806P1G-UP	JC1806R1G-UP
---	5 (15.2)	---	JC18	14.5 - 18.0 (JL1S)	115V	---	---
					230V	JC1806P1G-SS	JC1806R1G-SS
					460V	---	---
---	---	15.0 (21.0)	JC25	17.5 - 22.0 (JL1T)	115V	---	---
					230V	---	---
					460V	JC2506P1B-UT	JC2506R1B-UT
---	7.5 (22.0)	---	JC25	21.0 - 26.0 (JL1U)	115V	---	---
					230V	JC2506P1B-SU	JC2506R1B-SU
					460V	---	---
---	10.0 (28.0)	20.0 (27.0)	JC32	25.0 - 32.0 (JL1V)	115V	---	---
					230V	JC3206P1B-SV	JC3206R1B-SV
					460V	JC3206P1B-UV	JC3206R1B-UV
---	---	25.0 (34.0)	JC32	30.0 - 40.0 ((JL1W)	115V	---	---
					230V	---	---
					460V	JC3206P1B-UW	JC3206R1B-UW

COMPACT ENCLOSURE

*See “Nomenclature” page 5 for enclosure size

Three Phase, Full Voltage, Direct On-Line Starters; 50 amp - 105 amp

65 amp Starter "**Stop-Start**"

Horsepower Three Phase (Full Load Amps)			Contactor Series	Overload Relay Range (O/L part#)	Coil Voltage	Complete Part Number* Start-Stop Button	Complete Part Number* Reset only Button	
115V	230V	460V						
---	15 (42.0)	30 (40.0)	JC50	42 - 55 (JL2G)	115V	---	---	FULL SIZE ENCLOSURE
					230V	JC5006P1K-SG	JC5006R1K-SG	
					460V	JC5006P1K-UG	JC5006R1K-UG	
---	---	40 (52.0)	JC50	42 - 55 (JL2G)	115V	---	---	
					230V	---	---	
					460V	JC5006P1K-UG	JC5006R1K-UG	
---	20 (54.0)	---	JC65	54 - 65 (JL2H)	115V	---	---	
					230V	JC6506P1K-SH	JC6506R1K-SH	
					460V	---	---	
---	25 (68.0)	50 (65.0)	JC80	64 - 82 (JL2J)	115V	---	---	
					230V	JC8006P1K-SJ	JC8006R1K-SJ	
					460V	JC8006P1K-UJ	JC8006R1K-UJ	
---	---	60 (77.0)	JC80	64 - 82 (JL2J)	115V	---	---	
					230V	---	---	
					460V	JC8006P1K-UJ	JC8006R1K-UJ	
---	30 (80.0)	---	JC95	78 - 97 (JL2L)	115V	---	---	
					230V	JC9506P1L-SL	JC9506R1L-SL	
					460V	---	---	
---	40 (104)	75 (96.0)	JCC5	90 - 110 (JL2M)	115V	---	---	
					230V	JCC506P1L-SM	JCC506R1L-SM	
					460V	JCC506P1L-UM	JCC506R1L-UM	

*See "Nomenclature" page5 for enclosure size

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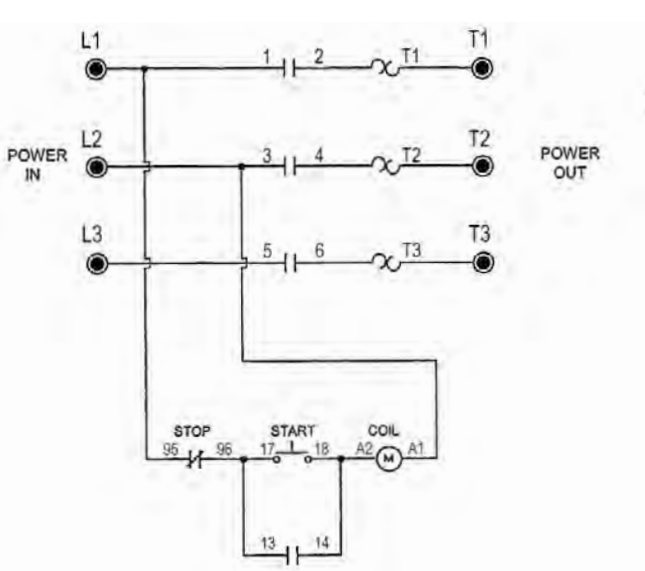
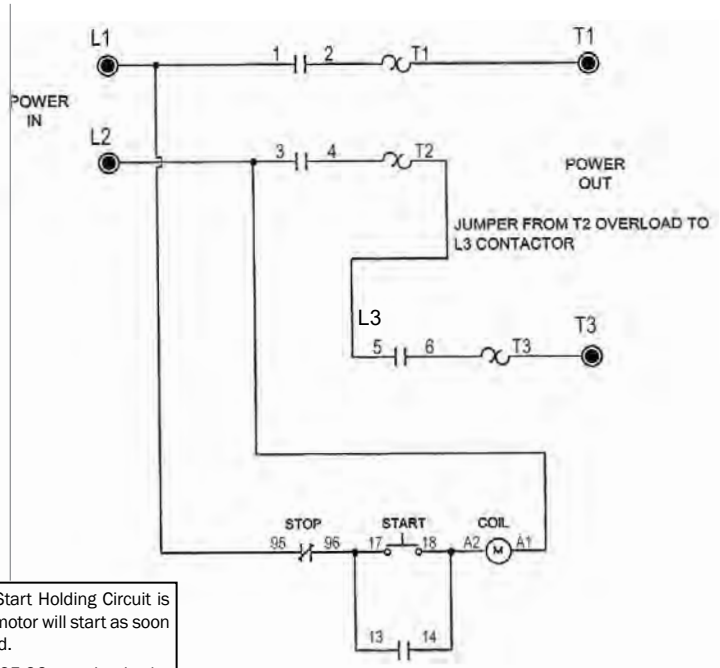
Typical Wiring Diagram; Direct On-Line Motor Starter

Three Phase Starter



Single Phase Starter

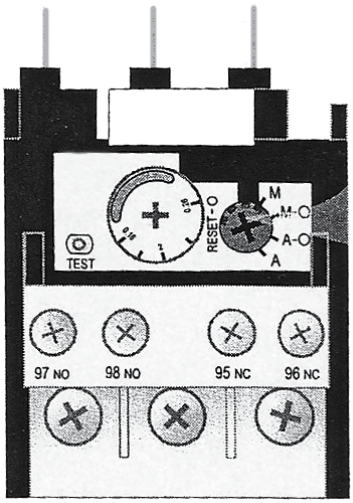


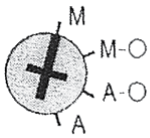
Reset Only - The Start Holding Circuit is removed and the motor will start as soon as power is applied.

Overload contact 95-96 remains in the control circuit.

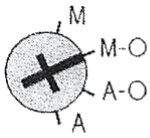
Note: Wire L1 & L2 control supply voltage only when coil voltage is the same as the line voltage.

Functions of Overload Relay

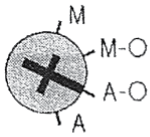




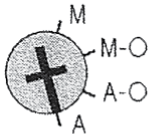
Manual RESET
(Operator must manually reset O/L relay when tripped)



*Manual RESET and STOP
(Operator must manually reset O/L relay when tripped. STOP can also be initiated by pushing the reset button which interrupts the holding circuit)



Automatic RESET and STOP
(After tripping, O/L relay will automatically turn on when proper temperature is met. STOP can also be initiated by pushing the reset button which interrupts the holding circuit.)



Automatic RESET no STOP
(After tripping, O/L relay will automatically turn on when proper temperature is met.)

* Recommended setting

Full-Load Motor-Running Currents in Amperes Corresponding to Various AC Horsepower Motor Ratings

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values.

	110V - 120V		220V - 240V [1,2]		380V - 415V		440V - 480V		550V - 600V		2.3 KV	4.16 KC
H.P.	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase	Three Phase	Three Phase
1/10	3.0	---	1.5	---	---	---	---	---	---	---	---	---
1/8	3.8	---	1.9	---	---	---	---	---	---	---	---	---
1/6	4.4	---	2.2	---	1.4	---	---	---	---	---	---	---
1/4	5.8	---	2.9	---	1.85	---	--	---	---	---	---	---
1/3	7.2	---	3.6	---	2.32	---	---	---	---	---	---	---
1/2	9.8	4.4	4.9	2.2	3.19	1.28	2.5	1.1	2.0	0.9	---	---
3/4	13.8	6.4	6.9	3.2	4.47	1.78	3.5	1.6	2.8	1.3	---	---
1	16.0	8.4	8.0	4.2	5.12	2.30	4.0	2.1	3.2	1.7	---	---
1.5	20.0	12.0	10.0	6.0	6.38	3.32	5.0	3.0	4.0	2.4	---	---
2	24.0	13.6	12.0	6.8	7.66	4.34	6.0	3.4	4.8	2.7	---	---
3	34.0	19.2	17.0	9.6	10.87	6.14	8.5	4.8	6.8	3.9	---	---
5	56.0	30.4	28.0	15.2	17.90	9.71	14.0	7.6	11.2	6.1	---	---
7.5	80.0	44.0	40.0	22.0	26.80	14.00	21.0	11.0	16.0	9.0	---	---
10	100.0	56.0	50.0	28.0	33.2	17.90	26.0	14.0	20.0	11.0	---	---
15	135.0	84.0	68.0	42.0	---	26.80	34.0	21.0	27.0	17.0	---	---
20	---	108.0	88.0	54.0	---	34.50	44.0	27.0	35.0	22.0	---	---
25	---	136.0	110.0	68.0	---	43.50	55.0	34.0	44.0	27.0	---	---
30	---	160.0	136.0	80.0	---	51.20	68.0	40.0	54.0	32.0	---	--
40	---	208.0	176.0	104.0	---	66.50	88.0	52.0	70.0	41.0	---	---
50	---	260.0	216.0	130.0	---	83.10	108.0	65.0	86.0	52.0	---	---
60	---	---	---	154.0	---	103.0	---	77.0	---	62.0	16.	9.
75	---	---	---	192.0	---	128.0	---	96.0	---	77.0	20.	11.
100	---	---	---	248.0	---	165.0	---	124.0	---	99.0	26.	14.3
125	---	---	---	312.0	---	208.0	---	156.0	---	125.0	31.	17.
150	---	---	---	360.0	---	240.0	---	180.0	---	144.0	37.	20.
200	---	---	---	480.0	---	320.0	---	240.0	---	192.0	49.	27.
250	---	---	---	602.0	---	403.0	---	302.0	---	242.0	60.	33.
300	---	---	---	---	---	482.0	---	361.0	---	289.0	72.	40.
350	---	---	---	---	---	560.0	---	414.0	---	336.0	83.	46.
400	---	---	---	---	---	636.0	---	477.0	---	382.0	95.	52.
500	---	---	---	---	---	786.0	---	590.0	---	472.0	118.	65.

Notes:

1. To obtain F.L.C. for 200 and 208 volt motors multiply 230 volts values by 1.15 and 1.10 respectively.
2. To obtain F.L.C. for 265 and 277 volt motors multiply 230 volts values by .87 and .83 respectively.

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KILOWATT MOTOR RATINGS

The table below provides the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide. Refer to the actual motor nameplate for full-load current values.

	Single-Phase Motor		Three-Phase Motor					
Power	**120V**	**240V**	**230V**	**400V**	**415V**	**440V**	**500V**	**690V**
Kilowatts	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
0.37	3.9	3.6	2	.98	---	0.99	1	---
0.55	5.2	4.8	2.8	1.5	---	1.36	1.21	---
0.75	6.6	6.1	3.6	1.9	2	1.68	1.5	---
1.1	9.6	8.8	5.2	2.5	2.5	2.37	2	---
1.5	12.7	11.7	6.8	3.4	3.5	3.06	2.6	---
1.8	15.7	14.4	---	---	---	---	---	---
2.2	18.6	17.1	9.6	4.8	5	4.42	3.8	--
3	24.3	22.2	---	6.3	6.5	5.77	5	3.5
3.7	---	---	15.2	---	---	---	---	---
4	29.6	27.1	---	8.1	8.4	7.9	6.5	4.9
4.4	34.7	31.8	---	---	---	---	---	---
5.2	39.8	36.5	---	---	---	---	---	---
5.5	42.2	38.7	22	11	11	10.4	9	6.7
6	44.5	40.8	---	---	---	---	---	---
7	49.5	45.4	---	---	---	---	---	---
7.5	54.4	50	28	14.8	14	13.7	12	9
9	---	---	---	18.1	17	16.9	13.9	10.5
11	---	----	42	21	21	20.1	18.4	12.1
15	---	---	54	28.5	28	26.5	23	16.5
18.5	---	---	68	35	35	32.8	28.5	20.2
22	---	---	80	42	40	39	33	24.2
30	---	---	104	57	55	51.5	45	33
37	---	---	130	69	66	640	55	40
45	---	---	154	81	80	76	65	46.8
55	---	---	192	100	100	90	80	58
75	---	---	248	131	135	125	105	75.7
90	---	---	312	162	165	146	129	94
110	---	---	360	195	200	178	156	113
132	---	---	---	233	240	215	187	135
---	---	---	480	222	260	236	207	---
160	---	---	---	285	280	256	220	165
---	---	---	600	---	---	---	---	---
200	---	---	---	352	340	321	281	203
220	---	---	720	388	385	353	310	224
250	---	---	840	437	425	401	360	253
280	---	---	---	---	---	---	---	---
315	---	---	---	555	535	505	445	321
---	---	---	1080	---	---	---	---	---
355	---	---	---	605	580	549	500	350
---	---	---	1200	---	---	---	---	---
400	---	---	---	675	650	611	540	390
450	---	---	1440	---	---	---	---	---
500	---	---	---	855	820	780	680	494
560	---	---	---	950	920	870	760	549
630	---	---	---	1045	1020	965	850	605
710	---	---	---	1200	1140	1075	960	694
800	---	---	---	---	1320	1250	1100	790
900	---	---	---	---	1470	1390	1220	880

Industrial Electrical Controls

SPRINGER controls company

ELECTRICAL CONTACTORS & STARTERS

DEFINITE PURPOSE CONTACTORS

- 25 Amp through 120 Amp rated (UL certified)
- 1 , 2 & 3 poles available
- Full range of coil voltages available

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INDEX

Springer Controls Definite Purpose (SCDP) Contactors are used in applications where the control requirements are well defined. This includes the controls of motors, power supplies, heating elements, lighting, HVAC fans and compressors.

Springer Controls maintains a large inventory of 25, 30 and 40 amp contactors as well as 50 amp through 120 amp. The contactors are available in 1, 2 and 3 poles along with a full range of coil voltages. All contactors are UL approved.

DEFINITE PURPOSE CONTACTORS;

Description / Nomenclature **4**

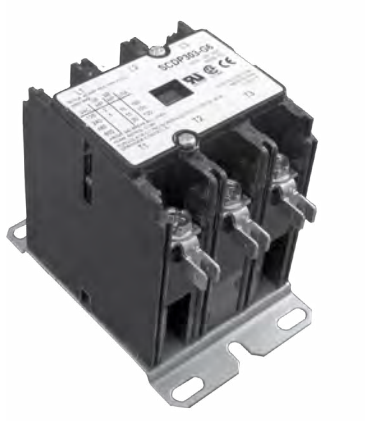
Auxiliary Switches / Terminals (3 & 4 pole) **5**

25 Amp through 40 Amp DP's **6**

25 - 40 Amp Electrical Ratings & Dimensions **7**

50 Amp through 120 Amps DP's **8**

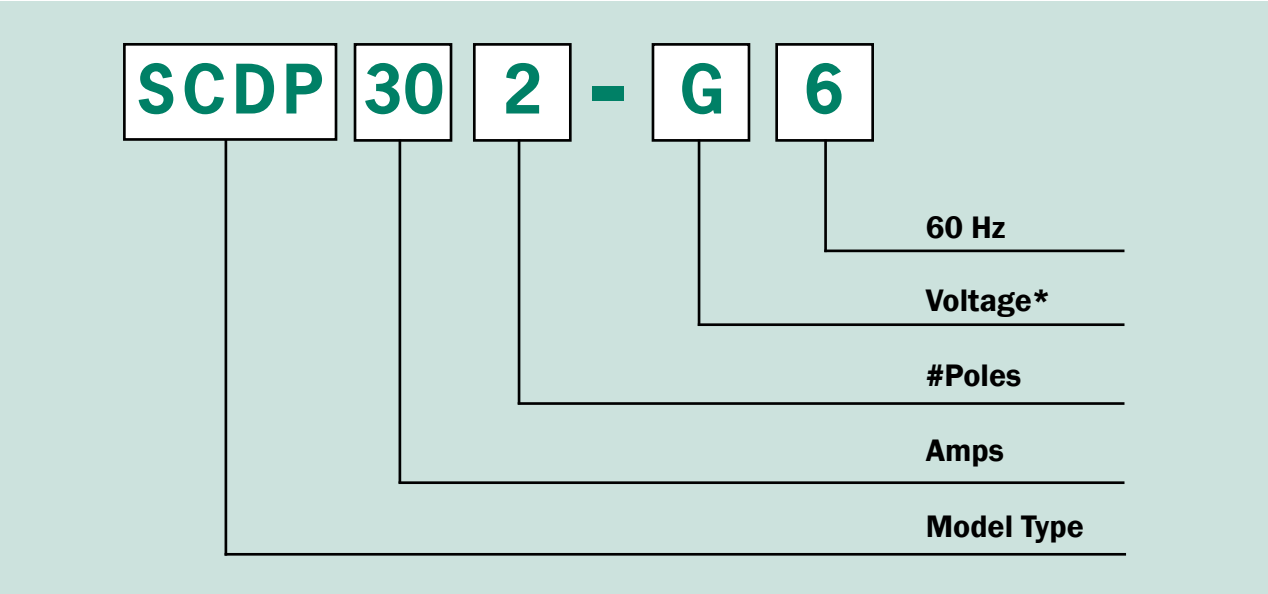
50 - 120 Amp Electrical Ratings & Dimensions **9**



Description

- Springer Controls Definite Purpose (SCDP) Contactors are used for control of Motors, Power Supplies, Heating Elements, Lighting, HVAC Fans and Compressors.
- Available from 25 to 120 amp current rating.
- 1, 2 & 3 pole available.
- Full range of coil voltages available
- UL approved (UL508 File No. E227250)
- CSA File No. 221260 (1456104)
- Multiple mounting and termination options available, contact us for more information.
- Silver Cadmium Oxide Contacts
- Temperature Range -40°F to 150°F
- Insulation System 266°F (130°C), Class B

Part Number Nomenclature



* Coil Voltage

Volts AC	24	120	208 - 240	277	480
60 Hz	**B**	**G**	**U**	**W**	**T**

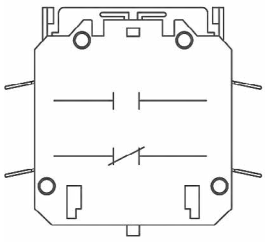
AUXILIARY SWITCHES & TERMINALS

Auxiliary Switches (3 & 4 pole contactors only)

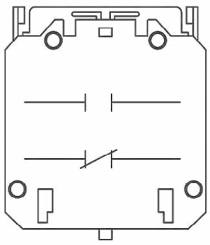
Auxiliaries for 25 - 60 DP's

Configuration	Termination	SCC Catalog No.
1 NO / 1 NC	Quick Connect (.25")	SCDP-AUX25-60-11-QC
1 NO / 1 NC	Screw Terminal (#6-32)	SCDP-AUX25-60-11-SC
SPDT*	Quick Connect (.25")	SCDP-AUX25-60-SPDT
(2) SPDT*	Quick Connect (.25")	SCDP-AUX25-60-2SPDT

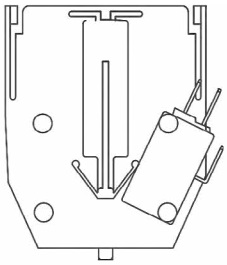
*10 amp, 300 VAC rated



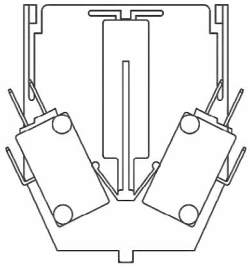
1 NO / 1 NC
quick connects



1 NO / 1 NC
screw terminals



One SPDT
switch per side



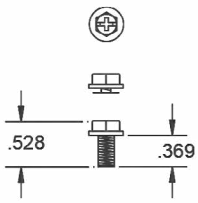
Two SPDT
switches per side

Auxiliaries for 75 - 120 DP's

Configuration	Termination	SCC Catalog No.
1 NO	Quick Connect (.25")	SCDP-AUX75-90-10-QC
1 NC	Quick Connect (.25")	SCDP-AUX75-90-01-QC
1 NO / 1 NC	Quick Connect (.25")	SCDP-AUX75-90-11-QC
2 NO	Quick Connect (.25")	SCDP-AUX75-90-20-QC

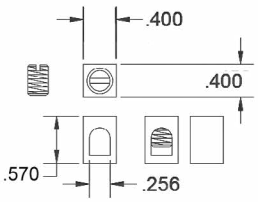
Terminals - DP Contactors

Standard on
20 - 30 FLA



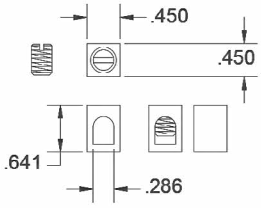
#10-32 combination
phillips, slotted
(torque = 22 in. lbs.)

40 FLA lug



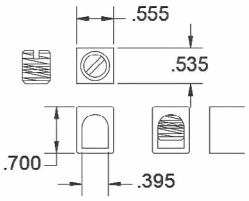
14 - 4 AWG Cu/Al
(torque = 40 in. lbs.)

50/60 FLA lug



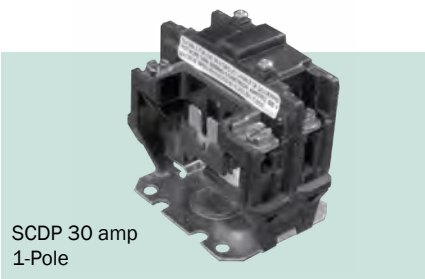
14 - 2 AWG Cu/Al
(torque = 50 in. lbs.)

75/90 FLA lug



14 - 1 AWG Cu/Al
(torque = 50 in. lbs.)

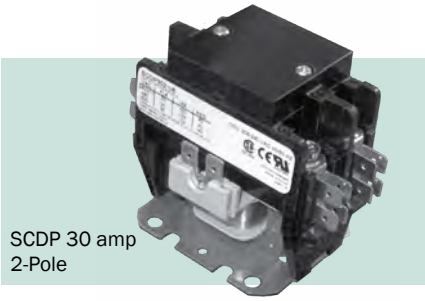
25 amp through 40 amp SCDP Contactors



SCDP 30 amp
1-Pole

1 Pole (includes Shunt)

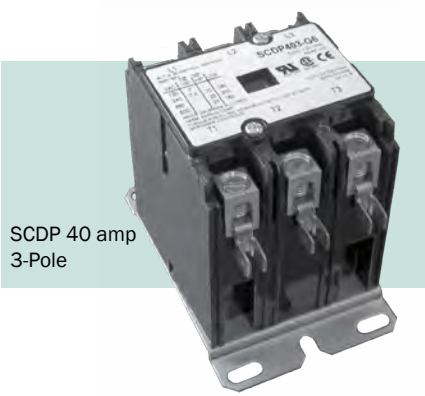
Full Load Amps	Resistive Amps	SCC Catalog No.
30	40	SCDP301S - * 6
40△	50	SCDP401S - * 6



SCDP 30 amp
2-Pole

2 Pole

Full Load Amps	Resistive Amps	SCC Catalog No.
25	35	SCDP252 - * 6
30	40	SCDP302 - * 6
40△	50	SCDP402 - * 6



SCDP 40 amp
3-Pole

3 Pole

Full Load Amps	Resistive Amps	SCC Catalog No.
25	35	SCDP253 - * 6
30	40	SCDP303 - * 6
40△	50	SCDP403 - * 6

△ 40 amp DP's utilize LUG terminations (see Page 5)

- **4 pole and REVERSING Package available upon request**

* Coil Voltage

Volts AC	24	120	208 - 240	277	480
Suffix (*)	**B**	**G**	**U**	**W**	**T**

Coil Ratings

COIL RATINGS: 25 amp through 40 amp

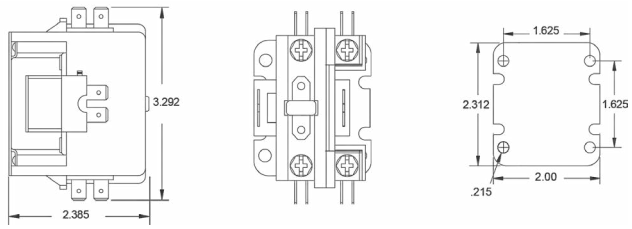
	1 POLE	2 POLE	3 POLE
Nominal In-Rush VA @ 60 Hz.	28	30	60
Nominal Sealed VA @ 60 Hz.	5	6.5	6
Control Power Transformer (CPT) - VA	10	12	21

Electrical Ratings; 25 - 40 amp SCDP Contactors

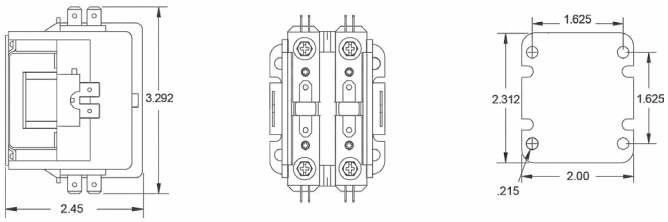
Full Load Amps	Resistive Amps @ 600VAC	Locked Rotor Amps @ 240/277VAC	Locked Rotor Amps @ 480VAC	Maximum Horsepower		
				Voltage	Single Phase	Three Phase
1 Pole Contactors						
30	40	180	150	120	1	-
				240	2	-
40	50	240	200	120	2	-
				240	3	-
2 Pole Contactors						
25	35	150	125	120	2	-
				240	3	-
30	40	180	150	120	2	-
				240	3	-
40	50	240	200	120	2	-
				240	3	-
3 Pole & 4 Pole Contactors						
25	35	150	125	120	2	-
				240/277	5	7.5
				480	-	15
30	40	180	150	120	2	-
				240/277	5	10
				480	-	15
40	50	240	200	120	3	-
				240/277	7.5	10
				480	-	20

Dimensions: 1, 2, 3 Pole / 25 - 40 amp SCDP Contactors

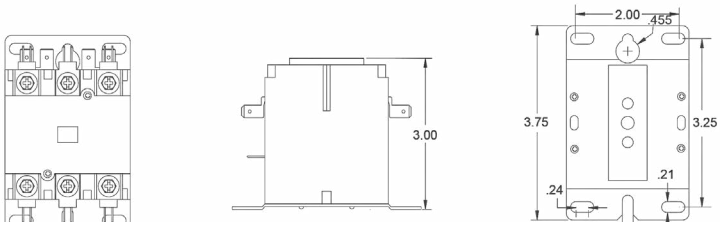
1 Pole Dimensions (inches)
(weight = .5 lbs)



2 Pole Dimensions (inches)
(weight = .6 lbs)



3 Pole Dimensions (inches)
(weight = 1.0 lbs)



50 Amp through 120 Amp SCDP Contactors

SCDP 75 amps
3-Pole

3 Pole

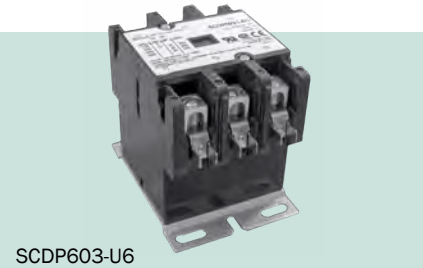
Full Load Amps	Resistive Amps	SCC Catalog No.
50	65	SCDP503 - * 6
60	75	SCDP603 - * 6
75	93	SCDP753 - * 6
90	120	SCDP903 - * 6
120	150	SCDP1203 - * 6

* Coil Voltage

Volts AC	24	120	208 - 240	277	480
Suffix (*)	**B**	**G**	**U**	**W**	**T**

Coil Ratings

COIL RATINGS: 50 amp through 120 amp - 3 POLE		
	50 - 60 Amp	**75 - 120 Amp**
Nominal In-Rush VA @ 60 Hz.	130	240
Nominal Sealed VA @ 60 Hz.	13	27
Control Power Transformer (CPT) - VA	45	80



SCDP603-U6
60 amp, 3-Pole, 208-240V

SCDP753-U6
75 amp, 3-Pole, 208-240V

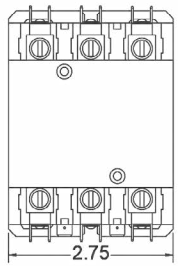
ELECTRICAL RATINGS & DIMENSIONS

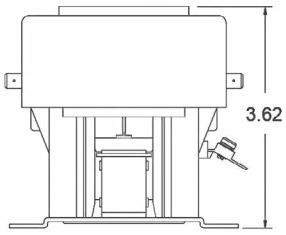
Electrical Ratings; 50 - 120 Amp SCDP Contactors

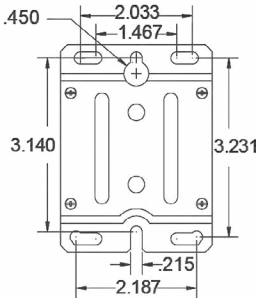
Full Load Amps	Resistive Amps @ 600VAC	Locked Rotor Amps @ 240/277VAC	Locked Rotor Amps @ 480VAC	Maximum Horsepower		
				Voltage	Single Phase	Three Phase
3 Pole Contactors						
50	65	300	250	120	3	-
				208	7.5	15
				240	10	15
				480	-	25
				600	-	25
60	75	360	300	120	5	-
				208	7.5	25
				240	10	25
				480	-	30
				600	-	30
75	93	450	375	120	5	-
				208	10	20
				240	15	25
				480	-	40
				600	-	40
90	120	540	450	120	7.5	-
				208	15	25
				240	20	30
				480	-	50
				600	-	50
120	150	720	600	120	20	-
				208	20	30
				240	25	40
				480	-	75
				600	-	75

Dimensions: 3 Pole / 50 - 120 Amp SCDP Contactors

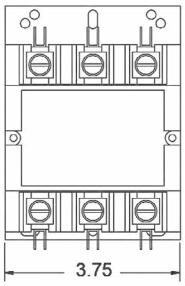
50 - 60 FLA Dimensions (inches) (weight = 2.0 lbs)

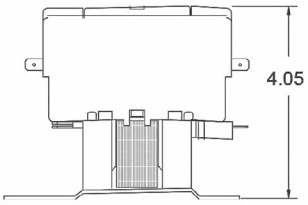


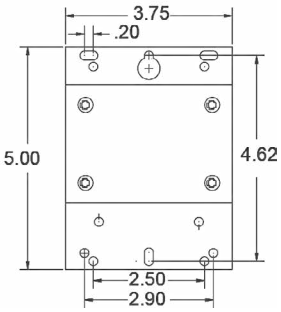




75 - 120 FLA Dimensions (inches) (weight = 4.0 lbs)







Industrial Electrical Controls

SPRINGER controls company

ELECTRICAL CONTACTORS & STARTERS

SOFT START & SOLID STATE CONTACTORS

- 1 & 3 phase Soft Start & Torque Limiters
- 1, 2 & 3 phase Electronic Contactors
- 3 phase Reversing Contactors

springercontrols.com

INDEX

Springer Controls Company carries a full line of solid-state contactors manufactured by ELTWIN (IC ELECTRONICS A/S.) The product line includes single phase electronic contactors, dual contactors, lamp & transformer controls, three phase contactors, soft-starters (1, 2 & 3-phase), reversing contactors, and starting torque limiters. The controllers are also available with internal by-pass as well as with coil controlled external by-pass.

SOFT STARTERS;

3 PHASE

Loads up to 3 amp 4
Loads up to 15 amp 4
Loads up to 25 amp 4
WIth integrated braking - up to 25 amp 5
With by-pass option - up to 15 amp 5
With inside DELTA wiring - up to 86 amp 5
With internal by-pass - up to 175 amp 5

1 or 3 PHASE

Starting Torque Limiter Soft Starter (Ramp-Up only) 6
Current Limiter Soft Starter for Compressor Motors 6
Sure Start Soft Starters for Compressor Motors 6

ELECTRONIC CONTACTORS;

1 phase - General Applications 7-8
2 & 3 phase - General Applications 8
1 phase - Resistive Loads (i.e. heating applications) 9
2 & 3 phase - Resistive Loads (i.e. heating applications) 10

SPECIALTY PRODUCTS;

3 phase - Reversing Contactor - up to 10 amp 11
Analogue Power Controllers - up to 30 amp 11
1 phase Low Noise Contactors - up to 15 amp 12
3 phase Meta Contactors (AOL)
ideal for harsh applications - up to 15 amp 12

3 PHASE SOFT STARTERS

Part Number Nomenclature

SMC 3 DA 23 03

- **Current Load/Motor Size kW**: 03 = 3A / 0.75 kW @ 230V; 03 = 3A / 1.5 kW @ 400-480V; 03 = 3A / 2 kW @ 600V
- **Line Voltage 50/60Hz**: 23 = 200 -240 VAC | 40 = 400 - 415 VAC; 48 = 440 - 480 VAC; 60 = 550 - 600 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 3 = 3 phase motor applications, with regulation on 2 phases
- **Type**: Soft Starter - Start Motor Controller with Internal By-Pass relay

- **Soft Starters w. internal by pass for 3 phase motor applications**
- **Motor loads up to 3A (0,25 kW - 2 kW @ 208 - 600V)**
- Adjustable ramp up/down time (0.5/0.10 seconds)
- Initial torque adjustment up 85% with selectable kick start
- Universal Control voltage 24 - 230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	200 - 240 VAC	3	SMC3DA2303
	400 - 415 VAC		SMC3DA4003
	440 - 480 VAC		SMC3DA4803
	550 - 600 VAC		SMC3DA6003

SMC 3 DA 23 15

- **Current Load/Motor Size kW**: 15 = 15A / 4 kW @ 230V; 15 = 15A / 7.5 kW @ 400-480V; 15 = 15A / 11 kW @ 600V
- **Line Voltage 50/60Hz**: 23 = 208 -240 VAC | 40 = 440 - 480 VAC; 60 = 550 - 600 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 3/32 = 3 phase motor applications, with regulation on 2 phases
- **Type**: Soft Starter - Start Motor Controller

- **Soft Starters for 3-phase motor applications**
- **Motor loads up to 15A (2.2 kW - 11 kW @ 208 - 600V)**
- Adjustable ramp up/down time (0.5/0.10 seconds)
- Initial torque adjustment up 85% with selectable kick start
- Universal Control voltage 24 - 230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	208 - 240 VAC	15	SMC3DA2315
	400 - 480 VAC		SMC3DA4015
	550 - 600 VAC		SMC3DA6015
	400 - 415 VAC		SMC32DA4015BP*

*SMC32DA4015BP - has built in bypass relay, Line Voltage = 400 - 415 VAC (Not UL approved)

SMC 3 DA 23 25

- **Current Load/Motor Size kW**: 25 = 25A / 7.5 kW @ 230V; 25 = 25A / 13 kW @ 400-480V; BP*= 27A / 15 kW @ 400-480V
- **Line Voltage 50/60Hz**: 23 = 208 -240 VAC | 40= 400 - 480 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 3 = 3 phase motor applications, with regulation on 2 phases
- **Type**: Soft Starter - Start Motor Controller

- **Soft Starters for 3-phase motor applications**
- **Motor loads up to 25A (2 kW - 11 kW @ 208 - 600V)**
- Adjustable ramp up/down time (0.5/0.10 seconds)
- Initial torque adjustment up 85% with selectable kick start
- Universal Control voltage 24 - 230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	208 - 240 VAC	25	SMC3DA2325
	400 - 480 VAC	25	SMC3DA4025
	400 - 480 VAC	27	SMC3DA4025BP*

*25BP series has Output terminals available for mounting of external by-pass contactor

3 PHASE SOFT STARTER

Part Number Nomenclature

SMBC 3 DA 23 25

- **Current Load/Motor Size kW**: 25 = 25A / 7.5 kW @ 230V; 25 = 25A / 11 kW @ 400-480V; 25 = 27A / 15 kW @ 400V w. by-pass*
- **Line Voltage 50/60Hz**: 23 = 208 -240 VAC | 40 = 400 - 480 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 3 = 3 phase motor applications, with regulation on 2 phases
- **Type**: Soft Starter with Dynamic Brake - Start Brake Motor Controller

- **Soft Starters w. integrated dynamic brake for 3 phase motor applications**
- **Motor loads up to 25A (2kW - 11 kW @ 208 - 600V)**
- Suitable for external by-pass contactor
- Adjustable ramp up/down time (0.5/0.10 seconds)
- Adjustable brake current, torque and selectable kick start
- Universal Control voltage 24 - 230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	208 - 240 VAC	25	SMBC3DA2325
	400 - 480 VAC		SMBC3DA4025

*SMBC - Output terminals available for mounting of external by-pass contactor.

SMC 33 DA 40 15 BP

- **BP** = Output terminals for external by-pass contactor
- **Current Load/Motor Size kW**: 15 = 15A / 7.5 kW - no by-pass; 25 = 27A / 11 kW - with by-pass; 50 = 35A / 15 kW (no by-pass)*; 50 = 50A / 30 kW (with by-pass)*
- **Line Voltage**: 23 = 208 -240 VAC | 40 = 208 - 480 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 33 = 3 phase motor applications, with regulation on all 3 phases
- **Type**: Soft Starter Start Motor Controller

- **Soft Starters for 3 phase motor applications**
- **Motor loads up to 15A (7.5 kW - 30 kW @ 208 - 480V)**
- 3 phase regulation allows for adjustable ramp up/down time (0.5/60 seconds) - Can be bypassed with external contactor
- Initial torque adjustment up 85% with selectable kick start
- Universal Control voltage 24-230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	208 - 480 VAC	15	SMC33DA4015
	208 - 480 VAC	27	SMC33DA4025BP
	208 - 240 VAC	50	SMC33DA2350BP*
	208 - 480 VAC	50	SMC33DA4050BP*

*Not UL Approved

SMC 33 DA 40 40 DBP

- **D**= Only available for inside Delta wiring
- **BP**= Output terminals for external by-pass contactor
- **Current Load/Motor Size kW**: 40 = 25A / 15 kW (without by-pass); 40 = 43A / 22 kW (with by-pass); 85 = 60A / 30 kW (without by-pass)*; 85 = 86A / 45 kW (with by-pass)*
- **Line Voltage**: 23 = 208 -240 VAC | 40 = 208 - 480 VAC
- **Control Voltage DA**: DA = 24 VDC - 230 VAC | DA = 24 VDC - 480 VAC
- **Phase Regulation**: 33 = 3 phase motor applications, with regulation on all 3 phases
- **Type**: Soft Starter | Start Motor Controller

- **Soft Starters for 3 phase motor applications**
- **Motor loads up to 15A (15kW - 45kW@208-480V)**
- Inside delta, 3 phase regulation allows for adjustable ramp up/down time (0.5/60 seconds). Can be bypassed with external contactor
- Initial torque adjustment up 85% with selectable kick start
- Universal Control voltage 24-230/480V AC/DC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	208 - 480 VAC	43	SMC33DA4040DBP
	208 - 240 VAC	86	SMC33DA2385DBP*
	208 - 480 VAC	86	SMC33DA4085DBP*

*Not UL Approved

SMC 33 DA 48 30 BPi

- **BPi**= Internal by-pass relay
- **Current Load/Motor Size kW**: 30 = 30A / 18 kW; 50 = 50A / 28 kW; 100 = 100A / 66 kW; 175 = 175A / 90 kW
- **Line Voltage**: 48 = 200 - 480 VAC
- **Control Voltage DA**: DA = 230 VAC
- **Phase Regulation**: 33 = 3 phase motor applications, with regulation on all 3 phases
- **Type**: Soft Starter | Start Motor Controller

- **Soft Starters w. internal by-pass for 3 phase motor applications**
- **Motor loads up to 175A (18 kW - 90 kW + @ 200 - 480V)**
- 3 phase regulation allows for adjustable ramp up/down time (0.5/60 seconds). Can be bypassed with external contactor
- Initial torque adjustment up 85% with selectable kick start
- Control voltage 230 VAC

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
230 VAC	200- 480 VAC	30	SMC33DA4830BPi
		50	SMC33DA4850BPi
		100	SMC33DA48100BPi
		175	SMC33DA48175BPi

Suitable for inside delta wiring: SMC33DA4830 = 51A Inside Delta
SMC33DA4850 = 86A Inside Delta
SMC33DA48100 = 173A Inside Delta

SPRINGER controls company

1 OR 3 PHASE SOFT STARTERS

SCL33DA4025BP

STARTING TORQUE LIMITER (SOFT STARTER - RAMP UP ONLY)

Part Number Nomenclature

STL 3 40 15

- **Current Load (A)**: 15 = 15A; 25 = 25A
- **Line Voltage 50/60Hz**: 40 = 208 - 480 VAC; 60 = 550 - 600 VAC; 69 = 550 - 690 VAC
- **Phase Regulation**: 1 = 1 phase motor | 3 = 3 phase motor
- **Type**: Starting Torque Limiter

- **Starting Torque Limiter (soft starter for 1 or 3 phase motor applications**
- **Motor loads up to 25A (0.37 kW - 22 kW @ 208 - 690V)**
- Adjustable Ramp-Up time 0.5 - 5 seconds
- Adjustable torque settings 0-85%

Phase	Line Voltage	Current Load (amps)	Catalog No.
1	208 - 480 VAC	15	STL1-4015
		25	STL1-4025
3	208 - 480 VAC	15	STL3-4015
		25	STL3-4025
	550 - 600 VAC	15	STL3-6015
		25	STL3-6025
	550 - 690 VAC	25	STL3-6925*

*690V version not UL approved

SCL 11 DA 23 25 BPi

- **BPi**= Internal by-pass relay
- **Current Load**: 15 = 15A(1); 25 = 25A; 35 = 35A; 50 = 50A(2)
- **Line Voltage**: 23 = 230 VAC | 40 = 400 VAC
- **Control Voltage DA**: DA = 230 VAC
- **Phase Regulation**: 11 = 1 phase motor control | 33 = 3 phase motor control
- **Type**: Start Current Limiter

- **Soft Starter - current limiter for starting and running 1 and 3 phase compressor motors**
- Integrated by-pass and electronic motor protection
- Motor current is measured continuously preventing against stalling, current imbalance or overload

Phase	Line Voltage	Current Load (amps)	Catalog No.
1	230 VAC	25	SCL11DA2325BP
		35	SCL11DA2335BP
3	400 VAC	15	SCL33DA4015BP
		25	SCL33DA4025BP
		35	SCL33DA4035BP

UL Approval in progress
(1) 15A only available for 3 phase motor control version
(2) 50A only available for 1 phase motor control version

S P 1 B 10-25 S N

- **Auxiliary Alarm Relay**: N - None
- **S**: Standard
- **Full Load Amps (FLA) (Corresponds to Compressor Run Load Amps (RLA))**: 10-25 = (208 - 230V Single Phase); 04-34 = (400 - 440V Three Phase)
- **Vintage**: A = Current, Three-Phase | B = Current, Single-Phase
- **Nominal Voltage Rating**: 1 = 208-230/50-60/1 | 4 = 400-440/50-60/3
- **Contactor Function**: P = Primary[1] | S = Secondary[2]
- **Type**: Sure-Start

- **SureStart single & three phase soft starters designed for compressor motors.**
- Self adjusting of the starting current to match compressor size and supply voltage.

Phase	Nominal Voltage	Full Load (amps)	Catalog No.
1	208-230V	208-230V	SP1B10-25SN
3	400-440V	400-440V	SS4A04-34SN

1 - Not available in the United States
2 - Primary includes a contactor. Secondary operates in series with contactor.

SPRINGER controls company

1 PHASE ELECTRONIC CONTACTOR

- SC series - Semiconductor contactors, 1 phase.
- General applications; resistive or inductive loads, heating elements / lamps / motors / transformers
- From 10-63 Amp supply, up to 690 VAC

CE c UL us LISTED

1 Pole

SC 1 DA 23 15

- **Type**: Semiconductor Contactor
- **Phase Regulation**: 1 = 1 Phase Electronic Contactor
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Line Voltage 50/60Hz**: 23 = 12 -240 VAC | 40 = 24 - 480 VAC
- **Current Load** (AC-1/51 / AC-3/53): 15 = 15A / 15A; 30 = 30A / 15A; 50 = 50A / 15A; 63 = 63A / 30A

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
24 - 230 VAC	24 - 480 VAC	15	15	**SC1DA2315**
		30	15	**SC1DA2330**
		50	15	**SC1DA2350**
		63	30	**SC1DA2363***
	24 - 480 VAC	15	15	**SC1DA4015**
		30	15	**SC1DA4030**
		50	15	**SC1DA4050**
		63	30	**SC1DA4063***

* SC1DXXX63 not UL approved

1 Pole

SC 1 DA 69 15

- **Type**: Semiconductor Contactor
- **Phase Regulation**: 1 = 1 Phase Electronic Contactor
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Line Voltage 50/60Hz**: 60 = 48 -600 VAC | 69 = 24 - 690 VAC
- **Current Load** (AC-1/51 / AC-3/53): 15 = 15A / 15A; 30 = 30A / 15A; 50 = 50A / 15A; 63 = 63A / 30A

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
24 - 230 VAC	48- 600 VAC	15	15	**SC1DA6015**
		30	15	**SC1DA6030**
		50	15	**SC1DA6050**
		63	30	**SC1DA6063***
	24 - 690 VAC	15	15	**SC1DA6915**
		30	15	**SC1DA6930**
		50	15	**SC1DA6950**
		63	30	**SC1DA6963***

* SC1DX69XX / SC1DXXX63 not UL approved

1 Pole

SC 1 DA 23 15

- **Type**: Semiconductor Contactor - Ohmic and inductive loads
- **Phase Regulation**: 1 = 1 Phase Electronic Contactor
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Line Voltage 50/60Hz**: 23 = 12 -240 VAC | 40 = 24 - 480 VAC
- **Current Load** (AC-1/51 / AC-3/53): 10 = 10A / 10A; 15 = 15A / 15A; 30 = 30A / 15A; 50 = 50A / 15A; 63 = 63A / 30A

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
5 - 24 VDC	12-240 VAC	10	10	**SC1DD2310**
		15	15	**SC1DD2315**
		30	15	**SC1DD2330**
		50	15	**SC1DD2350**
		63	30	**SC1DD2363***
	24-480 VAC	15	15	**SC1DD4015**
		30	15	**SC1DD4030**
		50	15	**SC1DD4050**
		63	30	**SC1DD4063***

* SC1DXXX63 not UL approved

1 PHASE ELECTRONIC CONTACTOR

1 Pole

SC 1 DA 69 15

- **Current Load** (AC-1/51 / AC-3/53): 15 = 15A / 15A; 30 = 30A / 15A; 50 = 50A / 15A; 63 = 63A / 30A
- **Line Voltage 50/60Hz**: 60 = 48 -600 VAC | 69 = 24 - 690 VAC
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Phase Regulation**: 1 = 1 Phase Electronic Contactor
- **Type**: Semiconductor Contactor - Ohmic and inductive loads

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
5 - 24 VDC	48- 600 VAC	15	15	**SC1DD6015**
		30	15	**SC1DD6030**
		50	15	**SC1DD6050**
		63	30	**SC1DD6063***
	24 - 690 VAC	15	15	**SC1DD6915***
		30	15	**SC1DD6930***
		50	15	**SC1DD6950***
		63	30	**SC1DD6963***

* SC1DX69XX / SC1DXXX63 not UL approved

2 & 3 PHASE ELECTRONIC CONTACTOR

- SC series - Semiconductor contactors, 2 and 3 phase.
- General applications; resistive or inductive loads, heating elements / lamps / motors / transformers, etc.
- 15 - 50A supply, up to 480 VAC

CE c UL us LISTED

2 Pole

SC 2 DA 23 30

- **Current Load** (AC-1/51 / AC-3/53): 30 = 30A / 15A; 50 = 50A / 15A
- **Line Voltage 50/60Hz**: 23 = 12 -240 VAC | 40 = 24 - 480 VAC
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Phase Regulation**: 2 = 1 Phase Dual Pole Electronic Contactor (Accumulated, two independent controlled phases)
- **Type**: Semiconductor Contactor

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
24 - 230 VAC	12 - 240 VAC	30	15	**SC2DA2330**
		50	15	**SC2DA2350**
	24 - 480 VAC	30	15	**SC2DA4030**
		50	15	**SC2DA4050**
5 - 24 VDC	12 - 240 VAC	30	15	**SC2DD2330**
		50	15	**SC2DD2350**
	24 - 480 VAC	30	15	**SC2DD4030**
		50	15	**SC2DD4050**

3 Pole

SC 3 DA 40 10

- **Current Load** (AC-1/51 / AC-3/53): 10 = 10A / 10A; 15 = 15A / 10A; 20 = 20A / 10A
- **Line Voltage 50/60Hz**: 23 = 12 -240 VAC | 40 = 24 - 480 VAC
- **Control Voltage DA/DD**: DA = 24 - 230V (AC) | DD = 5 - 24V (DC)
- **Phase Regulation**: 3 = 3 Phase Electronic Contactor (Three controlled phases)
- **Type**: Semiconductor Contactor

Control Voltage	Line Voltage	Current Load (Amps) AC1	Current Load (Amps) AC3	Catalog No.
24 - 230 VAC	12 - 240 VAC	10	10	**SC3DA2310**
		20	10	**SC3DA2320**
	24 - 480 VAC	10	10	**SC3DA4010**
		20	10	**SC3DA4020**
5 - 24 VDC	12 - 240 VAC	10	10	**SC3DD2310**
		20	10	**SC3DD2320**
	24 - 480 VAC	10	10	**SC3DD4010**
		20	10	**SC3DD4020**

1 PHASE CONTACTORS - RESISTIVE LOADS

- RC Series - 1 phase contactors for resistive loads such as heating elements, lamps, etc. (Ohmic loads)
- Resistive Loads from 10 - 125A AC1
- Rated operational voltage up to 480 VAC
- Universal control voltage DC/DC or DC/AC

CE

Part Number Nomenclature

RC 11 DA 40 15

- **Current Load AC-1/51**: 10 = 10A; 15 = 15A; : ; 125 = 125A
- **Line Voltage 50/60Hz**: 40 = 24 - 480 VAC | 23 = 12 - 240 VAC
- **Control Voltage DA / DD**: DA = 24 - 230V (DC/AC)* | DD = 5 - 24 V (DC/AC)
- **Phase Regulation**: 11 = 1 phase electronic contactor
- **Type**: Semiconductor Contactor - Ohmic loads

Control Voltage	Line Voltage	Current Load (amps AC1)	Catalog No.
24 - 230V AC/DC	24 - 240 VAC	15	RC11DA2315
	24 - 480 VAC	15	RC11DA4015
		30	RC11DA4030
		50	RC11DA4050
		63	RC11DA4063
		80	RC11DA4080*
		125	RC11DA40125*

* RC11DA4080A Control voltage only 24 VDC or 230 VAC
* RC11DA40125A Control voltage only 24 VDC or 230 VAC

RC 11 DD 40 15

- **Current Load AC-1/51**: 10 = 10A; 15 = 15A; : ; 125 = 125A
- **Line Voltage 50/60Hz**: 40 = 24 - 480 VAC | 23 = 12 - 240 VAC
- **Control Voltage DD**: DD = 5 - 24 V (DC/DC)
- **Phase Regulation**: 11 = 1 phase electronic contactor
- **Type**: Semiconductor Contactor - Ohmic loads

Control Voltage	Line Voltage	Current Load (amps AC1/51)	Catalog No.
5 - 24 VDC	12 - 240 VAC	10	RC11DD2310
		15	RC11DD2315
		30	RC11DD2330
		50	RC11DD2350
		63	RC11DD2363
	24 - 480 VAC	15	RC11DD4015
		30	RC11DD4030
		50	RC11DD4050
		63	RC11DD4063
		80	RC11DD4080
		125	RC11DD40125

2 OR 3 PHASE CONTACTORS - RESISTIVE LOADS

- RC Series - 2 or 3 phase contactors for resistive loads such as heating elements, lamps, etc. (Ohmic loads)
- Resistive Loads from 10 - 50A AC1
- Rated operational voltage up to 480 VAC
- Universal control voltage DC/DC or DC/AC

CE

RC 22 DA 40 30

- **Current Load AC-1/51**: 30 = 30A; 50 = 50A
- **Line Voltage 50/60Hz**: 40 = 24 - 480 VAC
- **Control Voltage DA / DD**: DA = 24 - 230V (DC/AC) | DD = 5 - 24 V (DC/AC)
- **Phase Regulation**: 22 = 1 phase dual pole electronic contactor (Accumulated, two independent controlled phases)
- **Type**: Semiconductor Contactor - Ohmic loads

Control Voltage	Line Voltage	Current Load (amps AC1)	Catalog No.
24 - 230V AC/DC	24 - 480 VAC	30	RC22DA4030
		50	RC22DA4050
5 - 24 V DC		30	RC22DD4030
		50	RC22DD4050
24 - 230V AC/DC	24 - 480 VAC	15	RC32DA4015
		25	RC32DA4025

RC 33 DA 40 15

- **Current Load AC-1/51**: 15 = 15A; 20 = 20A; 25 = 25A
- **Line Voltage 50/60Hz**: 40 = 24 - 480 VAC | 23 = 12 - 240 VAC
- **Control Voltage DA/DD**: DA = 24 - 230V (DC/AC) | DD = 5 - 24 V (DC/DC)
- **Phase Regulation**: 33 = 3 phase electronic contactor (3 controlled phases); 32 = 3 phase electronic contactor (2 controlled phases)
- **Type**: Semiconductor Contactor - Ohmic loads

Control Voltage	Line Voltage	Current Load (amps AC1/51)	Catalog No.
5 - 24 VDC	24 - 480 VAC	15	RC32DD4015
		25	RC32DD4025
		30	RC32DD4030
24 - 230V AC/DC	12 - 240 VAC	10	RC33DA2310
		20	RC33DA2320
24 - 230V AC/DC	24 - 480 VAC	10	RC33DA4010
		20	RC33DA4020
5 - 24 VDC	24 - 480 VAC	10	RC33DD4010
		20	RC33DD4010

SPECIALTY PRODUCTS

3 PHASE - REVERSING CONTACTOR

- SRC series - reversing contactors for ClockWise / CCW control of 3-phase AC motors
- Loads up to 10A (0.37 kW - 5.5 kW @ 480V)
- Universal control voltage 5 - 24 VDC or 24 - 230 V AC/DC

Part Number Nomenclature

SRC 3 DA 40 10

- **Current Load A Motor Size**: 10A / 5.5 kW
- **Line Voltage 50/60Hz**: 40 = 24 - 400 VAC
- **Control Voltage DA/DD**: DA = 24 - 230V (DC/AC) | DD = 5 - 24V (DC/DC)
- **Phase Regulation**: 3 = 3 phase motor control
- **Type**: Electronic Reversing Contactor for 3-phase motors

Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 230V (DC/AC)	24 - 400 VAC	10	SRC3DA4010
5 - 24V (DC/DC)			SRC3DD4010

ANALOGUE POWER CONTROLLERS

- SPC series - Analogue power controller for accurate process control
- Electronic phase angle or bust fire control of heating applications, lamps, trafos, heating elements, etc.

Part Number Nomenclature

SPC 1 AD 23 30

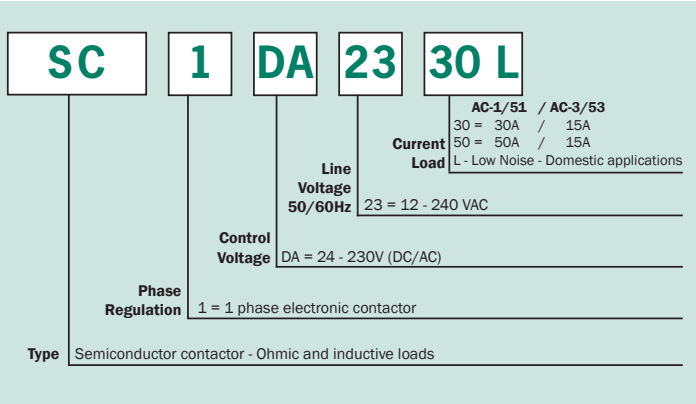
- **Current Load A Motor Size**: AC-1/51 / AC-55b
  - 30 = 30A / 30A
  - 50 = 50A / 30A
- **Line Voltage 50/60Hz**: 23 = 12 - 240 VAC | 40 = 24 - 480 VAC
- **Control Voltage AD**: 0 - 20 mA / 20 - 0 mA | 4 - 20 mA / 20 - 4 mA; 0 - 10 V / 10 - 0 V | 0 - 10 kohm / 10 - 0 kohm
- **Phase Regulation**: 1 = single phase
- **Type**: 1 phase electronic analogue power controller

Control Voltage AD	Line Voltage	Current Load (amps)	Catalog No.
0 - 20 mA / 20 - 0 mA	12 - 240 VAC	30	SPC1AD2330
		50	SPC1AD2350
4 - 20 mA / 20 - 4 mA	24 -480 VAC	30	SPC1AD4030
		50	SPC1AD4030

1 PHASE - LOW NOISE CONTACTORS

- SC Series - Low noise semiconductors contactors
- 1 phase for use in domestic applications with resistive or inductive loads
- Up to 50A - supply up to 690 VAC 50/60 Hz

Part Number Nomenclature

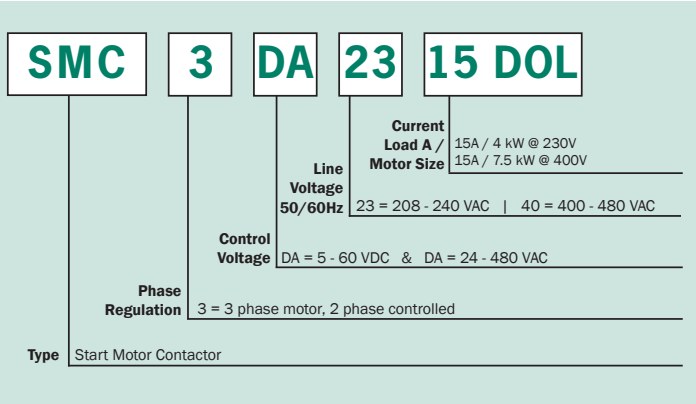


Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 230V (DC/AC)	12 - 240 VAC	30	SC1DA2330L
		50	SC1DA2350L

3 PHASE - META CONTACTORS (AOL)

- Electronic Motor Contactors (DOL) for 3 phase motor applications up to 15A
- Ideal for harsh applications where jogging and plugging is frequently used, where a high number of operating cycles are essential
- Fx: Cranes, material handling equipment, etc.
- Typical lifetime 25 million cycles

Part Number Nomenclature



Control Voltage	Line Voltage	Current Load (amps)	Catalog No.
24 - 480 VAC	400 - 480 VAC	15	SMC3DA4015DOL
	208 - 240 VAC		SMC3DA2315DOL

Industrial Electrical Controls

SPRINGER controls company

PILOT DEVICES

22MM (N5) PILOT DEVICES & PUSH BUTTON CONTROL STATIONS

- **Full selection of 22mm style push buttons, selector switches, pilot lights, joysticks, along with assembled push button stations.**

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INDEX

Springer Controls offers a complete line of rugged, industrial grade pilot devices. We carry both the 22mm and 30mm oil-tight devices. (see separate section on 30mm (N7) pilot devices). See page 28 - 32 for complete, assembled push button stations.

N5 Features 4
N5 Catalog Numbering System ..... 5 - 6
Assembly Information / Contact & Power Supply Selection 7
Push Buttons: Standard and Mushroom Head 8
Pilot Lights / Bulbs 9
Press-to-Test Pilot Lights 10
2 Position Selector Switches: Standard & Keyed 11
3 Position Selector Switches: Standard 12
3 Position Selector Switches: Keyed 13
4 & 5 Position Selector Switches: Standard & Keyed 14
Double Push Button (start - stop) Operator 15
Illuminated Push Buttons 16
2 & 3 Position Illuminated Selector Switches 17
Special Operators: Joysticks 18
Special Operators: Toggle Switches, Potentiometers, Wobble Sticks 19
Pre-assembled Operators with Contact Blocks 20
Accessories / Replacement Parts ..... 21 - 22
Legend Plates 23
N5 Technical Data ..... 24 - 25
N5 Polycarbonate Enclosures, Base-mount Devices 26
N5 Metal Enclosures 27
Assembled Push Button Stations ..... 28 - 30
Emergency Stop Push Button Stations ..... 31 - 32
N5 Dimensions ..... 33 - 36

FEATURES

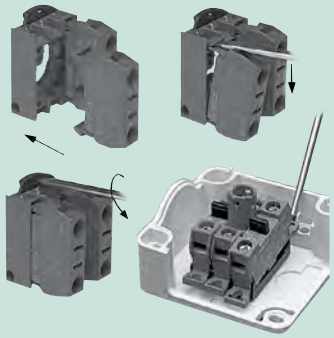
Shape, Material and Colors

The N5 line offers two bezel types for operators:
- round in chrome
- round in black thermoplastic (4x)

Modern ergonomic N5 actuators are available in a wide variety of styles and colors, and are the result of superior industrial design experience.

Series N5 satisfies any sophisticated industrial applications.

Fast Mounting



All the N5 rear panel devices are snap-on.

Mounting between panel and operator is accomplished by means of a patented snap-on flange which ensures a fast fitting.

For base mounting, the fitting is done directly on the adaptor inside the enclosures base.

Each single block can be mounted or removed individually.

In panel mounting, it is also possible to install or remove the snap-on mounting flange with the contact block group.

Blocks and/or flange can be disassembled by a standard screwdriver, to simplify operations.

Fitting and Positioning

All the N5 operators are fitted with seal to ensure IP66 N12 degree of protection.

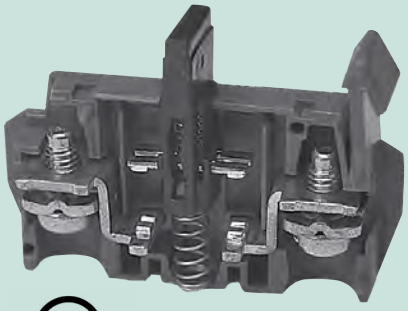
A locating tab on the operator allows the correct positioning on panels.

The tab also ensures panel stability and prevents unwanted rotations.

The tab can be removed with a screwdriver for applications in holes without a notch.

Suitable for use in NEMA types 1, 3, 3R, 3S, 4, 4X, 12 and 13 enclosures.

Safety and Reliability



The N5 contact blocks are designed to ensure maximum reliability in every condition and to monitor control circuits at low energy levels (12V-5mA minimum), thanks to advanced solution such as:
- Four contact points
- High efficiency self-cleaning operation
- Silver contacts properly shaped
- High contact pressure
- UL certified
- AC/DC Rating (page 24)

Mounting System

The N5 line offers a wide variety of operators, contact blocks and power supplies for panel mounting.

Furthermore, a range of operators, contact blocks and power supplies are available for base mounting.

The base mounting option is simple with our plastic enclosures fitted with a standard mounting adaptor, which allows a snap-on and secure fastening.

Rear Locking and Back Mounting Procedure

N5 operators are back mounted to the panel by a patented locking ring. The units can be assembled using a standard screwdriver.

As an option, an assembly wrench is available. (N5ACWAF)

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N5 CATALOG NUMBERING SYSTEM

Standard & Illuminated Push-Buttons

Operators
Page 8 & Page 16

N5 [ ] P [ ] [ ] [ ] [ ] [ ]

Bezel Style	Type	Type	Cap Color	Push-Button Type	Lens Type
C = Chrome **X** = Round Plastic	**P** = Push Button	**N** = Non-illuminated **L** = Illuminated	**O** = No Cap **N** = Black **R** = Red **V** = Green **G** = Yellow **L** = Blue **B** = White **A** = Amber	**G** = Flush **S** = Extended **E** = Recessed	**D** = Diffused for illuminated push-button only

Double Function Push-Buttons

Page 15

N5 D P L [ ] [ ] [ ] [ ]

Bezel Style	Type	Type	Cap Color	Push-Button Type	ISO Symbols
D = Square Plastic	**P** = Push Button	**L** = Illuminated	**N** = Black **V** = Green	**G** = Flush **S** = Top Flush Buttom Extended	**00** = No Symbol **01** = With Symbol

Pilot Lights

Page 9

N5 [ ] [ ] [ ] [ ] [ ] [ ]

Bezel Style	Type	Color	Lens Type	For Unibloc Type only
C = Chrome **X** = Round Plastic	**L** = Standard **U** = Unibloc	**R** = Red **V** = Green **G** = Yellow **L** = Blue **B** = White **I** = Clear **A** = Amber	**D** = Diffused **R** = Retraced **V** = Glass	**D0** = Full Voltage

Mushroom Head Push-Buttons

Page 8

N5 [ ] E [ ] [ ] [ ] [ ] [ ] [ ]

Bezel Style	Type	Mushroom Diameter	Color	Illumination	Position Type
C = Chrome **X** = Round Plastic	**M** = Momentary **T** = Push/Pull **R** = Turn to reset **C** = Key to reset	**3** = Ø 28 mm **4** = Ø 40 mm **6** = Ø 60 mm	**N** = Black **R** = Red **V** = Green **G** = Yellow	**N** = Non Illuminated **L** = Illuminated	**1** = Push-Pull **2** = 3 pos; maint. Push-Mom-Pull **3** = 3 pos; mom Push-Mom-Pull **95**= Keyed

Knob & Lever Selector Switches

Pages 11, 12 & 14

N5 [ ] S [ ] [ ] [ ] [ ] [ ]

Bezel Style	Type	Type	Cam	Spring Return	Color
C = Chrome **X** = Round Plastic		**M** = Knob **V** = Lever **L** = Illuminated Knob	**D**, **I** or **H** = 2 positions **E**, **L**, **U** or **Z** = 3 positions **X** = 4 positions **Y** or **W** = 5 positions	**0** = Fixed **1** = From Left **3** = From Left & Right **5** = From Right	**N** = Black **R** = Red **V** = Green **G** = Yellow **L** = Blue

Key Selector Switches

Page 13, 14

N5 [ ] S C [ ] [ ] [ ] 9 5

Bezel Style	Type	Cam	Spring Return	Key Removal	Key Selection
C = Chrome **X** = Round Plastic		**D**, **I or H** =2 positions **E**, **L**, **U or Z** = 3 positions **X** = 4 positions	**2/4 Positions** **0** = Fixed **5** = From right **3 Positions** **0** = Fixed **5** = From right **3** = From left & right	See key removal position page G9	

Contact Blocks

Page 7

N5 B [ ] [ ] [ ] [ ]

Bezel Style	Contacts	Terminal Type	Contact Type
	01 = 1 NC **10** = 1 NO **11** = 1 NO + 1 NC **20** = 2 NO **02** = 2 NC	**V** = Standard Screw **F** = Faston **B** = Base Mounting Screw	**N** = Normal **A** = Early Closing **R** = Late Opening

Power Supplies

Page 7

N5 P [ ] [ ] [ ] [ ] [ ]

	Type	Style	Terminal Type	Full Voltage
	D = Full Voltage **T** = Transformer **R** = Resistor	**N** = Normal **M** = Multifunction continuous blinking	**V** = Standard Screw **B** = Base Mounting Screw	**0** = No Bulb **A** = 6V **B** = 12V **D** = 24V **G** = 48V **L** = 120V **Transformer / Resistor** 110 - 120V = **J** 220 - 250V = **N** 480 - 500V = **Y**

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SPRINGER controls company

ASSEMBLY of 22mm PILOT DEVICES
Contacts and Power Supplies

Complete Unit Assembly

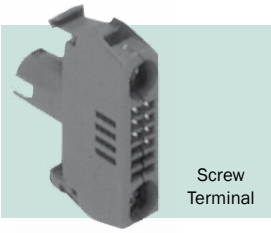
22mm OPERATOR + CONTACT BLOCK **or** POWER SUPPLY **or** OPTIONAL ACCESSORIES

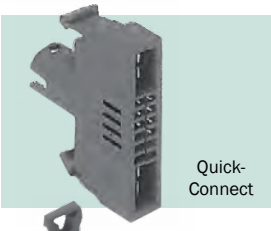
(Assembled Push Button Stations - pages 28 - 32)

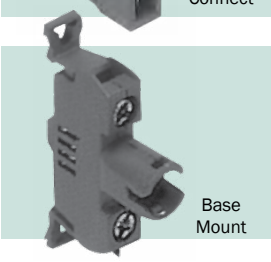
Contact Blocks (For use with all Panel Mounted Operations)

Type	Symbol	Screw Terminal Catalog No.	Quick Connect Terminal Catalog No.
N.C.		N5B01VN	N5B01FN
N.O.		N5B10VN	N5B10FN
N.C. N.O.		N5B11VN	Not Available
N.C. Late Break		N5B01VR	Not Available
N.O. Early Make		N5B10VA	Not Available
N.O. N.O.		N5B20VN	Not Available
N.C. N.C.		N5B02VN	Not Available

Power Supplies; Includes LED bulb (Clear/white LED bulb supplied, unless noted)


Screw Terminal

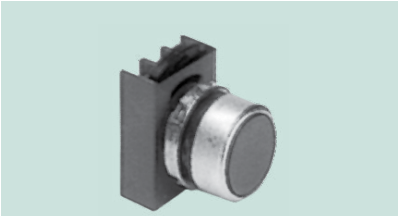

Quick-Connect


Base Mount

	Voltage	Screw Terminal Catalog No.	Quick Connect Terminal Catalog No.	Base Mt. Terminal Catalog No.
Full Voltage	No Lamp	N5PDNVO	N5PDNFO	N5PDNBO
	6V	N5PDNVA	N5PDNFA	N5PDNBA
	12V	N5PDNVB	N5PDNFB	N5PDNBB
	24V	N5PDNVD	N5PDNFD	N5PDNBD
	48V	N5PDNVG	N5PDNFG	N5PDNBG
	120V	N5PDNVL	N5PDNFL	N5PDNBL
Transformer	120 - 6V	N5PTNVJ (filament), N5PTNVJ - I (LED), screw terminal		
	240 - 6V	N5PTNVN (filament), N5PTNVN - I (LED), screw terminal		
	480 - 6V	N5PTNVY (filament), N5PTNVY - I (LED), screw terminal		
Flashing Full Voltage	110v AC/DC BA9S 130V-2W	N5PDMVJ (filament), N5PDMVJ - I (LED), screw terminal		
Flashing Transformer	120 - 6V BA9S 6V - 6W 220/250V	N5PTMVJ (filament), N5PTMVJ - I (LED), screw terminal		

PUSH BUTTONS *(Operators only - add contacts on page 7)*

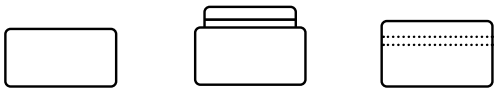
Standard - Momentary



N5CPNVG (Flush)

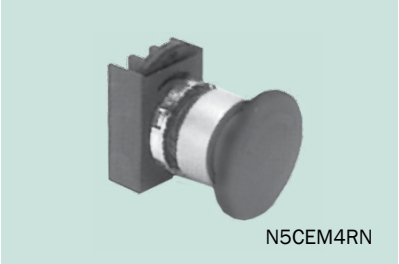
Operator (only)[1]	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
With Flush Cap	N5CPN • G	N5XPN • G
With Extended Cap	N5CPN • S	N5XPN • S
Guarded Cap	N5CPN • E	---

(• See Color Table Below)



Flush Extended Guarded

Mushroom Head - Momentary

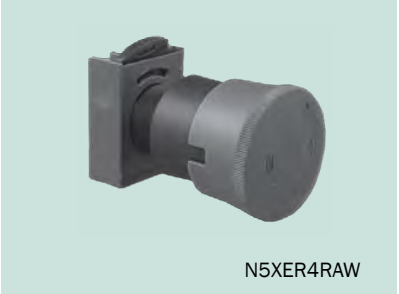


N5CEM4RN

Operator (only)[1]	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Mushroom Head 28mm	N5CEM3 • N	N5XEM3 • N
Mushroom Head 40mm	N5CEM4 • N	N5XEM4 • N
Mushroom Head 60mm	N5CEM6 • N	N5XEM6 • N

(• See Color Table Below)

Mushroom Head - Maintained

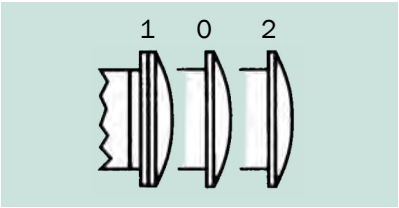


N5XER4RAW

Operator (only)[1]		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Push-Pull 40mm (2 pos. Maint.)		N5CET4 • N1	N5XET4 • N1
Push-Twist Release	Red 28mm	N5CER3RN	N5XER3RN
	Red 40mm	N5CER4RN	N5XER4RN
	Positive Break[2]	---	N5XER4RAN
	Status Indication[3]	---	N5XER4RAW
Push-Key Release	Red 40mm	N5CEC4RN95	N5XECRA95N

See page 31-32 for complete enclosed Emergency Stop Stations

Mushroom Head - 3 Position Push Pull



Operator (only)[1]	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained Push (0 to 1) Momentary Pull (0 to 2)	N5CET4 • N2	N5XET4 • N2
Momentary Push (0 to 1) Momentary Pull (0 to 2)	N5CET4 • N3	N5XET4 • N3

(Available only in Red, Black & Green)

• COLOR TABLE

- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Black	Red	Green	Yellow	Brown	Blue	White	Grey	W/O cap	w/Red,Blk/Green/Yellow
Caps	N	R	V	G	M	L	B	H	0	Z[4]
Mushroom Heads	N	R	V	G	-	-	-	-	-	-

Notes:
1 Contact Blocks not included; see page 7
2 Emergency Stop Operator; Complies with EN418 Machinery Safety Standard.
3 Emergency Stop Operator with status indication. EN418 approved
4 When ordering operator with 4 color caps (Red, Black, Green & Yellow) add $3.00

PILOT LIGHTS *(Complete Unit = Operator + Power Supply)*

Pilot Lights - Standard (Bulb not included)

Standard

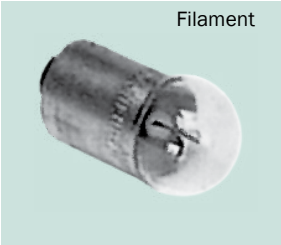
Unibloc

Lens & Lamp Holder		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Standard[1]	Diffused Lens	N5CL • D	N5XL • D
Unibloc Full Voltage (complete Pilot Light, Bulb not included)	Diffused Lens	---	N5XU • DD0

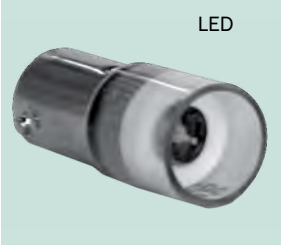
(• See Color Table Below)

Unibloc combines an indicator light and full voltage power in one unit. 250V maximum (bulb not included)

Bulbs


Filament

Description	Volts Nominal	Watts Nominal	Catalog No.
N59S Filament Type	6	0,6	N59S06
	6	1,5	N59S15
	12	2	N59S12
	24	2	N59S24
	30	2,1	N59S30
	48	2	N59S48
	60	1,2	N59S60
	130	2	N59S130


LED

Description	Volts Nominal	Watts	Catalog No.
Multi-LED	6	0.59	BA9S06L •
	12	0.78	BA9S12L •
	24	0.84	BA9S24L •
	48	1.12	BA9S48L •
	110	1.40	BA9S110L •
	230		BA9S230L •

• COLOR TABLE

- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

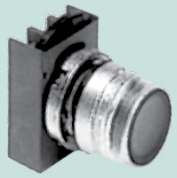
Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

Notes: 1 Lens & Lamp holder only; select Power Supply from page 7

PRESS-TO-TEST PILOT LIGHTS *(Complete Unit = Part number with competed suffixes)*

Press-To-Test Pilot Lights; includes power supply, contacts, and LED bulb

N5CPLVSDFL



N5CPLVSD

+

N5B01VN

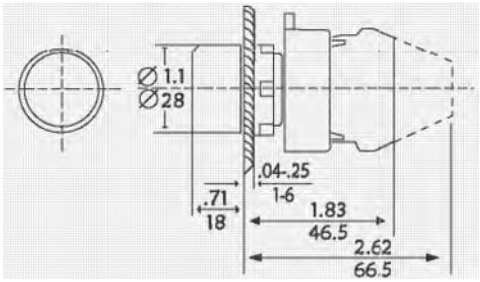
N5B10VN

+

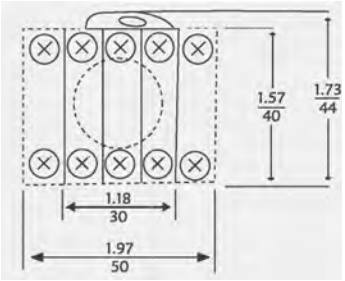
N5PDNVL

Operator	Chrome Bezel Catalog No.	4X Bezel Catalog No.
Full Voltage	N5CPL • SDF *	
Transformer	N5CPL • SDT *	
Resistor	N5CPL • SDR *	

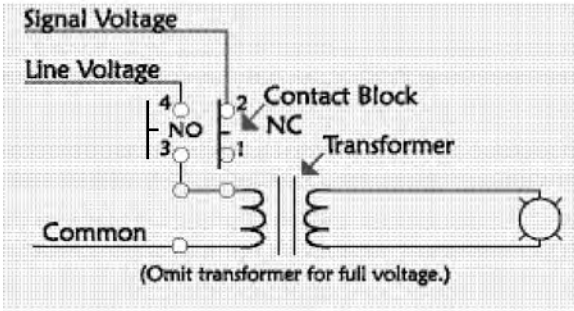
(• See Color Table Below)
(Add Power Supply suffix from table below)*



Round Recessed Push Button



Typical Back Side View



Wire Diagram

*Power Supply *(For Press-To-Test Pilot Lights)*

Power Supply Type	Lamp	LED Bulb Power Supply Suffix *
Full Voltage (AC/DC)	6V	A
	12V	B
	24V	D
	48V	G
	60V	H
	120V	L
Transformer (AC Only)	110 - 120V	J
	220 - 250V	N
	480 - 500V	Y

• COLOR TABLE

- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Red	Green	Yellow	Blue	White	Amber	Clear	w/o Lens
Color Code	R	V	G	L	B	A	I	O

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2 POSITION SELECTOR SWITCHES *(Complete Unit = Operator + Contact Block)*

(Contact Block & Legend Plates sold separately; page 7, 23)

2 Position Selector Switches - Standard

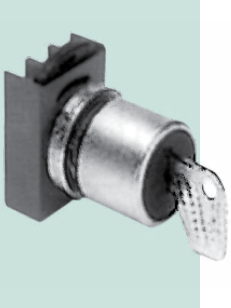
Knob

Lever

Operating Mode	Cam	Knob Type[1]		With Black Lever	
		Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained	D	N5CSMD0 •	N5XSMD0 •	N5CSVD0N	N5XSVD0N
	I	N5CSMI0 •	N5XSMI0 •	N5CSVI0N	N5XSVI0N
Spring Return					
Right To Left	D	N5CSMD5 •	N5XSMD5 •	N5CSVD5N	N5XSVD5N
Right To Center	I	N5CSMI5 •	N5XSMI5 •	N5CSVI5N	N5XSVI5N

(• See Color Table Below)

2 Position Selector Switches - Key Operated[2]



Operating Mode	Cam	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained	**D**	Left	N5CSCD0A95	N5XSCD0A95
		Right	N5CSCD0E95	N5XSCD0E95
		Left & Right	N5CSCD0K95	N5XSCD0K95
	I	Center	N5CSCI0C95	N5XSCI0C95
		Right		
		Center & Right	N5CSCI0N95	NRXSCI0N95
Spring Return				
Right To Left	D	Left	N5CSCD5A95	N5XSCD5A95
Right To Center	I	Center	N5CSCI5C95	N5XSCI5C95

Cam Mode

Right To Left **D**

Right to Center **I**

Contact Switching Sequence

Cam Mode	1 ↖	0 ↑	2 ↗	Screw Terminal Contact Block	
				Left Position	Right Position
D	0	---	X	---	N5B10VN
	X	---	0	N5B01VN	---
	0 X	--- ---	X 0	N5B11VN	---
I	---	0	X	---	N5B10VN
	---	X	0	N5B01VN	
	--- ---	0 X	X 0	N5B11VN	

• **COLOR TABLE** *- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.*					
Color	**Black**	**Red**	**Green**	**Yellow**	**Blue**
Color Code	**N**	**R**	**V**	**G**	**L**

Notes: 1 Add Suffix from Color Table. 2 Supplied with standard #95 key (spare keys found on page 22)

3 POSITION SELECTOR SWITCHES

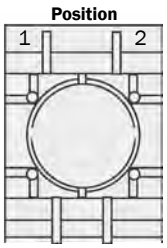
(Complete Unit = Operator + Contact Block)

(Contact Block & Legend Plates sold separately; page 7, 23)

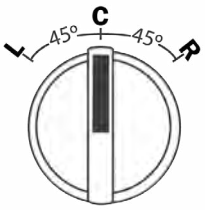
3 Position Selector Switches - Standard

Operating Mode	Cam	Knob Type: Catalog No. Chrome Bezel	Knob Type: Catalog No. Type 4X Bezel	With Black Lever: Catalog No. Chrome Bezel	With Black Lever: Catalog No. Type 4X Bezel
Maintained	E	N5CSME0 •	N5XSME0 •	N5CSVEON	N5XSVEON
	U	N5CSMU0 •	N5XSMU0 •	N5CSVUON	N5XSVUON
	Z	N5CSMZ0 •	N5XSMZ0 •	N5CSVZON	N5XSVZON
Spring Return Left To Center, Maintained Right	E	N5CSME1 •	N5XSME1 •	N5CSVE1N	N5XSVE1N
	L	N5CSML1 •	N5XSML1 •	N5CSVL1N	N5XSVL1N
	U	N5CSMU1 •	N5XSMU1 •	N5CSVU1N	N5XSVU1N
	Z	N5CSMZ1 •	N5XSMZ1 •	N5CSVZ1N	N5XSVZ1N
Spring Return Right To Center, Maintained Left	L	N5CSML5 •	N5XSML5 •	N5CSVL5N	N5XSVL5N
	U	N5CSMU5 •	N5XSMU5 •	N5CSVU5N	N5XSVU5N
	Z	N5CSMZ5 •	N5XSMZ5 •	N5CSVZ5N	N5XSVZ5N
Spring Return Left & Right To Center	E	N5CSME3 •	N5XSME3 •	N5CSVE3N	N5XSVE3N
	U	N5CSMU3 •	N5XSMU3 •	N5CSVU3N	N5XSVU3N
	Z	N5CSMZ3 •	N5XSMZ3 •	N5CSVZ3N	N5XSVZ3N

Contact Switching Sequence



(Back View)



(Front View)

Cam Mode	L	C	R	Screw Terminal Contact Block: Position 1	Screw Terminal Contact Block: Position 2	
Z	0	0	X	N5B10VN (N.O)	---	0° 1 45° 45° 2
	X	0	0	---	N5B10VN (N.O)	
	X	X	0	N5B01VN (N.C)	---	
	0	X	X	---	N5B01VN (N.C)	
	0	0	X	N5B11VN (N.O/N.C)	---	
	X	X	0			
	X	0	0	---	N5B11VN (N.O/N.C)	
	0	X	X			
E	0	0	X	---	N5B01VN (N.C)	0° 1 45° 45° 2
	0	X	0	N5B10VN (N.O)	---	
	0	0	X	N5B11VN (N.O/N.C)	---	
	0	X	0			
L	X	0	0	---	N5B10VN (N.O)	0° 1 45° 45° 2
	0	X	0	N5B01VN (N.C)	---	
	X	0	0	N5B11VN (N.O/N.C)	---	
	0	X	0			
U	0	0	X	N5B11VN (N.O/N.C)	---	0° 1 45° 45° 2
	0	X	0			
	0	0	X	---	N5B11VN (N.O/N.C)	
	X	0	0			

• **COLOR TABLE** *- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.*

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

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3 POSITION KEYED SELECTOR SWITCHES

(Contact Block & Legend Plates sold separately; page 7, 23)

3 Position Selector Switches - Key Operated - Maintained[1]

Chrome Bezel

4X Poly Bezel

Cam[2]	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Z	Left	N5CSCZ0A95	N5XSCZ0A95
	Center	N5CSCZ0C95	N5XSCZ0C95
	Right	N5CSCZ0E95	N5XSCZ0E95
	Left - Center	---	---
	Left - Right	N5CSCZ0K95	---
	Center - Right	---	---
	Left - Center - Right	N5CSCZ0T95	N5XSCZ0T95
E	Left	---	---
	Center	N5CSCE0C95	---
	Right	---	---
	Left - Center	---	---
	Left - Right	---	---
	Center - Right	---	---
	Left - Center - Right	N5CSCE0T95	N5XSCE0T95
U	Left	---	---
	Center	---	---
	Right	---	---
	Left - Center	---	---
	Left - Right	---	N5XSCU0K95
	Center - Right	---	N5XSCU0N95
	Left - Center - Right	---	N5XSCU0T95

3 Position Selector Switches - Key Operated - Spring Return[1]

		L → C R		L C ← R		L → C ← R	
Cam[2]	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Z	Left	---	---	N5CSCZ5A95	N5XSCZ5A95	---	---
	Center	N5CSCZ1C95	N5XSCZ1C95	N5CSCZ5C95	N5XSCZ5C95	N5CSCZ3C95	N5XSCZ3C95
	Right	N5CSCZ1E95	N5XSCZ1E95	---	---	---	---
	Left - Center	---	---	N5CSCZ5H95	N5XSCZ5H95	---	---
	Center - Right	N5CSCZ1N95	N5XSCZ1N95	---	---	---	---
E	Left	---	---	---	---	---	---
	Center	---	---	---	---	N5CSCE3C95	N5XSCE3C95
	Right			---	---	---	---
	Left - Center	---	---	N5CSCE5H95	N5XSCE5H95	---	---
	Center - Right	N5CSCE1N95	N5XSCE1N95	---	---	---	---
U	Left	---	---	---	N5XSCU5A95	---	---
	Center	---	N5XSCU1C95	---	N5XSCU5C95	---	---
	Right	---	N5XSCU1E95	---	---	---	---
	Left - Center	---	---	---	N5XSCU5H95	---	---
	Center - Right	---	N5XSCU1N95	---	---	---	---

Notes: 1 Supplied with 2- #95 Keys 2 See contact switching , page 12

4 & 5 POSITION SELECTOR SWITCHES *(Complete Unit = Operator + Contact Block)*

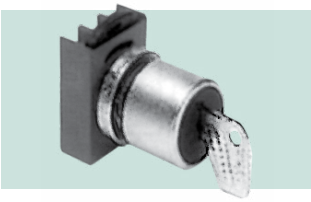
(Contact Block & Legend Plates sold separately; page 7, 23)

4 Position Selector Switches; Standard

Operating Mode	Cam	with Knob		with Black Lever	
		Chrome Bezel Catalog No.[1]	Type 4X Bezel Catalog No.[1]	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained	X	N5CSMXO •	N5XSMXO •	N5CSVXON	N5XSVXON
Spring Return (4 to 3 only, maintained (1-2-3)	X	N5CSMX5 •	N5XSMX5 •	N5CSVX5N	N5XSVX5N

(See Color Table Below)

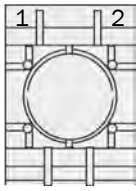
4 Position Selector Switches; Key Operated *(Operators only)*



Operating Mode	Cam	Key Removal	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained	X	All	N5CSCXOZ95	N5XSCXOZ95
Spring Return (4 to 3 only, maintained (1-2-3)	x	1-2-3		N5XSCX5R95

Contact Switching Sequence

Cam Code	1 ←	2 ↖	3 ↗	4 →	Screw Terminal Contact Block Left Position	Screw Terminal Contact Block Right Position
X	0	X	0	0	N5B11VN	---
	0	0	0	X		
	0	0	X	0	---	N5B11VN
	X	0	0	0		

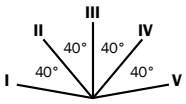


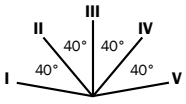
5 Position Selector Switches; Standard

Operating Mode	Cam	with Knob		with Black Lever	
		Chrome Bezel Catalog No.[1]	Type 4X Bezel Catalog No.[1]	Chrome Bezel Catalog No.	Type 4X Bezel Catalog No.
Maintained	Y	N5CSMYO •	N5XSMYO •	N5CSVYON	N5XSVYON
	W	N5CSMWO •	N5XSMWO •	N5CSVWON	N5XSVWON

Contact Switching Sequence

Cam Code	←	↖	↑	↗	→	Screw Terminal Contact Block Left Position	Screw Terminal Contact Block Right Position
W	0	X	0	0	0	N5B11VN	---
	0	0	0	X	0		
	0	0	X	0	0	---	N5B11VN
	0	0	0	0	X		
Y	0	X	0	0	0	N5B11VN	---
	0	0	0	0	X		
	0	0	0	X	0	---	N5B11VN
	X	0	0	0	0		





• COLOR TABLE *- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.*

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

Note: 1 Add Color Suffix from Color Table above

DOUBLE PUSH BUTTONS (Start-Stop)

(Complete Unit = Operator + Power Supply (optional) + Contact Blocks)

Double Push Button without Symbols - Momentary

N5DPLVRS00

Button Level	Button Color	Catalog No. Button without Symbols[1]
Flush Top Indicator Light*	Black - Red	N5DPLNRG00
Flush Bottom	Green - Red	N5DPLVRG00
Flush Top Indicator Light*	Black - Red	N5DPLNRS00
Extended Bottom	Green - Red	N5DPLVRS00

**Double Push Buttons come with both a white transparent lens for use with indicator light and a black insert for non-illuminated feature.*

Double Push Button with Symbols - Momentary

N5DPLVRG01

Button Level	Button Color	Catalog No. Button with Symbols[1]
Flush Top Indicator Light*	Black - Red	N5DPLNRG01
Flush Bottom	Green - Red	N5DPLVRG01
Flush Top Indicator Light*	Black - Red	N5DPLNRS01
Extended Bottom	Green - Red	N5DPLVRS01

**Double Push Buttons come with both a white transparent lens for use with indicator light and a black insert for non-illuminated feature.*

Double Push Button Accessory

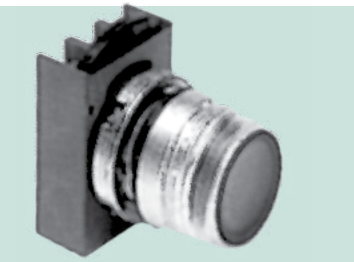
Description	Catalog No.
Silicone rubber boot for use with flush operators	080CPDT

Notes: 1 Bulb and Power Supply not included. To order necessary Power Supply and Bulb see page 7

ILLUMINATED PUSH BUTTONS

(Complete Unit = Operator + Power Supply + Contact Blocks)

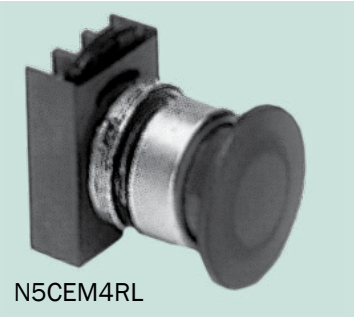
Standard - Momentary



N5CPLVGD

Operator (Only)[1] (with diffused lens)	Chrome Bezel Catolog No.	Type 4X Bezel Catalog No.
With Flush Cap	N5CPL • GD	N5XPL • GD
With Extended Cap	N5CPL • SD	N5XPL • SD

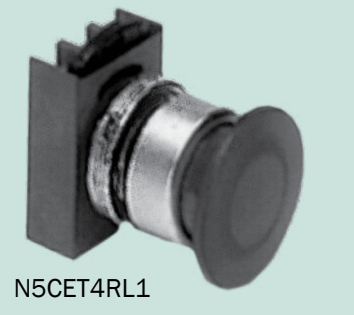
Mushroom Head - Momentary



N5CEM4RL

Operator (Only)[1]	Chrome Bezel Catolog No.	Type 4X Bezel Catalog No.
Mushroom Head 40mm	N5CEM4 • L	N5XEM4 • L

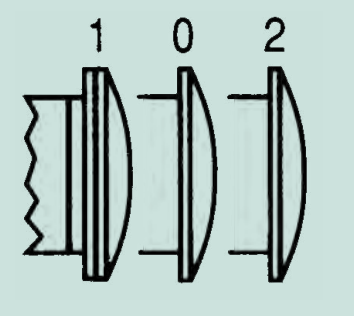
Mushroom Head - With Latch (Maintained)



N5CET4RL1

Operator (Only)[1]	Chrome Bezel Catolog No.	Type 4X Bezel Catalog No.
40mm Push To Latch - Pull To Release	N5CET4 • L1	N5XET4 • L1

Mushroom Head - 3-Position Push Pull (Center Rest)



Operator (Only)[1]	Chrome Bezel Catolog No.	Type 4X Bezel Catalog No.
40mm 3-Position -Maintained Push (0 to 1) -Momentary Pull (0 to 2)	N5CET4 • L2	N5XET4 • L2
40mm 3-Position -Momentary Push (0 to 1) -Momentary Pull (0 to 2)	N5CET4 • L3	N5XET4 • L3

• COLOR TABLE *- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.*

Color	Black	Red	Green	Yellow	Blue
Color Code	N	R	V	G	L

Note: 1 Order Contact Blocks & Power Supply from page 7

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2 & 3 POSITION ILLUMINATED SELECTOR SWITCHES

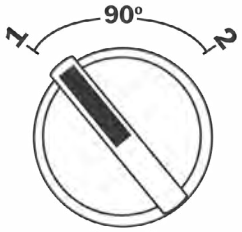
(Complete Unit = Operator + Power Supply + Contact Blocks)

2-Position Illuminated Selector Switches

N5XSLDOV

Operating Mode	Cam	Chrome Bezel Catolog No.[1]	Type 4X Bezel Catalog No.[1]
Maintained	D	N5CSLDO •	N5XSLDO •

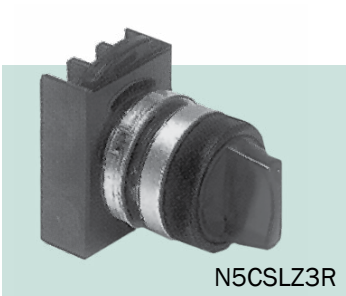
Contact Switching Sequence



Cam D

Cam Code	1 ↖	2 ↗	Screw Terminal Contact Block	
			Left Position	Right Position
D	0	X	---	N5B10VN
	X	0	N5B01VN	---
	0	X	N5B11VN	---
	X	0		

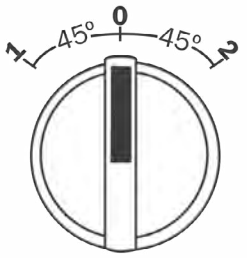
3-Position Illuminated Selector Switches



N5CSLZ3R

Operating Mode	Cam	Chrome Bezel Catolog No.[1]	Type 4X Bezel Catalog No.[1]
Maintained	Z	N5CSLZO •	N5XSLZO •
Spring Return Left To Center Maintained Right	Z	N5CSLZ1 •	N5XSLZ1 •
Spring Return Right To Center Maintained Left	Z	N5CSLZ5 •	N5XSLZ5 •
Spring Return Left & Right To Center	Z	N5CSLZ3 •	N5XSLZ3 •

Contact Switching Sequence



Cam Code	1 ↖	0 ↑	2 ↗	Screw Terminal Contact Block	
				Left Position	Right Position
Z	0	0	X	N5B10VN	---
	X	0	0	---	N5B10VN
	X	X	0	N5B01VN	---
	0	X	X	---	N5B01VN
	0	0	X	N5B11VN	---
	X	X	0		
	X	0	0	---	N5B11VN
	0	X	X		

• **COLOR TABLE** - *use complete catalog number when ordering. Replace the (•) with the suffix from the table below.*

Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

Note: 1 Order Contact Blocks, Power Supplies and Bulbs from page 7

SPECIAL OPERATORS

(Complete Unit = Operator + Contact Blocks)

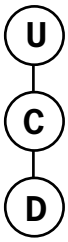
Joystick - Operators - Type 4X

Positions (see below)	Mechanical Interlock	Maintained All Positions Catalog No.	Momentary All Positions Catalog No.
3	No	N5XMN2F	N5XMN2T
3	Yes	N5XMB2F	N5XMB2T
5	No	N5XMN4F	N5XMN4T
5	Yes	N5XMB4F	N5XMB4T

Joystick - No Interlock

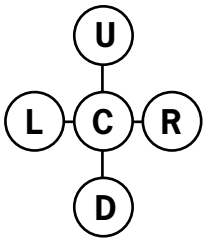
Joystick - With Interlock

3-Position Joystick Contact Arrangement



Position			Screw Terminal Contact Block Catalog No. and Mounting Position	
Up	Center	Down	Position 1	Position 2
0	0	X	N5B11VN	---
X	0	0		
X	0	0	---	N5B11VN
0	0	X		

5-Position Joystick Contact Arrangement



Position					Screw Terminal Contact Block Catalog No. and Mounting Position	
Up	Right	Center	Down	Left	Position 1	Position 2
0	0	0	X	0	N5B11VN	---
X	0	0	0	0		
0	X	0	0	0	---	N5B11VN
0	0	0	0	X		

Spare Boots for N5 Joysticks

Style	Catalog No.
Standard Rubber Boot (No interlock)	N5ARSCMN
Standard Rubber Boot (with interlock)	N5ARSCMB

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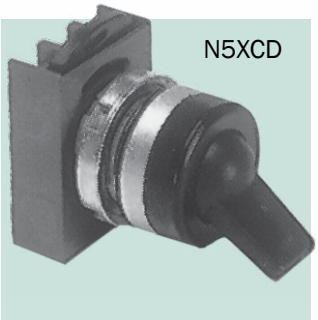
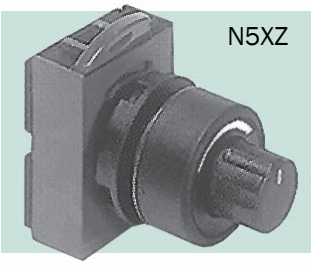
Toggle Switches & Cams - Operator Only *(Note selection and position of contact block(s) operation)*



Position			Contact Block Mounting Position		Positions & Catalog No.
Up	Center	Down	1	2	
X	---	0	---	N5B10VN	2 Position Maintained **N5XCD**
0	---	X	N5B01VN	---	
X 0	--- ---	0 X	N5B11VN	---	
X	0	0	---	N5B10VN	3 Position Maintained **N5XCB**
0	0	X	N5B01VN	---	
X 0	0 0	0 X	N5B11VN	---	

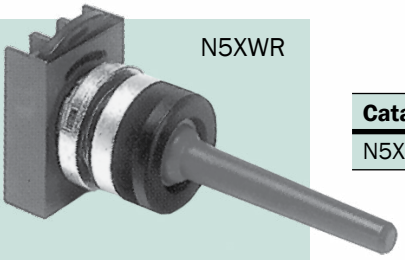
Potentiometer Operators*



Style	Catalog No.
Chrome Bezel (Operator only)*	N5CZ
4X Bezel (Operator only)*	N5XZ

** Potentimeter Operator use .25" x 2" stem.*

Wobble Sticks - Type 4X



Catalog No.
N5XWR

Reset Push Buttons (*Flush blue push buttons with white "R" provided with screw adjustable from 60mm to 80mm depth)*

Style	Catalog No.
Chrome Bezel	N5CRG
4X Bezel	N5XRG
Reset Rod (extended screw 170mm)	N5ACVLR

22mm PRE-ASSEMBLED OPERATORS

The 22mm Pilot Device units listed below are the most commonly ordered units. The units are complete and include operator, contact mounting base and contact blocks. Legend plates are not included. They may be ordered separately from page 23. Units are packed, unassembled in a single carton.

Push Buttons - Momentary

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.
Flush Pushbutton - 1N.O. Contact Block - Black Cap		N5CPNNG10
Flush Pushbutton - 1 N.O. & 1 N.C. Contact Block - Black Cap		N5CPNNG11
Flush Pushbutton - 1 N.O. Contact Block - Green Cap		N5CPNVG10
Flush Pushbutton - 1 N.O. & 1 N.C. Contact Block - Green Cap		N5CPNVG11
Flush Pushbutton - 1 N.C. Contact Block - Red Cap		N5CPNRG01
Extended Pushbutton - 1 N.C. Contact Block - Red Cap		N5CPNRS01
Extended Pushbutton - 1 N.O. & 1 N.C. Contact Block - Red Cap		N5CPNRS11
Guarded Pushbutton - 1 N.O. Contact Block - Black Cap		N5CPNNE10
Guarded Pushbutton - 1 N.O. & 1 N.C. Contact Block - Black Cap		N5CPNNE11
Mushroom 40mm Pushbutton - 1 N.C. Contact Block - Red Cap (Momentary)		N5CEM4RN01
Mushroom 40mm Twist-Release - 1 N.C. Contact Block - Red Cap		N5CER4RN01
Double Pushbutton Flush - 1 N.O. & 1 N.C. Contact Block - Black-Red Cap (No power supply)		N5DPLNRG0011
Double Pushbutton Flush - 1 N.O. & 1 N.C. Contact Block - Green-Red Cap (No power supply)		N5DPLVRG0011

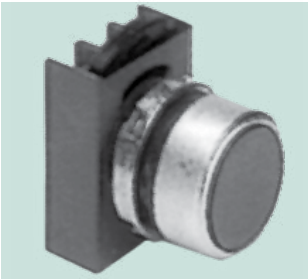
Selector Switches - Maintained

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.
3 Position Sel. Sw. - 2 N.O. Contact Blocks - Cam Z - Black Knob		N5CSMZON20
2 Position Sel. Sw. - 1 N.O. Contact Block - Cam D - Black Knob		N5CSMDON10
3 Position Sel. Sw. Key Operated - 2 N.O. Contact Block - Cam Z - Center Removal		N5CSCZOC9520
2 Position Sel. Sw. Key Operated - 1 N.O. & 1 N.C. Contact Block - Cam Z Left-Right Removal		N5CSCDOK9511

Pilot Lights

Operator / Description	Type 1, 3, 3R, 4, 12, 13 IP66 Chrome Bezel	Catalog No.
Std. Full Voltage Pilot Light 120V - Red Cap (Bulb included)		N5CLRDL
Std. Full Voltage Pilot Light 120V - Green Cap (Bulb included)		N5CLVDL
Std. Full Voltage Pilot Light 120V - Amber Cap (Bulb included)		N5CLADL
Uniblock 300V max. Pilot Light - Red Cap (Bulb not included)		N5XURDDO
Uniblock 300V max. Pilot Light - Green Cap (Bulb not included)		N5XUVDDO
Uniblock 300V max. Pilot Light - Amber Cap (Bulb not included)		N5XUADDO
Uniblock 300V max. Pilot Light - Blue Cap (Bulb not included)		N5XULDDO

N5CPNVG11 (Pre-assembled)



N5CPNVG

+

N5B10VN (Norm. Open)

+

N5BO1VN (Norm. Closed)

ACCESSORIES / REPLACEMENT PARTS

Pushbutton Caps

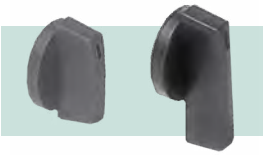
Description	Catalog No.
Flush & Guarded Operator	N5ARBG •
Extended Operator	N5ARBS •

Momentary Operators (Mushroom)

Description	Catalog No.
28mm	N5ARB3 •
40mm	N5ARB4 •
60mm	N5ARB6 •

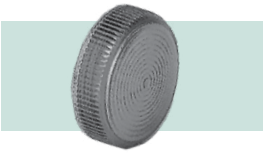
Push-Pull Operators (Mushroom)

Description	Catalog No.
40mm	N5ACB4 •



Knobs & Levers

Description	Catalog No.
Knob for Selector Switches	N5ACMN •
Lever for Selector Switches	N5ARMV •



Lenses (Pilot Lights)

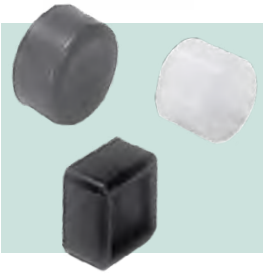
Description	Catalog No.
Diffused Version	N5ARGLD •
Refracted Version	N5ARGLR •
Glass Version	N5ARGLV •

Illuminated Push Button Lens

Description	Catalog No.
Illuminated Push Button Lens	N5ARGPD •

Illuminated Mushroom Head Push Buttons

Description	Catalog No.
Momentary 40mm	N5ARGP4 •
Push-Pull 40mm	N5ACGP4 •
Illuminated Lever Selector Switch	N5ACGSL •



Rubber Protective Caps (Standard Flush Push Buttons)

Description	Catalog No.
Colored	080CP •
Clear	080CPT

Rubber Protective Cab (Raised Push Buttons)

Description	Catalog No.
Clear	N5ARCST

COLOR TABLE

- **Use complete catalog number when ordering. Replace the (•) with the suffix from the table below.**

Colors	Black	Red	Green	Yellow	Brown	Blue	White	Grey	Amber	Clear	w/o Cap	Red, Black, Green, Yellow
Pushbutton Caps	N	R	V	G	M	L	B	H	---	---	O	Z[1]
Mushroom Heads	N	R	V	G	---	---	---	---	---	---	---	---
Knobs	N	R	V	G	---	L	---	---	---	---	---	---
Lenses	---	R	V	G	---	L	B	---	A	I	---	---
Protective Caps	N	R	V	G	---	---	---	---	---	---	---	---

Note 1: When ordering operator with 4-color caps (Red/Black/Green/Yellow) add $3.00

ACCESSORIES / REPLACEMENT PARTS

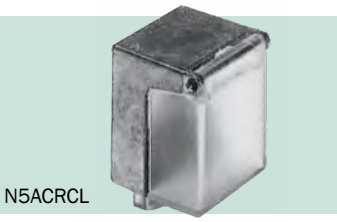
N5ARHPR

Plugs (fill a 22mm hole)

Description	Catalog No.
Round Plug	N5ARHPR

Printed Circuit Board Adaptor

Description	Catalog No.
Adaptor	N5ACA6


N5ACRCL

Protections

Description	Catalog No.
Extended Guard for 40mm Momentary mushroom head	N5ARRE4
Protection Cover: padlockable for standard push buttons, illuminated push buttons, selector switches, illuminated selector switches with knob.	N5ACRCL

N5ACFS5

Flanges *(For mounting contact blocks)*

Description	Catalog No.
Three position - 30 x 50mm	N5ACFS3
Five position - 50 x 50mm	N5ACFS5

077C3095

Keys

Description	Catalog No.
Extra Key; Selector Switch	077C3095

N5ARSN1

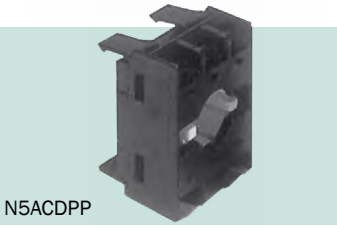
Adapter

Description	Catalog No.
Gives round control and signalling units a square appearance. – Made in black thermoplastic. – Excluded for mushroom flush buttons with positive break and Push-Pull units.	N5ARSN1

N5ACVLR

Reset Adjustment Screw

Description	Catalog No.
Extended Screw (170mm)	N5ACVLR


N5ACDPP

Push-On / Push-Off

Description	Catalog No.
Device for standard push buttons and illuminated push buttons. To be added only to single-pole contact blocks. – The N.O.-contacts must be early make types.	N5ACDPP

N5ACWAF

Ring Adaptor *(Allows N5 series to be mounted in 30mm hole)*

Description	Catalog No.
Chrome	N5ARAM32
4X Bezel	N5ARAX32

080E35L

Tools

Description	Catalog No.
Locking ring wrench	N5ACWAF
Bulb extractor	080E3SL

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LEGEND PLATES *(Complete Unit = Legend Insert + Insert Holder)*

Legend Inserts *(used with N5ARTBS Insert Holder – Black background except when noted)*

(N5ARTBS)

+

Insert

(N5ACPBS2_ _)

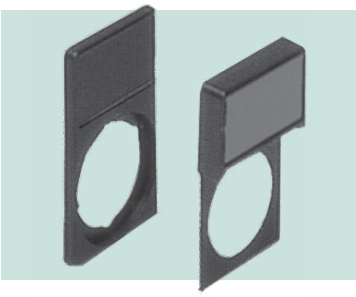
=

Complete Unit

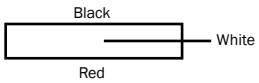
Marking	Catalog No.
Start	N5ACPBS202
Stop (Red)	N5ACPBS201
Forward	N5ACPBS214
Reverse	N5ACPBS215
Close	N5ACPBS205
Open	N5ACPBS206
Up	N5ACPBS204
Down	N5ACPBS203
Left	N5ACPBS222
Right	N5ACPBS224
Fast	N5ACPBS208
Slow	N5ACPBS207
Open-Close	N5ACPBS234
Stop-Start	N5ACPBS232
Forward-Reverse	N5ACPBS231
Off-On	N5ACPBS233
Forward-O-Reverse	N5ACPBS239
Emergency Stop (Red)	N5ACPBS229
Inch	N5ACPBS209
Jog	N5ACPBS210
Lower	N5ACPBS217
Off (Red)	N5ACPBS213
On	N5ACPBS212
Power On	N5ACPBS240
Push To Stop / Pull To Start	N5ACPBS241
Reset	N5ACPBS291
Run	N5ACPBS211
Start - Stop	N5ACPBS255
Up - Down	N5ACPBS256
Hand - Off - Auto	N5ACPBS261
Blank Insert	N5ACPBS
Transparent Insert	N5ACPTS
Custom Engrave	NSACPBSX

Insert Holders

Insert Holders come with blank insert which can be used to make your own legend. One side Red - One side Black.



- *Legend Plates are used for Pilot Device identification of application function.*
- *Legend Plate requires Legend Holder and Legend Insert*
- *Legend Plates can be custom engraved at an additional cost*

Description	Catalog No.
Supplied with neutral insert engravable on both sides 	
Standard 1.18" x 1.97" (30 x 50mm)	N5ARTBS
Extended 1.77" x 1.97" (45 x 50mm)	N5ARTBM

Emergency Stop Yellow Ring

Description	Catalog No.
2.28" (58mm) Dia	080XTGR02
3.07" (78MM) Dia	080XTG802

General Specifications

Conformity to Standards	UL508 (USA) NEMA ICS-2 (USA) VDE 0600 (Germany) BSI (Great Britain) CEI EN60947.5.1 (Italy) CENELEC EN 5000 7 (Europe)	CSA C22.2 No. 14-M91 (Canada) IEC 947.5.1 (International) UTE (France) NFC 63140 (France) JIS (Japan)	
Approvals	UL listed - File Number E170195 Manufacturing Facility is registered to ISO 9000		
Finger Protection at Terminals	IP2X according to IEC 529 Terminal identification is registered to ISO 9000		
Enclosure Ratings	Suitable for use in NEMA Types 1, 3, 3R, 3S, 4, 4X, 12 and 13 enclosures. (Multi-function push buttons are suitable for NEMA Type 1 enclosures only unless used with protective rubber cap accessory.) IP66 per IEC529, when mounted in enclosures with equal or superior seal.		
Ambient Temperature	Operating -13° to +158°F -25° to +70°C	Storage -40° to +158°F -40° to +70°C	
Climate Suitability / Humidity	Climate Type Temperature Wet Hot Wet Variable Wet	Temperature 74°F (23°C) 74°F (23°C) 104°F (40°C) 74° to 104°F (23° to 40°C)	Relative Humidity 50% 83% 92% 83% to 92%
Resistance to Vibration	Per IEC 68-2-6, 16g with a frequency from 40-500 Hz and maximum peak-to-peak amplitude of 0.75mm		
Resistance to Shock	According to MIL 202B, method 202A. Test was performed for 1/2 sinusoid for 11md, 38g max for all operators with transformers and 100g for all other operators.		
Operating Force	Standard push button operator: 2.5lbs (11N). Each contact block: 1.3lbs (6N). Selector switch operator: 2.4in/lb (0.27Nm)		

Wire Terminals

Wire Capacity and Terminal Torque Requirements	Suitable for #22 - #12 AWG stranded or solid copper wires, single or parallel conductors of same size. Terminal torque: 7-12 in/lb. Parallel conductor size combinations (stranded or solid wire):	
	Parallel Conductor Size Combinations (Stranded or Solid Wire)	**Terminal Torque**
	#12 with #14	12 in/lb
	#14 with #16	12 in/lb
	#16 with #18	12 in/lb
	#16 with #20	12 in/lb
	#16 with #22	12 in/lb
	#18 with #22	10 - 12 in/lb
	#18 with #20	10 - 12 in/lb
	#20 with #22	7 - 12 in/lb
Quick Connect Terminals	Suitable for one female tab connector measuring 0.25 x 0.03 inches (6.35 x 0.8 mm) or two female tab connectors measuring 0.11 x 0.03 inches (2.8 x 0.8 mm).	

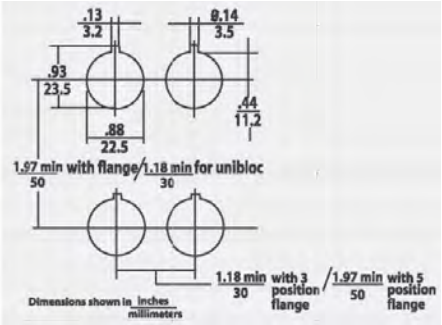
Contact Data

Electrical Reliability Data	Electrical life and reliability in low level current: 80 million operations at 12V, 5mA, resistive load. (32 contacts tested successfully for 2.5 million operations).								
Dust Resistance	In extremely dusty environments, electrical life at low level current is 250,000 operations at 12V, 5mA, resistive load. In a clean environment, electrical life at low level current is 10 million operations at 12V, 5mA, resistive load.								
Thermal Current	Ith = 10A per IEC 947-5-1								
Insulation Voltage	Ui = 660 Volts ac/dc (opposite polarity) except 2NO and 2NC blocks 300 Vac/dc								
Protection from Electrical Shock	Class I per IEC 536 for metal operators Class II (double insulation) per IEC 536 for plastic operators								
Insulation Category	Group "C" per VDE 0110								
Dielectic Strength	2500 volts								
Short Circuit Protection	10A type G fuse, per IEC 269.1 & 269.3								
AC3 Motor Rating	A600 (maximum make volt-amperes = 7200; maximum break volt-amperes = 720; PF- .25)								
	Volts (AC - V)	12	24	48	60	120	240	480	600
	Continuous (A)	10	10	10	10	10	10	10	10
	Making (A)	100	100	100	60	60	30	15	12
	Breaking (A)	10	10	10	6	6	3	1.5	1.2
Pilot Duty Rating	Q300 (maximum make or break volt-amperes = 69)								
	Volts (DC - V)	12	24	48	60	125	250	300	
	Continuous (A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Making (A)	2.5	2.5	1.4	1.1	0.55	0.27	0.23	
	Breaking (A)	2.5	2.5	1.4	1.1	0.55	0.27	0.23	

Contact Data

IEC Utilization Categories	AC 5 Control of AC Electromagnetic Loads Rated Operational Voltage and Current									
	Ue (V)	12	24	48	60	110	220	380	500	600
	Ie	10	10	10	10	6	3	2	1.5	1.2
	DC1 3 Control of DC Electromagnets Rated Operational Voltage and Current									
	UE (M)	12	24	48	60	110	220	300		
	LE (A)	2.5	2.5	1.4	10	0.55	0.27	0.2		
Contact Characteristics	NC: slow make, double break (positive opening) NO: slow make, double break Self-cleaning (wiping action) contact Double-bridge contacts with four points of contact									
Contact Resistance Contact Fidelity	<25mOhm per IEC 255.7 category 3 @ 24V, 1 amp Minimum current: 5mA Minimum voltage: 12 Vac/dc. maximum resistance - 2 ohms									
Logic Reed Contact Data *(Special Order)*	NC: Single break NO: Single break 120 Vac maximum, 0.1 5A maximum, 8VA maximum 30 Vdc maximum, 15A maximum, 4.5W maximum									

Mounting

Acceptable Panel Thickness	.040 - .236 inches (1-6 mm)
Operator Locking Ring Torque	26 in/lb (3 N -m)
Force Required fo Forcibly Remove Contact Blocks and Flange	Contact block or power supply from flange: 27 lbs (118N) 3- or 5-block flange from metal operator: 88 lbs (392 N) 3- or 5-block flange from plastic operator: 66 lbs (294 N)
Mounting Dimensions	

	Operators	Number of Operations
Mechanical Life Ratings for Operators	Standard Push Buttons	3,000,000
	Illuminated Push Buttons[1]	1,000,000 - 3,000,000
	Momentary Mushroom-head Push Buttons	3,000,000
	Maintained Mushroom-head Push Buttons	500,000
	Push-to-Latch, Turn-to-Release Mushroom-Head Push	300,000
	Buttons	300,000
	3-Position Mushroom-head Push Buttons	1,000,000
	Non-Illuminated Selector Switches	500,000
	Illuminated Selector Switches	500,000
	Joysticks	500,000
	Toggle Switches	1,000,000
	Wobble Sticks	500,000
	Key-Operated Push Buttons	1,000,000
	Selector Push Buttons	

[1] *Number of operations dependent on the operating duration of the lamp. If the lamp is left on for long periods of time, its heat can reduce mechanical life. All illuminated push buttons meet at least 1,000,000 operations.*

POLYCARBONATE ENCLOSURES, NAMEPLATES, CONTACT BLOCKS POWER SUPPLIES FOR BASE-MOUNTED PILOT DEVICES

(See pg. 28-32 for assembled push-button stations. Consult factory for custom stations)

NEMA 1, 3, 3R, 4, 4X, 12, 13, & IP66

(For use with operators from pages 8 - 17. Requires base-mount contact blocks & power supplies) (maximum of 3 per operator)

N5PEX102

Polycarbonate Enclosures

Holes	Color	Encl. Length	Catalog No.
1	Gray	2.83"	N5EPE01
1	Yellow	2.83"	N5EPEG1
2	Gray	4.33"	N5EPE02
3	Gray	5.51"	N5EPE03
4	Gray	6.89"	N5EPE04
6	Gray	9.25"	N5EPE06

Base-Mount Contact Block (Screw Terminals only for use with Polycarbonate Enclosures)

Type	Contacts	Catalog No.
Base-Mount	1 NO	N5B10BN
Base-Mount	1 NC	N5B01BN

Base-Mount Power Supply (Screw Terminals only)

Type	Voltage AC/DC	Catalog No. with Incandescent Bulb
Full Voltage	No Lamp	N5PDNB0
	6	N5PDNBA
	12	N5PDNBB
	24	N5PDNBD
	48	N5PDNBG
	120	N5PDNBL
Standard Resistor	110 - 120	N5PRNBJ
	220 - 240	N5PRNBN

Legend plates for Plastic Enclosures (Self adhesive, black background)

Marking	Catalog No.
Stop	N5AELN201
Start	N5AELN202
Down	N5AELN203
Up	N5AELN204
Close	N5AELN205
Open	N5AELN206
On	N5AELN212
Off	N5AELN213
Forward	N5AELN214
Reverse	N5AEL215
Left	N5AELN222
Right	N5AELN224

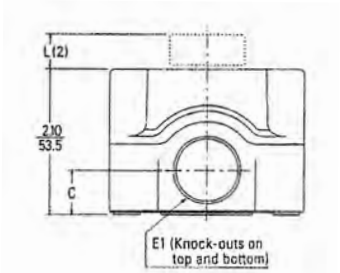
Plastic Enclosures

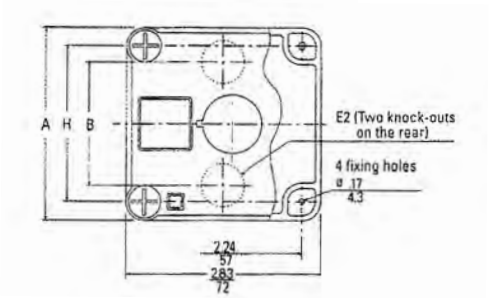
NEMA 1, 3 3R,3S, 4, 4X, 12, 13 and IP66

Enclosure Holes	Center Distance (in/mm)	Dimension A (in/mm)	Dimension B (in/mm)	Dimension C (in/mm)
1		2.83 (72)	1.81 (46)	.65 (16.5)
2	1.18 (30)	4.33 (110)	3.07 (78)	.65 (16.5)
3	1.18 (30)	5.51 (140)	4.25 (108)	.65 (16.5)
4	1.18 (30)	6.89 (175)	5.63 (143)	.65 (16.5)
6	1.18 (30)	9.25 (235)	7.87 (200)	.77 (19.5)

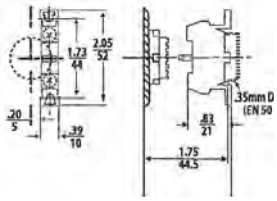
Enclosure Holes	Center Distance (in/mm)	Dimension E1 Ø (in/mm)	Dimension E2[1] Ø (in/mm)	Dimension H (in/mm)
1		.91 (23)	.61 (15.5)	2.24 (57)
2	1.18 (30)	.91 (23)	.85 (21.5)	3.74 (95)
3	1.18 (30)	.91 (23)	.85 (21.5)	4.92 (125)
4	1.18 (30)	.91 (23)	.85 (21.5)	6.30 (160)
6	1.18 (30)	1.14 (29)	.91 (23)	8.66 (220)

[1] 1-, 2-, 3-, and 4-hole enclosures suitable for cable gland, with locknut, PG16 or ½" NPT. 6-hole enclosures suitable for cable gland, with locknut GP12 or ¾" NPT.

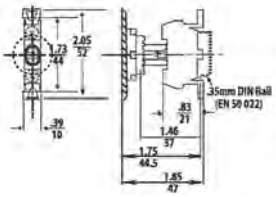




Base Mount Contact Blocks with Screw Terminal



Base Mount Power Supply



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METAL ENCLOSURES FOR TYPE N5 OILTIGHT PILOT DEVICES

NEMA 12 surface mounting enclosure is available with one through sixteen elements openings. All enclosures will accommodate non-illuminated operators with up to two contact blocks (1 per side). Consult factory for stations with 7 through 20 elements and all custom built assembled push-button stations.

N5 Separate Enclosures

N5SPPSL-2

Enclosures only (No operators or contacts)

Type 12, Metal, Surface Mounted Enclosure

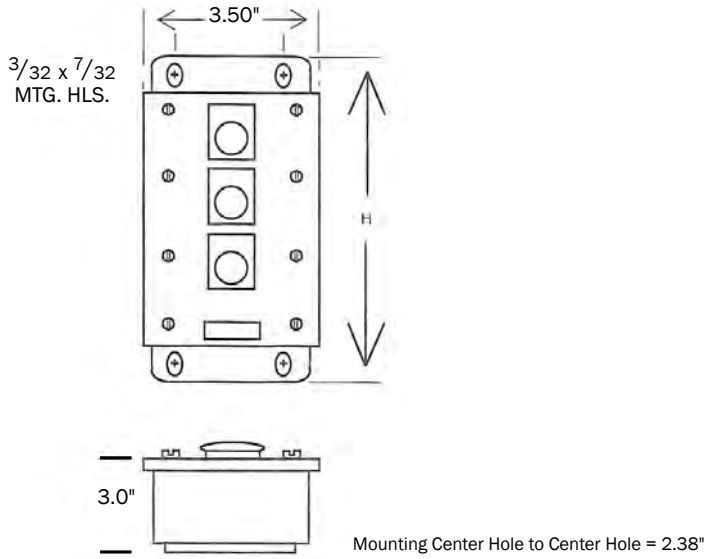
Number of Element(s)	Catalog No.
1	N5SPPSL - 1
2	N5SPPSL - 2
3	N5SPPSL - 3
4	N5SPPSL - 4
5	N5SPPSL - 5
6	N5SPPSL - 6
6 (2 column)	N5SPPSL - 6X
7 - 20	Consult factory

Dimensions

Type12, Metal

Number of Element(s)	W	Surface Mounted Enclosure H	D
1	3.50″	4.00″	3.00″
2		5.75″	
3		8.00″	
4		10.25″	
5		12.50″	
6		14.75″	

NEMA 12 Painted Metal



Note: Consult factory for extra deep or wide enclosure and stainless steel NEMA 4X

Ordering Information: Select Enclosure Desired by Catalog Number

22mm ASSEMBLED PUSH-BUTTON STATIONS

22mm push-button stations are available assembled in NEMA 1,3,3R,4, 4X, 12, 13, & IP66 rated polycarbonate enclosures. Assembled stations include operators, contact blocks, pilot lights, bulbs and legend plates as indicated. For Emergency Stop Push Button Stations (see page 31, 32). For other assembled stations not listed below please consult factory.

Single Element 22mm Push-Button Stations

N5PEC101

N5PEX102

N5PEX103

Description (CHROME BEZEL)	Catalog No.
Start PB Station Green Flush Push-Button Momentary	N5PEC101
Stop PB Station Red Extended Push-Button Momentary	N5PEC102
Stop PB Station Red 40mm Mushroom Push-Button Momentary	N5PEC103
Stop PB Station Red 40mm Push-Pull	N5PEC104

Consult factory for additional custom push-button stations

Description (4X BEZEL)	Catalog No.
Start PB Station Green Flush Push-Button Momentary	N5PEX101
Stop PB Station Red Extended Push-Button Momentary	N5PEX102
E-Stop PB Station Red 40mm Mushroom Push Button, twist release EN418 approved	N5PEX103
E-Stop PB Station Red 40mm Push-Pull	N5PEX104

Consult factory for additional custom push-button stations

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22mm ASSEMBLED PUSH-BUTTON STATIONS

Two Element 22mm Push-Button Stations

N5PEC201

Description (CHROME BEZEL)	Catalog No.
Start-Stop PB Station Green Flush, Red Extended Push-Buttons Momentary	N5PEC201
Start-Stop PB Station Green Flush, Red 28mm Mushroom PB Momentary	N5PEC202
Open-Close PB Station Two Black Flush Push-Buttons Momentary	N5PEC203
Up-Down PB Station Two Black Flush Push-Buttons Momentary	N5PEC204
Forward-Reverse PB Station Two Black Flush Push-Buttons Momentary	N5PEC205

Consult factory for additional custom push-button stations.

N5PEX204

Description (4X BEZEL)	Catalog No.
Start-Stop PB Station (Green Flush, Red Extended Push-Buttons)	N5PEX201
Start-Stop PB Station (Green Flush, Red 28mm mushroom PB)	N5PEX202
Open-Close PB Station (Two Black Flush Push-Buttons)	N5PEX203
Up-Down PB Station (Two Black Flush Push-Buttons)	N5PEX204
Forward-Reverse PB Station (Two Black Flush Push-Buttons)	N5PEX205

Consult factory for additional custom push-button stations.

Three Element 22mm Push-Button Stations

N5PEC304

Description (CHROME BEZEL)	Catalog No.
Forward - Reverse - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC301
Open - Close - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC302
Up - Down - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEC303
Start - Stop - On Light PB Station One Green Flush, One Red Extended Momentary, Pilot Light Green 120V	N5PEC304
Start - Stop - Selector Switch One Green, One Red Momentary, 2 pos Sel. Sw. Maintained	N5PEC305

Consult factory for additional custom push-button stations.

N5PEX301

Description (4X BEZEL)	Catalog No.
Forward - Reverse - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX301
Open - Close - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX302
Up - Down - Stop PB Station Two Black Flush, One Red Extended PB Momentary	N5PEX303
Start - Stop - On Light PB Station One Green Flush, One Red Extended Momentary, Pilot Light Green 120V	N5PEX304
Start - Stop - Selector Switch One Green, One Red Momentary, 2 pos. Sel. Sw. maintained	N5PEX305

Consult factory for additional custom push-button stations.

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EMERGENCY STOP PUSH-BUTTON STATIONS

Assembled 22 mm style Emergency Stop stations include choice of either a clear-covered enclosure or 3 types of open enclosures (polycarbonate, powder coated metal or stainless steel). The 40 mm sized Mushroom Head operators come in your choice of Push-Pull, Momentary, Twist-Release or Push with Key Release (not available enclosed). The contact configuration is either 1 normally closed contact or 1 normally-open & 1 normally-closed contact. For assembled Emergency Stop Stations not listed , please consult factory.

ENCLOSED style Emergency Stop Push Button station; Polycarbonate

N5PEX1111

Description	Catalog No.
Mushroom Head (Red), Push-Pull, 1 normally closed contact	N5PEX1110
Mushroom Head (Red), Push-Pull, 1 normally open - 1 normally closed contact	N5PEX1111
Mushroom Head (Red), Momentary, 1 normally closed contact	N5PEX1112
Mushroom Head (Red), Momentary, 1 normally open - 1 normally closed contact	N5PEX1113
Mushroom Head (Red), Twist-Release, 1 normally closed contact	N5PEX1114
Mushroom Head (Red), Twist-Release 1 normally open - 1 normally closed contact	N5PEX1115

Features include: Nema/UL approved polycarbonate enclosure (external 6" x 6.5" x 4"), clear cover with Integrated locking latch,no metal components to rust, mounting provisions on top & bottom, cleverly labeled “Emergency Stop” legend, Outdoor rated (IP68).

OPEN style Emergency Stop Push Button station; Polycarbonate, Yellow Cover

N5PEX1144

Description	Catalog No.
Mushroom Head (Red), Push-Pull, 1 normally closed contact	N5PEX1140
Mushroom Head (Red), Push-Pull, 1 normally open - 1 normally closed contact	N5PEX1141
Mushroom Head (Red), Momentary, 1 normally closed contact	N5PEX1142
Mushroom Head (Red), Momentary, 1 normally open - 1 normally closed contact	N5PEX1143
Mushroom Head (Red), Twist-Release, 1 normally closed contact	N5PEX1144
Mushroom Head (Red), Twist-Release 1 normally open - 1 normally closed contact	N5PEX1145
Mushroom Head (Red), Push-Key Release 1 normally closed contact	N5PEX1146
Mushroom Head (Red), Push-Key Release 1 normally open - 1 normally closed contact	N5PEX1147

Features include: Nema / UL approved polycarbonate enclosure (2.8" x 2.8" x 2.1"), no metal components to rust, knock-outs on top & bottom, base mounted contacts (no wiring to cover), “Stop” legend, Outdoor rated (IP66 Type 4, 4X, 12).

OPEN style Emergency Stop Push Button station; Polycarbonate

N5PEX1116

Description	Catalog No.
Mushroom Head (Red), Push-Pull, 1 normally closed contact	N5PEX1116
Mushroom Head (Red), Push-Pull, 1 normally open - 1 normally closed contact	N5PEX1117
Mushroom Head (Red), Momentary, 1 normally closed contact	N5PEX1118
Mushroom Head (Red), Momentary, 1 normally open - 1 normally closed contact	N5PEX1119
Mushroom Head (Red), Twist-Release, 1 normally closed contact	N5PEX1120
Mushroom Head (Red), Twist-Release 1 normally open - 1 normally closed contact	N5PEX1121
Mushroom Head (Red), Push-Key Release 1 normally closed contact	N5PEX1122
Mushroom Head (Red), Push-Key Release 1 normally open - 1 normally closed contact	N5PEX1123

Features include: Nema / UL approved polycarbonate enclosure (4.25" x 3" x 3.5"), excelled resistance to UV, no metal components to rust, clearly labeled “Emergency Stop” legend, Outdoor rated (IP67, Type 4X)

OPEN style Emergency Stop Push Button station; Carbon Steel (Gray Powder Coat)

N5PEX1131

Description	Catalog No.
Mushroom Head (Red), Push-Pull, 1 normally closed contact	N5PEX1124
Mushroom Head (Red), Push-Pull, 1 normally open - 1 normally closed contact	N5PEX1125
Mushroom Head (Red), Momentary, 1 normally closed contact	N5PEX1126
Mushroom Head (Red), Momentary, 1 normally open - 1 normally closed contact	N5PEX1127
Mushroom Head (Red), Twist-Release, 1 normally closed contact	N5PEX1128
Mushroom Head (Red), Twist-Release 1 normally open - 1 normally closed contact	N5PEX1129
Mushroom Head (Red), Push-Key Release 1 normally closed contact	N5PEX1130
Mushroom Head (Red), Push-Key Release 1 normally open - 1 normally closed contact	N5PEX1131

Features include: Nema / UL approved 0.063” carbon steel enclosure (4" x 3.5" x 3"), gray powder coat, mounting provisions on top & bottom, stainless screws, clearly labeled “Emergency Stop” legend, Outdoor rated (IP66, Type 4, 12)

OPEN style Emergency Stop Push Button Station; Stainless Steel (type 304)

N5PEX1136

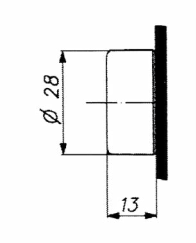
Description	Catalog No.
Mushroom Head (Red), Push-Pull, 1 normally closed contact	N5PEX1132
Mushroom Head (Red), Push-Pull, 1 normally open - 1 normally closed contact	N5PEX1133
Mushroom Head (Red), Momentary, 1 normally closed contact	N5PEX1134
Mushroom Head (Red), Momentary, 1 normally open - 1 normally closed contact	N5PEX1135
Mushroom Head (Red), Twist-Release, 1 normally closed contact	N5PEX1136
Mushroom Head (Red), Twist-Release 1 normally open - 1 normally closed contact	N5PEX1137
Mushroom Head (Red), Push-Key Release 1 normally closed contact	N5PEX1138
Mushroom Head (Red), Push-Key Release 1 normally open - 1 normally closed contact	N5PEX1139

Features include: Nema / UL approved 0.063” type 304 stainless steel enclosure (4" x 3.5" x 3"), mounting provisions on top & bottom, stainless screws, clearly labeled “Emergency Stop” legend, Outdoor rated (IP66, Type 4, 4X, 12)

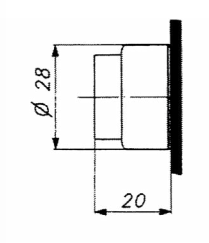
DIMENSIONS

Round Operators - Push-Buttons

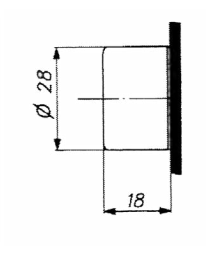
N5CPN-G
N5XPN-G



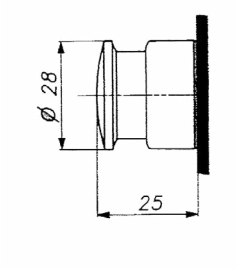
N5CPN-S
N5XPN-S



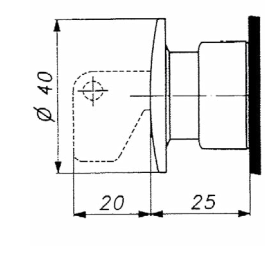
N5CPN-E



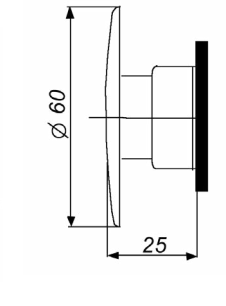
N5CEM3-N
N5XEM3-N
N5CER3RN
N5XER3RN



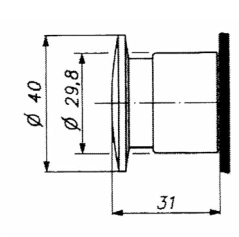
N5CEM4-N
N5XEM4-N
N5CER4RN
N5XER4RN
N5CEC4RN-



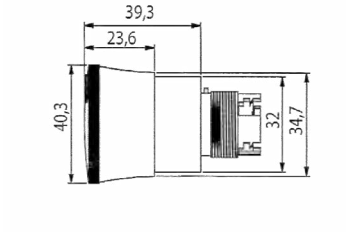
N5CEM6-N
N5XEM6-N



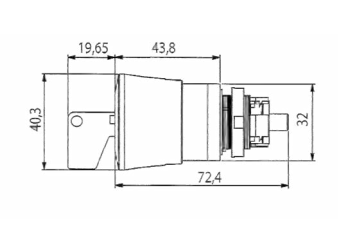
N5CET4-N-
N5XET4-N-



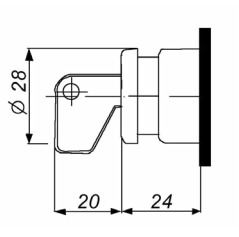
N5XER4RAN/W



N5XEC4RA-95N

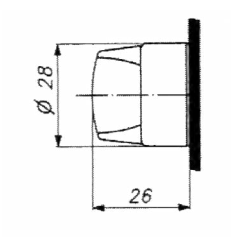


N5CPCN- - -
N5XPCN- - -

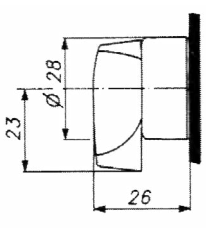


Round Operators - Selector Switches

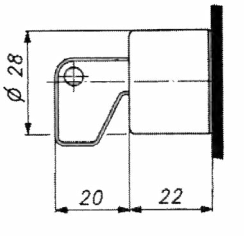
N5CSM-
N5XSM-



N5CSV-
N5XSV-

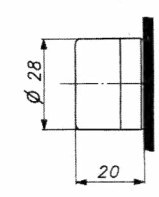


N5CPCN- - -
N5XPCN- - -

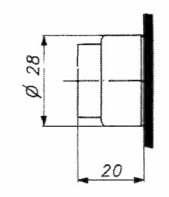


Round Operators - Illuminated Push-Buttons and Selector Switches

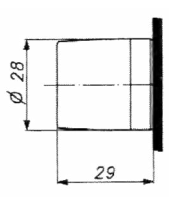
N5CPL-G-
N5XPL-G-



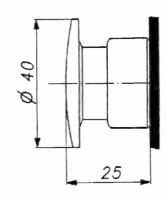
N5CPL-S-
N5XPL-S-



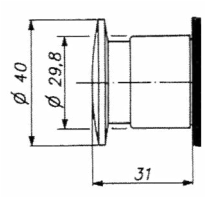
N5CPL-E-
N5XPL-E-



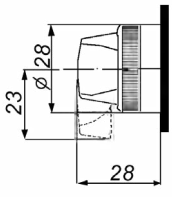
N5CEM4-L
N5XEM4-L



N5CET4-L-
N5XET4-L-

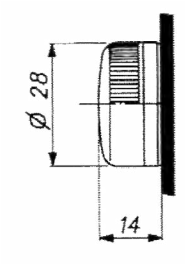


N5CSL- - -
N5XSL- - -
N5CSA- - -
N5XSA- - -

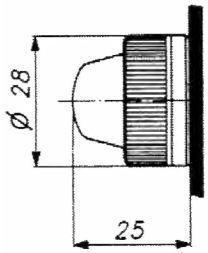


Round Operators - Pilot Lights

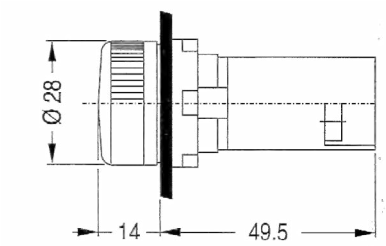
N5CL- -
N5XL- -



N5CL-V

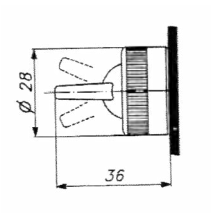


N5XU- -

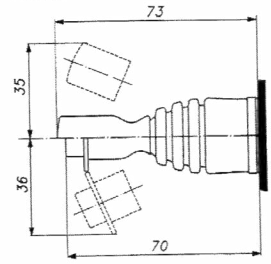


Round Operators - Other Devices

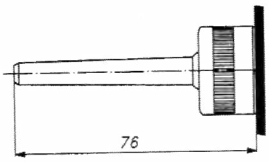
N5XC-



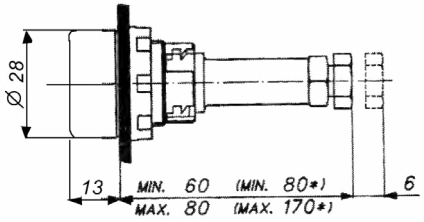
N5CMN- -
N5XMN- -



N5XMB- -

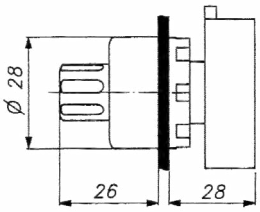


N5CRG
N5XRG



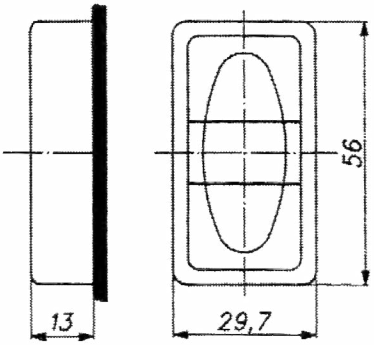
*with accessory N5ACVLR

N5CZ
N5XZ

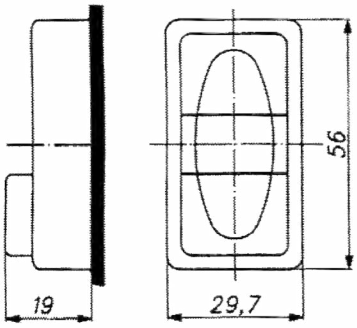


Square Operators - Double Function Push-Buttons

N5DPL- - G - -



N5DPL- - S - -



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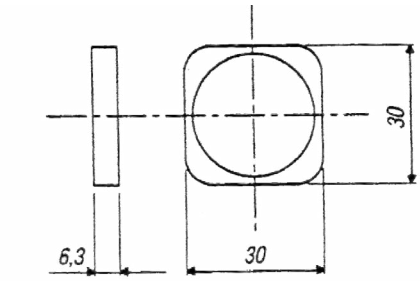
DIMENSIONS

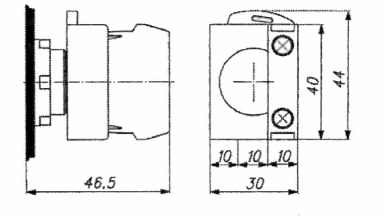
Square Operators - Other Devices

Adaptor
N5ARSN1

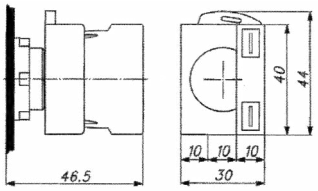


Contact Blocks

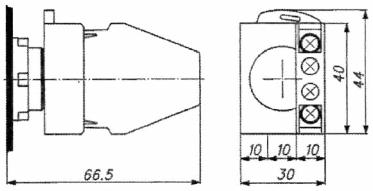
N5B01V- /



N5B01FN /

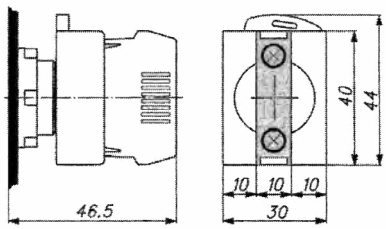


N5B011VN
N5B02VN
N5B20VN

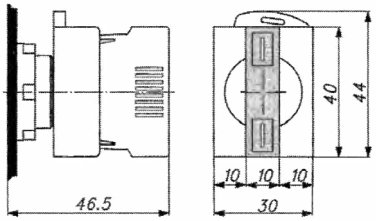


Power Supplies

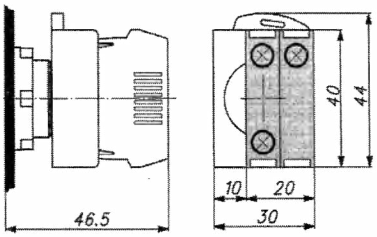
N5PDNV0
N5PRLV -
N5PRDV-



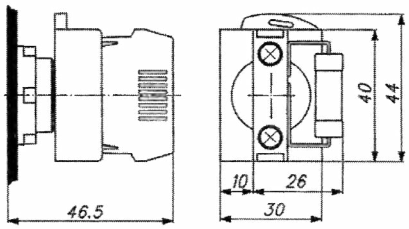
N5PDNF0



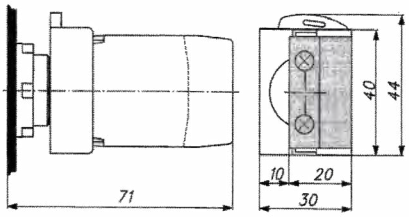
N5PRNV-
N5PDTV0
N5PRTV-



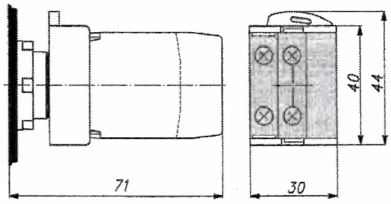
N5PREV-



N5PTNV-

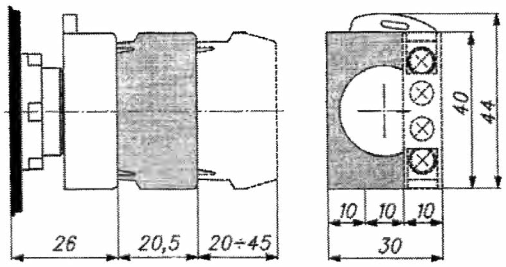


N5PDMV-/



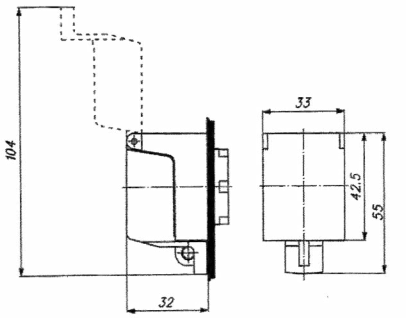
Push-On / Push-Off Devices

N5ACDPP



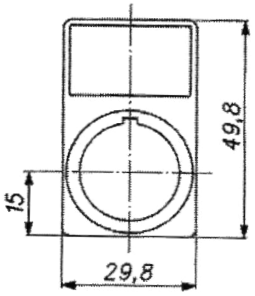
Protection Cover

N5ACRCL

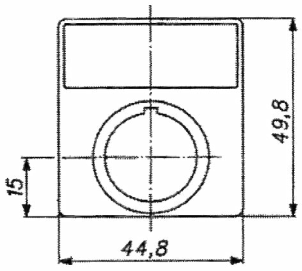


Insert Holders and Plates

N5ARTBS

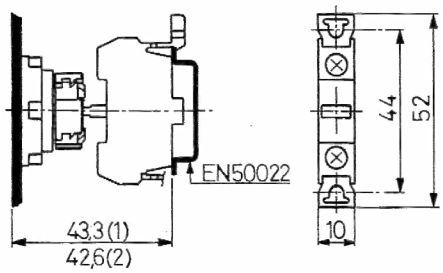


N5ARTBM



Contact Blocks

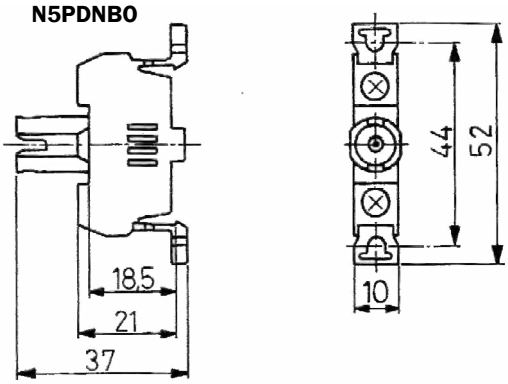
N5B01BN
N5B10BN



(1) With insert holder
(2) Without insert holder

Power Supplies

N5PDNB0



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Industrial Electrical Controls

SPRINGER controls company

PILOT DEVICES

30MM (N7) PILOT DEVICES & PUSH BUTTON CONTROL STATIONS

- Full selection of 30mm style push buttons, selector switches, pilot lights, joysticks, along with custom assembled push button stations.

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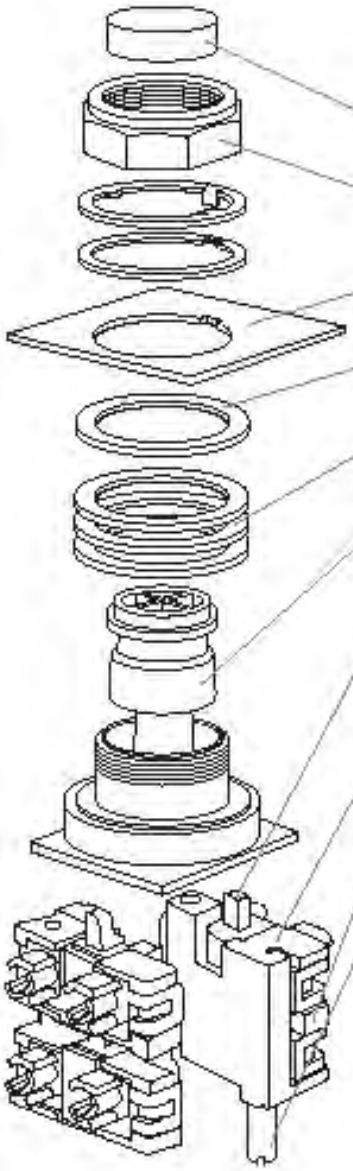
The rugged durability of the N7 (30mm) is engineered and manufactured from the inside out.



N7 push buttons are suitable for use in Types 1, 3, 3R, 4, 4X, 12 and 13 applications when mounted in enclosures rated for those same applications.

Snap-on caps come in eight different colors and in clear.

Octagonal mounting rings meet stringent automotive industry standards.

Nameplates are available in red or black, blank or with standard markings.

Rubber gasket helps seal push buttons against oil, water and dust.

Spacers are added or removed to accommodate different panel thicknesses. Bellows-type rubber seal keeps out contaminants.

Color-coded plungers tell you quickly and accurately whether contact is normally open or closed. On standard single block, NO is green; NC is red. On double block, NO/NC is white.

Modular contact blocks can be easily added to meet circuitry requirements.

Clear contact block covers facilitate fast, precise contact inspection.

Contact block mounting via a single captive screw saves installation time and money.

INDEX

Springer Controls offers a complete line of rugged, industrial grade pilot devices. We carry both the 30mm and 22mm oil-tight devices. (See separate section on 22mm N5 Pilot Devices) We custom assemble push button stations from 1 - 16 buttons in polycarbonate or metal enclosures. (page 20)

30MM (N7) PILOT DEVICES;

N7 Catalog Numbering System ..... 4 - 6
N7 Ordering Information / Contacts 7
Push-Buttons: Standard and Mushroom head 8
Pilot Lights and Illuminated Mushroom head 9
Illuminated Standard Push-Buttons 10
Key Selector Push-Button & Push-Button Accessories 11
Selector Switches - Metal Lever: 2-3-4 Position 12
Selector Switches - Colored Knob: 2-3-4 Position 13
Keyed Selector Switches: 2-3-4 Position 14
Illuminated Selector Switches 15
N7 Cam Code and Switching Sequence: Selector Switches 16
Joysticks 17
N7 Mounting Dimensions and Ratings 18
N7 Metal and Polycarbonate Enclosures 19
Legend Plates 20
Accessories 21, 22
N7 Technical Data 23
N7 Dimensions 24, 25

Push-Buttons & Push-Pull Operators

N7 PNG V 10

Contact Arrangement

Color Cap

N*	Black	A	Amber
R*	Red	L	Blue
V*	Green	M	Brown
G*	Yellow	B	White

*(*Colors Available for Mushroom Heads)*

Operator Type

PNS	Extended - Push-Button	EM6	Jumbo Mushroom Head PB
PNG	Flush - Push- Button	ER3	Twist Release Motor Head
PNE	Recessed Guard	ET3	Push-Pull Std. Mushroom Head
EM3	Std. Mushroom Head PB	ET6	Push-Pull Jumbo Mushroom Head

30mm Series

Selector Switch Operators

N7 SM B N 0 11

Contact Arrangement

Operator Function

0 ...	Maintained
5 ...	Spring Return from Right
1 ...	Spring Return from Left
3 ...	Spring Return from Both Left and Right

Knob Color

N	Black	G	Yellow
R	Red	L	Blue
V	Green		

Cam Number

See Tables on page 16

Operator Type

SM	Selector Switch Knob (standard)
SV	Selector Switch Metal Lever

30mm Series

CATALOG NUMBERING SYSTEM

Pilot Lights & Press-To-Test Lights

N7 L N V D J

Voltage

A ... 6V	D ... 24V	L ... 130V	W ... 415V
B ... 12V	J ... 120V	N ... 240V	Y ... 480V

Power Supply

T ...	Transformer Type
D ...	Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	I ... Clear
V ... Green	A ... Amber	B ... White	O ... No Lens

Function

N	Normal
M	Multifunction

Operator Type

L	Standard Pilot Light
T	Press-To-Test Pilot Light

30mm Series

Illuminated Push Button & Push-Pull Operators

N7 PL S V D J 11

Contact Arrangement

Voltage

A... 6V*	G ...48V	N ...220-25V	Y ... 480-500V
B ... 12V*	L ...130V*	U ... 380V	
D ... 24V*	J ... 110-120v	W ... 415V	*FV only

Power Supply

T ...	Transformer Type
R ...	Resistor Type
D ...	Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	B ... White
V ... Green	A ... Amber	M ... Brown	I ... Clear

Guard

S	Extended without guard
M	Flush with guard

Operator Type

PL	Lighted Push-Button
EL	Lighted Mushroom Head

30mm Series

Illuminated Selector Switch

N7	SL	D	R	T	0	11

Contact Arrangement

Voltage

A...6V*	G ...48V	N ...220-25V	Y ...480-500V
B ... 12V*	L ...130V*	U ...380V	
D ... 24V*	J ... 110-120V*	W ... 415V	*FV only

Power Supply

T ...	Transformer Type
D ...	Full Voltage Type

Lens Color

R ... Red	G ... Yellow	L ... Blue	B ... White
V ... Green	A ... Amber	M ... Brown	I ... Clear

Position Cam

D	... 2 Position	L	... 3 Position
B	... 3 Position	Z	... 3 Position

Operator Designation

SL	Selector Illuminated (Knob Type Only)

30mm Series

ORDERING INFORMATION AND CONTACTS

Ordering Information

- Use complete catalog number when ordering. Contacts can be included in part number. Replace the (•) with the suffix from the color table.
- Additional items available:

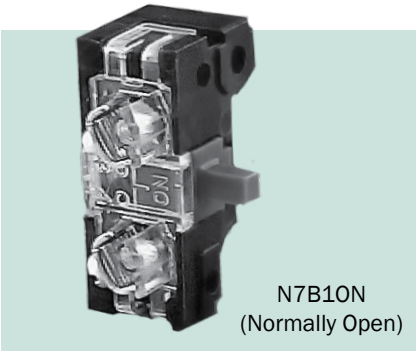
Accessories..... page 21/22
Legend Plates..... page 20
Ratings & Dimensions ..... page 24 - 26

Contact Table

For this Contact Arrangement	SCC Catalog No.	GE Catalog No.
1 N.O.	N7B10N	072-10
1 N.C.	N7B01N	077-01
1 N.O. - N.C.	N7B11N	077-11
1 N.O. (early close)	N7B10A	077-10A
1 N.C. (late open).	N7B01R	077-01R

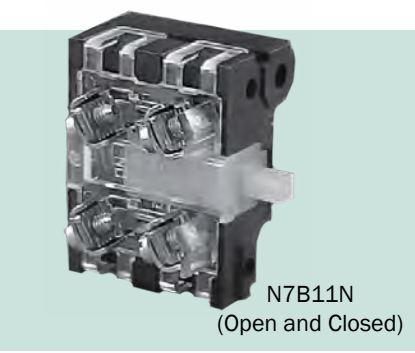
Contact Ratings

NEMA Rating	Amp. Rating Max. Volts	VA Make	Break	Continuous	Make	Break
Maximum AC Contact Rating Per Pole, 50 or 60 Hz						
A600	120	60	6	10	7200	720
	240	30	3			
	480	15	1.5			
	600	12	1.2			
Maximum DC Contact Rating Per pole						
P600	125	1.1	5	138		
	250	0.55		138		
	301-600	0.2		120		



N7B10N
(Normally Open)

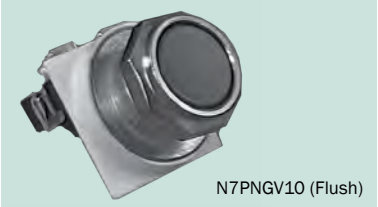
N7B01N
(Normally Closed)



N7B11N
(Open and Closed)

PUSH BUTTONS; STANDARD & MUSHROOM HEAD

N7PNSV10 (Extended)


N7PNGV10 (Flush)

N7EM6R01 (Recessed)

Push Buttons - Momentary Operation

Operator	Contact Arrangement	SCC Catalog No.
Extended	Without Contacts	N7PNS • 00
	1 N.O.	N7PNS • 10
	2 N.O.	N7PNS • 20
	1 N.C.	N7PNS • 01
	2 N.C.	N7PNS • 02
	1 N.O. , 1 N.C.	N7PNS • 11
Flush	Without Contacts	N7PNG • 00
	1 N.O.	N7PNG • 10
	2 N.O.	N7PNG • 20
	1 N.C.	N7PNG • 01
	2 N.C.	N7PNG • 02
	1 N.O. , 1 N.C.	N7PNG • 11
Recessed	Without Contacts	N7PNE • 00
	1 N.O.	N7PNE • 10
	2 N.O.	N7PNE • 20
	1 N.C.	N7PNE • 01
	2 N.C.	N7PNE • 02
	1 N.O. , 1 N.C.	N7PNE • 11

N7EM6R01

N7ER3R01

Mushroom Operators - Momentary Operation

Operator	Contact Arrangement	SCC Catalog No.
35mm Mushroom	Without Contacts	N7EM3 • 00
	1 N.O.	N7EM3 • 10
	2 N.O.	N7EM3 • 20
	1 N.C.	N7EM3 • 01
	2 N.C.	N7EM3 • 02
	1 N.O. , 1 N.C.	N7EM3 • 11
60mm Mushroom	Without Contacts	N7EM6 • 00
	1 N.O.	N7EM6 • 10
	2 N.O.	N7EM6 • 20
	1 N.C.	N7EM6 • 01
	2 N.C.	N7EM6 • 02
	1 N.O. , 1 N.C.	N7EM6 • 11

Mushroom Operators - Latched Operation *(Twist to Release)*

Operator	Contact Arrangement	SCC Catalog No.
35mm Mushroom	Without Contacts	N7ER3R00
	1 N.O.	N7ER2R10
	2 N.O.	N7ER3R20
	1 N.C.	N7ER3R01
	2 N.C.	N7ER3R02
	1 N.O. , 1 N.C.	N7ER3R11

Mushroom Operators - Push-Pull

Operator	Contact Arrangement	SCC Catalog No.
35mm Mushroom	Without Contacts	N7ET3 • 00
	1 N.O.	N7ET3 • 10
	2 N.O.	N7ET3 • 20
	1 N.C.	N7ET3 • 01
	2 N.C.	N7ET3 • 02
	1 N.O. , 1 N.C.	N7ET3 • 11

Operator	Contact Arrangement	SCC Catalog No.
60mm Mushroom	Without Contacts	N7ET6 • 00
	1 N.O.	N7ET6 • 10
	2 N.O.	N7ET6 • 20
	1 N.C.	N7ET6 • 01
	2 N.C.	N7ET6 • 02
	1 N.O. , 1 N.C.	N7ET6 • 11

• COLOR TABLE

Use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Colors	Black	Red	Green	Yellow	Brown[1]	Blue[1]	White[1]	Amber[1]
Caps	N	R	V	G	M	L	B	A

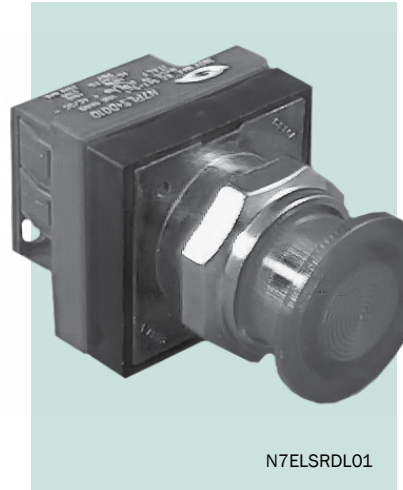
Note:
[1] *Colors not available in mushroom heads*

PILOT LIGHTS AND ILLUMINATED MUSHROOM HEAD

N7LNRTJ

Pilot Lights

Type	Function	SCC Catalog No.
Full Voltage	Normal	N7LN • D*
Transformer	Normal	N7LN • T*
Push to Test[1]		
Full Voltage	Normal	N7TN • D*
Transformer	Normal	N7TN • T*



N7ELSRDL01

Illuminated Mushroom Push Button - Momentary Operation

Type	Function	SCC Catalog No.
Full Voltage	1 N.O.	N7ELS•D*10
	2 N.O.	N7ELS•D*20
	1 N.C.	N7ELS•D*01
	2 N.C.	N7ELS•D*02
	1 N.O. - 1 N.C.	N7ELS•D*11
Transformer	1 N.O.	N7ELS•T*10
	2 N.O.	N7ELS•T*20
	1 N.C.	N7ELS•T*01
	2 N.C.	N7ELS•T*02
	1 N.O. - 1 N.C.	N7ELS•T*11

COLOR TABLE

Lens Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

Full Voltage Suffix	No Bulb O	6V A	12V B	24V D	130V L	230 V N
Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y	

Note:

- *All Pilot Lights and Illuminated Mushroom Push Buttons come with LED bulb.*

ILLUMINATED STANDARD PUSH BUTTONS - Momentary Operation

N7PLVDL10

N7PLMVDL10

N7PLSVTJ10

Full Voltage Type	Contact Arrangement	SCC Catalog No.
Extended	Without Contacts	N7PLS•D*00
	1 N.O.	N7PLS•D*10
	2 N.O.	N7PLS•D*20
	1 N.C.	N7PLS•D*01
	2 N.C.	N7PLS•D*02
	1 N.O. , 1 N.C.	N7PLS•D*11
Flush with Guard	Without Contacts	N7PLM•D*00
	1 N.O.	N7PLM•D*10
	2 N.O.	N7PLM•D*20
	1 N.C.	N7PLM•D*01
	2 N.C.	N7PLM•D*02
	1 N.O. , 1 N.C.	N7PLM•D*11

Transformer Type	Contact Arrangement	SCC Catalog No.
Extended	Without Contacts	N7PLS•T*00
	1 N.O.	N7PLS•T*10
	2 N.O.	N7PLS•T*20
	1 N.C.	N7PLS•T*01
	2 N.C.	N7PLS•T*02
	1 N.O. , 1 N.C.	N7PLS•T*11
Flush with Guard	Without Contacts	N7PLM•T*00
	1 N.O.	N7PLM•T*10
	2 N.O.	N7PLM•T*20
	1 N.C.	N7PLM•T*01
	2 N.C.	N7PLM•T*02
	1 N.O. , 1 N.C.	N7PLM•T*11

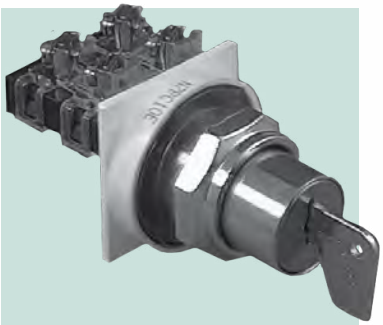
COLOR TABLE							
Lens Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I

*					
Full Voltage Suffix	No Bulb O	6V A	12V B	24V D	130V L
Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y

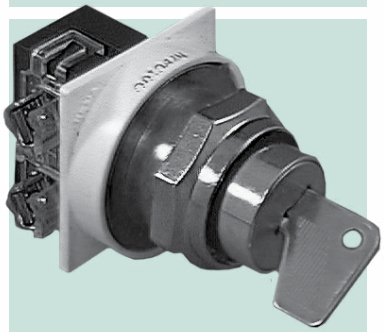
Note:

- *All Illuminated Push Buttons come with LED bulb.*

KEY SELECTOR PUSH BUTTONS & PUSH BUTTON ACCESSORIES



N7PC10E



N7PC10C

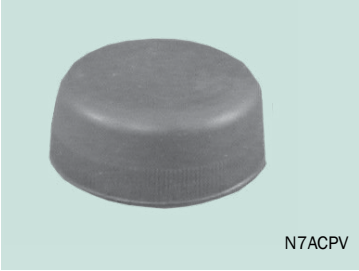
Key Selector Push Buttons

Contact Arrangement	Lockable Position	SCC Catalog No.
Without Contacts	Released	N7PC00E
1 N.O.	Released	N7PC10E
2 N.O.	Released	N7PC20E
1 N.C.	Released	N7PC01E
2 N.C.	Released	N7PC02E
1 N.O. - 1 N.C.	Released	N7PC11E

Contact Arrangement	Lockable Position	SCC Catalog No.
Without Contacts	Depressed	N7PC00F
1 N.O.	Depressed	N7PC10F
2 N.O.	Depressed	N7PC20F
1 N.C.	Depressed	N7PC01F
2 N.C.	Depressed	N7PC02F
1 N.O. - 1 N.C.	Depressed	N7PC11F

Contact Arrangement	Lockable Position	SCC Catalog No.
Without Contacts	Both	N7PC00C
1 N.O.	Both	N7PC10C
2 N.O.	Both	N7PC20C
1 N.C.	Both	N7PC01C
2 N.C.	Both	N7PC02C
1 N.O. - 1 N.C.	Both	N7PC11C

N7AG02, N7AG01, N7AG03



N7ACPV

N7ACPLT

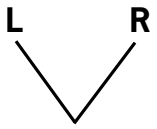
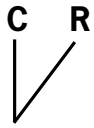
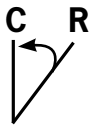
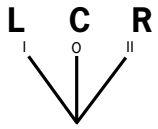
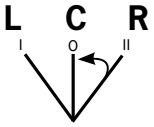
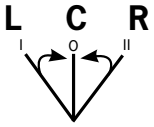
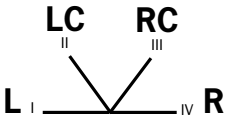
Push Button Accessories

Description	SCC Catalog No.
Guard Rings for Push Buttons	
Unguarded (Extended)	N7AG02
Guarded (Flush)	N7AG01
Extended Guard (Recessed)	N7AG03

Water Resistant Boots for Push Buttons	
Black	N7ACPN
Red	N7ACPR
Green	N7ACPV
Yellow	N7ACPG
Translucent	N7ACPT
Translucent Water Resistant Boots for Illuminated Push Buttons, Pilot Lights and Press-To-Test Pilot Lights	N7ACPLT

Additional accessories see pages 21 and 22

SELECTOR SWITCHES WITH METAL LEVER

Description	Function	Code	Contact Arrangement	SCC Catalog No.
2 Position Maintained		D	1 N.O. - 1 N.C.	N7SVD0011
		I	1 N.O. - 1 N.C.	N7SVI0011
2 Position Spring Return From Right		I	1 N.O. - 1 N.C.	N7SVI0511
3 Position Maintained		B (HOA)	1 N.O. - 1 N.C.	N7SVB0011
		Z	2 N.O. - 2 N.C.	N7SVZ0022
3 Position Spring Return From Right		Z	2 N.O. - 2 N.C.	N7SVZ0522
3 Position Spring Return To Center		Z	2 N.O. - 2 N.C.	N7SVZ0322
4 Position Maintained		X	2 N.O. - 2 N.C.	N7SVX0022

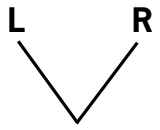
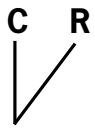
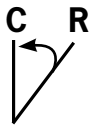
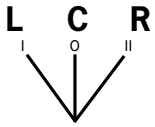
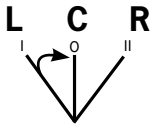
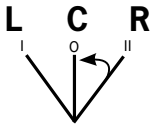
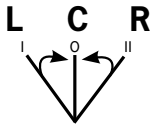
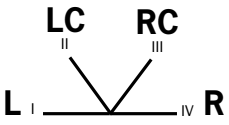
Notes:
- Cam Function Code Operation, page 16
- For operator only, replace last 2 digit with “00”. Omit contact price

Ordering Information

Items: • Accessories - page 21/22 • Legend Plates - page 20 • Ratings & Dimensions - page 24/25

SELECTOR SWITCHES WITH COLORED KNOB

(see page 16 for Contact Switching Sequence)

Description	Function	Code	Contact Arrangement	Catalog No.
2 Position Maintained		D	1 N.O. - 1 N.C.	N7SMD•011
		I	1 N.O. - 1 N.C.	N7SMI•011
2 Position Spring Return From Right		I	1 N.O. - 1 N.C.	N7SMI•511
3 Position Maintained		B	1 N.O. - 1 N.C.	N7SMB•011
		U	2 N.O. - 2 N.C.	N7SMU•022
		Z	2 N.O. - 2 N.C.	N7SMZ•022
3 Position Spring Return From Left		B	1 N.O. - 1 N.C	N7SMB•111
3 Position Spring Return From Right		B	1 N.O. - 1 N.C	N7SMB•511
3 Position Spring Return To Center		B	1 N.O. - 1 N.C	N7SMB•311
4 Position Maintained		X	2 N.O. - 2 N.C.	N7SMX•022

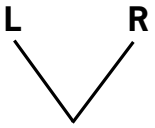
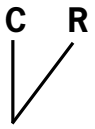
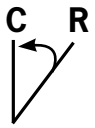
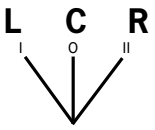
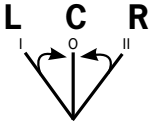
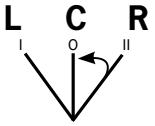
Notes:
-Cam Function Code Operation, page 16 -For operator only, replace last 2 digit with “00”.
Omit contact price

Color Table •Use complete catalog number when ordering. Replace (•) with the suffix from the table below

Colors	Black	Red	Green	Yellow	Blue
Knobs	N	R	V	G	L

KEYED SELECTOR SWITCHES

(see page 16 for Contact Switching Sequence)

Description	Function	Code	Contact Arrangement	Key Removal	SCC Catalog No.
2 Position Maintained		D	1 N.C. - 1 N.O.	L	N7SCD0A1195
				R	N7SCD0E1195
				L-R	N7SCD0K1195
2 Position Maintained		I	1 N.C. - 1 N.O.	C	N7SCI0C1195
				R	N7SCI0E1195
				C-R	N7SCI0N1195
2 Position with Spring Return From Right		I	1 N.C. - 1 N.O..	C	N7SCI5C1195
3 Position Maintained		B	1 N.C. - 1 N.O.	L	N7SCB0A1195
				C	N7SCB0C1195
				R	N7SCB0E1195
				L-C	N7SCB0H1195
				L-R	N7SCB0K1195
				C-R	N7SCB0T1195
				L-C-R	N7SCB0T1195
3 Position Maintained		B	2 N.O. - 2 N.C.	C	N7SCB3C2295
3 Position Maintained with Spring Return From Right		Z	2 N.O. - 2 N.C.	C	N7SCZ5C2295

Notes:
-For key removal option on 4 position consult factory.
-Cam function code operation, pg. 16

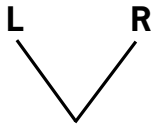
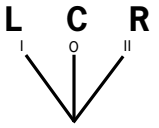
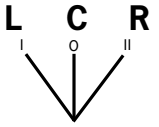
Ordering Information

• Accessories - page 21/22 • Legend Plates - page 20 • Ratings & Dimensions - page 24/25

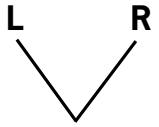
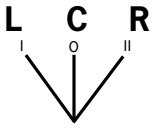
ILLUMINATED SELECTOR SWITCHES

(see page 16 for Contact Switching Sequence)

Full Voltage Type

Description	Function	Code	Contact	SCC Catalog No.
2 Position Maintained		D	Without Contact	N7SLD•D*00
			1 N.C. - 1 N.O.	N7SLD•D*11
3 Position Maintained		B	Without Contact	N7SLB•D*00
		Z	Without Contact	N7SLZ•D*00
3 Position Maintained		B	1 N.C. - 1 N.O.	N7SLB•D*11
		Z	1 N.C. - 1 N.O.	N7SLZ•D*11

Transfomer Type

Description	Function	Code	Contact	SCC Catalog No.
2 Position Maintained		D	Without Contact	N7SLD•T*00
			1 N.C. - 1 N.O.	N7SLD•T*11
3 Position Maintained		B	1 N.C. - 1 N.O.	N7SLB•T*11
		Z	1 N.C. - 1 N.O.	N7SLZ•T*11

*					
Full Voltage Suffix	No Bulb O	6V A	12V B	24V D	130V L
Transformer Suffix	120V J	240-250V N	380V U	415V W	480V Y

Notes:
-Cam Function Code Operation, page 16

● **Color Table** • Use complete catalog number when ordering. Replace (•) with the suffix from the table below					
Colors	Black	Red	Green	Yellow	Blue
Knobs	N	R	V	G	L

Notes:
-All Illuminated Selector Swtches come with LED bulb

SELECTOR SWITCHES - CAM CODE AND SWITCHING SEQUENCE

N7SNIN011

2 Position Selector Switch

Location of Contact Block (Front View)		Contact Block			Cam Code			
		Catalog No.	Symbol	Rod Color	D		I	
					Left	Right	Center	Right
Left	N.O.	N7B10		Green	O	X	O	X
	N.C.	N7B01		Red	X	O	X	O
Right	N.O.	N7B10		Green	O	X	O	X
	N.C.	N7B01		Red	X	O	X	O

3 Position Selector Switch

Location of Contact Block (Front View)		Contact Block			Cam Code								
		SCC Catalog No.	Symbol	Rod Color	B			Z			U		
					Left	Center	Right	Left	Center	Right	Left	Center	Right
Left	N.O.	N7B10		Green	O	O	X	O	O	X	O	O	X
	N.C.	N7B01		Red	X	O	O	X	X	O	X	O	O
Right	N.O.	N7B10		Green	O	O	X	X	O	O	O	O	X
	N.C.	N7B01		Red	X	O	O	O	X	X	O	X	O

N7SVZ0322

4 Position Selector Switch (x cam code)

Location of Contact Block (Front View)		Contact Block			Cam Code			
		SCC Catalog No.	Symbol	Rod Color	Left	Left Center	Right Center	Right
Left	N.O.	N7B10		Green	O	O	X	O
	N.C.	N7B01		Red	X	O	O	O
Right	N.O.	N7B10		Green	O	X	O	O
	N.C.	N7B01		Red	O	O	O	X

Standard Contact Blocks

Contact Configuration	Operating Plunger Color Code	SCC Catalog No.
1 N.O. - 1 N.C.	White	N7B11N
1 N.O.	Green	N7B10N
1 N.C.	Red	N7B01N
1 N.O. (early close)	White	N7B01A
1 N.C. (late open)	White	N7B01R

Ordering Information

Items: • Accessories - page 21/22 • Legend Plates - page 20 • Ratings & Dimensions - page 24/25

JOYSTICKS

Joystick Operator

The Joystick Operator is available in three (left-center-right) and five (left-up-right-down-center) position, maintained and spring return (to center) types. They are also available with a release button on the end of the operator which must be depressed in order to operate the joystick

N7MN2T22N

Joystick *(Legend plate note included)*

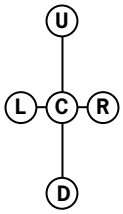
Type	Without Release Button		With Release Button	
	SCC Catalog No.	GE Catalog No.	SCC Catalog No.	GE Catalog No.
3 Positions Maintained	N7MN2F22N	077MTS2422	N7MB2F22N	077MTS2422B
3 Positions Spring Return to Center	N7MN2T22N	077MT24S22	N7MB2T22N	077MT24S22B
5 Positions Maintained	N7MN4F22N	077MTS123422	N7MB4F22N	077MTS123422B
5 Positions Spring Return to Center	N7MN4T22N	077MT1234S22	N7MB4T22N	077MT1234S22B

Three Position Joystick *(Contact Sequence)*

Type	Contacts		Rod Color	Joy Stick Position (Front View)		
	Location (Front View)	Type and Symbol		Left	Center	Right
3 Positions, Maintained and Spring Return to Center With or Without Release Button	Left		Green	X	O	O
			Red	O	O	X
	Right		Green	O	O	X
			Red	X	O	O

N7MB4T22N

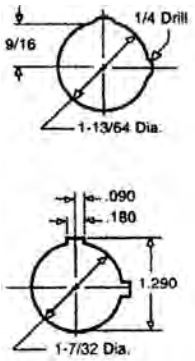
Five Position Joystick *(Contact Sequence)*



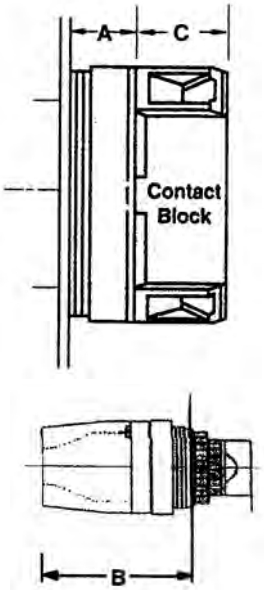
Type	Contacts		Rod Color	Joy Stick Position (Front View)				
	Location (Front View)	Type and Symbol		Left	Up	Center	Down	Right
Five Positions, Maintained and Spring Return to Center With or Without Release Button	Left		Green	O	O	O	X	O
			Red	O	X	O	O	O
	Right		Green	O	O	O	O	X
			Red	X	O	O	O	O

Description	SCC Catalog No.
Replacement Boot for Joystick	N7ACMN

Panel Drilling



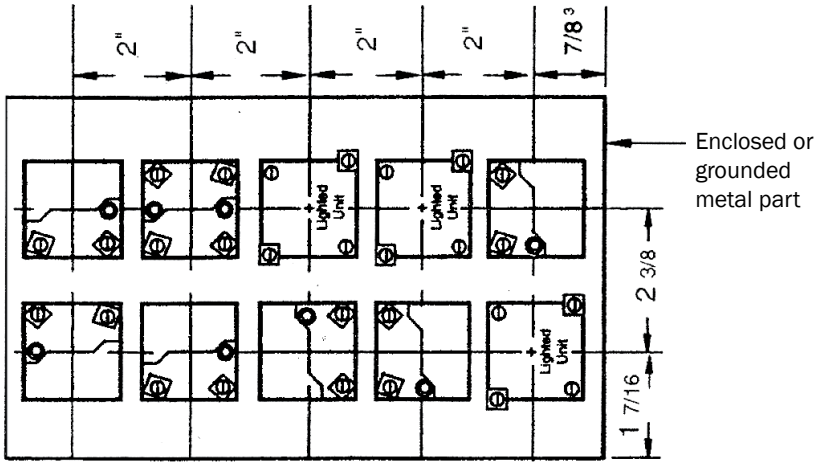
Rear of Mounting Panel



Contact Ratings

NEMA Rating	Max. Volts	Amp. Rating Make	Amp. Rating Break	Amp. Rating Continuous	VA Make	VA Break
Maximum AC Contact Rating Per Pole, 50 or 60 Hz						
A600	120	60	6	10	7200	720
	240	30	3			
	480	15	1.5			
	600	12	1.2			
Maximum DC Contact Rating Per Pole						
P600	125	1.1		5	138	
	250	0.55			138	
	301-600	0.5			120	

Minimum Center-line Clearance



Dimensions

Depth Behind Panel	Push Buttons & Selector Switches	Push-Pull Units Non-Illuminated	Illuminated FV	Illuminated XFMR
A[3]	21/32	1 11/32		
B	---	---	1 7/8"	2 3/8"
C[4]	3/4	3/4	---	---

Maximum Panel Thickness, Inches	Spacers Required
1/16	3
1/8	2
3/16	1

Panels thicker than 3/16" must be counter bored.

Notes:

1. Use the trim washer if no legend plate is used. Discard the trim washer when using a legend plate.
2. When using Legend Plate, both horizontal and vertical centerlines between operators must be 2 1/2" minimum. When using either 2 1/4" mushroom head or lever selector switch, both horizontal and vertical centerlines between operators must be 2 1/4" minimum.
3. Depth when three neoprene spacers are used. Reduce depth by 1/16" for each spacer omitted.
4. Depth per contact block. Maximum contact stack depth is three (3) inches.

SEPARATE ENCLOSURES FOR TYPE N7 OILTIGHT PILOT DEVICES

N7 (30mm) surface mounting enclosures are available from one through sixteen element openings. All enclosures are UL approved. Enclosures will accommodate non-illuminated operators with up to two contact blocks (1 per side). Consult factory for stations with 7 through 16 elements and all custom assembled push button stations.

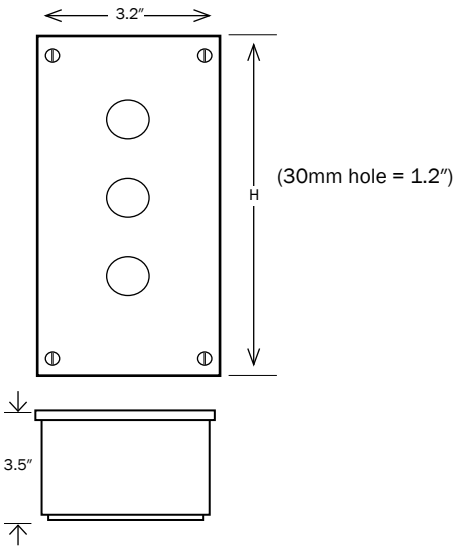
N7 Separate Enclosures; Metal and Polycarbonate

Enclosures Only (No Operators or Contacts)

Element	Type 3R, 4X Polycarbonate Surface Mounted Enclosure SCC Catalog No.	Type 12 Metal Surface Mounted Enclosure SCC Catalog No.
1	N7EPE01	N7SPPB-1
2	N7EPE02	N7SPPB-2
3	N7EPE03	N7SPPB-3
4	***consult factory*	N7SPPB-4
5		N7SPPB-5
6		N7SPPB-6
7-16		***consult factory*

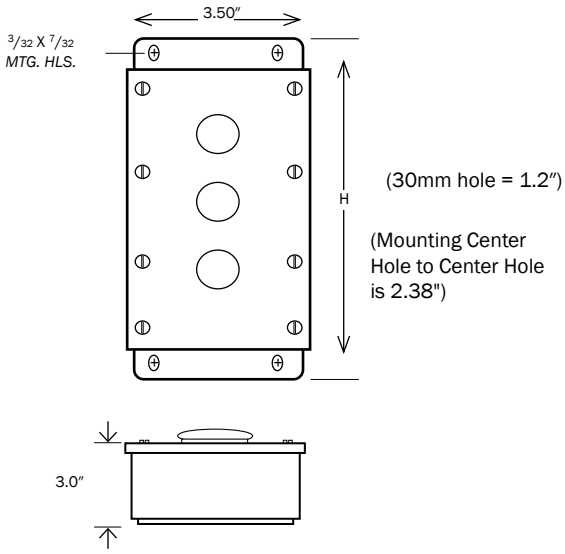
Enclosure Dimensions

NEMA Polycarbonate 3R, 4X



Number of Elements	W	H	D
1	3.2"	4.3"	3.5"
2		6.7"	
3		9.1"	

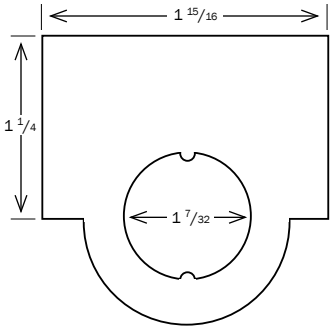
NEMA 12 Painted Metal



Number of Elements	W	H	D
1	3.50"	3.50"	3.0"
2		5.75"	
3		8.00"	
4		10.25"	
5		12.50"	
6		14.75"	

Ordering Information:
-Select Enclosure Desired by Catalog Number **-Extra Deep Enclosures Available**

Standard Plates *(Listed below; Aluminium with Black Surface)*

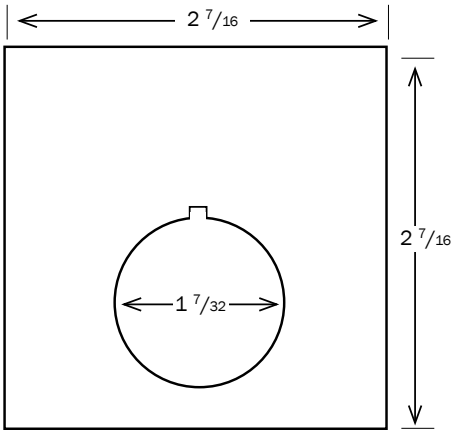


Standard Size *Character height is 1/8 inch on standard plate*

SCC Catalog No.
N7TNA_● (see below)
N7TNA-X (custom)

Marking	SCC Catalog No.	Marking	SCC Catalog No.	Marking	SCC Catalog No.
Pushbutton		**Pushbutton**		**2 Pos. Selector Switch**	
				Man-Auto	N7TNA231
Start	N7TNA41	Raise	N7TNA59	Off-On	N7TNA230
Stop	N7TNA40	Lower	N7TNA60	Jog-Run	N7TNA234
Fast	N7TNA49	Jog	N7TNA51	Up-Down	N7TNA232
Slow	N7TNA48	Inch	N7TNA50	**3 Pos. Selector Switch**	
Open	N7TNA47	Run	N7TNA52	Auto-Off-Hand	N7TNA310
Close	N7TNA46	Forward	N7TNA55	Open-Off-Close	N7TNA312
Off	N7TNA54	Reverse	N7TNA56	Up-Off-Down	N7TNA313
On	N7TNA53	Power On	N7TNA42	**4 Pos. Selector Switch**	
Up	N7TNA45	(Blank)	N7TNA	1-2-3-4	N7TNA4
Down	N7TNA44			(Blank)	N7TNC

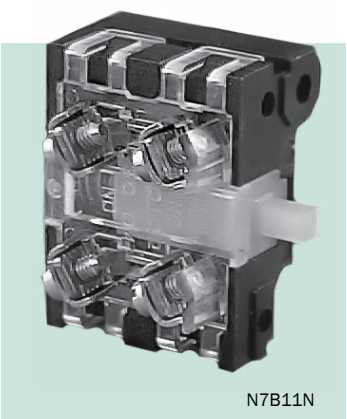
Extra Large Plates



Extra large Plates *Character height is 1/4 on extra large plate*

	Brushed Aluminized Surface	Plastic
	Catalog No.	Catalog No.
Blank	N7TNBM	N7TMBP
Engraved	N7TNBM-X	N7TMBP-X

ACCESSORIES


N7B11N

Standard Contact Blocks

Contact Configuration	Operating Plunger Color Code	Standard Contact Block SCC Catalog No.	Standard Contact Block GE Catalog No
1 N.O. - 1 N.C.	White	N7B11N	077-11
1 N.O.	Green	N7B10N	077-10
1 N.C.	Red	N7B01N	077-01
1 N.O. (early close)	White	N7B10A	077-10A
1 N.C. (late open)	White	N7B01R	077-01R

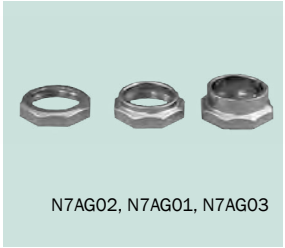
LED Bulbs

Description	Volts Nominal	Watts	SCC Catalog No.
Multi-LED	6	0.59	BA9S06L •
	12	0.78	BA9S12L •
	24	0.84	BA9S24L •
	48	1.12	BA9S48L •
	110	1.40	BA9S110L •
	230		BA9S230L •

• COLOR TABLE

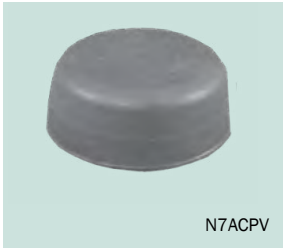
- use complete catalog number when ordering. Replace the (•) with the suffix from the table below.

Color	Red	Green	Yellow	Blue	White	Amber	Clear
Color Code	R	V	G	L	B	A	I


N7AG02, N7AG01, N7AG03

Push Button Accessories

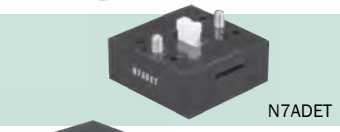
Description	SCC Catalog No.
Guard Rings for Push Buttons	
Unguarded (Extended)	N7AG02
Guarded (Flush)	N7AG01
Extended Guard (Recessed)	N7AG03


N7ACPV

Water Resistant Boots for Push Buttons	
Black	N7ACPN
Red	N7ACPR
Green	N7ACPV
Yellow	N7ACPG
Translucent	N7ACPT
Translucent Water Resistant Boots for Illuminated Push Buttons, Pilot Lights and Press-To-Test Pilot Lights	N7ACPLT

N7ACPLT

Accessories

	Description	SCC Catalog No.
N7ACST	Translucent Water Resistant Boots for Knob Operated Standard and Illuminated Selector Switches	N7ACST
N7ADIM	Mechanical Interlock for Push Buttons (Interlocks two buttons so they cannot be simultaneously depressed)	N7ADIM
N7ADAMP	Maintained Interlock for Push Buttons (Interlocks two buttons so that when one is depressed, the other is released-maintained operation)	N7ADAMP
N7ADPP	Push-On/Push-off (Converts standard momentary operator to push-on/ push-off)	N7ADPP
N7CHG	Guard Ring Wrench (for Octagonal Guard Rings)	N7CHG
N7AOPZ	Potentiometer operator only	N7AOPZ
077C3095	Key (2-3-4 Position/Non-Illuminated Selector Swich)	077C3095
N7ATPF	Hole Plug, 1 & 13 -Grey	N7ATPF
 N7ADET	Push-Pull module for Mushroom	N7ADET
N7AXG	Lockout Attachments	N7AXG

SPRINGER controls company

TECHNICAL DATA

Compliance With Standards
IEC 947.5.1 - VDE 0660 - NFC 63140
CEI EN 60947.5.1 - UTE - BSI - NEMA
CENELEC EN 50007

Approvals
UL (USA) - CSA (Canada) - RINA - Lloyd's Register of Shipping

Climactic Protections
The standard versions are suitable for use in the following climates:

Temperate Climate	cat. 23/50 (DIN 50014)
Wet Climate	cat. 23/83 (DIN 50015)
Hot Wet Climate	cat. 40/92 (DIN 50015)
Var. Wet Climate	cat. FW24 (DIN 50016)

Temperature Ranges

Operation	-25° C tot +70° C
Storage	-40° C tot +70° C

Protection Degree of Operators
IP65 according to IEC 529 when they are mounted into enclosures with the same or a higher degree of protection.
IP66 with appropriate protective caps.

Protection Degree of Terminals
IP2x according to IEC 529.
Fully integrated on signaling units, illuminated push-buttons and illuminated selector switches. With accessory on contact blocks for control units.

Rated Insulation Voltage
690V according to EN 60947.1

Impulse Withstand Voltage
4kVaccording to EN 60947.1

Insulation Class
Group C according to VDE 0110

Electric Shocks Protection
Class 1 according to IEC 536

Short Circuit Protection
With fuses type gl of 10A according to IEC 947.5.1

Connection Terminals
Screw type with retractable clamp.
Clamping capacity of rigid and/or flexible conductors:
- minimum 22 AWG (0.32mm²)
- maximum 12 AWG (3.3 mm²)

Performances of the Contacts
- Slow acting
- Self-Cleaning
- NC forced breaking
- Double break

Electrical Performances

Rated thermal current Ith = 10 A

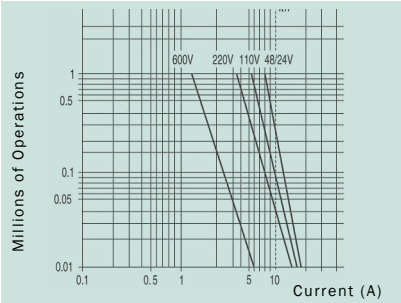
Performances according to IEC 947.5.1

Category AC15 (A600)								
Voltage Ue (V)	24	48	60	110	220	380	500	600
Current Ie (A)	10	10	10	6	3	2	1.5	1.2
Category DC13 (P600)								
Voltage Ue (V)	24	48	60	110	220	380	500	600
Current Ie (A)	5	2.7	2	1.1	0.55	0.3	0.22	0.2
Category DC13 (Q300) *(for illuminated push-buttons and illum. selector switches)*								
Voltage Ue (V)	24	48	60	110	220	300		
Current Ie (A)	2.5	1.4	1	0.55	0.27	0.2		

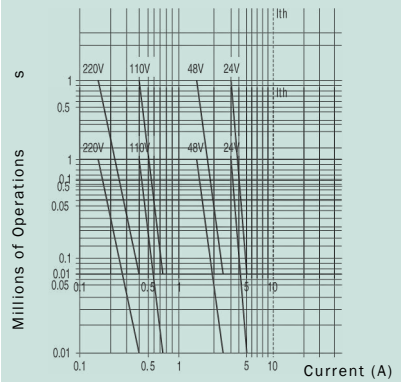
Performances according to CSA and UL

AC Heavy Duty (A600)
DC Standard Duty (P600)
(Q300) for illuminated push-button and illuminated selector switch.

Electrical Endurance
Alternative current 50/60 Hz cat. Ac15



Direct current cat. DC 13



Mechanical Endurance

Joysticks Key Push-Buttons Locking Emergency	$0.5x10^6$ op.
Knob Selector Switches Lever Selector Switches Key Selector Switches Illum. Selector Switches Selector Push-Buttons Timed Push-Buttons Illuminated Push-Buttons	$1x10^6$ op.
Momentary std. Push-Buttons Momentary mush. Push-Buttons	$3x10^6$ op.

Number of Contact Blocks

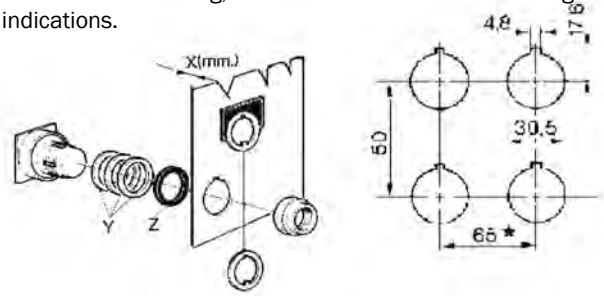
Momentary std. Push-Buttons Momentary mush. Push-Buttons	4 doubel pole (8 single pole)
Key Push-Buttons Locking Emergency	4 double pole (8 single pole)
Selector Switches (4 pos. types excl.)	6 double pole (6 single pole)
4 pos. Selector Switches	2 double pole
Selector Push-Buttons	6 double pole (6 single pole)
Joysticks 2 and 4 positions	4 double pole (4 single pole)
Illuminated Push-Buttons Illuminated Selector Switches	for different contacts configuration, contact our sales office.

Fitting of Units
The units of Series N7 are designed for fitting onto panels with a thickness between 1 and 7 mm, with holes of 30.5 mm diameter, according to the rules established by EN 60947.5.1.

A special metal ring supplied with each unit or one of the nameplates included among the fittings, enables the unit to be exactly positioned.

All equipment is supplied with a set of spacing rings to adjust variations in the thickness of the panel thus ensuring a uniform front protrusion.

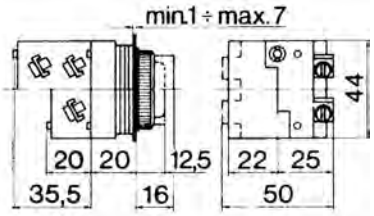
For a correct fitting, it needs to observe the diagram below and tables indications.



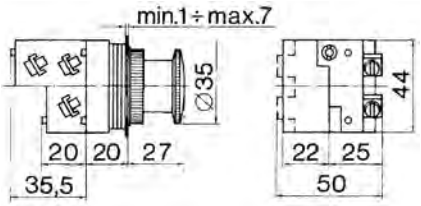
X	Y	Z
1÷2,5	3	1
3÷4,5	2	1
5÷6,5	1	1
7	–	1

Push-Buttons

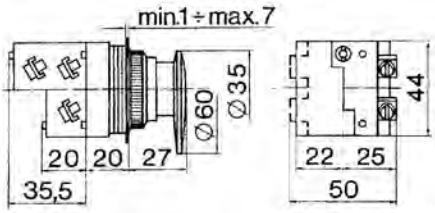
N7PN



N7EM3

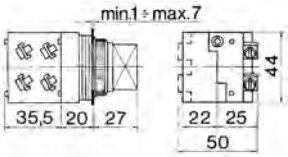


N7EM6

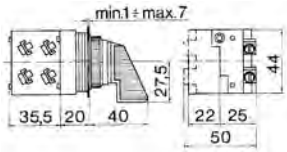


Selector Switches

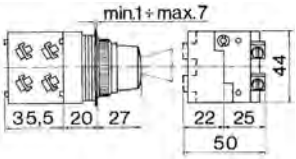
N7SM_ _ _



N7SV_ _ _



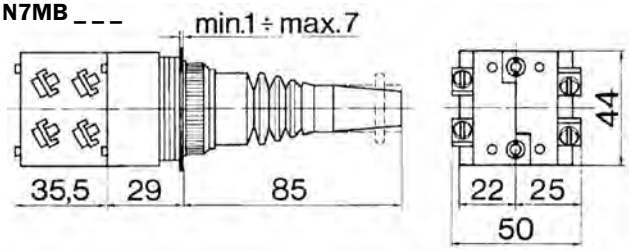
N7SL_ _ _



Joysticks

N7MN _ _ _

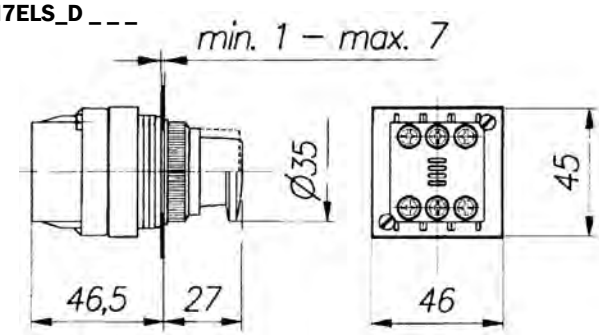
N7MB _ _ _



Illuminated Push-Buttons

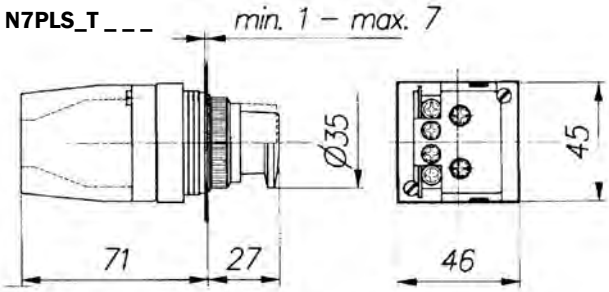
N7PLS_D _ _ _

N7ELS_D _ _ _



N7PLS_R _ _ _

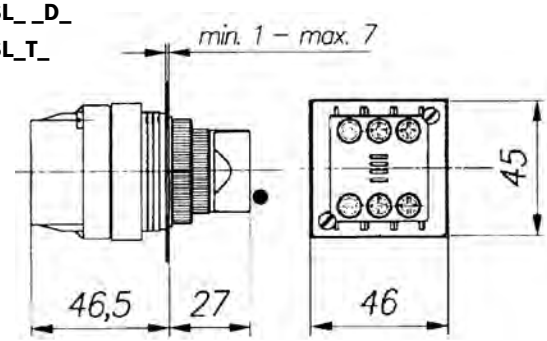
N7PLS_T _ _ _



Illuminated Selector Switches

N7SL_ _D_

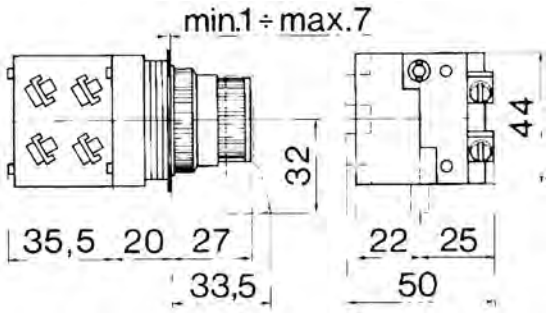
N7SL_T_



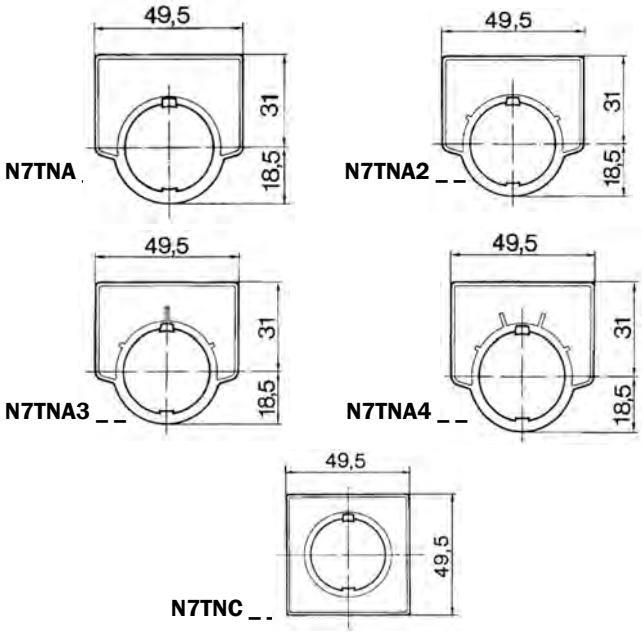
DIMENSIONS

Selector Push-Buttons

N7LN_ _ _

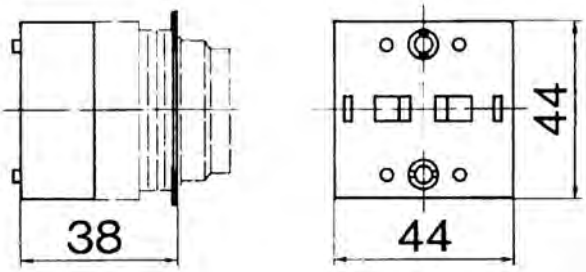


Nameplates

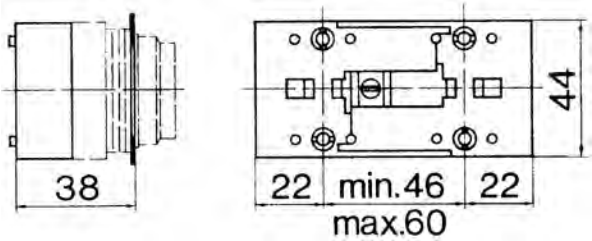


Kits

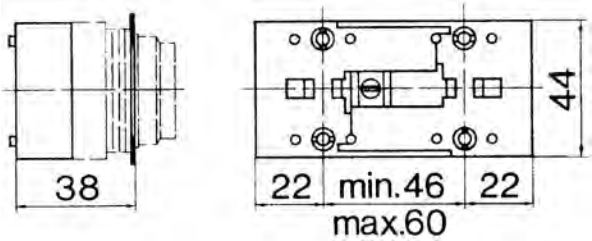
N7ADPP



N7ADAMP

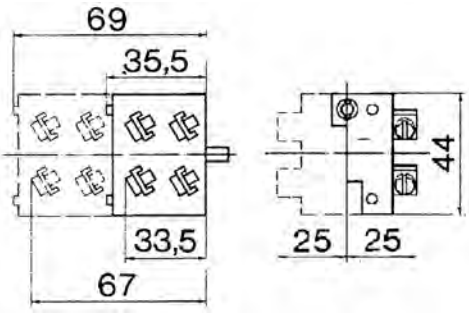


N7ADIM

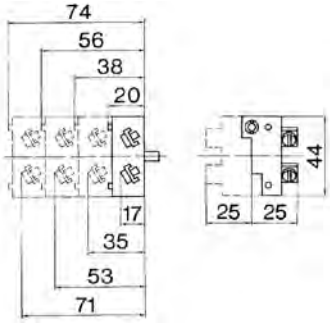


Contact Blocks

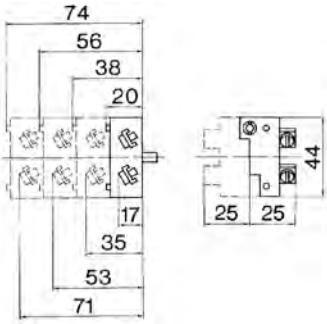
N7B11N



N7B10N



N7B01N



Industrial Electrical Controls

SPRINGER® controls company

Power Switching Devices

DISCONNECT SWITCHES (16 to 630 amp)

- 16 Amp to 125 Amp units in stock; up to 630 amp units available
- Open and Enclosed versions available
- Variety of handle options, extra poles, terminals, contacts available

springercontrols.com

INDEX

Springer Controls is partnered with **MERZ-PCE,** a world leader in the manufacturing of switch gears. We carry a complete line of UL approved, CSA listed, Disconnect Switches from 16A to 125A. Springer now offers larger disconnect switches rated up to 630 amps (consult factory for part number and pricing of switches greater than 125 amps.) Switches are available as an open type or in a polycarbonate enclosure (see page 8.) Designed and tested to the most demanding standards, the switches will provide years of satisfied service under rated conditions. Switches meet IEC 947-3, EN60947-3, and DIN VDE Part 107. A complete line of Merz CAM SWITCHES can be found in the Cam Switches Catalog section.

DISCONNECT SWITCHES (16 TO 630 amp);

Overview 4
Product Numbering System / Model Ratings 4
Handle Types / Mounting Styles 5
Front Panel Mounting Disconnects 6
Rear Panel Mounting Disconnects 7, 8
Enclosed Disconnect Switches 8
Accessories 9, 10
Dimensions; Disconnect Switches ..... 11 - 14
Dimensions; Enclosures 15

Overview

MLO Series is a UL approved, economical 32 amp designed disconnect switch. It is designed with a non-modular, molded casing (cannot add auxiliaries/power poles). The UL approved MLI through ML3 Series is a modular designed disconnect switch with optional accessories that include extra power poles, ground and neutral terminals as well as auxiliary contacts. Current range available f rom 25 amp through 125 amp. (Consult Springer Controls fro current ratings above 125 amp.)

Product Numbering System

ML1 | 025 | A | R | 3 | (E)

Enclosure Type
(No Letter represents "open" switch)

E ... Enclosure

Handle Type

2 ... 2 Padlock
3 ... 3 Padlock
4 ... No Padlock

Handle Color

R ..... Red / Yellow
B ..... Black / Silver

Mounting Style

A ... Front-Mount; 4-Hole
C ... Front-Mount; 22mm Hole
D ... Rear Panel Mount; Door Coupling and Interlock
S ... Rear Panel Mtg.; Extension Rod and Coupling
P ... Rear Panel Mtg.; Din-Rail Mount

Current Rating *

Ø16 amp	Ø63 amp
Ø25 amp	Ø80 amp
Ø32 amp	125 amp
Ø40 amp	

Switch Model

MLØ (16 amp / 32 amp)
ML1 (25 amp / 40 amp)
ML2 (63 amp / 80 amp)
ML3 (125 amp)

*Consult factory for current ratings above 125 amp. (160A, 200A, 250A, 315A, 400A, 500A, 630A, rated switches available.)

Model Ratings

Switch Model			MLØ	ML1	ML1	ML2	ML2	ML3
General Purpose	3-phase	Amps	32	25	40	63	80	125
		Volts	600	600	600	600	600	600
Motor 3-phase	240V	hp	7.5	7.5	10	15	20	25
	480V	hp	15	10	20	30	40	50
	600V	hp	20	10	20	30	40	50
Motor 1-phase	125V	hp	1.5	1	1.5	3	4	6
	240V	hp	3	2	3	7.5	10	15

Notes:
A full complement of accessories are available, additional power contacts, ground terminal, neutral terminals and auxiliary contacts. Finger protector terminal covers are available as well as legend plates. The shaft extension kits cover a complete range of panel depth up to 21.7 inches.

HANDLE TYPES / MOUNTING STYLES

Operating Handle Types

Type #2
- Lockout Handle
- 1 or 2 Padlocks
- Red / Yellow
- Black / Silver

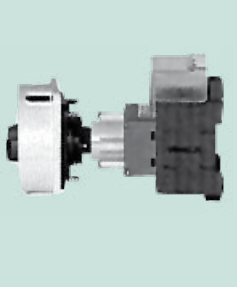
Type #3
- Lockout Handle
- 3 Padlocks
- Red / Yellow
- Black / Silver

Type #4
- Handle Without Lockout
- Red / Yellow
- Black / Silver

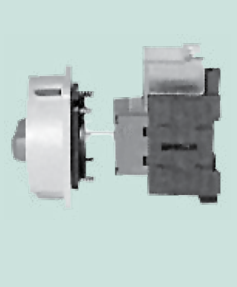
Mounting Styles

Type A
- 4- Hole Mounting
- Terminal Screws on Rear of Base
- Front Panel Mount

Type C
- 22.5 mm Hole Mounting
- Terminal Screws on Rear of Base
- Front Panel Mount



Type D
- Front Panel 4-Hole
- Door Coupling and Door Interlock in “ON” Position
- Terminal Screws on Front of Base
- Rear Panel Din Mount



Type S
- Front Panel 4-Hole
- Shaft Extender Required
- Terminal Screws on Front of Base
- Rear Panel Din Mount

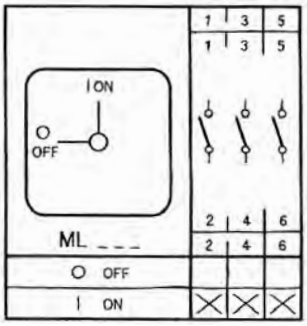
Type P
- Handle Mounted to Base
- Terminal Screws on Front of Base
- Rear Panel Din Mount

FRONT PANEL MOUNTING DISCONNECTS

Front Panel Mounting (4) Hole mounting "A"

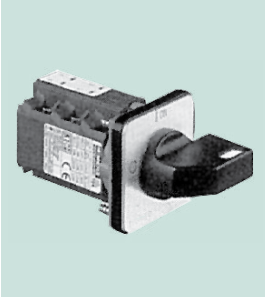
Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	No Padlock Handle IP55	Two Padlock Handle IP55	Three Padlock Handle IP55
32A	1.5	3	7.5	15	20	MLØ-032-AB4	MLØ-032-A*2	MLØ-032-A*3
25A	1	2	7.5	10	10	ML1-025-AB4	ML1-025-A*2	ML1-025-A*3
40A	1.5	3	10	20	20	ML1-040-AB4	ML1-040-A*2	ML1-040-A*3
63A	3	7.5	15	30	30	ML2-063-AB4	---	ML2-063-A*3
80A	4	10	20	40	40	ML2-080-AB4	---	ML2-080-A*3
125A	6	15	25	50	50	ML3-125-AB4	---	ML3-125-A*3

Contact Diagram
3-Pole



Dimension Fig.9, *page 13*

Dimension Fig.1, *page 11*

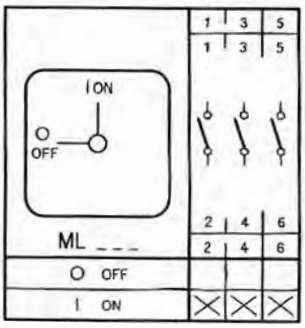


Dimension Fig.2, *page 11*

Front Panel Mounting (22.5mm) Hole Mounting "C"

Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	No Padlock Handle IP55	Two Padlock Handle IP65	Three Padlock Handle IP65
32A	1.5	3	7.5	15	20	MLØ-032-CB4	MLØ-032-C*2	MLØ-032-C*3
25A	1	2	7.5	10	10	ML1-025-CB4	ML1-025-C*2	ML1-025-C*3
40A	1.5	3	10	20	20	ML1-040-CB4	ML1-040-C*2	ML1-040-C*3
63A	3	7.5	15	30	30	---	---	---
80A	4	10	20	40	40	---	----	---
125A	6	15	25	50	50	---	---	---

Contact Diagram
3-Pole



Dimension Fig.3, *page 11*

Dimension Fig.4, *page 12*

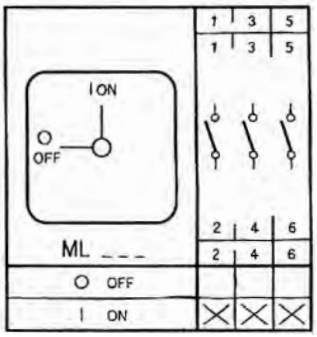
* R = Red/Yellow Handle / * B = Black/Silver Handle

REAR PANEL MOUNTING DISCONNECTS

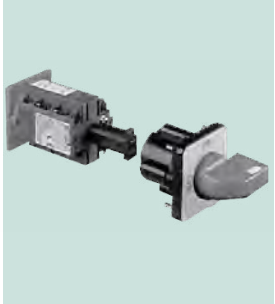
Rear Panel Mounting, Door Coupling & Interlock (4) Hole Mounting "D"

Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	No Padlock Handle IP55	Two Padlock Handle IP55	Three Padlock Handle IP55
32A	1.5	3	7.5	15	20	MLØ-032-DB4	MLØ-032-D*2	MLØ-032-D*3
25A	1	2	7.5	10	10	ML1-025-DB4	ML1-025-D*2	ML1-025-D*3
40A	1.5	3	10	20	20	ML1-040-DB4	ML1-040-D*2	ML1-040-D*3
63A	3	7.5	15	30	30	ML2-063-DB4	---	ML2-063-D*3
80A	4	10	20	40	40	ML2-080-DB4	----	ML2-080-D*3
125A	6	15	25	50	50	ML3-125-DB4	---	ML3-125-D*3

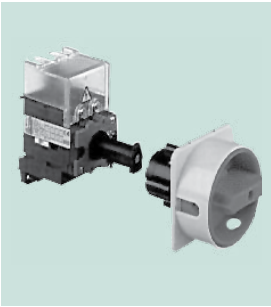
Contact Diagram
3-Pole



Dimension Fig.5, *page 12*



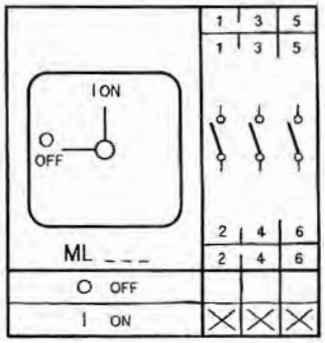
Dimension Fig.6, *page 12*



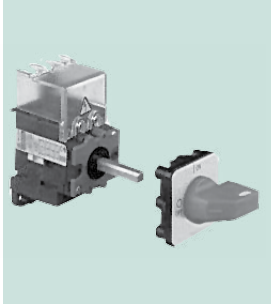
Rear Panel Mounting, Extension Rod & Coupling (4) Hole Mounting "S"

Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	No Padlock Handle IP55	Two Padlock Handle IP55	Three Padlock Handle IP55
32A	1.5	3	7.5	15	20	MLØ-032-SB4	MLØ-032-S*2	MLØ-032-S*3
25A	1	2	7.5	10	10	ML1-025-SB4	ML1-025-S*2	ML1-025-S*3
40A	1.5	3	10	20	20	ML1-040-SB4	ML1-040-S*2	ML1-040-S*3
63A	3	7.5	15	30	30	---	---	ML2-063-S*3
80A	4	10	20	40	40	---	----	ML2-080-S*3
125A	6	15	25	50	50	---	---	ML3-125-S*3

Contact Diagram
3-Pole



Dimension Fig.7, *pg I11*



Dimension Fig.8, *pg I11*

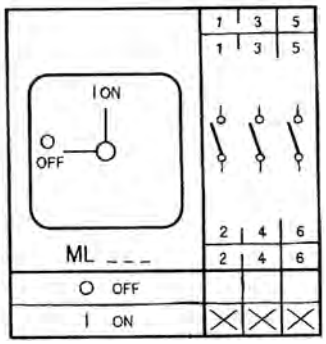
* R = Red/Yellow Handle / * B = Black/Silver Handle

REAR PANEL DISCONNECTS / ENCLOSED DISCONNECTS

Rear Panel Mounting Distribution Board Mounting Din Rail Mounting "P"

Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	No Padlock Handle IP30	Two Padlock Handle IP30
32A	1.5	3	7.5	15	20	MLØ-032-PB4	MLØ-032-P*2
25A	1	2	7.5	10	10	ML1-025-PB4	ML1-025-P*2
40A	1.5	3	10	20	20	ML1-040-PB4	ML1-040-P*2
63A	3	7.5	15	30	30	ML2-063-PB4	ML2-063-P*2
80A	4	10	20	40	40	ML2-125-PB4	ML2-080-P*2
125A	6	15	25	50	50	ML3-125-PB4	ML3-125-P*2

Contact Diagram
3-Pole



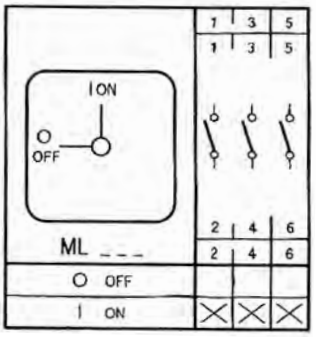
Dimension Fig.10,
page 14

Dimension Fig.11,
page 14

Enclosed Disconnect Switches

Thermal Rated Current @ 600V	HP 1 phase 120V	HP 1 phase 240V	HP 3 phase 240V	HP 3 phase 480V	HP 3 phase 600V	Three Padlock Handle IP65	Enclosure Size	Protection Class	
32A	1.5	3	7.5	15	20	ML1-032-A*3E	C12B	IP55	See Page I13 for Encl. Dimensions
25A	1	2	7.5	10	10	ML1-025-A*3E	E2	IP65	
32A	1.5	3	10	20	20	ML1-040-A*3E	E3	IP65	
50A	3	7.5	15	30	30	ML2-063-A*3E	E4	IP65	
63A	4	10	20	40	40	ML2-080-A*3E	E5	IP65	
100A	6	15	25	50	50	ML3-125-A*3E[1]	I7	IP65	

Contact Diagram
3-Pole •



Dimension Fig.12,
page 14

ML1-025-AR3E

ML2-063-AR3E

- Extra poles and auxiliaries available; consult factory.

* R = Red/Yellow Handle / * B = Black/Silver Handle

[1] ML3 - 125 - A*3E comes with a transparent front cover (Enclosure #I7)

ACCESSORIES

Extra Poles & Terminals

Type	Front Mount	Din Base Mount	Switching Norm Open	Ground Terminal	Neutral Terminal	Neutral Contact Early Make
ML1-025, ML1-040	X		SK1-E	PE1-E	N1-E	NV1-E
ML1-025P, ML1-040P		X	SK1-V	PE1-V	N1-V	NV1-V
ML2-063, ML2-080	X		SK2-E	PE2-E	N2-E	NV2-E
ML2-063P, ML2-080P		X	SK2-V	PE2-V	N2-V	NV2-V
ML3-125	X		SK3-E	PE3-E	N3-E	NV3-E
ML3-125P		X	SK3-V	PE3-V	NE-V	NV3-V

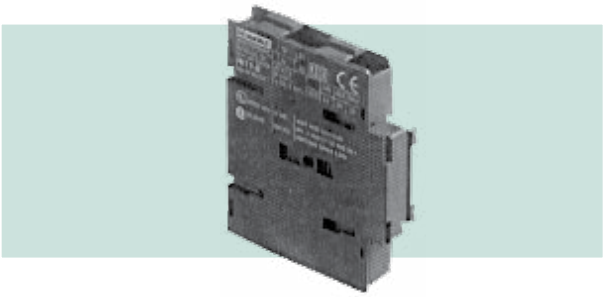
The maximum amount of poles and auxiliary contacts used on switches:

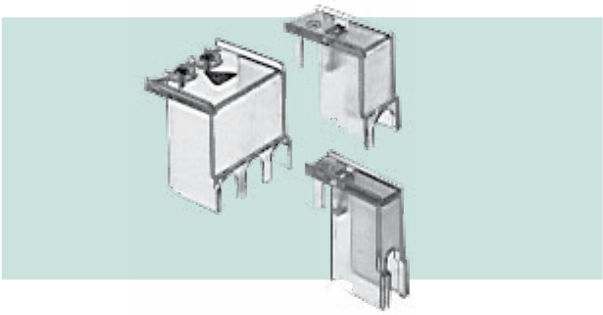
Type	SK or NV	HI 11 (auxiliary)
ML1	2	0
	2	1
	1	2
	2	2
ML 2 / 3	2	0
	2	1
	1	2
	0	3

Auxiliary Contacts (12 amp max.)

Type	SCC Catalog No.
Front Mount	HI11-E
Din Base Mount	HI11-V

Notes:
- 1 N.O., 1 N.C.
- Max. 3 Auxiliaries
- Snap on left or right side



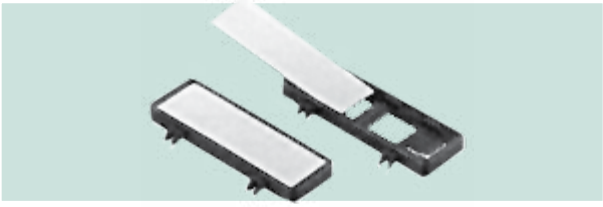


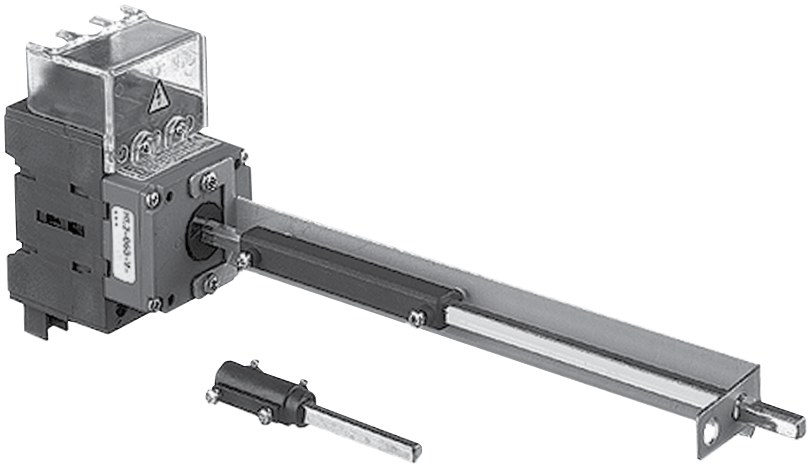
Terminal Covers

Type	SCC Catalog No.
ML1- 1 Pole	HS1-ML1
ML1- 3 Pole	HS3-ML1
ML2/3 -1 Pole	HS1-ML2/3
ML2- 3 Pole	HS3-ML2
ML3- 3 Pole	HS3-ML3

Nameplates

For 3 Padlock Style	SCC Catalog No.
Legend Plate w. Blank Insert	ALP
Legend Plate w. Engraved Insert	ALP-E





Shaft Extension

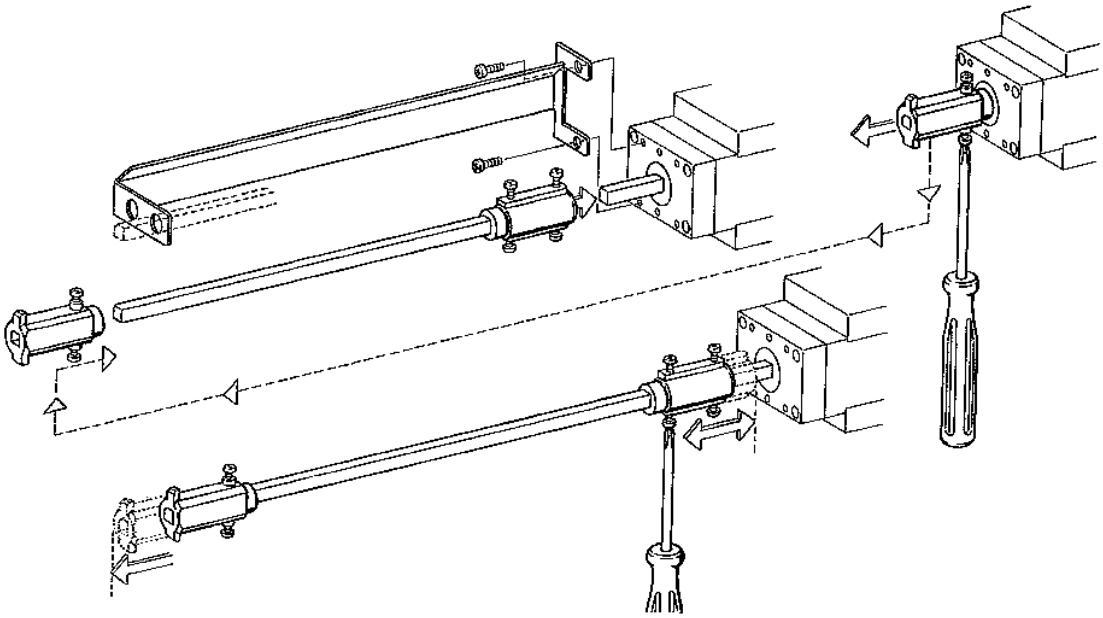
Mounting Depth Required[1]		Shaft Part No. Required
A104 & ML1	ML2 & ML3	
4.13" - 5.31"	4.72" - 5.9"	None - Required
6.70" - 8.46"	7.28" - 9.06"	AL-65
10.43" - 13.19"	11.02" - 13.78"	AL-165
14.47" - 17.13"	14.96" - 17.72"	AL-265 [1], [2]
13.31" - 21.06"	18.90" - 21.65"	AL-365 [1], [2]
Extended Shaft Support Bracket		ALSS

Notes:

[1] Mounting depth is from outside of door to disconnect mounting plate. Shaft extension can be easily cut to size in the field.

[2] Shaft support ALSS required for AL-265 and AL-365

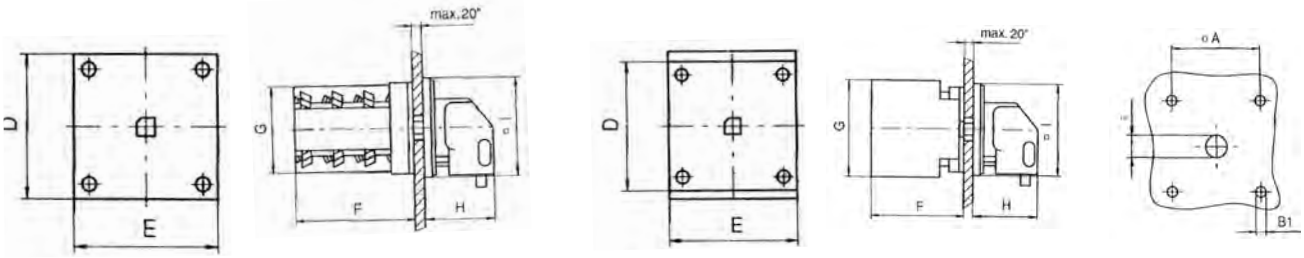
Shaft Extension Diagram



DIMENSIONS; DISCONNECT SWITCHES

Figure 1

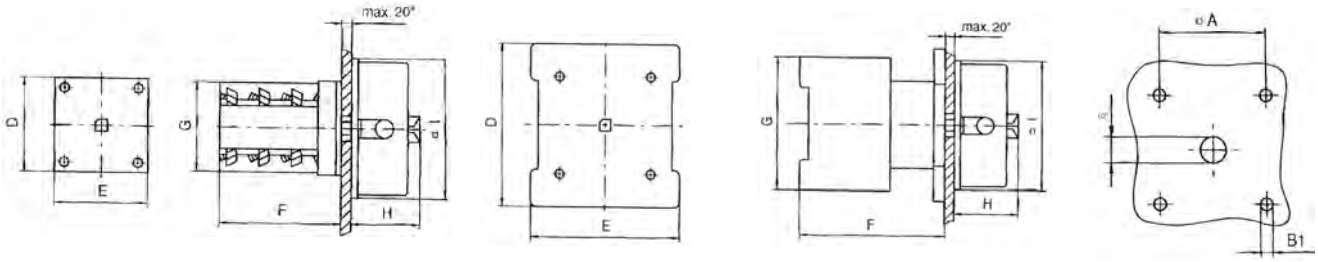
Series 104 **Series ML**



Type	Dimensions (Inches)							
	A	B1	D	E	F	G	H	I
104	1.42	.177	1.75	1.75	2.24	1.69	1.38	1.89
ML1	1.42	.177	1.73	1.73	1.97	2.17	1.38	1.89

Figure 2

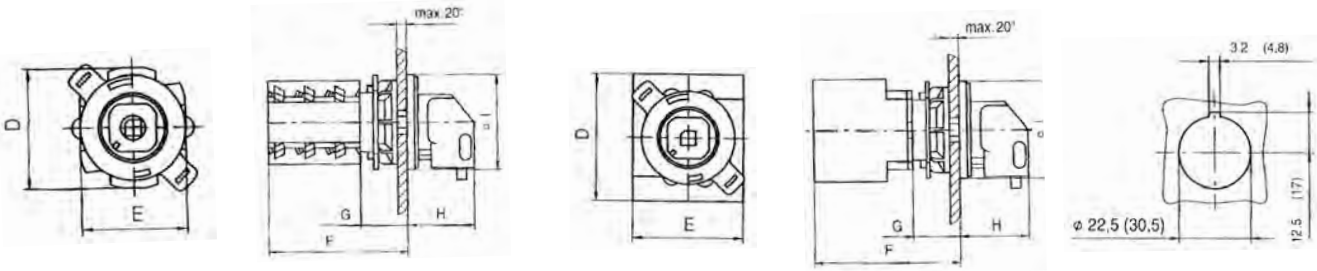
Series 104 **Series ML**



Type	Dimensions (Inches)							
	A	B1	D	E	F	G	H	I
104	1.42	.177	1.75	1.75	2.24	1.69	1.26	2.6
ML1	1.42	.177	1.73	1.73	1.97	2.17	1.26	2.6
ML2	1.89	.22	2.28	2.28	2.83	2.95	1.46	3.39
ML3	1.89	.22	3.07	3.07	2.83	3.15	1.46	3.39

Figure 3

Series 104 **Series ML**

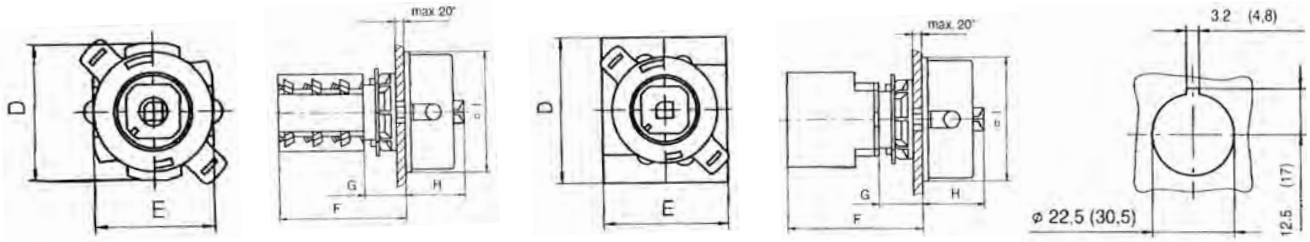


Type	Dimensions (Inches)					
	D	E	F	G	H	I
104	1.69	1.50	2.87	.98	1.38	1.89
ML1	2.17	1.77	2.95	.98	1.38	1.89

DIMENSIONS; DISCONNECT SWITCHES

Figure 4

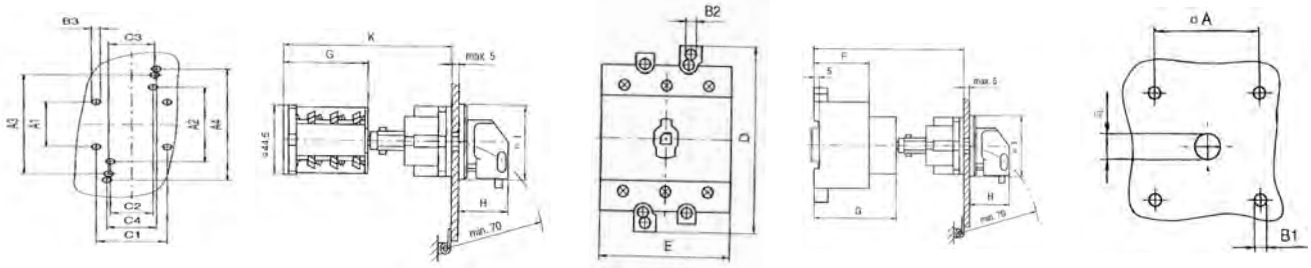
Series 104 **Series ML**



Type	Dimensions (Inches)					
	D	E	F	G	H	I
104	1.69	1.50	2.87	.98	1.26	2.60
ML1	2.17	1.77	2.95	.98	1.26	2.60

Figure 5

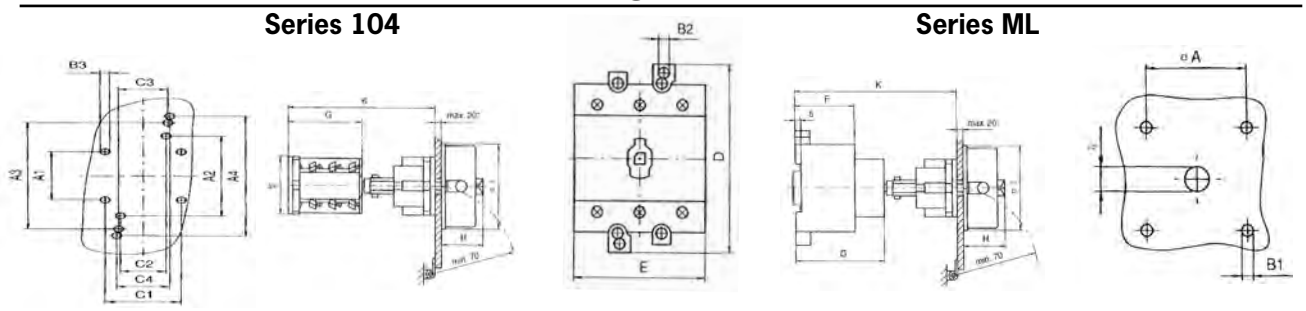
Series 104 **Series ML**



Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	---	---	---	.18	1.42	---	---	---	---	---	---	2.32	1.38	1.89	4.45-5.63
ML1	1.42	---	2.36	2.56	2.76	.18	---	.87	1.18	.98	3.07	1.77	1.65	2.17	1.38	1.89	4.13-5.31

Figure 6

Series 104 **Series ML**

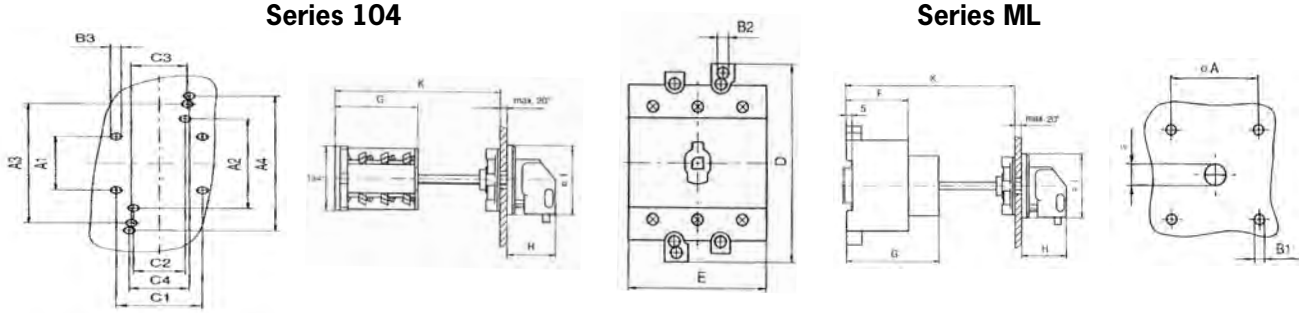


Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	---	---	---	.18	1.42	---	---	---	---	---	---	2.32	1.26	2.60	4.45-5.63
ML1	1.42	---	2.36	2.56	2.76	.18	---	.87	1.18	.98	3.07	1.77	1.65	2.17	1.26	2.60	4.13-5.31
ML2	1.89	---	---	3.15	3.54	.22	---	---	.93	.98	3.94	2.11	1.93	2.83	1.46	3.39	4.72-5.91
ML3	1.89	---	---	3.15	3.54	.22	---	---	.93	.98	3.94	2.76	1.93	2.83	1.46	3.39	4.72-5.91

DIMENSIONS; DISCONNECT SWITCHES

Figure 7

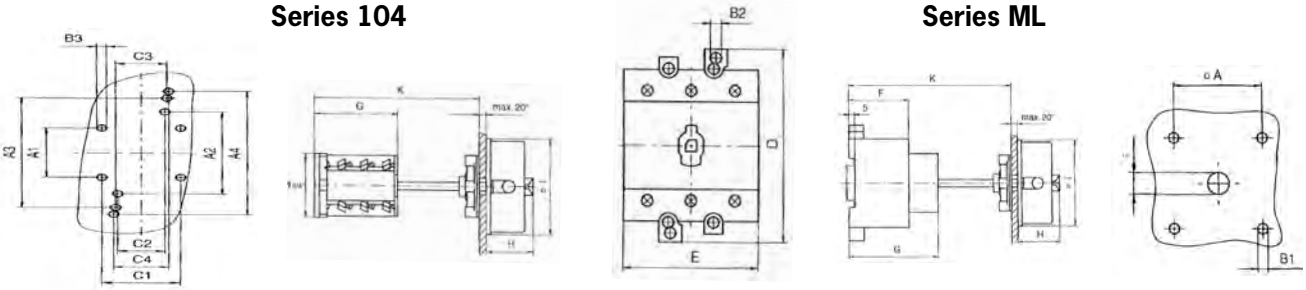
Series 104 **Series ML**



Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	---	---	---	.18	1.42	---	---	---	---	---	---	2.32	1.38	1.89	3.46 - 3.86
ML1	1.42	---	2.36	2.56	2.76	.18	---	.87	1.18	.98	3.07	1.77	1.65	2.17	1.38	1.89	3.46 - 3.86

Figure 8

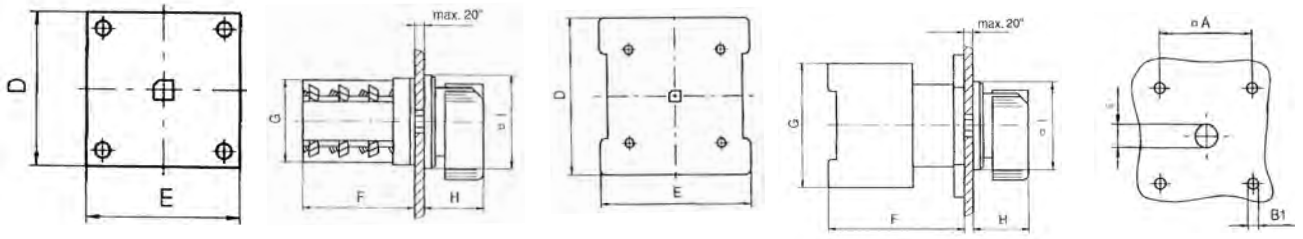
Series 104 **Series ML**



Type	Dimensions (Inches)																
	A	A1	A2	A3	A4	B1	C1	C2	C3	C4	D	E	F	G	H	I	K
104	1.42	1.42	---	---	---	.18	1.42	---	---	---	---	---	---	2.32	1.26	2.60	3.46 - 3.86
ML1	1.42	---	2.36	2.56	2.76	.18	---	.87	1.18	.98	3.07	1.77	1.65	2.17	1.26	2.60	3.46 - 3.86
-ML2	1.89	---	---	3.54	3.54	.22	---	---	.93	.98	3.94	2.11	1.93	2.83	1.54	3.39	4.06 - 4.45
ML3	1.89	---	---	3.54	3.54	.22	---	---	.93	.98	3.94	2.76	1.93	2.83	1.54	3.39	4.06 - 4.45

Figure 9

Series 104 **Series ML**

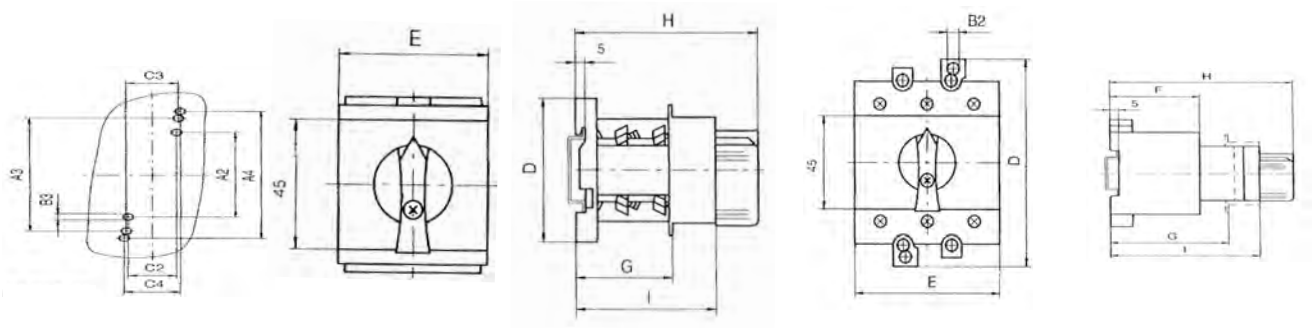


Type	Dimensions (Inches)							
	A	B1	D	E	F	G	H	I
104	1.42	.18	1.75	1.75	2.24	1.69	1.14	1.89
ML1	1.42	.18	1.73	1.73	1.97	2.17	1.14	1.89
ML2	1.89	.22	2.28	2.28	2.83	2.95	1.30	2.52
ML3	2.68	.22	3.07	3.07	2.83	3.15	1.38	3.46

DIMENSIONS; DISCONNECT SWITCHES

Figure 10

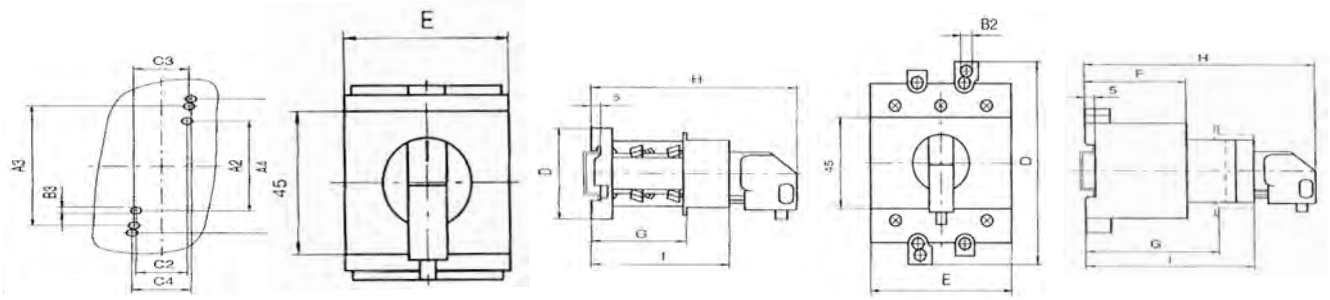
Series 104 **Series ML**



Type	Dimensions (Inches)												
	A2	A3	A4	B3	C2	C3	C4	D	E	F	G	H	I
104	---	---	---	---	---	---	---	2.36	2.07	---	1.85	3.39	2.6
ML1	2.36	2.56	2.76	.15	.87	1.18	.98	3.07	2.07	1.65	1.91	3.44	2.66
ML2	---	3.15	3.54	.20	---	.93	.98	3.94	2.11	1.93	---	3.94	3.11
ML3	---	3.15	3.54	.20	---	.93	.98	3.94	2.76	1.93	---	3.94	3.11

Figure 11

Series 104 **Series ML**



Type	Dimensions (Inches)												
	A2	A3	A4	B3	C2	C3	C4	D	E	F	G	H	I
104	---	---	---	---	---	---	---	2.36	2.07	---	1.85	3.54	2.60
ML1	2.36	2.56	2.76	.15	.87	1.18	.98	3.07	2.07	1.65	1.91	3.60	2.66
ML2	---	3.15	3.54	.20	---	.93	.98	3.94	2.11	1.93	---	4.09	3.11
ML3	---	3.15	3.54	.20	---	.93	.98	3.94	2.76	1.93	---	4.09	3.11

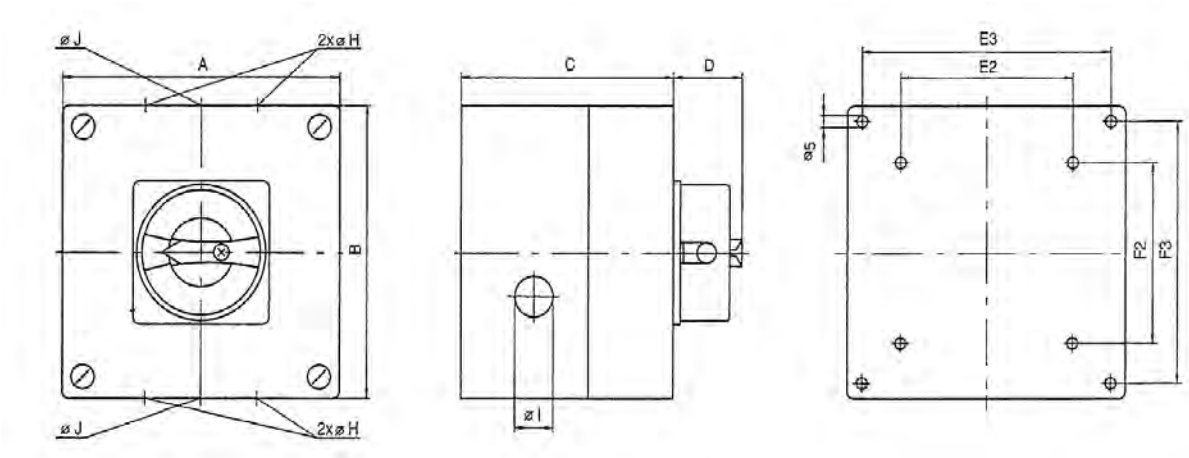
Enclosed Switches

ML1-025-AR3E

ML2-063-AR3E

ML3-125-AR3E

Figure 12



Type	Dimensions (Inches)							
	A	B	C	D	E2	E3	F2	F3
C12B	3.39	---	2.87	1.38	---	2.68	---	---
E2	3.70	5.12	3.19	1.26	---	3.11	---	4.53
E3	5.12	5.12	3.90	1.26	---	4.53	---	4.53
E4	4.33	7.09	4.37	1.26	1.97	3.74	4.72	6.50
E5	7.09	7.17	4.37	1.46	4.72	6.50	4.72	6.57
E6	7.09	10.00	4.37	1.46	4.72	6.50	7.76	9.41
I7	12.00	12.00	6.75	1.46	---	---	---	---

Notes: I7 enclosure comes with a transparent front cover (see above photo #ML3-125-AR3E)

Industrial Electrical Controls

SPRINGER controls company

Power Switching Devices

CAM SWITCHES

CHANGE OVER SWITCHES - STEP SWITCHES - REVERSING SWITCHES - MULTI SPEED SWITCHES - GROUP SWITCHES - WYE DELTA SWITCHES - CODE SWITCHES - VOLTMETER & AMMETER SWITCHES - SINGLE PHASE STARTER SWITCHES

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INDEX

Springer Controls is partnered with **MERZ-PCE,** a world leader in the manufacturing of switch gears. We offer complete line of Cam Switches with as many as 24 switch contacts. Each contact has two fixed terminals and a moving contact bridge. All switches are designed with four switching angles, finger proof construction, captive screws and cable end stops, along with quality construction and excellent engineered design that surpasses the industry standards. UL, CSA, and VDE 0660 part 107 approvals as well as meeting IEC 947-3, EN60947-3 and CE all verify the excellence of the product. All MERZ products meet ROHS certification as well.

CAM SWITCHES

Model Ratings / Product Numbering System 4

Technical Data 5

CAM SWITCH TYPES: Open

- **On-Off Switches** 6, 7
- **Change-Over Switches (Transfer Switches)** 8-12
- **Reversing Switches (Drum Switches)** 13
- **Step Switches (Tap Switches) with and no "0" Position'** 14-17
- **Multi-Speed Switches** 18,19
- **Wye-Delta Switches** 20
- **Group Switches** 21-23
- **Code Switches** 24, 25
- **Voltmeter Switches** 26, 27
- **Ammeter Switches** 28, 29
- **Single-Phase Starter Switches** 30

CAM SWITCH TYPES: Enclosed

- **Reversing Switches** 31
- **Change-Over Switches** 32

Handle and Mounting Code 33

Handle and Mounting Dimensions 34

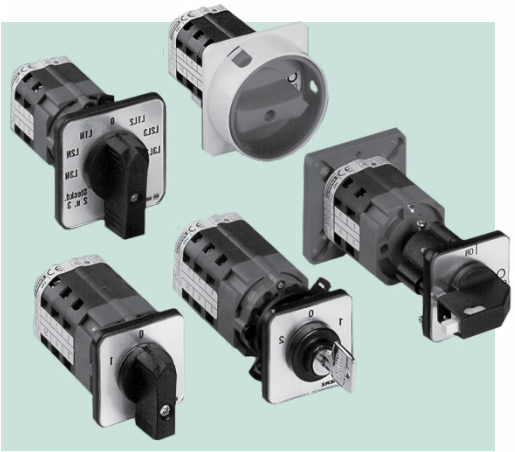
Cam Switch Enclosures 35

Cam Switch Accessories 36

Custom Cam Switch Order Form 27

MODEL AND PRODUCT INFORMATION

Cam Switch Model Ratings



c UL US LISTED

Switch Model			105	151	251	451	656	756
General Purpose 3-phase		A	16	20	25	40	80	100
		V	600	600	600	600	600	600
Motor 3-phase	240V	hp	3	5	7.5	10	25	30
	480V	hp	5	10	20	30	50	60
	600V	hp	5	10	20	30	50	60
Motor 1-phase	120V	hp	.5	1	1.5	2	7.5	10
	240V	hp	1.5	3.0	3	5.0	15	20

Product Numbering System

W 2 5 1 / 3 - A B - [ ]

Special Options

Mounting Code (pg. J39)
- 3 Types: - 4-Hole Front Mount
  - Base Mount
  - Central Mount (22.5 or 30.5mm)
- Black lever handle standard on all cam switches. Consult factory for custom handle style

Contact Arrangement
Factory Assigned: Up to 4 digits

Switch Model

105 (16 amp)	451 (40 amp)
151 (20 amp)	656 (80 amp)
251 (25 amp)	756 (100 amp)

Type

A = On-Off Switches	W = Reversing Switches or Drum Switches
Z = By-Pass or Transfer Switches	P = Multi-Speed Switches
V = Step Switches	S = Wye-Delta Switches
V = Voltmeter or Ammeter Switches	E = Single Phase Starter Switches

Example: Reversing Switch; 25amp, 3-pole maintained, 4-hole, front mount handle = Part# W251/3-AB

SPRINGER controls company

TECHNICAL DATA

Technical Data

acc. to IEC 947-3, EN 60947-3 (DIN VDE 0660 part 107), UL and CSA

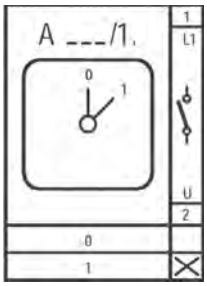
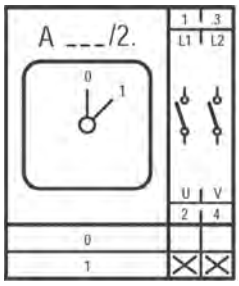
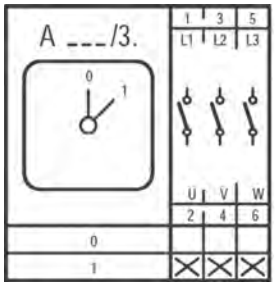
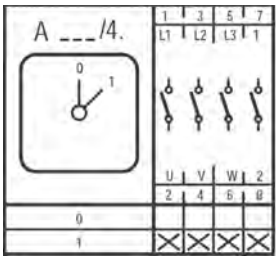
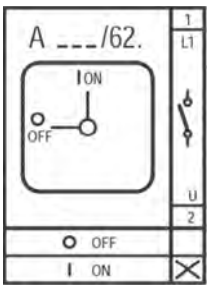
Series Type			105	151	251	451	656*	756*
Rated Uninterrupted current (by max. cross section)								
I_u open - 1_{th}		**A**	**20**	**32**	**40**	**63**	**80***	**125***
Ithe encapsulated		**A**	**16**	**25**	**40**	**63**	**80***	**125***
Rated insulation voltage U_i (III/3)		V	690	690	690	690	690	690
Rated impulse with stand. voltage U_{imp} (III/3)		kV	6	6	6	6	6	6
Rated operational current I_eAC-21 A		A	16	25	32	50	80*	125*
Rated operational voltage U_e		A	690	690	690	690	690	690
Making / Breaking capacity Utilization category AC-3								
Motor switches for operational switching **Single phase motor**	3 x 230V	kW	3	5,5	7,5	11	22	22
	3 x 400V	**kW**	**5,5**	**7,5**	**11**	**18,5**	**37**	**45**
	3 x 690V	kW	5,5	11	15	22	45	45
	1 x 230V	kW	2,2	3	4	5,5	11	11
	1 x 400V	**kW**	**3**	**4**	**5,5**	**7,5**	**15**	**18,5**
Utilization category AC-23 A								
Motor switches (Main Switches Maintenance Switches)	3 x 230V	kW	4	7,5	11	15	22	37
	3 x 400V	**kW**	**7,5**	**11**	**15**	**22**	**37**	**45**
	3 x 690V	kW	7,5	15	18,5	30	45	45
Rated breaking capacity AC-23 A	3 x 230V	A	150	255	370	520	750	930
	3 x 400V	**A**	**150**	**230**	**300**	**430**	**700**	**850**
	3 x 690V	A	90	170	210	330	490	490
Utilization category AC-15								
Control Switches	230V	A	6	10	12	16	20	20
Rated operational current L_e	400V	A	4	6	10	12	16	16
Short-circuit capacity								
Max. fuse rating (gl-Char.)		A	25	35	50	63	125	160
Rated conditional short-circuit current		kA_{eff}	4	6	6	6	-	-
Rated short-circuit making capacity I_{cm}		kA	-	-	-	-	3,4	3,4
Rated short-time withstand I_{cw} (1-s-current)		Aeff	240	30	400	60	1200	1550
Isolating characteristics up to		V	500	500	690	690	690	690
Mechanical life -- Operating cycles			10^6	10^6	10^6	10^6	10^6	10^6
Terminal screws (Pozidrive)			M3	M3,5	M4	M5	M8	2 x M4
Screwdriver: Pozidrive		Size	1	2	2	2	2	2
Torque terminal scres		Nm	0,8	1,0	1,8	2,2	3,5	3,5
Cable cross section		min. mm²	1,0	1,0	1,0	1,5	1,5	1,5
Solid or multi-stranded		min. mm²	4,0	4,0	6,0	10,0	25,0	35,0
Flexible with ferrule		min. mm²	1,0	1,0	1,0	1,5	1,5	1,5
(DIN 46228)		max. mm²	2,5	2,5	4,0	6,0	16,0	35,0

**656 = 100 A, 756 = 160 A with usage of extension terminals. (non-UL rating)*

UL Ratings:

Series Type			105	151	251	451	656	756
General Purpose 3 Phase		A	16	20	25	40	80	100
		V	600	600	600	600	600	600
Motor 3 Phase	240V	hp	3	5	7,5	10	25	30
	480V	hp	5	10	20	30	50	60
	600V	hp	5	10	20	30	50	60
Motor 1 Phase (2 pole)	120V	hp	0,5	1,0	1,5	2,0	7,5	10,0
	240V	hp	1,5	3,0	3,0	5,0	15,0	20,0
Cable cross section		AWG-No	16-10	16-10	14-8	14-6	14-4	14-1

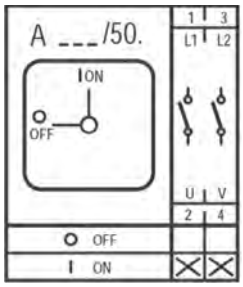
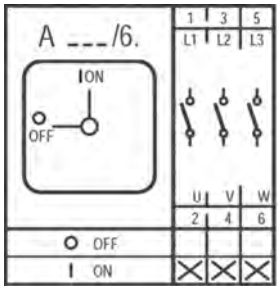
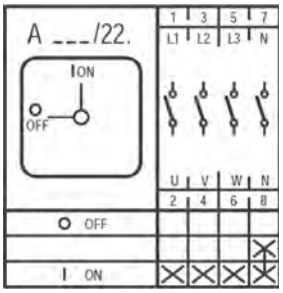
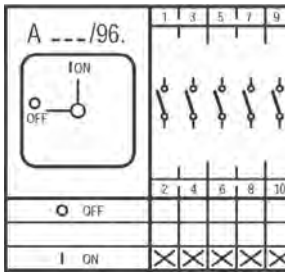
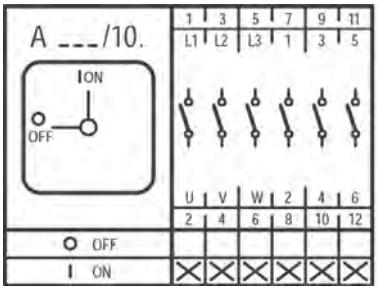
ON-OFF SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole	16	A105/1 -	XX	
	20	A151/1 -	XX	
	25	A251/1 -	XX	
	40	A451/1 -	XX	
	80	A656/1 -	XX	
	100	A756/1 -	XX	
2 Pole	16	A105/2 -	XX	
	20	A151/2 -	XX	
	25	A251/2 -	XX	
	40	A451/2 -	XX	
	80	A656/2 -	XX	
	100	A756/2 -	XX	
3 Pole	16	A105/3 -	XX	
	20	A151/3 -	XX	
	25	A251/3 -	XX	
	40	A451/3 -	XX	
	80	A656/3 -	XX	
	100	A756/3 -	XX	
4 Pole	16	A105/4 -	XX	
	20	A151/4 -	XX	
	25	A251/4 -	XX	
	40	A451/4 -	XX	
	80	A656/4 -	XX	
	100	A756/4 -	XX	
1 Pole	16	A105/62 -	XX	
	20	A151/62 -	XX	
	25	A251/62 -	XX	
	40	A451/62 -	XX	
	80	A656/62 -	XX	
	100	A756/62 -	XX	

XX - Replace with Handle Suffix from page 33

TYPE: ON-OFF SWITCHES

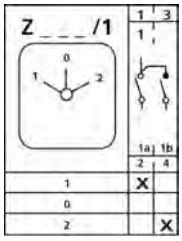
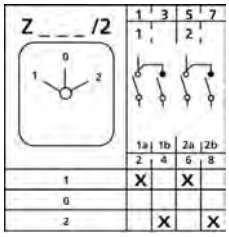
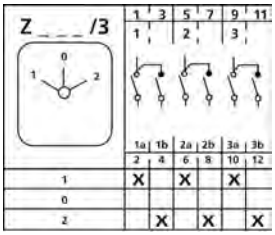
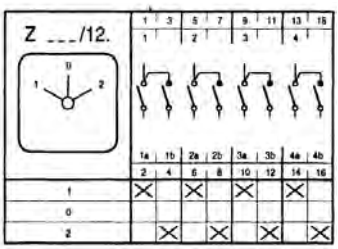
ON-OFF SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
2 Pole	16	A105/50 -	XX	
	20	A151/50 -	XX	
	25	A251/50 -	XX	
	40	A451/50 -	XX	
	80	A656/50 -	XX	
	100	A756/50 -	XX	
3 Pole	16	A105/6 -	XX	
	20	A151/6 -	XX	
	25	A251/6 -	XX	
	40	A451/6 -	XX	
	80	A656/6 -	XX	
	100	A756/6 -	XX	
4 Pole 1-contact priority	16	A105/22 -	XX	
	20	A151/22 -	XX	
	25	A251/22 -	XX	
	40	A451/22 -	XX	
	80	A656/22 -	XX	
	100	A756/22 -	XX	
5 Pole	16	A105/96 -	XX	
	20	A151/96 -	XX	
	25	A251/96 -	XX	
	40	A451/96 -	XX	
	80	A656/96 -	XX	
	100	A756/96 -	XX	
6 Pole	16	A105/10 -	XX	
	20	A151/10 -	XX	
	25	A251/10 -	XX	
	40	A451/10 -	XX	
	80	A656/10 -	XX	
	100	A756/10 -	XX	

XX - Replace with Handle Suffix from page 33

TYPE: CHANGE-OVER SWITCHES WITH O-POSITION

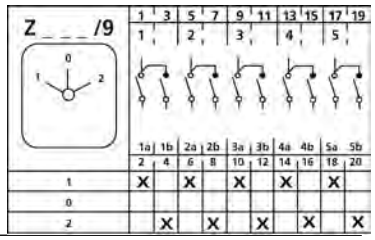
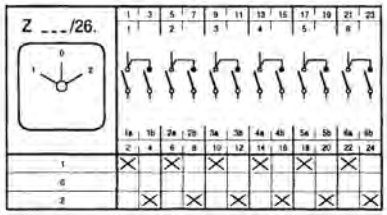
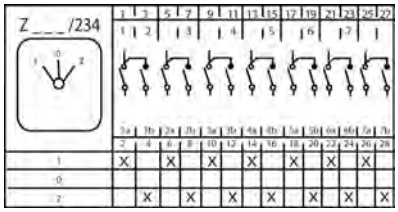
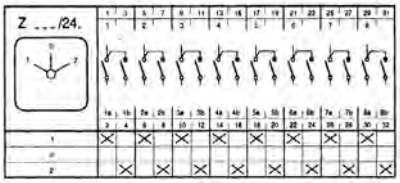
CHANGE-OVER SWITCHES WITH O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole Maintained	16	Z105/1 -	XX	
	20	Z151/1 -	XX	
	25	Z251/1 -	XX	
	40	Z451/1 -	XX	
	80	Z656/1 -	XX	
	100	Z756/1 -	XX	
2 Pole Maintained	16	Z105/2 -	XX	
	20	Z151/2 -	XX	
	25	Z251/2 -	XX	
	40	Z451/2 -	XX	
	80	Z656/2 -	XX	
	100	Z756/2 -	XX	
3 Pole Maintained	16	Z105/3 -	XX	
	20	Z151/3 -	XX	
	25	Z251/3 -	XX	
	40	Z451/3 -	XX	
	80	Z656/3 -	XX	
	100	Z756/3 -	XX	
4 Pole Maintained	16	Z105/12 -	XX	
	20	Z151/12 -	XX	
	25	Z251/12 -	XX	
	40	Z451/12 -	XX	
	80	Z656/12 -	XX	
	100	Z756/12 -	XX	

XX - Replace with Handle Suffix from page 33

TYPE: CHANGE-OVER SWITCHES WITH O-POSITION

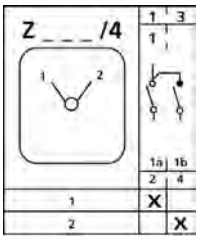
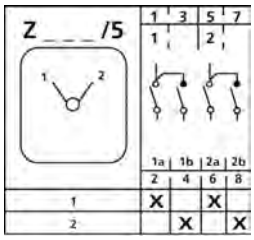
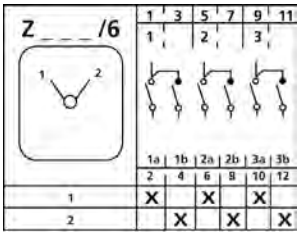
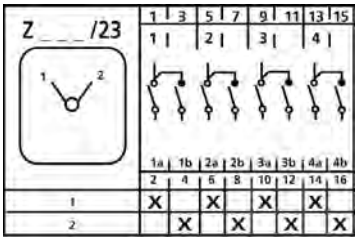
CHANGE-OVER SWITCHES WITH O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Font Plate / Contact Diagram
5 Pole Maintained	16	Z105/9 -	XX	
	20	Z151/9 -	XX	
	25	Z251/9 -	XX	
	40	Z451/9 -	XX	
	80	Z656/9 -	XX	
	100	Z756/9 -	XX	
6 Pole Maintained	16	Z105/26 -	XX	
	20	Z151/26 -	XX	
	25	Z251/26 -	XX	
	40	Z451/26 -	XX	
	80	Z656/26 -	XX	
	100	Z756/26 -	XX	
7 Pole Maintained	16	Z105/234 -	XX	
	20	Z151/234 -	XX	
	25	Z251/234 -	XX	
	40	Z451/234 -	XX	
	80	Z656/234 -	XX	
	100	Z756/234 -	XX	
8 Pole Maintained	16	Z105/24 -	XX	
	20	Z151/24 -	XX	
	25	Z251/24 -	XX	
	40	Z451/24 -	XX	
	80	Z656/24 -	XX	
	100	Z756/24 -	XX	

XX - Replace with Handle Suffix from page 33

TYPE: CHANGE-OVER SWITCHES WITH NO O-POSITION

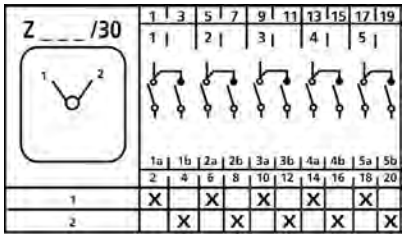
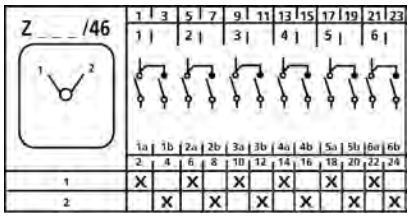
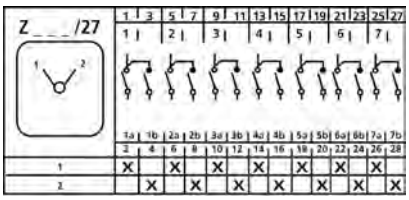
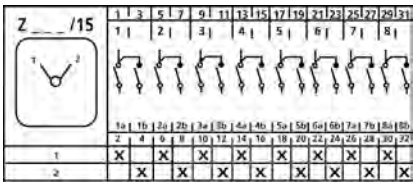
CHANGE-OVER SWITCHES WITH NO O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole Maintained	16	Z105/4 -	XX	
	20	Z151/4 -	XX	
	25	Z251/4 -	XX	
	40	Z451/4 -	XX	
	80	Z656/4 -	XX	
	100	Z756/4 -	XX	
2 Pole Maintained	16	Z105/5 -	XX	
	20	Z151/5 -	XX	
	25	Z251/5 -	XX	
	40	Z451/5 -	XX	
	80	Z656/5 -	XX	
	100	Z756/5 -	XX	
3 Pole Maintained	16	Z105/6 -	XX	
	20	Z151/6 -	XX	
	25	Z251/6 -	XX	
	40	Z451/6 -	XX	
	80	Z656/6 -	XX	
	100	Z756/6 -	XX	
4 Pole Maintained	16	Z105/23 -	XX	
	20	Z151/23 -	XX	
	25	Z251/23 -	XX	
	40	Z451/23 -	XX	
	80	Z656/23 -	XX	
	100	Z756/23 -	XX	

XX - Replace with Handle Suffix from page 33

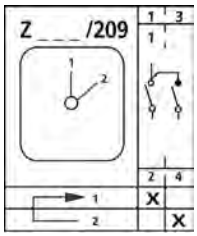
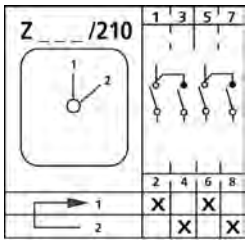
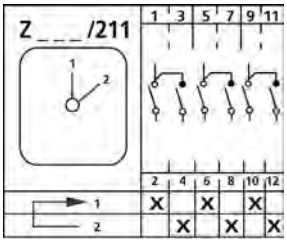
TYPE: CHANGE-OVER SWITCHES WITH NO O-POSITION

CHANGE-OVER SWITCHES WITH NO O-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see pg. J39)*	Front Plate / Contact Diagram
5 Pole Maintained	16	Z105/30 -	XX	
	20	Z151/30 -	XX	
	25	Z251/30 -	XX	
	40	Z451/30 -	XX	
	80	Z656/30 -	XX	
	100	Z756/30 -	XX	
6 Pole Maintained	16	Z105/46 -	XX	
	20	Z151/46 -	XX	
	25	Z251/46 -	XX	
	40	Z451/46 -	XX	
	80	Z656/46 -	XX	
	100	Z756/46 -	XX	
7 Pole Maintained	16	Z105/27 -	XX	
	20	Z151/27 -	XX	
	25	Z251/27 -	XX	
	40	Z451/27 -	XX	
	80	Z656/27 -	XX	
	100	Z756/27 -	XX	
8 Pole Maintained	16	Z105/15 -	XX	
	20	Z151/15 -	XX	
	25	Z251/15 -	XX	
	40	Z451/15 -	XX	
	80	Z656/15 -	XX	
	100	Z756/15 -	XX	

XX - Replace with Handle Suffix from page 33

CHANGE-OVER SWITCHES WITH SPRING RETURN

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole Spring Return	16	Z105/209 -	XX	
	20	Z151/209 -	XX	
	25	Z251/209 -	XX	
	40	Z451/209 -	XX	
	80	Z656/209 -	XX	
	100	Z756/209 -	XX	
2 Pole Spring Return	16	Z105/210 -	XX	
	20	Z151/210 -	XX	
	25	Z251/210 -	XX	
	40	Z451/210 -	XX	
	80	Z656/210 -	XX	
	100	Z756/210 -	XX	
3 Pole Spring Return	16	Z105/211 -	XX	
	20	Z151/211 -	XX	
	25	Z251/211 -	XX	
	40	Z451/211 -	XX	
	80	Z656/211 -	XX	
	100	Z756/211 -	XX	

XX - Replace with Handle Suffix from page 33

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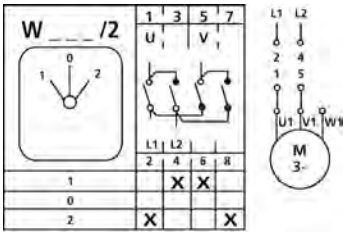
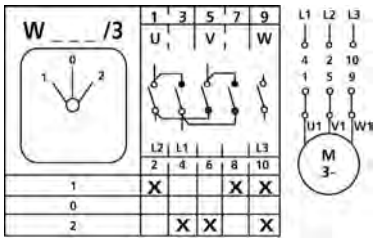
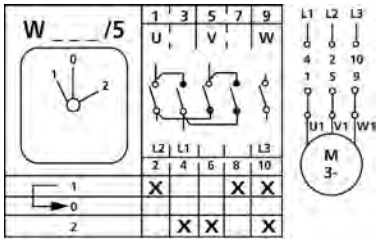
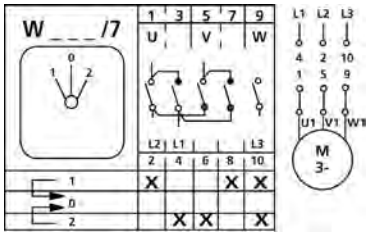
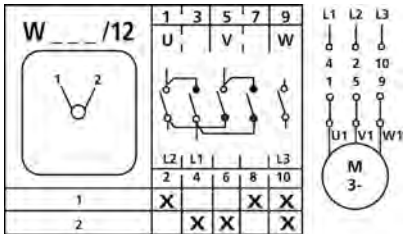
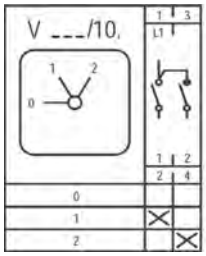
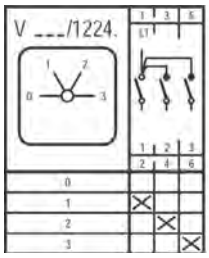
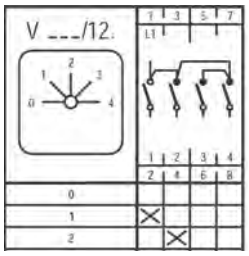
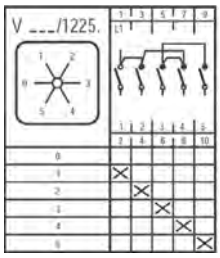
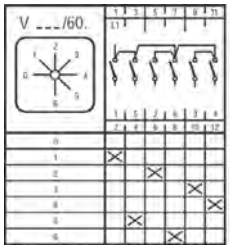
REVERSING SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
2 Pole Maintained	16	W105/2 -	XX	
	20	W151/2 -	XX	
	25	W251/2 -	XX	
	40	W451/2 -	XX	
	80	W656/2 -	XX	
	100	W756/2 -	XX	
3 Pole Maintained	16	W105/3 -	XX	
	20	W151/3 -	XX	
	25	W251/3 -	XX	
	40	W451/3 -	XX	
	80	W656/3 -	XX	
	100	W756/3 -	XX	
3 Pole with spring return from 1 - 0	16	W105/5 -	XX	
	20	W151/5 -	XX	
	25	W251/5 -	XX	
	40	W451/5 -	XX	
	80	W656/5-	XX	
	100	W756/5 -	XX	
3 Pole with spring return both sides	16	W105/7 -	XX	
	20	W151/7 -	XX	
	25	W251/7 -	XX	
	40	W451/7 -	XX	
	80	W656/7 -	XX	
	100	W756/7 -	XX	
3 Pole without 0-Position Maintained	16	W105/12 -	XX	
	20	W151/12 -	XX	
	25	W251/12 -	XX	
	40	W451/12 -	XX	
	80	W656/12 -	XX	
	100	W756/12 -	XX	

XX - Replace with Handle Suffix from page 33

TYPE: STEP SWITCHES WITH 0-POSITION; 2 TO 6 STEP

STEP SWITCHES WITH 0-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole, 0 + 2 Step	16	V105/10 -	XX	
	20	V151/10 -	XX	
	25	V251/10 -	XX	
	40	V451/10 -	XX	
	80	V656/10 -	XX	
	100	V756/10 -	XX	
1 Pole, 0 + 3 Step	16	V105/1224 -	XX	
	20	V151/1224 -	XX	
	25	V251/1224 -	XX	
	40	V451/1224 -	XX	
	80	V656/1224 -	XX	
	100	V756/1224 -	XX	
1 Pole, 0 + 4 Step	16	V105/12 -	XX	
	20	V151/12 -	XX	
	25	V251/12 -	XX	
	40	V451/12 -	XX	
	80	V656/12 -	XX	
	100	V756/12 -	XX	
1 Pole, 0 + 5 Step	16	V105/1225 -	XX	
	20	V151/1225 -	XX	
	25	V251/1225 -	XX	
	40	V451/1225 -	XX	
	80	V656/1225 -	XX	
	100	V756/1225 -	XX	
1 Pole, 0 + 6 Step	16	V105/60 -	XX	
	20	V151/60 -	XX	
	25	V251/60 -	XX	
	40	V451/60 -	XX	
	80	V656/60 -	XX	
	100	V756/60 -	XX	

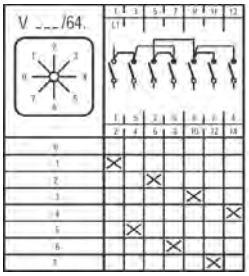
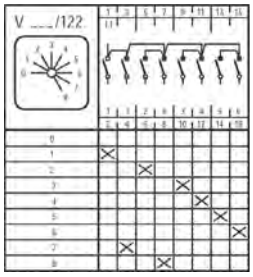
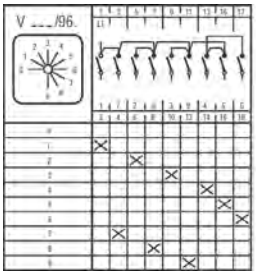
For 2, 3 and 4 pole switches, consult Springer Controls

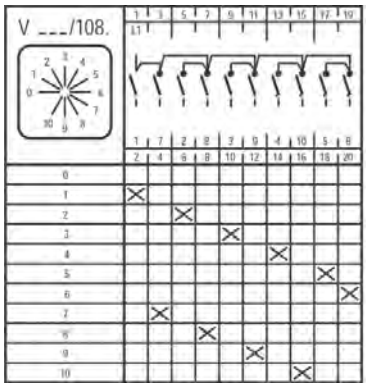
XX - Replace with Handle Suffix from page 33

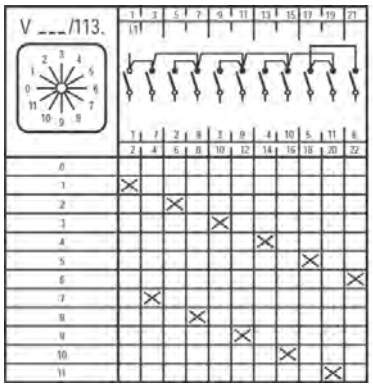
SPRINGER controls company

TYPE: STEP SWITCHES WITH 0-POSITION; 7 TO 11 STEP

STEP SWITCHES WITH 0-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
Step switches with 0-Position - 7 steps				
1 Pole, 0 + 7 Step	16	V105/64 -	XX	
	20	V151/64 -	XX	
	25	V251/64 -	XX	
	40	V451/64 -	XX	
	80	V656/64 -	XX	
	100	V756/64 -	XX	
Step switches with 0-Position - 8 steps				
1 Pole, 0 + 8 Step	16	V105/122 -	XX	
	20	V151/122 -	XX	
	25	V251/122 -	XX	
	40	V451/122 -	XX	
	80	V656/122-	XX	
	100	V756/122-	XX	
Step switches with 0-Position - 9 steps				
1 Pole, 0 + 9 Step	16	V105/96-	XX	
	20	V151/96 -	XX	
	25	V251/96 -	XX	
	40	V451/96 -	XX	
	80	V656/96 -	XX	
	100	V756/96 -	XX	

Step switches with 0-Position - 10 steps					
1 Pole, 0 - 10 Step	16	V105/108 -	XX	$107.00	
	20	V151/108 -	XX	$159.00	
	25	V251/108 -	XX	$218.00	
	40	V451/108 -	XX	$320.00	
	80	V656/108 -	XX	$534.00	
	100	V756/108 -	XX	$677.00	

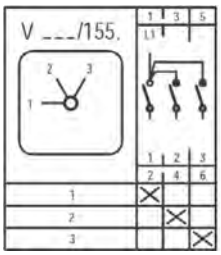
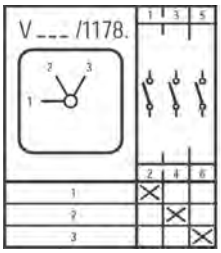
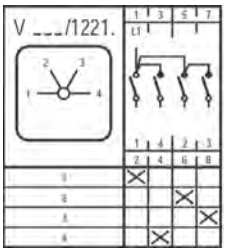
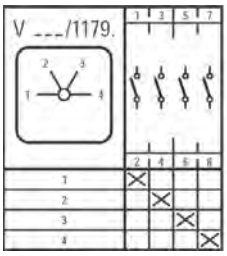
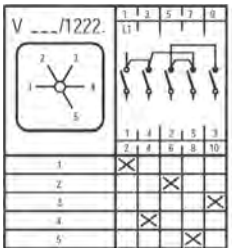
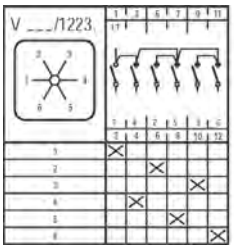
Step switches with 0-Position - 11 steps					
2 Pole, 0 + 11 Step	16	V105/113 -	XX	$118.00	
	20	V151/113 -	XX	$176.00	
	25	V251/113 -	XX	$240.00	
	40	V451/113 -	XX	$352.00	
	80	V656/113 -	XX	$590.00	
	100	V756/113 -	XX	$747.00	

For 2, 3 and 4 pole switches, consult Springer Controls

XX - Replace with Handle Suffix from page 33

TYPE: STEP SWITCHES WITH NO 0-POSITION; 2 TO 6 STEP

STEP SWITCHES WITH NO 0-POSITION

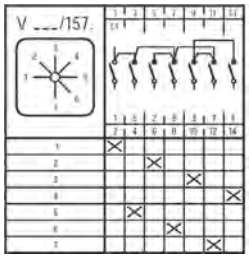
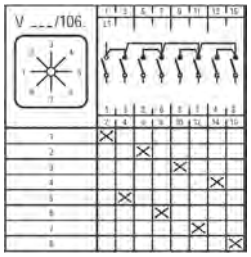
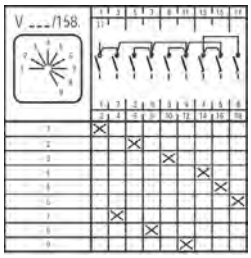
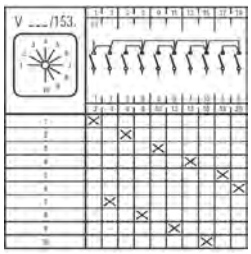
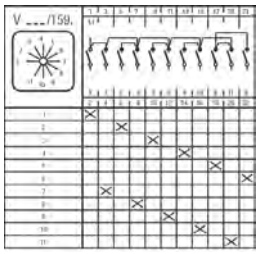
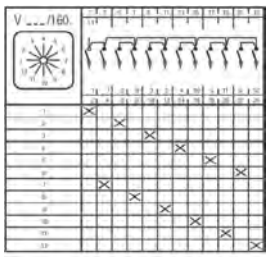
Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole, 1 Step	16	V105/155 -	XX	
	20	V151/155 -	XX	
	25	V251/155 -	XX	
	40	V451/155 -	XX	
	80	V656/155 -	XX	
	100	V756/155 -	XX	
1 Pole, 3 Step, Separate Contacts	16	V105/1178 -	XX	
	20	V151/1178 -	XX	
	25	V251/1178 -	XX	
	40	V451/1178 -	XX	
	80	V656/1178 -	XX	
	100	V756/1178 -	XX	
1 Pole, 4 Step	16	V105/1221 -	XX	
	20	V151/1221 -	XX	
	25	V251/1221 -	XX	
	40	V451/1221 -	XX	
	80	V656/1221 -	XX	
	100	V756/1221 -	XX	
1 Pole, 4 Step Separate Contacts	16	V105/1179 -	XX	
	20	V151/1179 -	XX	
	25	V251/1179 -	XX	
	40	V451/1179 -	XX	
	80	V656/1179 -	XX	
	100	V756/1179 -	XX	
1 Pole, 5 Step	16	V105/1222 -	XX	
	20	V151/1222 -	XX	
	25	V251/1222 -	XX	
	40	V451/1222 -	XX	
	80	V656/1222 -	XX	
	100	V756/1222 -	XX	
1 Pole	16	V105/1223 -	XX	
	20	V151/1223 -	XX	
	25	V251/1223 -	XX	
	40	V451/1223 -	XX	
	80	V656/1223 -	XX	
	100	V756/1223 -	XX	

For 2, 3 and 4 pole switches, consult Springer Controls

SPRINGER controls company

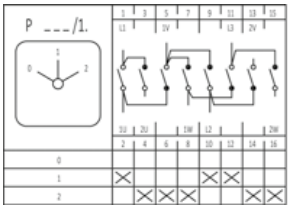
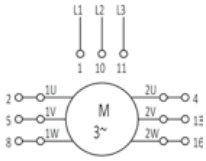
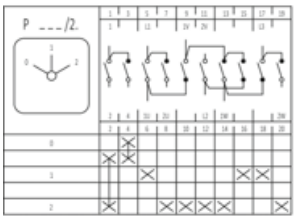
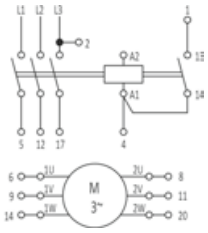
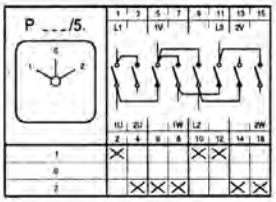
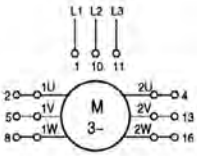
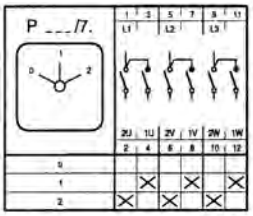
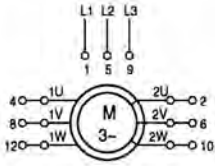
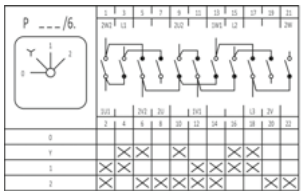
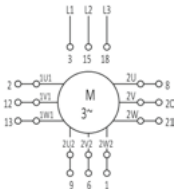
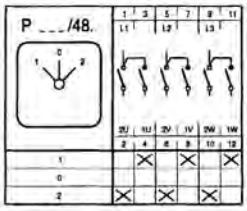
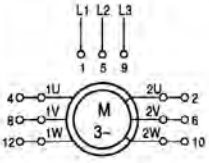
TYPE: STEP SWITCHES WITH NO 0-POSITION; 7 TO 11 STEP

STEP SWITCHES WITH NO 0-POSITION

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole	16	V105/157-	XX	
	20	V151/157 -	XX	
	25	V251/157 -	XX	
	40	V451/157 -	XX	
	80	V656/157 -	XX	
	100	V756/157 -	XX	
1 Pole	16	V105/106-	XX	
	20	V151/106 -	XX	
	25	V251/106 -	XX	
	40	V451/106 -	XX	
	80	V656/106 -	XX	
	100	V756/106 -	XX	
Step Switches without 0-Position - 9 Steps				
1 Pole	16	V105/158 -	XX	
	20	V151/158 -	XX	
	25	V251/158 -	XX	
	40	V451/158 -	XX	
	80	V656/158 -	XX	
	100	V756/158 -	XX	
Step Switches without 0-Position - 10 Steps				
1 Pole	16	V105/153 -	XX	
	20	V151/153-	XX	
	25	V251/153 -	XX	
	40	V451/153 -	XX	
	80	V656/153 -	XX	
	100	V756/153 -	XX	
Step Switches without 0-Position - 11 Steps				
1 Pole	16	V105/159-	XX	
	20	V151/159 -	XX	
	25	V251/159-	XX	
	40	V451/159 -	XX	
	80	V656/159-	XX	
	100	V756/159 -	XX	
Step Switches without 0-Position - 12 Steps				
1 Pole	16	V105/160-	XX	
	20	V151/160 -	XX	
	25	V251/160 -	XX	
	40	V451/160 -	XX	
	80	V656/160 -	XX	
	100	V756/160-	XX	

For 2, 3 and 4 pole switches, consult Springer Controls

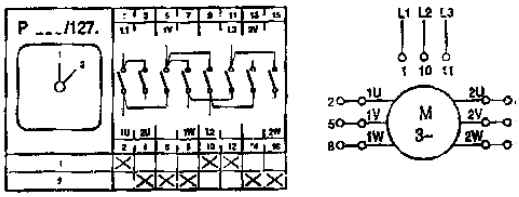
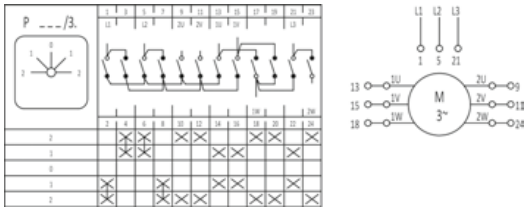
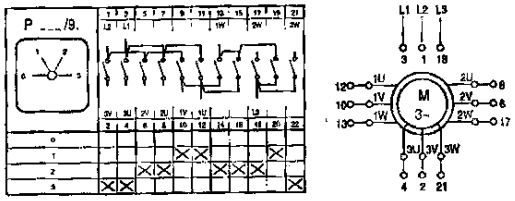
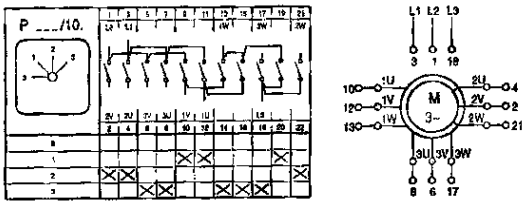
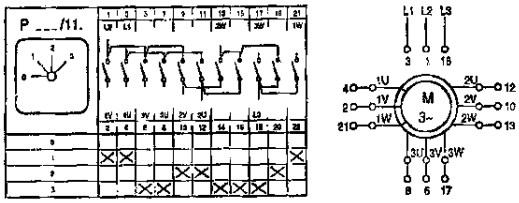
TYPE: MULTI-SPEED SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
2- Speed Switches Tapped Windings	16	P105/1 -	XX	 
	20	P151/1 -	XX	
	25	P251/1 -	XX	
	40	P451/1 -	XX	
	80	P656/1 -	XX	
	100	P756/1 -	XX	
2-Speed Switches Tapped Windings with 1 Contact	16	P105/2 -	XX	 
	20	P151/2 -	XX	
	25	P251/2 -	XX	
	40	P451/2 -	XX	
	80	P656/2 -	XX	
	100	P756/2 -	XX	
2-Speed Switches Tapped Windings 0 Middle	16	P105/5 -	XX	 
	20	P151/5 -	XX	
	25	P251/5 -	XX	
	40	P451/5 -	XX	
	80	P656/5-	XX	
	100	P756/5 -	XX	
2-Speed Switches 2 Separate Windings	16	P105/7 -	XX	 
	20	P151/7 -	XX	
	25	P251/7 -	XX	
	40	P451/7 -	XX	
	80	P656/7 -	XX	
	100	P756/7 -	XX	
2-Speed Switches With Starting Position	16	P105/6-	XX	 
	20	P151/6 -	XX	
	25	P251/6 -	XX	
	40	P451/6 -	XX	
	80	P656/6 -	XX	
	100	P756/6 -	XX	
2-Speed Switches 2 Separate Windings	16	P105/48 -	XX	 
	20	P151/48 -	XX	
	25	P251/48 -	XX	
	40	P451/48 -	XX	
	80	P656/48 -	XX	
	100	P756/48 -	XX	

XX - Replace with Handle Suffix from page 33

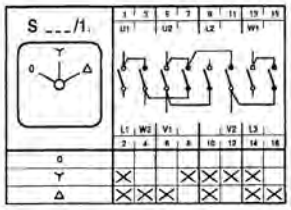
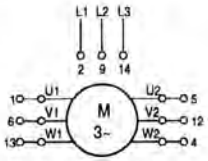
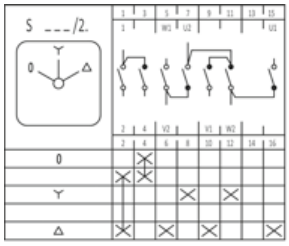
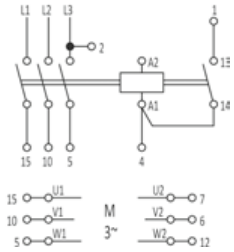
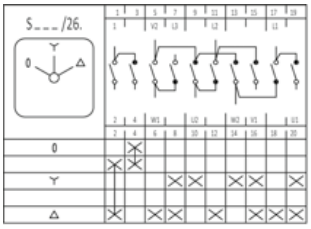
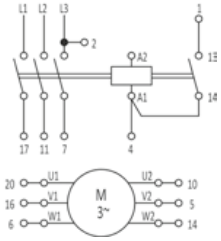
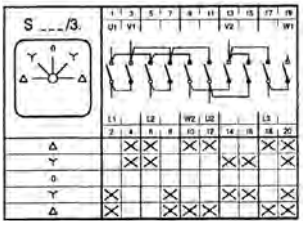
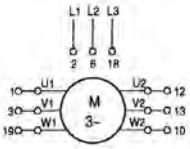
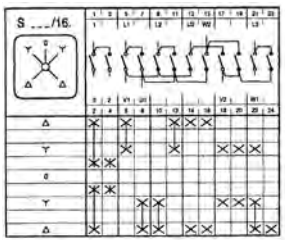
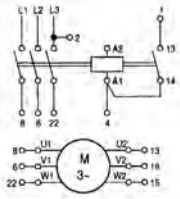
TYPE: MULTI-SPEED SWITCHES

MULTI-SPEED SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
2- Speed Switches Tapped Wingings Without 0 Position	16	P105/127 -	XX	
	20	P151/127 -	XX	
	25	P251/127 -	XX	
	40	P451/127 -	XX	
	80	P656/127 -	XX	
	100	P756/127 -	XX	
2-Speed Switches Tapped Windings 2 Reversing	16	P105/3 -	XX	
	20	P151/3 -	XX	
	25	P251/3 -	XX	
	40	P451/3 -	XX	
	80	P656/3 -	XX	
	100	P756/3 -	XX	
3-Speed Tapped Windings 1 and 2	16	P105/9 -	XX	
	20	P151/9 -	XX	
	25	P251/9 -	XX	
	40	P451/9 -	XX	
	80	P656/9-	XX	
	100	P756/9 -	XX	
3-Speed Switches Tapped Windings 1 and 3	16	P105/10-	XX	
	20	P151/10 -	XX	
	25	P251/10 -	XX	
	40	P451/10 -	XX	
	80	P656/10 -	XX	
	100	P756/10 -	XX	
3-Speed Switches Tapped Windings 2 and 3	16	P105/11 -	XX	
	20	P151/11 -	XX	
	25	P251/11 -	XX	
	40	P451/11 -	XX	
	80	P656/11 -	XX	
	100	P756/11 -	XX	

XX - Replace with Handle Suffix from page 33

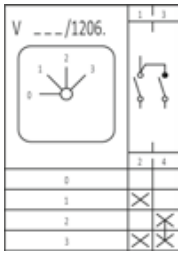
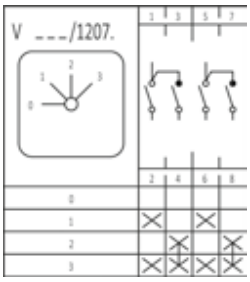
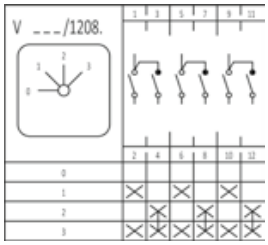
TYPE: WYE-DELTA SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
Standard	16	S105/1 -	XX	 
	20	S151/1 -	XX	
	25	S251/1 -	XX	
	40	S451/1 -	XX	
	80	S656/1 -	XX	
	100	S756/1 -	XX	
With 1 Contact without Main Contacts	16	S105/2 -	XX	 
	20	S151/2 -	XX	
	25	S251/2 -	XX	
	40	S451/2 -	XX	
	80	S656/2 -	XX	
	100	S756/2 -	XX	
With 1 Contact	16	S105/26 -	XX	 
	20	S151/26 -	XX	
	25	S251/26 -	XX	
	40	S451/26 -	XX	
	80	S656/26-	XX	
	100	S756/26 -	XX	
2 Reversing	16	S105/3-	XX	 
	20	S151/3 -	XX	
	25	S251/3 -	XX	
	40	S451/3 -	XX	
	80	S656/3 -	XX	
	100	S756/3 -	XX	
2 Reversing With Contact	16	S105/16 -	XX	 
	20	S151/16 -	XX	
	25	S251/16 -	XX	
	40	S451/16 -	XX	
	80	S656/16 -	XX	
	100	S756/16 -	XX	

XX - Replace with Handle Suffix from page 33

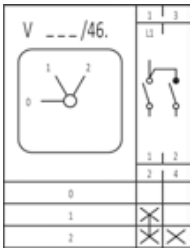
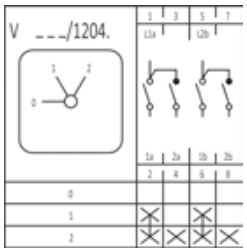
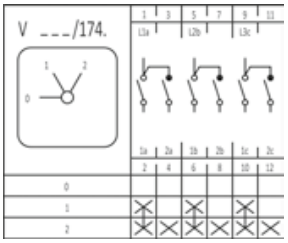
TYPE: GROUP SWITCHES, 2 GROUPS IN SERIES

GROUP SWITCHES, 2 GROUPS IN SERIES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole	16	V105/1206-	XX	
	20	V151/1206 -	XX	
	25	V251/1206 -	XX	
	40	V451/1206 -	XX	
	80	V656/1206 -	XX	
	100	V756/1206 -	XX	
2 Pole	16	V105/1207 -	XX	
	20	V151/1207 -	XX	
	25	V251/1207-	XX	
	40	V451/1207 -	XX	
	80	V656/1207 -	XX	
	100	V756/1207 -	XX	
3 Pole	16	V105/1208 -	XX	
	20	V151/1208 -	XX	
	25	V251/1208 -	XX	
	40	V451/1208 -	XX	
	80	V656/1208-	XX	
	100	V756/1208 -	XX	

XX - Replace with Handle Suffix from page 33

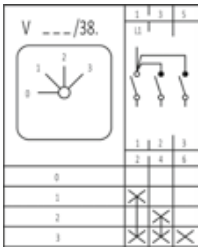
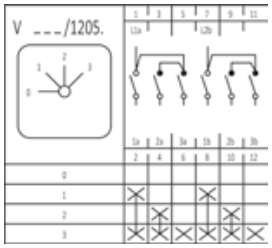
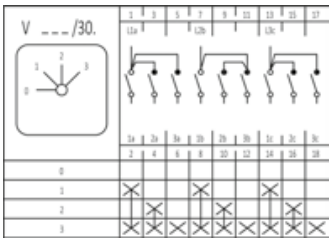
GROUP SWITCHES, 2 GROUPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole	16	V105/46-	XX	
	20	V151/46 -	XX	
	25	V251/46 -	XX	
	40	V451/46 -	XX	
	80	V656/46 -	XX	
	100	V756/46 -	XX	
2 Pole	16	V105/1204 -	XX	
	20	V151/1204 -	XX	
	25	V251/1204-	XX	
	40	V451/1204 -	XX	
	80	V656/1204 -	XX	
	100	V756/1204 -	XX	
3 Pole	16	V105/174-	XX	
	20	V151/174 -	XX	
	25	V251/174 -	XX	
	40	V451/174 -	XX	
	80	V656/174-	XX	
	100	V756/174 -	XX	

XX - Replace with Handle Suffix from page 33

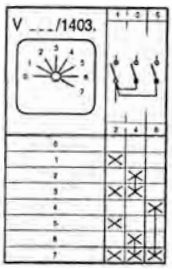
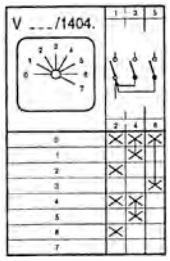
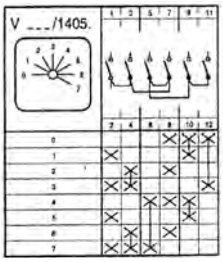
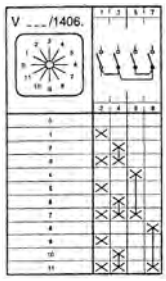
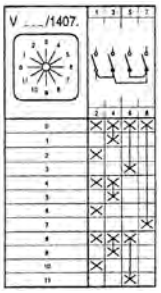
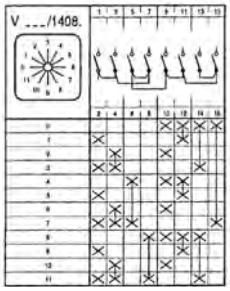
TYPE: GROUP SWITCHES, 3 GROUPS

GROUP SWITCHES, 3 GROUPS

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole	16	V105/38-	XX	
	20	V151/38 -	XX	
	25	V251/38 -	XX	
	40	V451/38 -	XX	
	80	V656/38 -	XX	
	100	V756/38 -	XX	
2 Pole	16	V105/1205 -	XX	
	20	V151/1205 -	XX	
	25	V251/1205-	XX	
	40	V451/1205 -	XX	
	80	V656/1205 -	XX	
	100	V756/1205 -	XX	
3 Pole	16	V105/30-	XX	
	20	V151/30 -	XX	
	25	V251/30 -	XX	
	40	V451/30 -	XX	
	80	V656/30-	XX	
	100	V756/30 -	XX	

XX - Replace with Handle Suffix from page 33

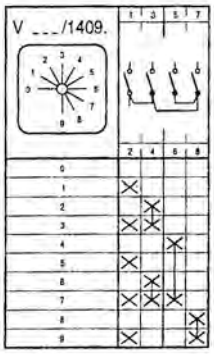
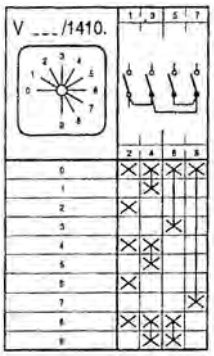
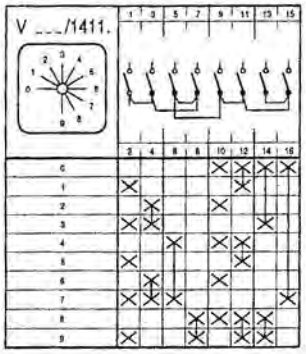
CODE SWITCHES, BINARY CODE

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
0-7	16	V105/1403-	XX	
	20	V151/1403 -	XX	
	25	V251/1403 -	XX	
0-7 Compliment	16	V105/1404-	XX	
	20	V151/1404 -	XX	
	25	V251/1404 -	XX	
0-7 + Compliment	16	V105/1405-	XX	
	20	V151/1405 -	XX	
	25	V251/1405 -	XX	
0-11	16	V105/1406-	XX	
	20	V151/1406 -	XX	
	25	V251/1406 -	XX	
0-11 Compliment	16	V105/1407-	XX	
	20	V151/1407 -	XX	
	25	V251/1407 -	XX	
0-11 + Compliment	16	V105/1408-	XX	
	20	V151/1408 -	XX	
	25	V251/1408 -	XX	

XX - Replace with Handle Suffix from page 33

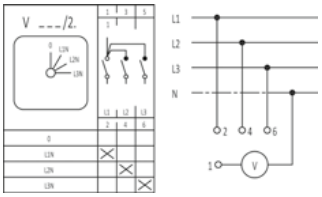
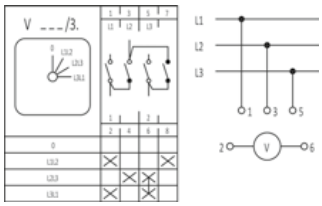
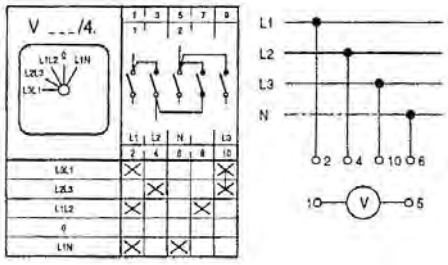
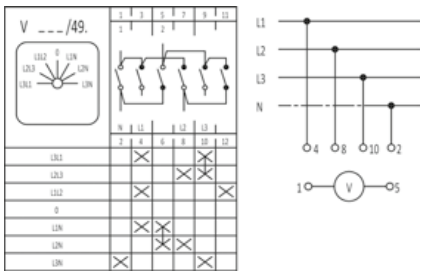
TYPE: CODE SWITCHES, BCD CODE

CODE SWITCHES, BCD CODE

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
0-9	16	V105/1409-	XX	
	20	V151/1409 -	XX	
	25	V251/1409 -	XX	
0-9 Compliment	16	V105/1410-	XX	
	20	V151/1410 -	XX	
	25	V251/1410 -	XX	
0-9 + Compliment	16	V105/1411-	XX	
	20	V151/1411 -	XX	
	25	V251/1411 -	XX	

XX - Replace with Handle Suffix from page 33

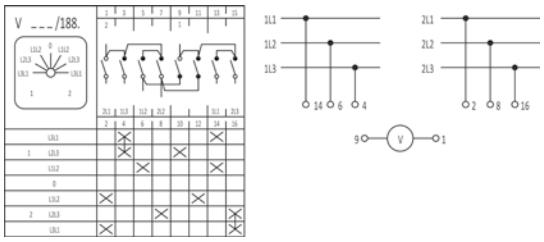
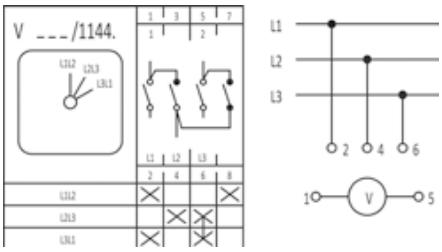
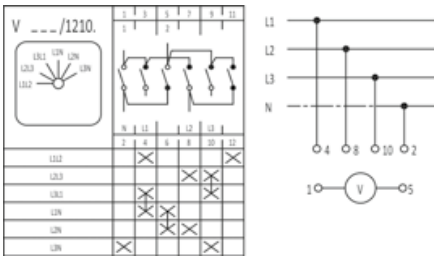
VOLTMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
3 Phases to N	16	V105/2-	XX	
3 Line Voltages	16	V105/3-	XX	
3 Line Voltages 1 Phase to N	16	V105/4-	XX	
3 Line Voltages 3 Phases to N	16	V105/49-	XX	

XX - Replace with Handle Suffix from page 33

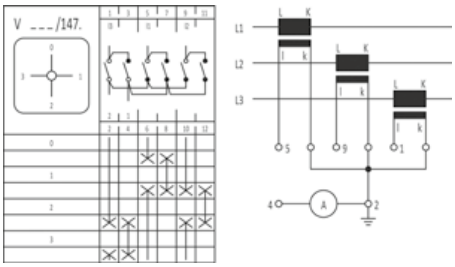
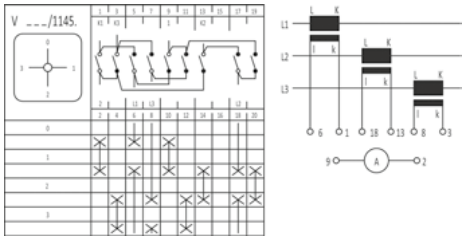
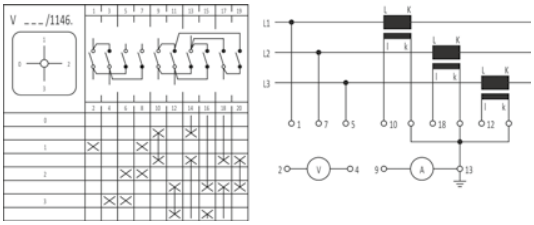
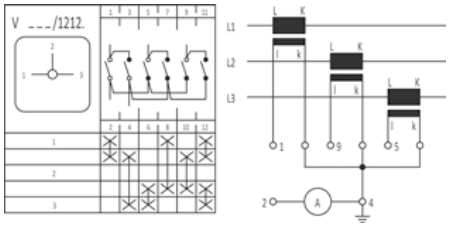
TYPE: VOLTMETER SELECTOR

VOLTMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
3 Line Voltages for 2 Mains	16	V105/188-	XX	
3 Line Voltages	16	V105/1144-	XX	
3 Line Voltages 3 Phase to N	16	V105/1210-	XX	

XX - Replace with Handle Suffix from page 33

AMMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole 3 Transformer Circuits	16	V105/147-	XX	
2 Pole 3 Transformer Circuits	16	V105/1145-	XX	
3 Voltages 3 Currents	16	V105/1146-	XX	
1 Pole 3 Transformer Circuits	16	V105/1212-	XX	

XX - Replace with Handle Suffix from page 33

Discount Schedule SC-10

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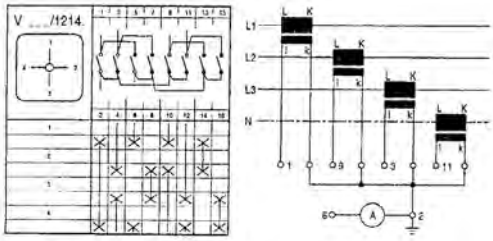
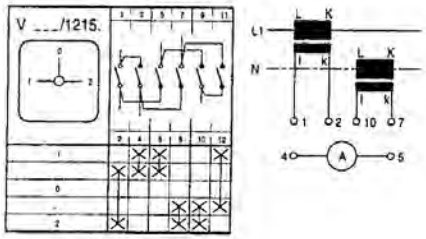
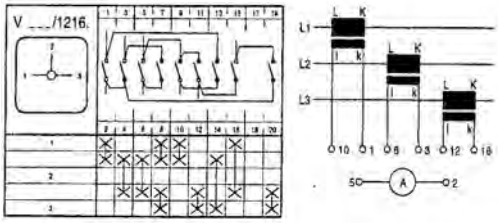
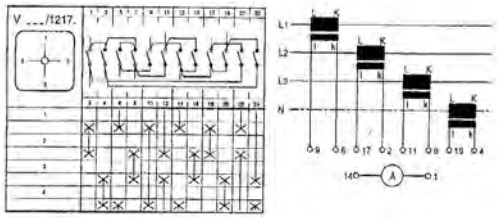
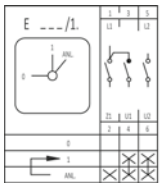
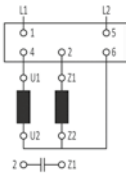
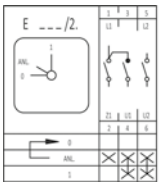
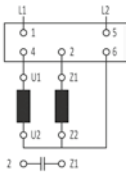
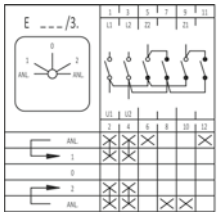
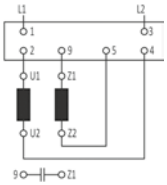
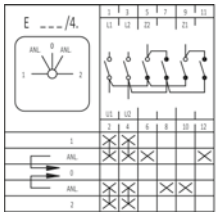
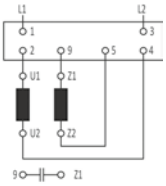
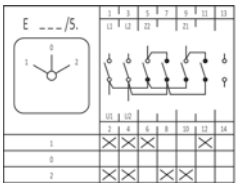
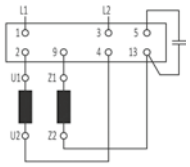
TYPE: AMMETER SELECTOR

AMMETER SELECTOR

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
1 Pole 4 Transformer Circuits	16	V105/1214-	XX	
2 Pole 2 Transformer Circuits	16	V105/1215-	XX	
2 Pole 3 Transformer Circuit	16	V105/1216-	XX	
2 Pole	16	V105/1217-	XX	

XX - Replace with Handle Suffix from page 33

SINGLE-PHASE STARTER SWITCHES

Contact Arrangements	AMPS AC3	Model Number	Handle Code *(see page 33)*	Front Plate / Contact Diagram
With Starter Capacitor	16	E105/1-	XX	  with starting capacitor
	20	E151/1-	XX	
	25	E251/1-	XX	
With Starter Capacitor	20	E151/2-	XX	  with starting capacitor
	25	E251/2-	XX	
2 Reversing	16	E105/3-	XX	  with starting capacitor
	20	E151/3-	XX	
	25	E251/3-	XX	
2 Reversing	20	E151/4-	XX	  with starting capacitor
	25	E251/4-	XX	
With Running Capacitor	16	E105/5-	XX	  running capacitor
	20	E151/5-	XX	
	25	E251/5-	XX	

XX - Replace with Handle Suffix from page 33

TYPE: ENCLOSED REVERSING SWITCHES

ENCLOSED REVERSING SWITCHES

KEY FEATURES:

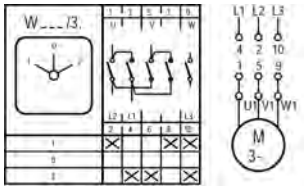
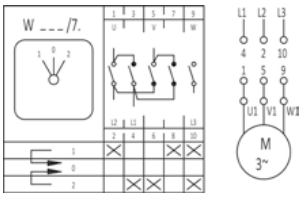
- Polycarbonate,non-metalic, water-tight enclosure (IP65, outdoor rated)
- Choice of either a lockable, disk-style handle (black/gray) or a non-lockable lever style handle (black)
- Choice of either maintained or momentary (spring-return) handle operation.
- Nameplate “REV–OFF–FWD” (standard) or “DWN–OFF–UP” (optional).
- UL approved

Motor Rating; Amps - Horsepower

Switch Prefix*	AC Motor Rating (Amps)	115 V 1 phase	230 V 1 phase	230 V 3 phase	460 V 3 phase
W151	20 Amp	1 HP	3 HP	5 HP	10 HP
W451	40 Amp	3 HP	5 HP	10 HP	25 HP

W151 Series with Disk, **Lockable** Style Handle

W151 Series with Lever, **Non-Lockable**, Style Handle

Contact Arrangements	AMPS	Handle Operation	Model Number	Front Plate / Contact Diagram
3 pole Maintained	20	Lever	W151/3-I2-CA	
		Lockable	W151/3-I2-DA	
	40	Lever	W451/3-I3-CA	
		Lockable	W451/3-I3-DA	
3 pole Spring Return to Center	20	Lever	W151/7-I2-CA	
		Lockable	W151/7-I2-DA	
	40	Lever	W451/7-I3-CA	
		Lockable	W451/7-I3-DA	

***DIMENSIONS:** W151: 4.50” (W) x 4.50” (H) x 6.00” (D)
W451: 5.75” (W) x 5.75” (H) x 7.25” (D)

Label “REV–OFF–FYD” is standard. For “DWN–OFF–UP” replace the letter A in part number suffix with the letter B

For single phase or custom enclosures, consult Springer Controls

TYPE: ENCLOSED CHANGE-OVER SWITCHES

SINGLE-PHASE STARTER SWITCHES

KEY FEATURES:

- Selections of polycarbonate, water-tight enclosure or aluminium enclosure (both IP65, outdoor rated)
- Standard, non-lockable, lever style handle (black)
- 3 position, maintained, handle operation with center “off” position.
- Nameplate “1–0–2” (standard) or custom engraved as an option.
- UL approved

Motor Rating; Amps - Horsepower

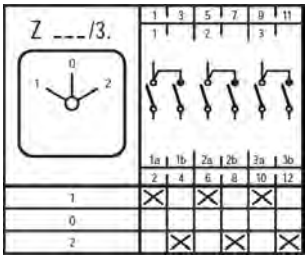
Switch Prefix*	AC Motor Rating (Amps)	115 V 1 phase	230 V 1 phase	230 V 3 phase	460 V 3 phase
Z151	20 Amp	1 HP	3 HP	5 HP	10 HP
Z451	40 Anp	3 HP	5 HP	10 HP	25 HP

Polycarbonate Enclosure with Lever Handle

Aluminium Enclosure with Lever Handle

Contact Arrangements	AMPS	Enclosure	Model Number
3 pole Maintained	20	Polycarbonate	Z151/3.I2N0400
		Aluminium	Z151/3.ALS3-0200
	40	Polycarbonate	Z451/3.I3N0400
		Aluminium	Z451/3.ALS4-0400

Front Plate / Contact Diagram



***DIMENSIONS** *(approximate)*:

Polycarbonate: Z151: 4.50” (W) x 4.50” (H) x 6.00” (D)
Z451: 5.75” (W) x 5.75” (H) x 7.25” (D)

Aluminum: Z151: 7.25” (W) x 6.50” (H) x 3.75” (D)
Z451: 9.75” (W) x 8.75” (H) x 4.00” (D)

For higher amp or custom enclosure, consult Springer Controls.

HANDLE & MOUNTING CODE - CAM SWITCHES

KEY FEATURES:

- 3 mounting styles available for cam switches (see below).
  Replace "XX" suffix from cam part number with letter suffix below. (Example: A251/6-AB, Front Mount 4-hole)
- Standard black lever handle used on all cam switches (custom handles are available on request.)
- Price of switch includes handle and mounting style.
- Cam switches available with enclosure; polycarbonate or aluminum. Consult factory.

Front Mount; 4-hole*

Model / Series	Suffix*
105, 151	AA
251, 451	AB
656, 756	AC

Base Mount; Screw Fixing*

Model / Series	Suffix*
105, 151	PB
251, 451	PC
656, 756	PD

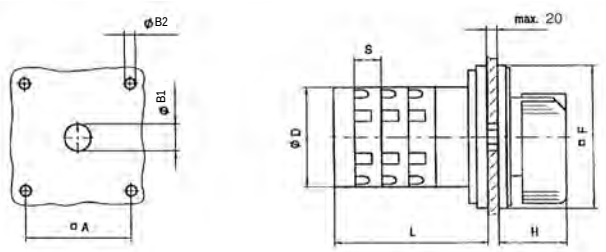
Central Mount; 1-Hole (22.5mm or 30.5mm)*

Model / Series	Suffix*
105, 151, 251	CA
451, 656, 756	Not Available

** All cam handles Black/Grey in color. Consult factory for Red/Yellow. See page 34 for dimensions.*

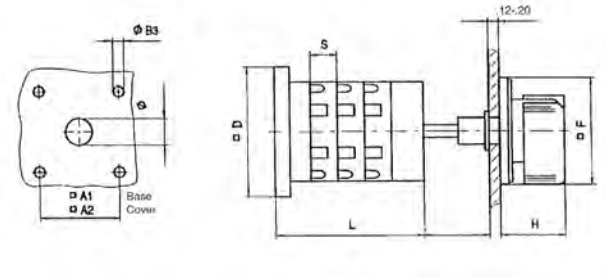
HANDLE & MOUNTING DIMENSIONS

Front Mount; 4-Hole Dimensions



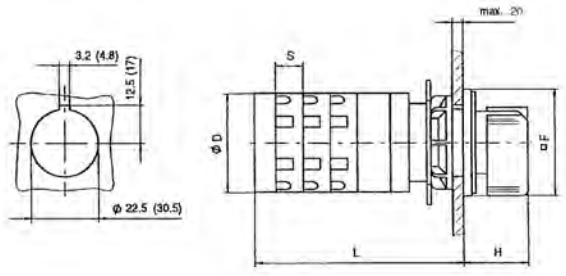
Type	Dimension (Inches)							L By Switch Contacts			
	A	B1	B2	D	F	H	S	1-2	3-4	5-6	7-8
105	1.42	.47	.18	1.73	1.89	1.14	.49	1.34	1.83	2.32	2.81
151	1.42	.47	.18	1.93	1.89	1.14	.49	1.79	2.28	2.78	3.27
251	1.89	.47	.22	2.48	2.52	1.30	.49	1.93	2.42	2.91	3.41
451	1.89	.47	.22	2.83	2.52	1.30	.69	2.13	2.81	3.50	4.19
656	2.68	.59	.22	3.15	3.46	1.38	.63	2.13	2.76	3.39	4.02
756	2.68	.59	.22	3.39	3.46	1.38	1.04	2.52	3.56	4.61	5.65

Base Mount; Screw Fixing Dimensions



Type	Dimension (Inches)							L By Switch Contacts			
	A1	A2	B3	D	F	H	S	1-2	3-4	5-6	7-8
105	1.42	1.42	.18	1.73	1.89	1.14	.49	1.34	1.83	2.32	2.81
151	1.89	1.42	.18	2.40	1.89	1.14	.49	1.71	2.20	2.70	3.19
251	1.89	1.89	.20	2.40	2.52	1.30	.49	1.85	2.34	2.83	3.33
451	2.68	1.89	.20	3.62	2.52	1.30	.69	2.05	2.74	3.43	4.11
656	2.68	2.68	.22	3.62	3.46	1.38	.63	2.05	2.68	3.31	3.94
756	2.68	2.68	.22	3.62	3.46	1.38	1.04	2.44	3.48	4.53	5.57

Central Mount; 1 Hole Dimensions (22.5mm or 30.5mm)



Type	Dimension (Inches)				L By Switch Contacts			
	D	F	H	S	1-2	3-4	5-6	7-8
105	1.73	1.89	1.14	.49	1.89	2.38	2.87	3.37
151	1.93	1.89	1.14	.49	2.70	3.19	3.68	4.17
251	2.48	2.52	1.30	.49	2.83	3.33	3.82	4.31

CAM SWITCH ENCLOSURES

All cam switches can be designated to an enclosure. Enclosures are available in polycarbonate or aluminum cast-iron. Consult factory for pricing of a complete enclosed switch.

Dimensional Data

Dimensions are enclosure only; does not include the handle dimension.

Polycarbonate (IP65 rated)

Series	L x W x D (mm)	Mounting Hole to Hole	Enclosure Type
105	90.5 x 90.5 x 73	80 mm	I1 - D - NL4
105	90.5 x 90.5 x 110	80 mm	I1 - D - HL4
151, 251, ML1	115 x 115 x 98	100 mm	I2 - D- NL4
151, 251, ML1	115 x 115 x 125	100 mm	I2 - D - HL4
451, ML2	145 x 145 x 120	130 mm	I3 - D - NL4
451, ML2	145 x 145 x 150	130 mm	I3 - D - HL4
656*, 756*	300 x 300 x 170	271 mm	I7N
656*, 756*	300 x 300 x 214	271 mm	I7H

* Clear polycarbonate cover face

Aluminum Cast-Iron (IP54 rated)

Series	L x W x D (mm)	Mounting Hole to Hole	Enclosure Type
105, 151	105 x 105 x 79	80 mm	A18
151, 251	121 x 121 x 92	80 mm	A19

* Consult factory for additional sizes

CAM SWITCH ACCESSORIES

Extension Terminal

Type	SCC Catalog No.
Extension Terminals	AS

** C.F. - Consult Factory items will vary in price according to switch configuration.*

Blade Terminal

Type	SCC Catalog No.
Blade Terminals	F

** C.F. - Consult Factory items will vary in price according to switch configuration.*

Auxiliaries

Type	SCC Catalog No.
PE Terminals	PE
N Terminals	N

Protection Covers

Type	SCC Catalog No.
Protection Covers	DH

** C.F. - Consult Factory items will vary in price according to switch configuration.*

Voltage Release - Loss of Voltage

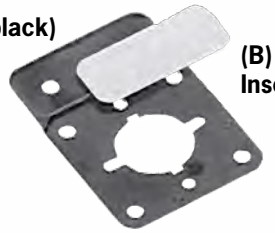
Type	SCC Catalog No.
Voltage Release	U

24V AC, 120V AC, 240V AC

** C.F. - Consult Factory items will vary in price according to switch configuration.*

Front Plates For Central 2 & 3 Hole Mounting

(A)
Base Plate (black)



(B)
Insert Plate (silver)

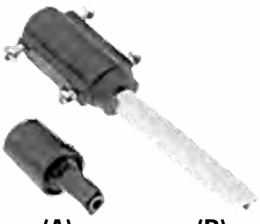
Type	Color	Size	Dimension	SCC Catalog No.
A	Black	0	30 x 51mm	EB91
A	Black	1	48 x 69mm	EB64
B	Silver	0		ES
B	Silver	1		ES1

Front Plates Size 1 & Size 2

Color	Size	Dimension	SCC Catalog No.
Yellow	1	66 x 89mm	MSY
Grey	2	86 x 108mm	MSG

Base & Rear Mounting Up To Series 451

Extension Shafts



(A) **(B)**

Type	Size	SCC Catalog No.
A	18mm (max. 5 pcs.)	AL18
B	65 - 80mm	AL-65
B	165 - 205mm	AL165
B	265 - 305mm	AL265
B	365 - 405mm	AL365

SPRINGER controls company

SPECIAL ORDER FORM

Name: _____

Company: _____

P.O. Box: _____

Street Address: _____

City, State, Zip _____

Telephone # _____

Fax # _____

e-mail address _____

send to:

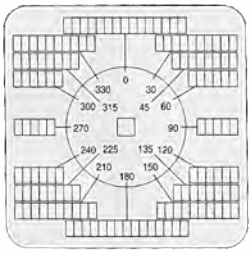
Springer Controls Co., Inc.

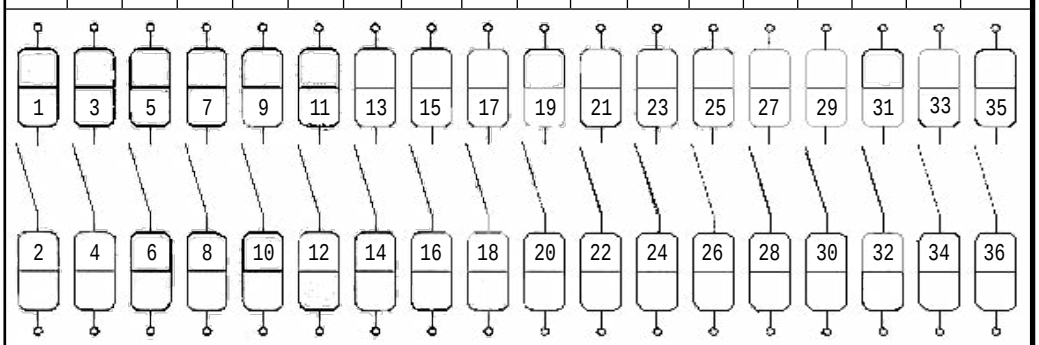
96074 Chester Road
Yulee, Florida 32097

Phone: (904) 225-0575
Fax: (904) 225-9084

SpringerControls.com

Front Plate





Swiching Angle	○	□ Complete Rotation
	Switch Position Marking	Degree

Key Removable	Contact Closed	Contact Closed Without Interruption
Spring Return		Wiping Contact

Series:

Application:

Quantity:

Accessories:

Date:	Writer:	Factory Type:	Factory Order No.:

Industrial Electrical Controls

SPRINGER controls company

Power Switching Devices

HAZARDOUS LOCATION SWITCHES

springercontrols.com

INDEX

Springer Controls hazardous location switches, also known as oil immersed switches, are designed to provide dependable, heavy duty performance in indoor or outdoor locations; specifically where atmospheric conditions are dusty, corrosive or hazardous. Their positive action and heavy-duty construction make them suitable for the most rugged application. They are dependable under the most extreme operating conditions.

HAZARDOUS LOCATION / OIL IMMERSED SWITCHES;

Description / Features **4**

Specifications **5**

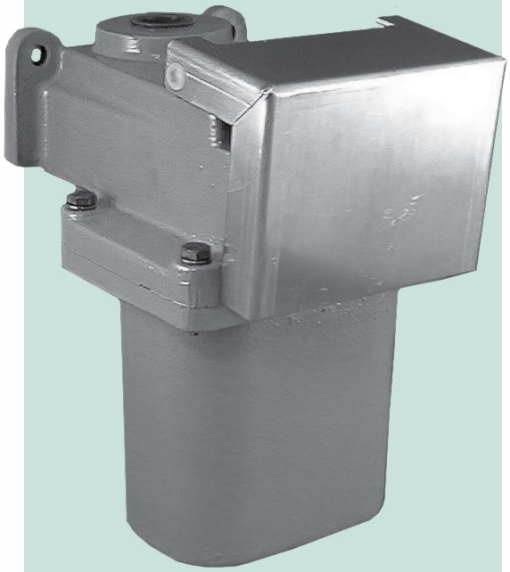
Model # **6, 7**

Accessories **8, 9**

Dimensions **10**

DESCRIPTION / FEATURES

2080-ZQ11



2080-AF8-1

Description

Springer Controls hazardous location switches, also known as oil immersed switches, are designed to provide dependable heavy duty performance in indoor or outdoor locations; specifically where atmospheric conditions are dusty, corrosive or hazardous. Their positive action and heavy-duty construction make them suitable for the most rugged application. They are dependable under the most extreme operating conditions.

Features

Typical applications include: oil refineries, chemical plants, textile mills, paper mills, steel mills, food processing and any area where corrosive or hazardous conditions exist.

The standard enclosure consists of heavily constructed cast iron top and tank. A functional design that facilitates installation and provides a dust-tight, weather-resistant lever operator. The top casting has a provision to lock the operating lever in either the “on” or “off” position.

The operating mechanism consists of heavy duty contacts, a molded phenolic mounting panel and push-rod, wing-type cast iron operating lever, monel shaft, stainless steel bushings and washers.

All operator stations are designed with maximum flexibility of contact arrangement and access to operating parts for easy installation, maintenance and inspection.

The control of corrosion from atmospheric conditions and the elimination of exposed arcs are accomplished by the immersion of all operating parts in oil. The Type 675 has the Underwriters Laboratory (UL) approval for Hazardous Location, File #184636.

SPRINGER controls company

SPECIFICATIONS

Specifications

Type 675	Type 604
Type 675 Hazardous Locations Nema 3R, 7, 8, 9 Class I, Group B, C, D Class II, Group E, F, G	Type 604 Watertight, Corrosion Proof Nema 3, 4, 11, 12 Class I, Group D, Div. 2

Specifications

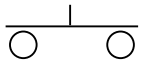
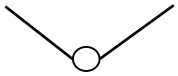
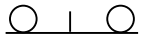
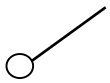
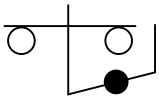
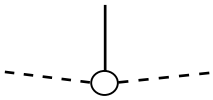
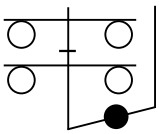
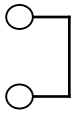
	675 Dim. 1	604 Dim. 1
Approx. Ship wt. Lbs.	18lb	17lb
Oil[1] Capacity Qts.	1	1
Hub Size (Two / Unit)	3/4”	3/4”
Dia. Mounting Holes	3/8”	3/8”

[1] *All units shipped less oil*

Contact Rating - AC
Air or Oil - NEMA A600

6 Amps - 120V 3 Amps - 240V 1.5 Amps - 480V 1.2 Amps - 600V	Recommended switch oil or transformer oil is Chevron “Univolt N61”. (**Not** provided with switch)

Contact Configuration - Handle Lever Style

	Indicates momentary make; spring return		Indicates common double lever
	Indicates momentary break; spring return		Indicates single lever
	Indicates maintained contact		Indicates 3 position selector
	Indicates maintained contact; two circuit		Indicates removable

MODEL

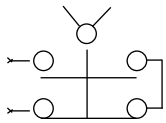
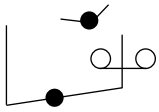
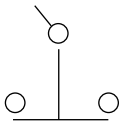
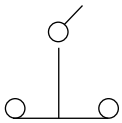
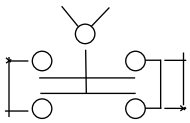
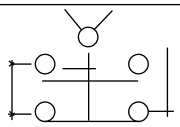
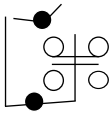
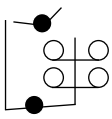
2080-AF8

Springer Controls line of corrosive-hazardous location operators stations offer heavy duty construction and positive contact action. Internal contact assemblies are identical in each type of station.

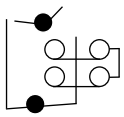
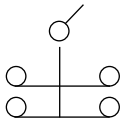
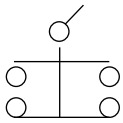
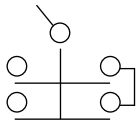
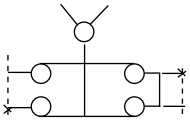
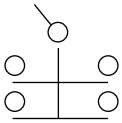
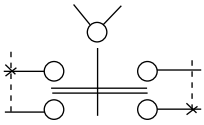
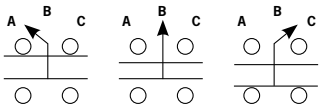
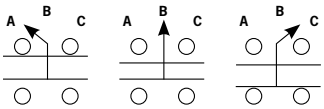
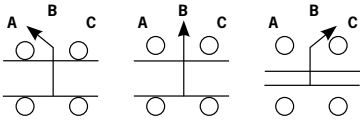
Approved enclosures for Springer Controls Push Buttons are:
Type 604 - designed for use in NEMA 3, 4, 11, and 12.
Type 675 - designed for use in NEMA 3R, 7, 8, and 9.

For maximum protection against corrosion and elimination of exposed arcs, switch oil is recommended.

All **Type 675** stations are **UL** Listed and **cUL** Listed

NEMA 3R, 7, 8, 9 Type 675	NEMA 3, 4, 11, 12 Type 604	Contact Arrangement	
2080-AF8	2080-AF11	1 N.O. - 1 N.C. Momentary	
2080-B8	2080-B11	1 N.C. Maintained	
2080C8	2080-C11	1 N.O. Momentary	
2080-D8	2080-D11	1 N.C. Momentary	
2080-E8	2080-E11	2 N.O. Momentary	
2080-F8	2080-F11	1 N.O. - 1 N.C. Momentary	
2080-I8	2080-I11	1 N.C. - 1 N.O. Maintained	
2080-J8	2080-J11	2 N.C. Maintained	

MODEL

NEMA 3R, 7, 8, 9 Type 675	NEMA 3, 4, 11, 12 Type 604	Contact Arrangement	
2080-R8	2080-R11	2 N.C. Maintained	
2080-S8	2080-S11	2 N.C. Momentary	
2080-T8	2080-T11	1 N.O. - 1 N.C. Momentary	
2080-WL8	2080-WL11	2 N.O. Momentary	
2080-WS8	2080-WS11	2 N.C. Momentary	
2080-Y08	2080-Y011	2 N.O. Momentary	
2080-YT8	2080-YT11	2 N.O. Momentary	
2080-TY8 (not UL)	2080-TY11	Sel.Sw.; Left Spring Return, Maintained Right	 Spring Return From "A" Maintained "C"
2080-VV8	2080-VV11	Sel. Sw; Maintained Left, Center, Right	 Maintained In All Positions
2080-ZQ8	2080-ZQ11	Sel. Sw.; Left Spring Return, Maintained Right 1 N.O. / 1 N.C.	 Spring Return From "A" Maintained "C"

ACCESSORIES

Springer Controls can help you meet any requirement. Our custom built stations include special maintained and momentary contact arrangements, lever guards and special conduit hubs. Custom nameplate kits available as well.

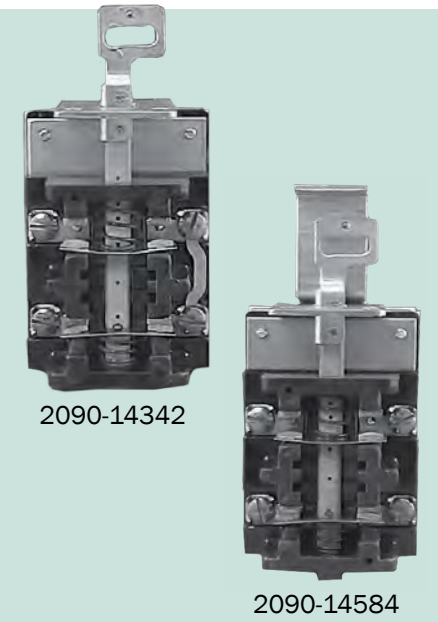
Custom Build - Suffix

Add the "catalog-suffix" to the switch part number to obtain factory built modifications.

ie. 2080-ZQ8-1...
Complete unit with operating lever guard installed

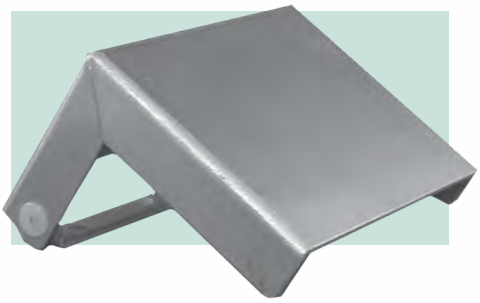
Factory Modification		SCC Cat. Suffix
Operating Lever Guard	LG 1	-1
Optional Hubs	1 Inch	-3
Optional Hubs	1 1/4 Inch	-4

Contact Assemblies (Type 2080-604 & 2080-675)



Replacement Parts	SCC Catalog No.
Switch Rod	2090-14309
Push Button Contact Assembly - AF	2090-14342
Push Button Contact Assembly - B	2090-14440
Push Button Contact Assembly - C	2090-14441
Push Button Contact Assembly - D	2090-14442
Push Button Contact Assembly - I	2090-14567
Push Button Contact Assembly - ZQ	2090-14584
Push Button Contact Assembly - J	2090-14829
Push Button Contact Assembly - VV	2090-17574
Push Button Contact Assembly - TO	2090-24482
Push Button Contact Assembly - TY	2090-14522
Push Button Contact Assembly - YT	2090-14527

Field Kit: Operating Lever Guard



Accessories and Parts	SCC Catalog No.
Lever Guard - Single Tank	2080-LG1

ACCESSORIES

Standard Nameplate Kits *(includes the rivets for field installation)*

● HANDS-OFF-AUTO ●

2080-N5

Nameplate specs.

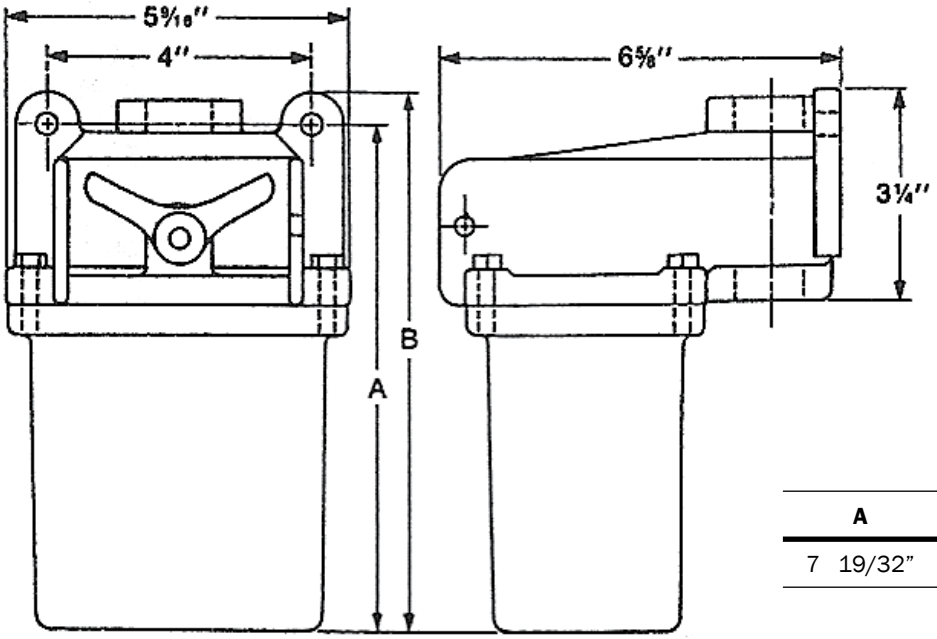
Width: 3/8”
Length: 3.25”
Hole Ø: 1/8” (Two holes)

2080-ZQ11
with 2080-N5 Nameplate

Nameplate	SCC Catalog No.
Nameplate “Start-Stop”	2080-N1
Nameplate “Start”	2080-N2
Nameplate “Stop”	2080-N3
Nameplate “Reset”	2080-N4
Nameplate “Hands-Off-Auto”	2080-N5
Nameplate “Automatic”	2080-N6
Nameplate “Down”	2080-N7
Nameplate “Emergency”	2080-N8
Nameplate “Fast-Off-Slow”	2080-N9
Nameplate “Forward-Off-Reverse”	2080-N10
Nameplate “Hand”	2080-N11
Nameplate “Hand-Auto-Off”	2080-N12
Nameplate “Reset-Stop-Start”	2080-N13
Nameplate “Jog”	2080-N14
Nameplate “Tower”	2080-N15
Nameplate “Off”	2080-N16
Nameplate “On”	2080-N17
Nameplate “Open”	2080-N18
Nameplate “Raise”	2080-N19
Nameplate “Reverse”	2080-N20
Nameplate “Run”	2080-N21
Nameplate “Start-On-Off”	2080-N22
Nameplate “Start-Run-Stop”	2080-N23
Nameplate “Test”	2080-N24
Nameplate “Up”	2080-N25
Nameplate “Trip”	2080-N26
Nameplate “Manual-Off-Auto”	2080-N27
Nameplate “Slow-Fast”	2080-N28
Nameplate “Run-Stop”	2080-N29
Nameplate “ON-Off”	2080-N30
Nameplate “Jog-Auto-Off”	2080-N31
Nameplate “Jog-Off-Auto”	2080-N32
Nameplate “Start-Auto-Off”	2080-N33
Nameplate “Fire-Shunt”	2080-N34

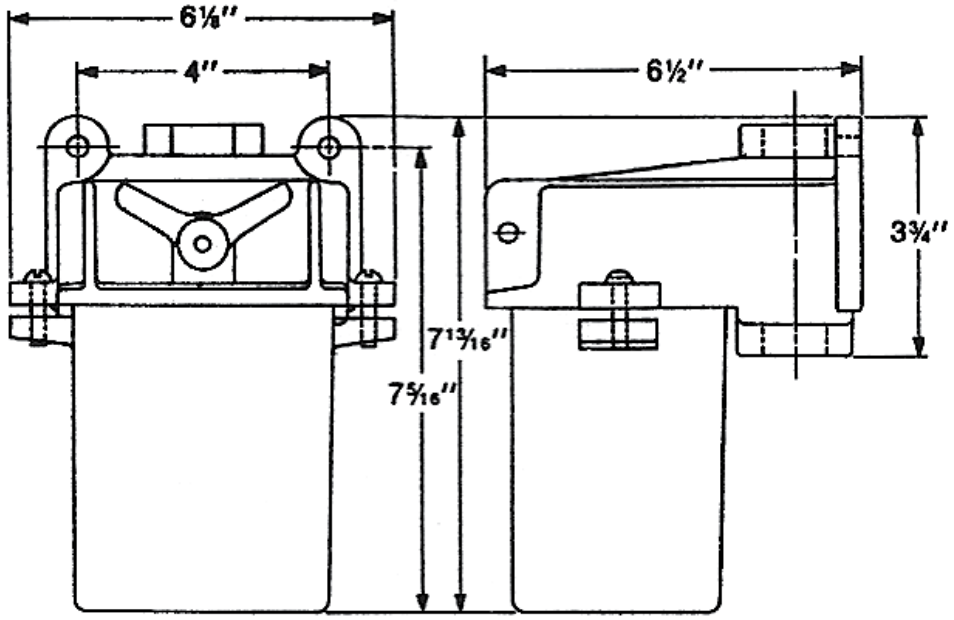
DIMENSIONS

Type 675



A	B
7 19/32"	8 1/4"

Type 604



Industrial Electrical Controls

SPRINGER controls company

Power Switching Devices

UL1077 & UL 508 Listed Supplementary Breakers

UL489 Listed Branch Circuit Breakers

CIRCUIT BREAKERS

springercontrols.com

INDEX

Springer Controls carries a complete line of Techna Miniature Circuit Breakers (MCB) rated from 0.5 amps through 63.0 amps. Applications include usage in UL508A panels, motor group installations, motor disconnects or whenever a circuit breaker is required in power or control circuitry.

MINIATURE CIRCUIT BREAKERS (MCB)

Jtec UL (Motor Disconnect) UL1077 & UL508 10 kA

- General Information 4
- Nomenclature 4
- Part Number 4
- Trip Curves 5
- Dimensions 5
- Accessories 6
- Technical Specs 7
- Interrupting Capacities 8

Jtec 489 (Branch Circuit Protection)

- General Information 9
- Nomenclature 9
- Part Number 9
- Trip Curves 10
- Dimensions 10
- Accessories 11
- Technical Specs 12
- DC Rated Technical Specs 12

JtecUL MOTOR DISCONNECT

Springer Controls carries a complete line of Techna Miniature Circuit Breakers (MCB) rated from 0.5 amps through 63.0 amps. Applications include usage in UL508A panels, motor group installations, motor disconnects or whenever a circuit breaker is required in power or control circuitry.

JtecUL - General Information

- 0.5 amp through 63.0 amps
- Rated as a manual motor controller switch suitable for motor disconnect. Separate disconnect switch not required.
- UL 1077 recognized, UL 508 listed
- 10kA, 480Y / 277 VAC
- 1,2,3,4 Poles

JtecUL Nomenclature

JTEC	UL	2	B	10
10kA Series MCB	UL 508 Listed UL 1077 Recognized	No. of Poles 1, 2, 3, 4	Trip Curve B, C, D *(see curve Diagrams page 5)*	Current Rating (A) 0.5, 01, 02, 03, 04, 05, 06, 08, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 60, 63A

JtecUL Part Number

		SCC Catalog Number
1-Pole	Curve B	JTECUL1B*
	Curve C	JTECUL1C*
	Curve D	JTECUL1D*
2-Pole	Curve B	JTECUL2B*
	Curve C	JTECUL2C*
	Curve D	JTECUL2D*
3-Pole	Curve B	JTECUL3B*
	Curve C	JTECUL3C*
	Curve D	JTECUL3D*
4-Pole	Curve B	JTECUL4B*
	Curve C	JTECUL4C*
	Curve D	JTECUL4D*

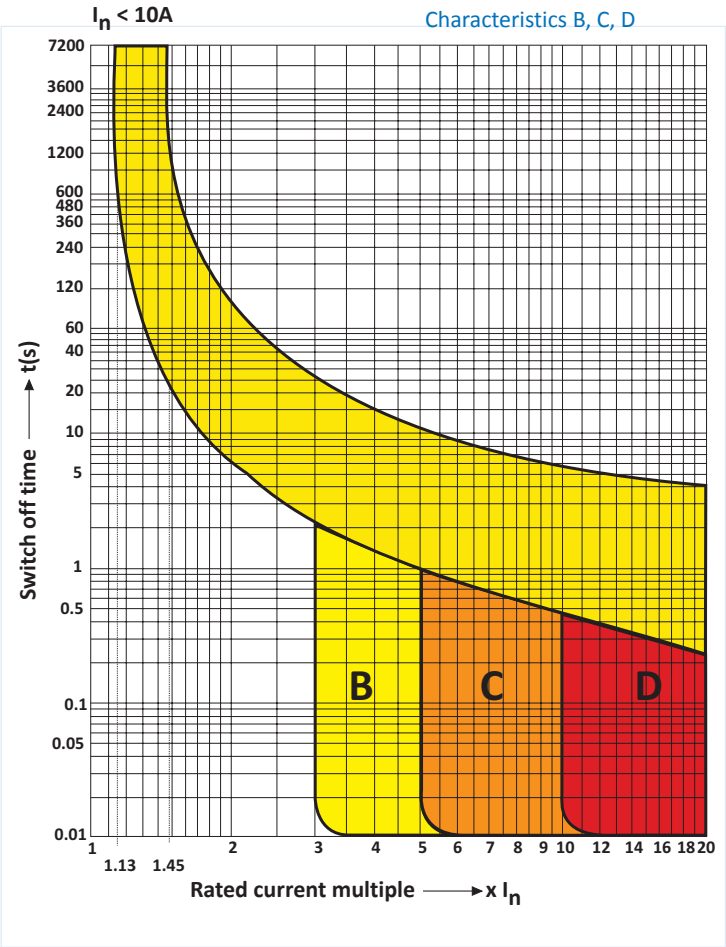
* Amps.= 0.5, 1, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 60, 63A
(see curve diagram on page L3 for selection)

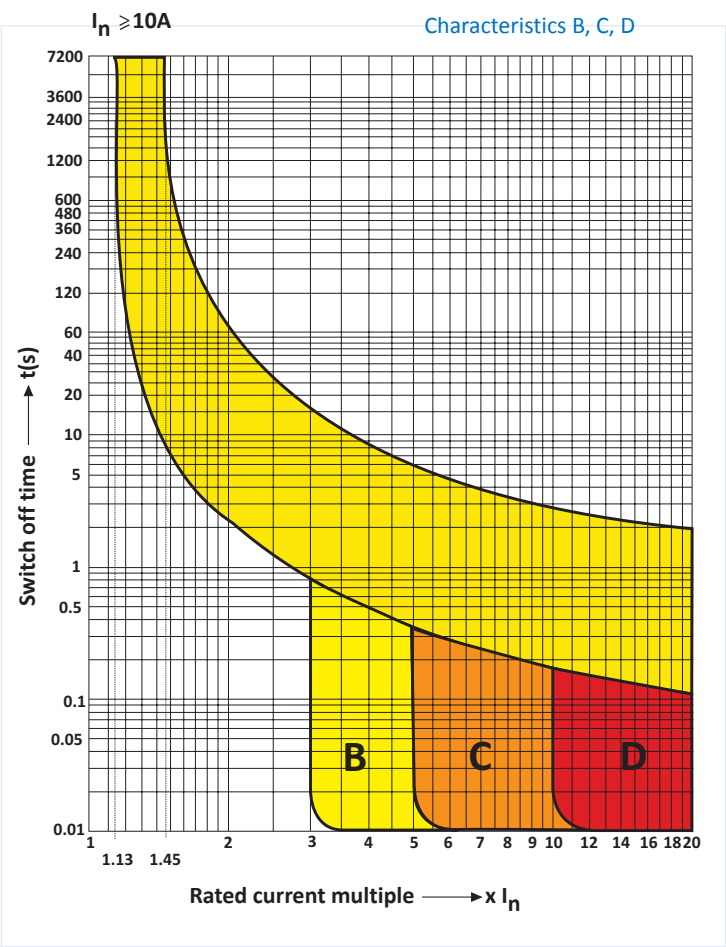
Discount Schedule SC-45

Springer Controls Company • 96074 Chester Road, Yulee, FL 32097 • (904) 225-0575 • Fax: (904) 225-9084 • springercontrols.com

JtecUL MOTOR DISCONNECT

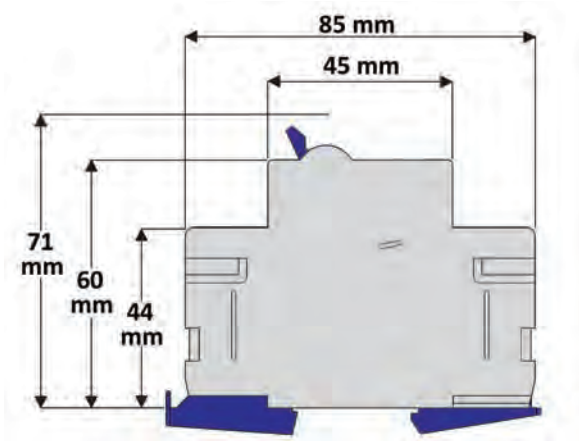
JtecUL Trip Curves

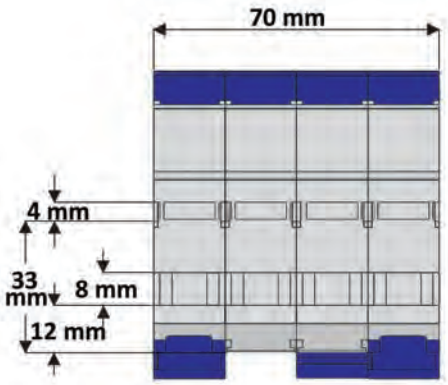




B= Shorter Trip, C= Medium Trip, D= Longer Trip

JtecUL Dimensions





JtecUL - Protectors

4A Rated Auxiliary Contacts

Neutral Pole

Lockon, Lockoff Adaptors

Accessories		Cable Min	Cable Max	Torque Max	SCC Catalog No.
Auxiliary & Signal Contacts	1 Changeover	0.5mm² AWG 20	2.5mm² AWG 18	0.5Nm 4 lb-in	JTECULAUX1CO
	2 Changeover				JTECULAUX2CO
	1 Changeover + 1 Signal Changeover				JTECULAUXSCO
	1 Changeover + 1 Signal + Test Button				JTECULAUXSTCO
Neutral Pole		2.5mm² AWG 18	25mm² AWG 3	2.8Nm 25 lb-in	JTECULN2
Lockoff Adaptor		Black			JTECULP1BLACK
		Yellow			JTECULP1YELLOW

Shunt Trip

Under Voltage Release

Accessories		Cable Min	Cable Max	Torque Max	SCC Catalog No.	
					Shunt Trip	Undervoltage Release
AC	12V	2.5mm² AWG 18	25mm² AWG 3	2.8Nm 25 lb-in	JTECULST12AC	JTECULUV12AC
	24V				JTECULST24AC	JTECULUV24AC
	48V				JTECULST48AC	JTECULUV48AC
	60V				JTECULST60AC	JTECULUV60AC
	110V				JTECULST110AC	JTECULUV110AC
	120V				JTECULST120AC	JTECULUV120AC
	230V				JTECULST230AC	JTECULUV230AC
	277V				JTECULST277AC	JTECULUV277AC
	400V				JTECULST400AC	JTECULUV400AC
DC	12V	2.5mm² AWG 18	25mm² AWG 3	2.8Nm 25 lb-in	JTECULST12DC	JTECULUV12DC
	24V				JTECULST24DC	JTECULUV24DC
	48V				JTECULST48DC	JTECULUV48DC
	110V				JTECULST110DC	JTECULUV110DC

JtecFMA - Front Mount Adaptors

The front mount adaptors allow easy conversion from rear DIN rail mounting to front panel mounting on any of our **Jtec/JtecUL/ Jtec489** range of MCB's. Available in 1, 2 and 3 pole.

JtecFMA for	SCC Catalog No.
1 pole	JTECRMA1P
2 pole	JTECRMA2P
3 pole	JTECRMA3P

Jtec - Panel Clip

Replaces standard DIN Rail clip allowing breaker to be screwed to back of panel without the use of DIN Rail

Description	SCC Catalog No.
Panel Clip - order 2 per pole	Jtec Panel Clip

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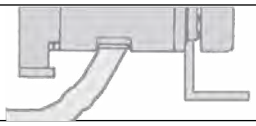
TECHNICAL SPECIFICATIONS

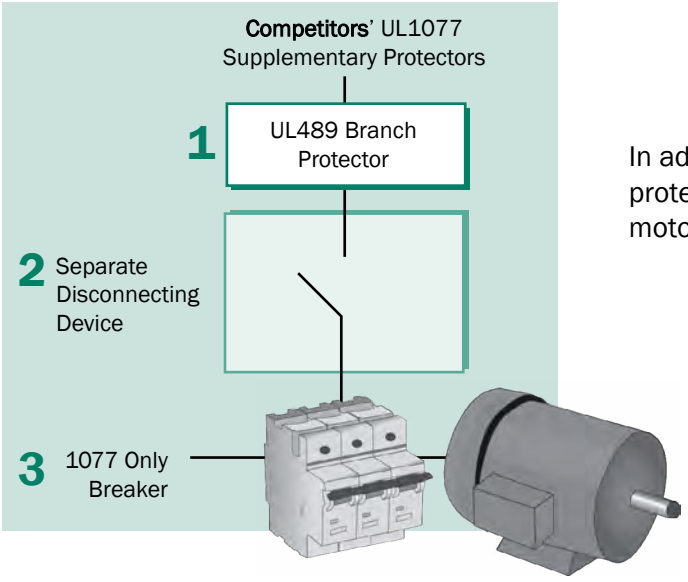
JtecUL - Technical Specifications

	AC MCB's
Current Ratings (A)	0.5, 1, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 63A
Number of Poles	1, 2, 3, 4, 1+N, 3+N
Trip Curves to En 60898	B, C, D
Rated Voltage	230 / 400Vac EN60898
	480 / 277 Vac UL1077/508
Rated DC Voltage	max. 48V DC - 1p
Rated Frequency	50 - 60 Hz
Short Circuit Capacity (interrupt Rating) acc. EN60898	10kA
European Energy Limiting Class to EN60898	Class 3, B & C 0.5 A-40 A
UL Interrupt Rating	5kA No backup
	10kA with backup fuse
Electrical Life	6000 cycles on/off tested for motor disconnect
Mechanical Life	100,000 cycles on/off
Protection Degree	IP20 at front
Ambient Temperature Range	-13°F to 140°F (-25°C to 60°C)
Operational Position	In any plane
Compliance Standards	UL1077 / UL508, EN60898
Vibration Resistance	3g (8 - 50Hz)
Resistance to Thermal Shocks	284°F (140°C)

	Connectable Conductor Cross Sections Cable Clamp	
Type of Conductor	**Minimum**	**Maximum**
Single wire, Multiple wire, Fine wire, Fine wire wit Ferrule	1mm^2 / AWG18	25mm^2 / AWG3
Tightening Torque	2.8Nm/25lb-in	2.8Nm/25lb-in
Maximum Feed Current through Jtec MCB to Busbar	126A	

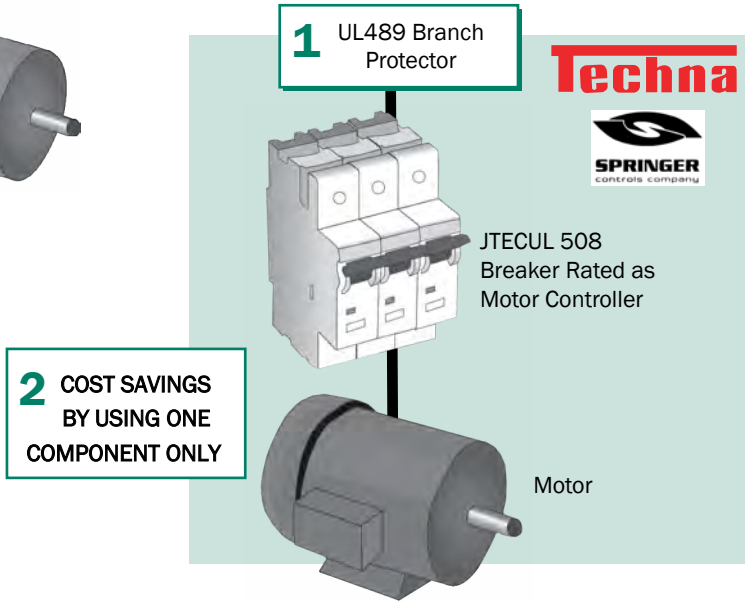
Interrupting Capacities

UL1077 Supplementary Protection	5kA	480Y/277 VAC	No backup fuse
	10kA	480Y/277 VAC 0.5–6 A	No backup fuse
		480Y/277 VAC>6 A	Backup fuse 4 x I_n Class J
UL 508 Manual Motor Controller Suitable for protection and switching of Motor Circuits	5kA	480Y/277 VAC	No backup fuse
	10kA	480Y/277 VAC 0.5–6 A	No backup fuse
		480Y/277 VAC>6 A	Backup fuse 4 x I_n Class J
Motor Control	Rated as Manual Motor Controller suitable for motor disconnect Separate switch not required		
Suitable for use on a circuit capable of delivering not more than 5kA rms Symmetrical Amperew, 480 / 277V maximum			
Suitable for use on a circuit capable of delivering not more than 1kA rms Symmetrical Amperes, 480 / 277V when protected by J Class Fuses			



COST SAVINGS POTENTIAL

In addition to performing as a supplementary protector the JtecUL is UL508 listed for use as a motor controller.



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JTEC 489; BRANCH CIRCUIT PROTECTION

Jtec 489 - General Information

- 0.2 amp through 63.0 amps
- Rated as a branch circuit breaker able to be used to protect a branch circuit without a backup device.
- 10kA, 480Y/277 VAC (up to 32 amps); 240 VAC (33 to 63 amps) 10kA, 125 VDC 1 pole; 250VDC 2 poles
- 1,2,3,4 Poles (AC); 1, 2 Poles (DC)
- UL 489 listed (FILE E255530)

JTEC 489 Nomenclature

Ordering Code - AC

JTEC	489	2	B	10
10kA Series MCB AC Applications	UL 489 Listed	No. of Poles 1, 2, 3, 4	Trip Curve B, C, K, D *(see curve Diagrams pg L5)*	Current Rating (A) 0.2, 0.5, 01, 1.6, 02, 03, 04, 05, 06, 07, 08, 09, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50, 60, 63A

Ordering Code - DC

JTEC DC	489	1	C	20
10kA Series MCB DC Applications	UL 489 Listed	No. of Poles 1, 2	Trip Curve B, C, K, D *(see curve Diagrams pg L5)*	Current Rating (A) 0.2, 0.5, 01, 1.6, 02, 03, 04, 05, 06, 07, 08, 09, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50, 60, 63A

** special current ratings available on request*

Jtec 489 Part NUMBERS - AC (for DC, see ordering code above)

		SCC Catalog No.
1-Pole	Curve B, C, K, D	JTEC489-1#*
2-Pole	Curve B, C, K, D	JTEC489-2#*
3-Pole	Curve B, C, K, D	JTEC489-3#*
4-Pole	Curve B, C, K, D	JTEC489-4#*

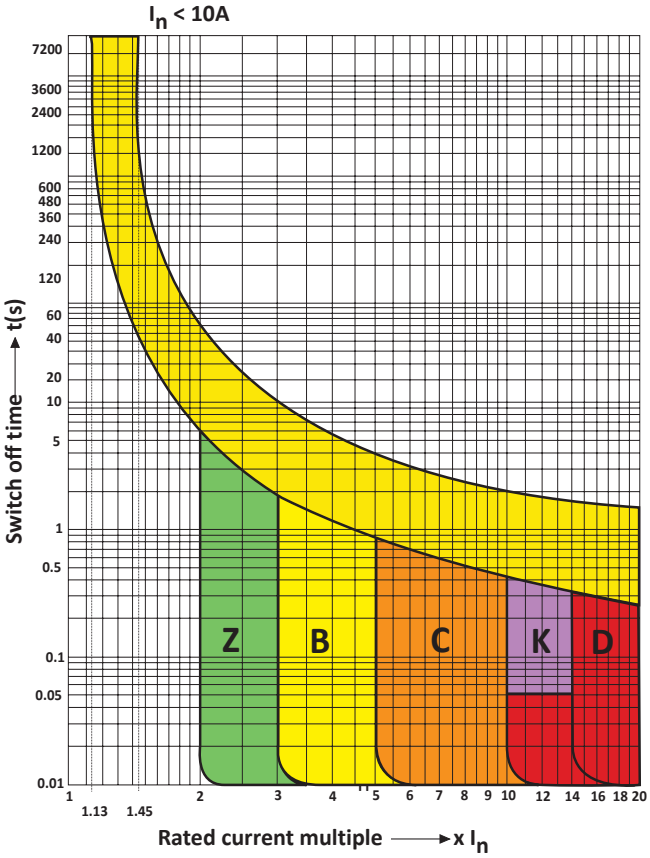
 # - Curve = B - Quick, C - Medium, K - Motor, D - Long

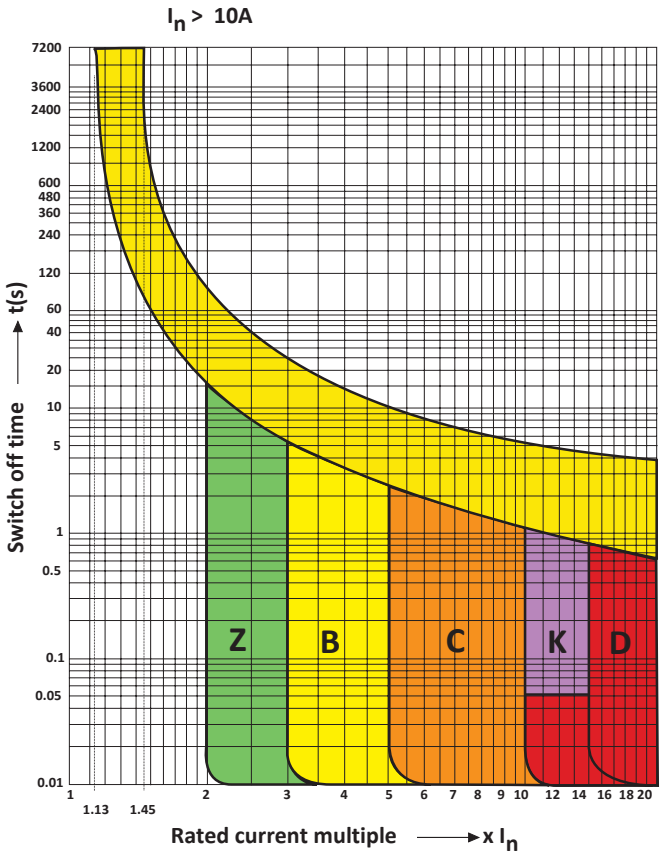
* Amps.= 0.2, 0.5, 1, 1.6, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16, 20, 25, 30, 32, 40, 50, 60, 63A
(see curve diagram on page L5)

Discount Schedule SC-45

JTEC 489; BRANCH CIRCUIT PROTECTION

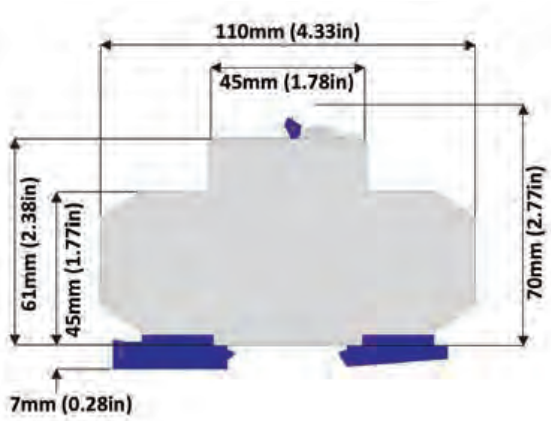
Jtec 489 Trip Curves

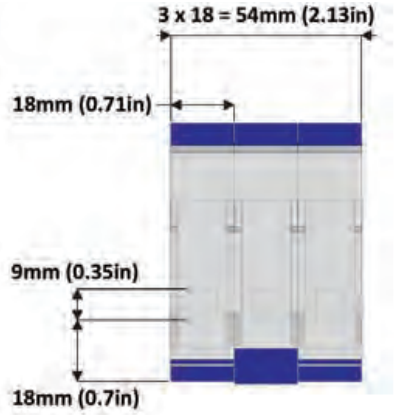




B= Short Trip, C= Medium Trip, K= Motor Trip, D= Longer Trip

Jtec 489 Dimensions





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Jtec 489 ACCESSORIES

Jtec 489 - Protectors

4A Rated Auxiliary Contacts

Neutral Pole

Lockon, Lockoff Adaptors

Accessories		SCC Catalog No.
Auxiliary and Signal Contacts	1 Changeover Contact	JTEC489AUX1CO
	2 Changeover Contact	JTEC489AUX2CO
	1 Changeover + 1 Signal Changeover	JTEC489AUXSCO
	1 Changeover + 1 Signal + Test Button	JTEC489AUXSTCO
N-Pole	Neutral Pole	JTEC489N2
Lockon/Lockoff off Adaptors	Black	JTEC489P1BLACK
	Yellow	JTEC489P1YELLOW

Shunt Trip

Under Voltage Release

Accessories		SCC Catalog No.	
		Shunt Trip	Undervoltage Release
AC	12Vac	JTEC489ST12AC	JTEC489UV12AC
	24Vac	JTEC489ST24AC	JTEC489UV24AC
	48Vac	JTEC489ST48AC	JTEC489UV48AC
	60Vac	JTEC489ST60AC	JTEC489UV60AC
	110Vac	JTEC489ST110AC	JTEC489UV110AC
	120Vac	JTEC489ST120AC	JTEC489UV120AC
	230Vac	JTEC489ST230AC	JTEC489UV230AC
	277Vac	JTEC489ST277AC	JTEC489UV277AC
	400Vac	JTEC489ST400AC	JTEC489UV400AC
DC	12Vdc	JTEC489ST12DC	JTEC489UV12DC
	24Vdc	JTEC489ST24DC	JTEC489UV24DC
	48Vdc	JTEC489ST48DC	JTEC489UV48DC
	110Vdc	JTEC489ST110DC	JTEC489UV110DC

JtecFMA - Front Mount Adaptors

Techna's new front mount adaptors allow the easy front attachment of any of our **Jtec/JtechUL/Jtec489** range of MCB's. Available in either 1, 2,and 3 pole.

JtecFMA for	SCC Catalog No.
1 pole	JTECRMA1P
2 pole	JTECRMA2P
3 pole	JTECRMA3P

Technical Data for Jtec 489

	AC MCB's
Current Ratings (A)	0.2, 0.5, 1, 1.6, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 20, 25, 30, 32, 35, 40, 50, 60, 63 (special current rating available on request)
Number of Poles	1, 2, 3, 4, 1+N, 3+N
Trip Curves to En 60898	B, C, K, D
Rated Voltage	230 / 400Vac EN60898
	480 / 277 Vac UL489, upto 32A)
	240 Vac (UL489, upto 63A
Rated Frequency	50/60 Hz
Short Circuit Capacity acc. EN60898/60947-2	10kA
European Energy Limiting Class to EN60898	Class 3, B & C 0.2 A-40 A
UL Interrupt Rating	510kA
Electrical Life	6000 cycles on/off
Mechanical Life	100,000 cycles on/off
Protection Degree	IP20 at front
Ambient Temperature Range	-13°F to 140°F (-25°C to 60°C)
Operational Position	In any plane
Compliance Standards	UL489, EN 60898/EN 60947-2
Vibration Resistance	3g (8 - 50Hz)
Resistance to Thermal Shocks	284°F (140°C)
Connectable Cross Section	$1mm^2$ - $25mm^2$ / AWG18-AWG3
Tightening Torque	2.8Nm / 25 lb-in

Technical Data for Jtec 489 DC

Jtec dc circuit breaker allows usage on dc circuits upto 125Vdc in a single pole and 250Vdc with two poles in series configuration.

The JtecDC device is polarity sensitive and must be wired correctly as per the examples to the right.

Poles	Voltage	Breaking capacity
Single Pole	125Vdc	10kA
Double Pole in Series	250Vdc	10kA

Industrial Electrical Controls

SPRINGER® controls company

Crane & Hoist Control

PENDANT AND WALL MOUNT CONTROL STATIONS

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PENDANT AND WALL MOUNT CONTROL SYSTEMS

Springer Controls is the North American distributor for **Tecno Elettrica Ravasi (TER)** of Italy. **TER** is a world leader in the manufacturing of crane and hoist controls. **Springer / TER** offers multiple options of pendant controls and push button stations to the North American market. Springer Controls stocks the parts in the U.S. to customize and build out the controls for immediate shipment.

INDEX

ALPHA Pendant
2 Column Design, 2–13 Operators ..... 5 – 16

CHARLIE Pendant
Pistol Grip Design, 2–3 Operators ..... 17 – 24

MIKE Pendant
1 Column Design, 4–15 Operators ..... 25 – 40

MIKE-D Pendant
Direct Control Design, 3–4 Operators ..... 41 – 48

MIKE-X Pendant
Explosion Proof, 4–16 Operators ..... 49 – 56

NPA Pendant
1 Column Design, 2–12 Operators ..... 57 – 72

NPA-CP Pendant
Direct Control Design, 2–8 Operators ..... 73 – 82

SPA Pendant
Rugged 2 Column Design, 2–20 Operators ..... 83 – 96

VICTOR Control Station
Wall Mount Design, 1–8 Operators ..... 97 – 114

ALPHA

PENDANT CONTROL STATION

The **ALPHA** Pendant control station has a unique 2 column design that contains from 2-13 positions for buttons, selectors, pilot lights or potentiometers. 1 or 2 speed contacts available. Many customers prefer the two-column design for up/down or left/right functions next to each other on the control. It can also be used for a pilot indicator light directly next to the button that controls the on/off function. This design makes it very intuitive for the operator and provides a wide range of functions and controls in a compact, ergonomic housing.

Features

- Reduced installation and wiring time and costs: the switches feature terminals facing the cable clamp of the control station and screws on the opposite site to facilitate wiring.
- The control station has an angle of inclination giving the operator the best view of all the control elements and enabling a natural, comfortable working position.
- The emergency stop mushroom push button complies with standard EN 418.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP65.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C).
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configurations from 2 to 13 actuators arranged on a double row.
- Single or double switches with NO or NC contacts featuring one or two speeds.
- Wide range of actuators: push buttons, selector switches and key-selector switches (various operation configurations), pilot lights, latched mushroom push buttons with rotation release or key-operated.
- Available with label (symbols and lettering) to adhere below the actuators.

Certifications

- CE marking and EAC certifications.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR ALPHA PENDANT STATION

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage:	-40°F / +158°F (-40°C / +70°C)
	Operational:	-13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65	
Insulation category	Class II	
Cable entry	Rubber cable sleeve (Ø 0.55"÷1.02" | Ø 14÷26 mm)	
Operating positions	Any position	

Technical Specifications — Contact Switches

SCC Part No. →	**PRSL1000PI**	**PRSL1001PI**
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.6Nm	
Microswitch type	Double break, slow action	Double break, slow action
Contacts	1NO	1 NC
Scheme		
Markings and Homologations	CE c UL us EAC	

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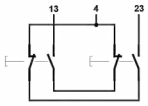
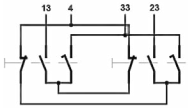
SPECIFICATIONS FOR ALPHA PENDANT STATION

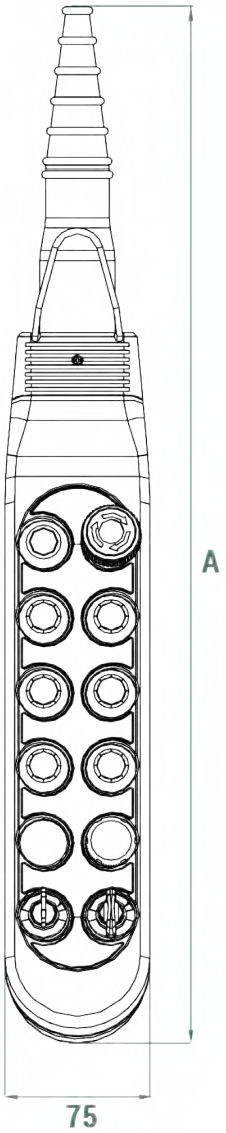
Technical Specifications — Contact Switches

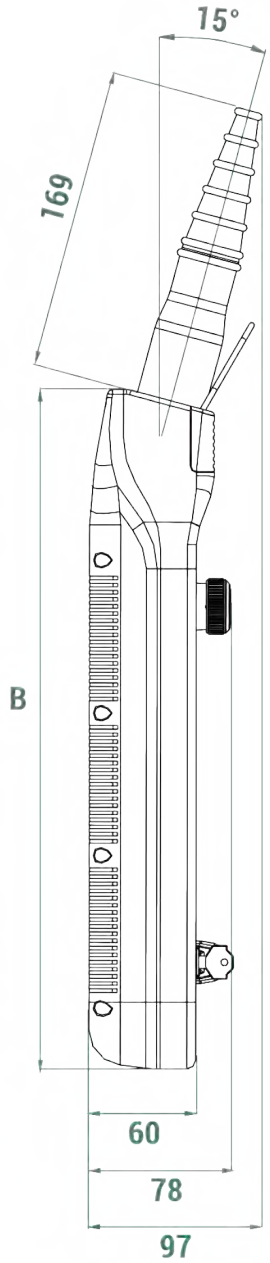
SCC Part No. →	PRSL 1002PI	PRSL1003PI
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.6Nm	
Microswitch type	Double switch, 1 speed	Double switch, 2 speeds
Contacts	2NO+common	3NO+common
Scheme		
Markings and Homologations	CE c UL us EAC	

Technical Specifications — Lamp Holders

SCC Part No. →	PRSL1004PI
Maximum voltage	125 V
Maximum power	2.6 W
Lamp type	T5.5K 0.866" (22mm)
Connections	Screw-type terminals
Wires	1 s 2.5 mm^2, 2 x 1.5 mm^2
Tightening torque	0.6 Nm
Markings and Homologations	CE

ALPHA PENDANT - OVERALL DIMENSIONS (mm)





No. of actuators	Dimensions (mm)	
	A	B
2 - 3 - 4 - 5	382	222
6 - 7 - 8 - 9	462	302
10 - 11 - 12 - 13	542	382

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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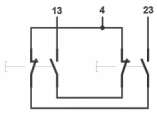
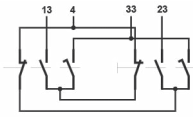
STANDARD ALPHA PENDANT CONTROL STATIONS

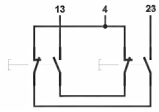
Standard control stations are equipped with cable sleeve, hook and electrical interlock between opposite function pushbuttons.

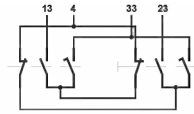
2 Actuators

SCC Part No. → PF38020005			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton
-	-	Blanking plug	Blanking plug

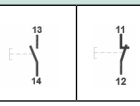
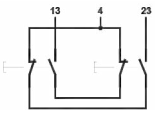
SCC Part No. → PF38020002			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton
-	-	Blanking plug	Blanking plug

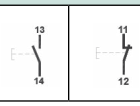
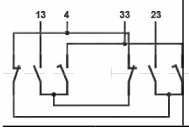
3 Actuators

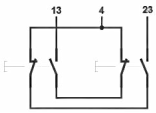
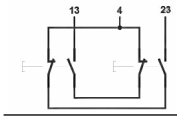
SCC Part No. → PF38030001			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1001PI 1NC	Latched mushroom pushbutton	
	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton
-	-	Blanking plug	Blanking plug

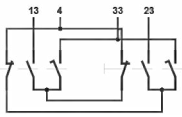
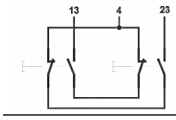
SCC Part No. → PF38030002			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1001PI 1NC	Latched mushroom pushbutton	
	N.1 PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton
-	-	Blanking plug	Blanking plug

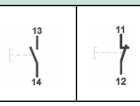
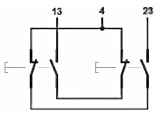
4 Actuators

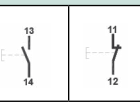
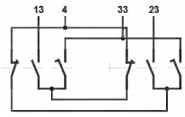
SCC Part No. → PF38040002				
Switch scheme	**Switch type**		**Actuator type**	
	N.1 PRSL1001PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
	N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

SCC Part No. → PF38040003				
Switch scheme	**Switch type**		**Actuator type**	
	N.1 PRSL1001PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
	N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton

SCC Part No. → PF38040004			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton
	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF38040006			
Switch scheme	**Switch type**	**Actuator type**	
	N.1 PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton
	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF38040012				
Switch scheme	**Switch type**		**Actuator type**	
	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
	N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

SCC Part No. → PF38040016				
Switch scheme	**Switch type**		**Actuator type**	
	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
	PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton

STANDARD ALPHA PENDANT CONTROL STATIONS

5 Actuators

SCC Part No. → PF38050003			
Switch scheme	**Switch type**	**Actuator type**	
11 12	N.1 PRSL1001PI 1NC	Latched mushroom pushbutton	
13 4 23	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton
13 4 23	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF38050004			
Switch scheme	**Switch type**	**Actuator type**	
11 12	N.1 PRSL1001PI 1NC	Latched mushroom pushbutton	
13 4 33 23	N.1 PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton
13 4 23	N.1 PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

6 Actuators

SCC Part No. → PF38060001				
Switch scheme		**Switch type**		**Actuator type**	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
-		-		Blanking plug	Blanking plug

SCC Part No. → PF38060002				
Switch scheme		**Switch type**		**Actuator type**	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
-		-		Blanking plug	Blanking plug

8 Actuators

SCC Part No. → PF38080001				
Switch scheme		**Switch type**		**Actuator type**	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

SCC Part No. → PF38080006				
Switch scheme		**Switch type**		**Actuator type**	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

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STANDARD ALPHA PENDANT CONTROL STATIONS

8 Actuators

SCC Part No. → PF38080002					
Switch scheme		Switch type		Actuator type	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speed		Pushbutton	Pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speed		Pushbutton	Pushbutton

SCC Part No. → PF38080008					
Switch scheme		Switch type		Actuator type	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
13 4 33 23		N.1 PRSL1003PI 3NO+common 2 speeds		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

10 Actuators

SCC Part No. → PF38100001					
Switch scheme		Switch type		Actuator type	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
-		-		Blanking plug	Blanking plug

12 Actuators

SCC Part No. → PF38120001					
Switch scheme		Switch type		Actuator type	
13 14	11 12	N.2 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

STANDARD PENDANT CONTROL STATIONS WITH CABLE OUTPUT ON THE BOTTOM

These pendant control stations are upside down, i.e. the cable output is on the bottom. Standard control stations are equipped with cable sleeve, hook and electrical interlock between opposite function pushbuttons.

10 Actuators

SCC Part No. → PF38100002					
Switch scheme		**Switch type**		**Actuator type**	
13 14	13 14	N.1 PRSL1000PI 1NO	N.1 PRSL-1000PI 1NO	Pushbutton Yellow	Pushbutton
13 14	11 12	N.1 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
-		-		Blanking plug	Blanking plug

12 Actuators

SCC Part No. → PF38120002					
Switch scheme		**Switch type**		**Actuator type**	
13 14	13 14	N.1 PRSL1000PI 1NO	N.1 PRSL1000PI 1NO	Pushbutton Yellow	Pushbutton
13 14	11 12	N.1 PRSL1000PI 1NO	N.1 PRSL1001PI 1NC	Pushbutton Green	Latched mushroom pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton
13 4 23		N.1 PRSL1002PI 2NO+common 1 speed		Pushbutton	Pushbutton

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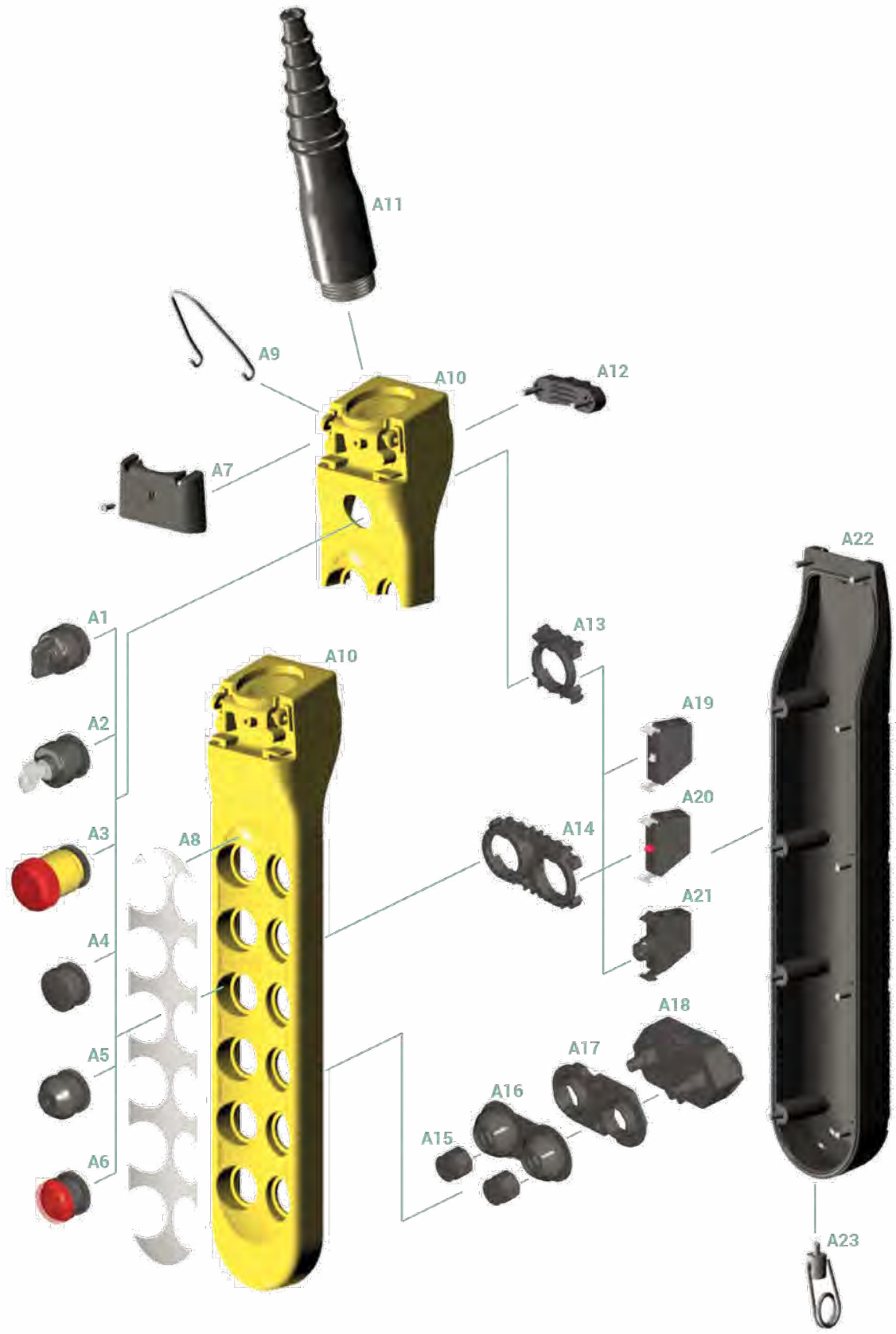
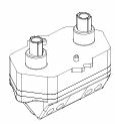
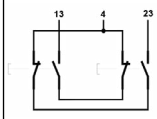
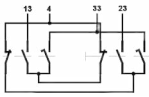
ALPHA PENDANT STATION - ASSEMBLY DRAWING



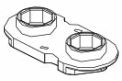
Refer to the following tables for descriptions of components: “Switches”, “Actuators”, “Pilot Lights”, “Mushroom Pushbuttons”, “Selector Switches” and “Accessories”.

ALPHA PENDANT - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A18		1 speed, 2+common double switch		PRSL1002PI
		2 speeds, 3NO+common double switch		PRSL1003PI
A19		1 NO switch		PRSL1000PI
A20		1 NC switch		PRSL1001PI
A21		Lamp holder	-	PRSL1004PI

Actuators

Ref.	Drawing	Description	SCC Part No.
A4		Blanking plug	PRSL1023PI
A5		Single pushbutton	PRTS000001
A15+ A16		Double pushbutton with rubber	PRTD000001
A16		Rubber for double pushbutton	PRG00020PE
A17		Holding plate for double pushbutton	PRSL8737PI

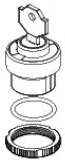
Mushroom Pushbuttons

Ref.	Drawing	Description	SCC Part No.
A3		Latched mushroom pushbutton for emergency stop	PRSL1009PI

Pilot Lights

Ref.	Drawing	Description	SCC Part No.
A6		Red	PRSL1012PI
		Yellow	PRSL1013PI
		Green	PRSL1014PI

Selector Switches

Ref.	Drawing	Positions	Spring return	Maintained positions	Pull-out position	SCC Part No.
A1		0/1	X			PRSL1015PI
		0/1		X		PRSL1016PI
		1/0/2	X			PRSL1026PI
		1/0/2		X		PRSL1027PI
A2		0/1		X	0	PRSL1017PI
		0/1	X		0	PRSL1024PI

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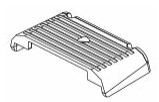
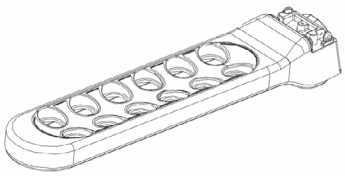
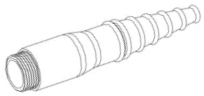
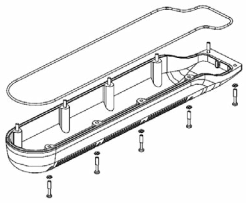
ALPHA PENDANT - ACCESSORY PARTS

Accessories

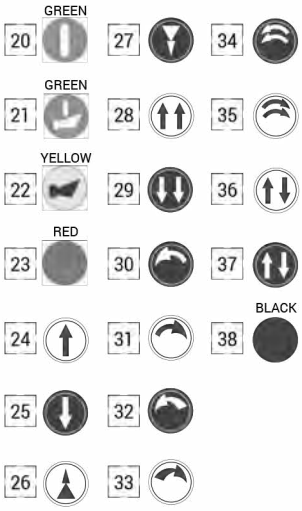
Ref.	Drawing	Description	SCC Part No.
A7		Cable Cover	PRSL5602PI
A8		Label	ET38xxxxxx (Part on request)
A9		Hook	PRGA0020PE
A10		Cover 2/4 actuators	PRSL5607PI
		Cover 3/5 actuators	PRSL5611PI
		Cover 6/8 actuators	PRSL5608PI
		Cover 7/9 actuators	PRSL5612PI
		Cover 10/12 actuators	PRSL5609PI
		Cover 11/13 actuators	PRSL5613PI
A11		Cable sleeve	PRSL0145PE
A12		Cable clamp	PRSL1020PI
A13		Holding plate for 3 switches	PRSL8739PI
A14		Holding plate for 2+2 switches	PRSL8735PI
A22		Enclosure 2/3/4/5 actuators	PRSL5066PI
		Enclosure 6/7/8/9 actuators	PRSL5067PI
		Enclosure 10/11/12/13 actuators	PRSL5068PI
A23		Lower hook	PRGA0051PE

ALPHA REQUEST FORM FOR NON STANDARD CONTROL STATION

Control elements

1. PRTS000001 Single pushbutton
2. PRTD000001 Double pushbutton
3. PRSL1023PI Blanking plug
4. PRSL1009PI Emergency stop mushroom pushbutton
5. PRSL1012PI Red pilot light
6. PRSL1013PI Yellow pilot light
7. PRSL1014PI Green pilot light
8. PRSL1015PI Selector switch 0/1 spring return
9. PRSL1016PI Selector switch 0/1 maintained positions
10. PRSL1026PI Selector switch 1/0/2 spring return
11. PRSL1027PI Selector switch 1/0/2 maintained positions
12. PRSL1017PI Key selector switch 0/1 maintained positions
13. PRSL1024PI Key selector switch 0/1 spring return

Label symbols



Single switches

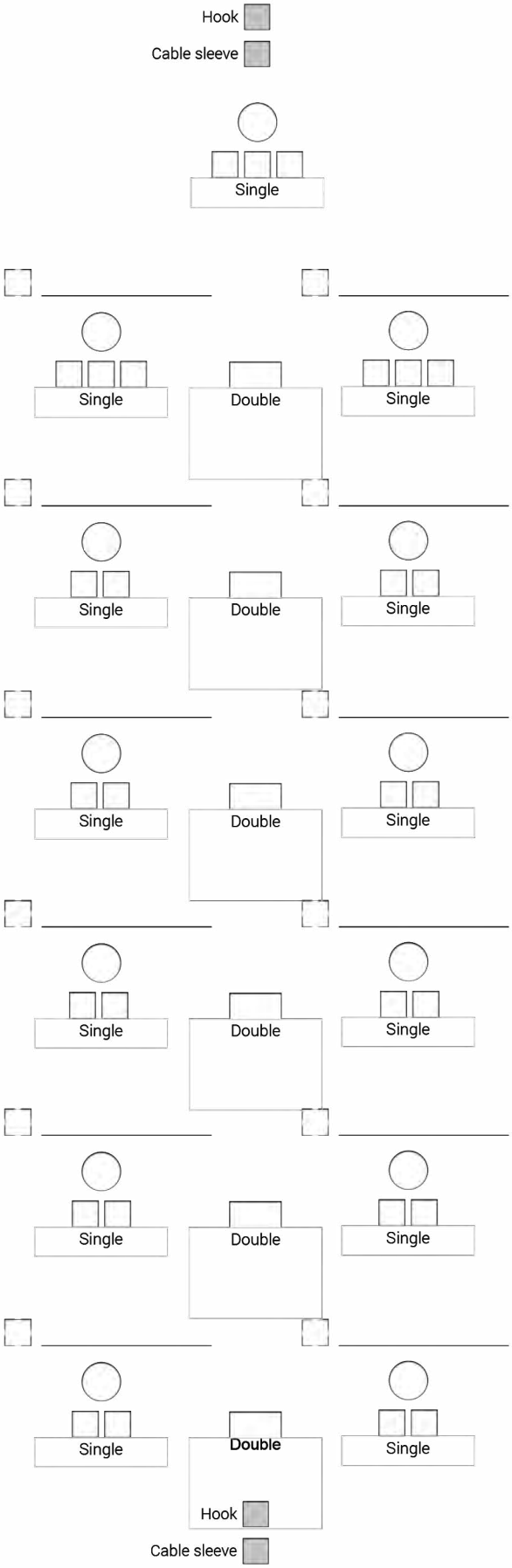
A	PRSL1000PI	1NO
B	PRSL1001PI	1NC
C	PRSL1004PI	Lamp holder

Double switches

D	PRSL1002PI	1 speed
E	PRSL1003PI	2 speeds

Instructions

- Fill in the pendant station scheme for the number of control elements required.
- Enter the number corresponding to the control element required in the circle.
- In the broken-line box enter the number corresponding to the symbol required on the label. Next to the number mark the direction of the arrow and the customized lettering, if requested.
- In the unbroken boxes enter the letters corresponding to the single or double switches required.
  ATTENTION: it is possible to mount 3 single switches for each control element only if they are placed in the first row. In any other positions, it is only possible to mount up to 2 single switches for each control element.
- Tick the appropriate box to show where the cable sleeve and the hook must be assembled (top or bottom).



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CHARLIE

PENDANT CONTROL STATION

The highly popular **Charlie** pendant control station has 2-3 positions for buttons, selectors, pilot lights or potentiometers. 1 or 2 speed contacts available. The compact design has a modern, ergonomic design for single handed thumb operation of the two main control positions. The third position is commonly used for an emergency stop or a selector switch, it can also be configured with a pilot light or potentiometer.

Features

- Reduced time and costs for installation and wiring: the switches are assembled inside the pendant station without screws, with all the terminals facing the cable inlet and screws in the opposite direction to facilitate wiring.
- A threaded ring is used to secure the enclosure and cover, providing easy access to the internal components without any need for tools or screws.
- Due to the hollow handle the control station can be quickly and easily set down onto a pin.
- The emergency stop mushroom pushbutton complies with standard EN 418.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP65.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C).
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configuration with 2 or 3 actuators.
- Single switches with NO or NC contacts and double switches with NO contacts, one or two speeds, with electrical interlock to prevent simultaneous operation of opposite functions.

Certifications

- CE marking and EAC certifications.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR CHARLIE PENDANT STATION

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +70°C)
	Operational: -13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65
Insulation category	Class II
Cable entry	Cable clamp M20
	Spiral cable clamp M20
Operating positions	Any position
Weight	~ 11.288 oz. (320g)

Technical Specifications — Switches

SCC Part No. →	**PRSL1000PI**	**PRSL1001PI**
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.6 Nm	
Microswitch type	Double break, slow action	Double break, slow action
Contacts	1NO	1 NC
Scheme		
Markings and Homologations	CE c UL us EAC	

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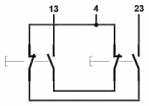
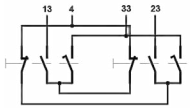
SPECIFICATIONS FOR CHARLIE PENDANT STATION

Technical Specifications — Switches

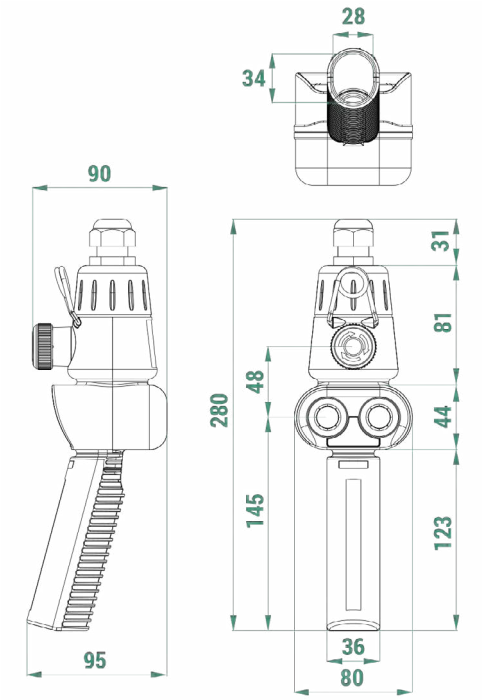
SCC Part No. →	PRSL 1002PI	PRSL1003PI
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.6 Nm	
Microswitch type	Double switch, 1 speed	Double switch, 2 speeds
Contacts	2NO+common	3NO+common
Scheme		
Markings and Homologations	CE c UL us EAC	

Technical Specifications — Lamp Holders

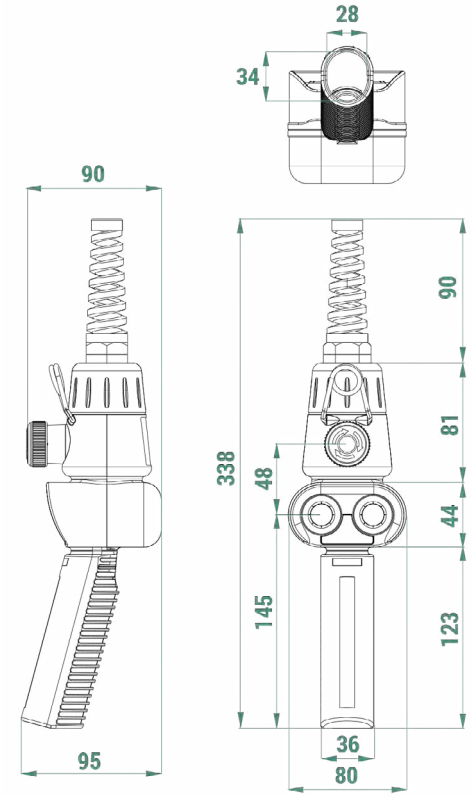
SCC Part No. →	PRSL1004PI
Maximum voltage	125 V
Maximum power	2.6 W
Lamp type	T5.5K 0.866" (22mm)
Connections	Screw-type terminals
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2
Tightening torque	0.6 Nm
Markings and Homologations	CE

CHARLIE PENDANT - OVERALL DIMENSIONS (mm)

With cable clamp M20



With spiral cable clamp M20



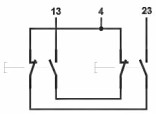
1 mm = 0.03937 inches | 1 inch = 25.4 mm

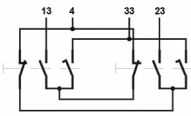
Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

CHARLIE PENDANT - STANDARD CONTROL STATIONS

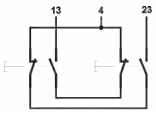
Standard control stations are equipped with cable clamp M20, hook and electrical interlock between opposite function pushbuttons.

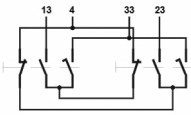
2 Actuators

SCC Part No. → PF39020001			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF39020002			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton

3 Actuators

SCC Part No. → PF39030001			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL1001PI 1NC	Latched mushroom pushbutton	
	PRSL1002PI 2NO+common 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF39030002			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL1001PI 1NC	Latched mushroom pushbutton	
	PRSL1003PI 3NO+common 2 speeds	Pushbutton	Pushbutton

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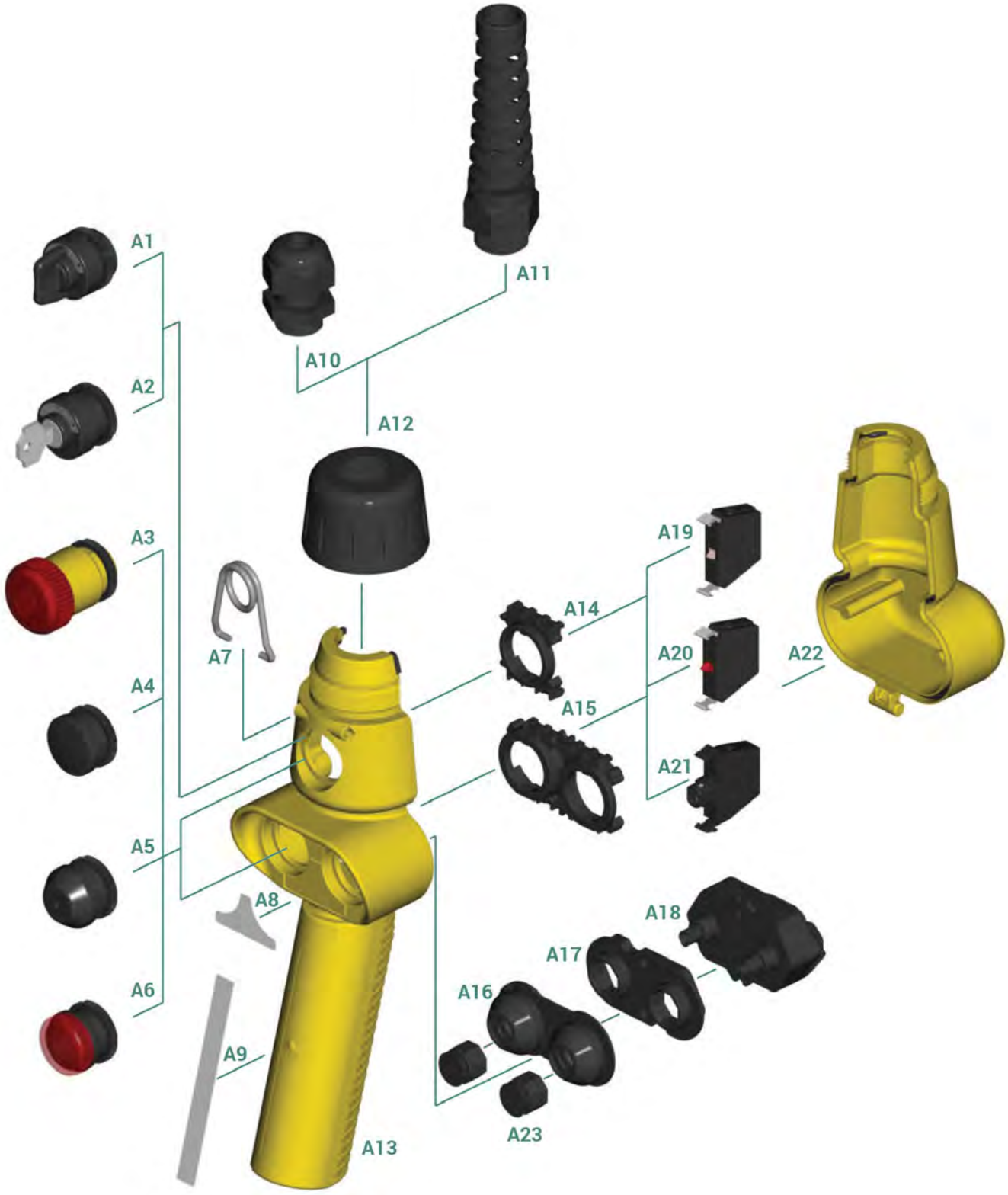
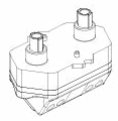
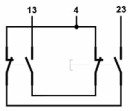
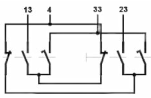
CHARLIE PENDANT - ASSEMBLY DRAWING



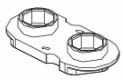
Refer to the following tables for descriptions of components: “Switches”, “Actuators”, “Pilot Lights”, “Mushroom Pushbuttons”, “Selector Switches” and “Accessories”.

CHARLIE PENDANT - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A18		1 speed, 2+common double switch		PRSL1002PI
		2 speeds, 3NO+common double switch		PRSL1003PI
A19		1 NO switch		PRSL1000PI
A20		1 NC switch		PRSL1001PI
A21		Lamp holder	-	PRSL1004PI

Actuators

Ref.	Drawing	Description	SCC Part No.
A4		Blanking plug	PRSL1023PI
A5		Single pushbutton	PRTS000001
A16		Rubber for double pushbutton	PRG00020PE
A16+ A23		Double pushbutton with rubber	PRTD000001
A17		Holding plate for double pushbutton	PRSL8737PI

Mushroom Pushbuttons

Ref.	Drawing	Description	SCC Part No.
A3		Latched mushroom pushbutton for emergency stop	PRSL1009PI

Pilot lights

Ref.	Drawing	Description	SCC Part No.
A6		Red	PRSL1012PI
		Yellow	PRSL1013PI
		Green	PRSL1014PI

Selector Switches

Ref.	Drawing	Positions	Spring return	Maintained positions	Pull-out position	SCC Part No.
A1		0/1	X			PRSL1015PI
		0/1		X		PRSL1016PI
		1/0/2	X			PRSL1026PI
		1/0/2		X		PRSL1027PI
A2		0/1		X	0	PRSL1017PI
		0/1	X		0	PRSL1024PI

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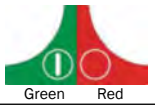
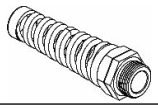
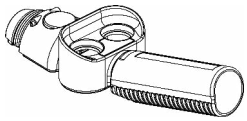
CHARLIE PENDANT - ACCESSORY PARTS

Accessories

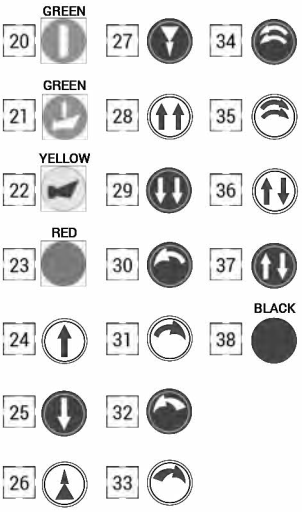
Ref.	Drawing	Description	SCC Part No.
A7		Hook	PRGA0015PE
A8		Label - Standard 1 speed	ET39030001
		Label - Standard 2 speed	ET39030021
		Label	ET39030014
		Label	ET39030069
		Label	ET39030015
		Label	ET39030007
A9		Blank label for handle	PRET0127PE
A10		Cable clamp M20	PRPS0064PE
A11		Spiral cable clamp M20	PRPS0025PE
A12		Closing ring for cable clamp and spiral cable clamp	PRSL5524PI
A13		Cover	PRSL5008PI
A14		Holding plate for 3 switches	PRSL8739PI
A15		Holding plate for 2+2 switches	PRSL8735PI
A22		Enclosure	PRSL5518PI

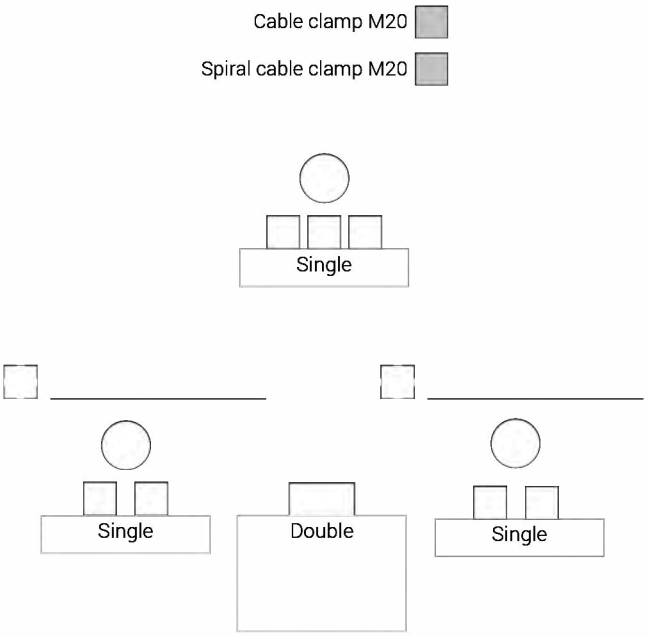
CHARLIE PENDANT - REQUEST FORM FOR NON STANDARD CONTROL STATION

Control elements

1. PRTS000001 Single pushbutton
2. PRTD000001 Double pushbutton
3. PRSL1023PI Blanking plug
4. PRSL1009PI Emergency stop mushroom pushbutton
5. PRSL1012PI Red pilot light
6. PRSL1013PI Yellow pilot light
7. PRSL1014PI Green pilot light
8. PRSL1015PI Selector switch 0/1 spring return
9. PRSL1016PI Selector switch 0/1 maintained positions
10. PRSL1026PI Selector switch 1/0/2 spring return
11. PRSL1027PI Selector switch 1/0/2 maintained positions
12. PRSL1017PI Key selector switch 0/1 maintained positions
13. PRSL1024PI Key selector switch 0/1 spring return

Label symbols





Single switches

A	PRSL1000PI	1NO
B	PRSL1001PI	1NC
C	PRSL1004PI	Lamp holder

Double switches

D	PRSL1002PI	1 speed
E	PRSL1003PI	2 speeds

Instructions

- Fill in the chart according to the number of control elements required.
- Enter the number corresponding to the control element required in the circle. Selector switches can be mounted only in the central position.
- In the broken-line box enter the number corresponding to the symbol required on the label. Next to the number mark the direction of the arrow and the customized lettering, if requested.
- In the unbroken boxes enter the letters corresponding to the single or double switches required.
- Tick the box if the cable clamp or the spiral cable clamp is required.
- The label on the handle of the control station can be customized on request: please write the text requested under Remarks or e-mail the logo.

Notes: .....

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MIKE

PENDANT CONTROL STATION

The **Mike** pendant control station has 4-15 positions for buttons, selectors, pilot lights or potentiometers. 1 or 2 speed contacts available. The light weight construction and ergonomic design make it easy to hold in one hand,while operating the controls with the other. With up to 15 positions for controls or indicators, and a unique position labeling feature which allows the control labels to be placed on the buttons themselves and/or off to the sides. The **Mike** can handle the most complicated and diverse control requirements.

Features

- Reduced installation and wiring time and costs: the cable inlet and the switches fitted in the base of the control station are separated from the actuators, mounted on the cover.
- Innovative suspension system with concealed cables to enable rapid, correct, ergonomic installation.
- Rubber pushbuttons with symbol disks to ensure protection against dust and prevent jamming when the control station is used in harsh environments.
- The emergency stop mushroom pushbutton complies with standard ISO 13850.
- Positive opening NC contacts for safety functions.
- Mechanical life of pushbuttons and switches: 10 million operations.
- IP protection degree: IP66, IP67 and IP69K.
- IK protection degree: IK08.
- NEMA protection degree: Mike is classified Type 1, 4 and 4X.
- Extreme temperature resistance: -40°F to +176°F (-40°C to +80°C).
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configuration from 4 to 15 actuators.
- Available with specific protection for actuators mounted on the bottom of the control station.
- 1NO or 1NC switches, LEDs voltage 24/48 Vac/dc or 110/230 Vac and 110 Vdc, and potentiometers.
- Mechanical interlock to prevent simultaneous operation of opposite functions.
- Wide range of actuators in different colors: one or two speed pushbuttons, selector switches and key-selector switches in various operation configurations, pilot lights, impulse or latched mushroom pushbuttons with rotation or key-operated release.
- One speed pushbuttons and selector switches available in illuminated version in a range of colors.
- Latched on-off maintained pushbutton to give an effective visual perception of the activated function.
- Available with labels (symbols and lettering) to be applied next to the actuators or with pushbuttons with two-color molded permanent symbols.

Certifications

- CE marking, cULus* marking and EAC certiication.
- Mike is available, upon request, with the SIL1 certiication (Safety Integrity Level 1), according to Standard IEC 61508.

Fill-in the "request form" for a custom product configuration

* Not available on all versions.

SPECIFICATIONS FOR MIKE PENDANT STATION

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	ISO 13850 Safety of machinery - Emergency stop - Principles for design
Conformity to cULus Standards	CSA-C22 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
SIL1	IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical / electronic / programmable electronic safety-related systems
Markings and Homologations	CE, cULus*, EAC

General Technical — Specifications

Ambient temperature	Storage: -40°F / +176°F (-40°C / +80°C)
	Operational: -13°F / +176°F (-25°C / +80°C)
IP protection degree	IP 66 / IP 67 / IP 69K
IK protection degree	IK 08
NEMA protection degree	Type 1, 4 and 4X
Insulation category	Class II
Cable entry	Rubber cable sleeve (Ø 8÷26 mm)
	Cable clamp M20
Operating positions	Any position
Mechanical life	1 speed pushbutton: 10 x 10^6 operations
	2 speed pushbutton: 10 x 10^6 operations
	Illuminated pushbutton: 10 x 10^6 operations

* Not available on all versions.

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SPECIFICATIONS FOR MIKE PENDANT STATION

Technical Specifications — Switches

SCC Part No. →	PRSL1800PI	PRSL1801PI
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Electrical Reliability EN 60947-5-4	λ <2.5x10^8 at 24 V, 5mA, 5x10^6 cicles	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	2 x 0.5 mm^2 - 2 x 1.5 mm^2 - 1 x 2.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and stiff or flexible wire 14-22AWG)	
Tightening torque	0.5 Nm	
Microswitch type	Double break, slow action	Double break, slow action
Contacts	1NO	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

Technical Specifications — LEDs

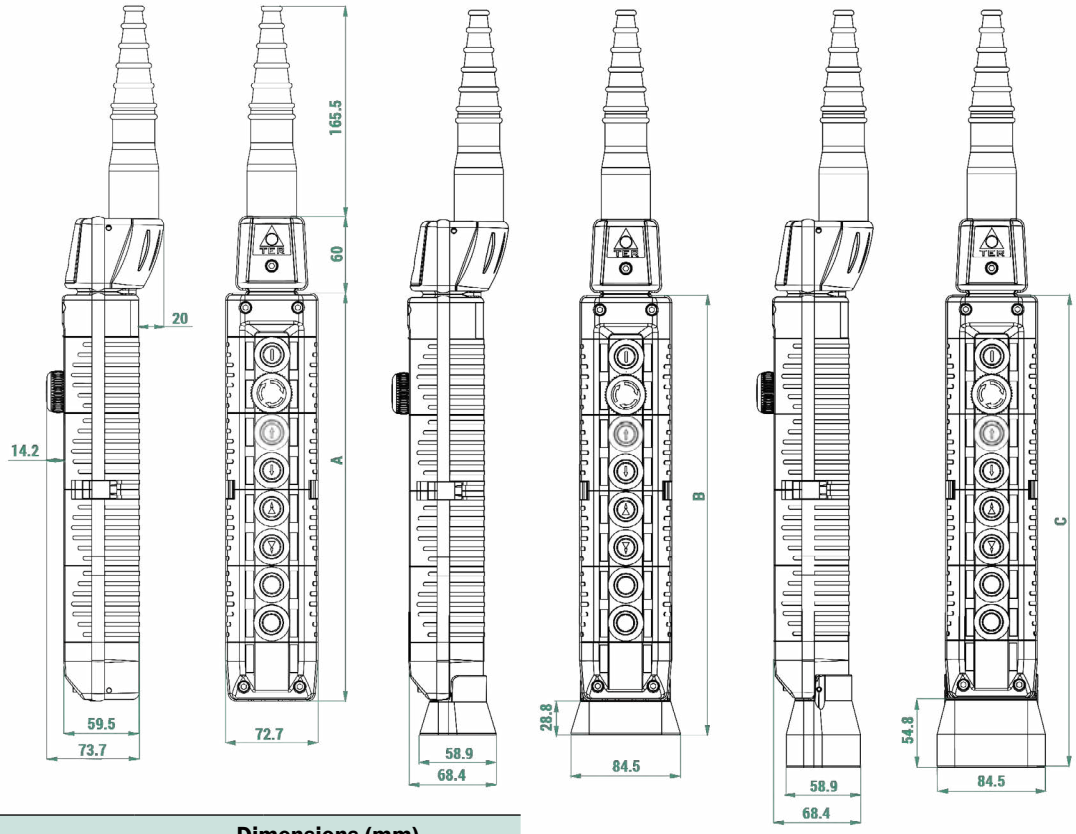
SCC Part No. →	PRSL 1820PI	PRSL1821PI
Rated operational voltage		
Rated current consumption		
Scheme		
Markings and Homologations	CE cULus EAC	

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PRSL 1893PI	PRSL 1891PI	PRSL1892PI
Ohmic value	1 kΩ	4.7 kΩ	10 kΩ
Life time	15 x 10^3 movements (minimum)		
Operational ambient temperature	-13°F / +158°F (-25°C / +70°C)		
Mechanical angle	300°		
Actual electrical angle	267°		
Ohmic value tolerance	±20%		

MIKE PENDANT - OVERALL DIMENSIONS (mm)

Standard **With small lower protection** **With large lower protection**



No. of actuators	Dimensions (mm)		
	A	B	C
4	201	229.8	255.8
5	201	229.8	255.8
6	261	289.8	315.8
7	261	289.8	315.8
8	321	349.8	375.8
9	321	349.8	375.8
12	441	469.8	495.8
13	441	469.8	495.8
14	501	529.8	555.8
15	501	529.8	555.8

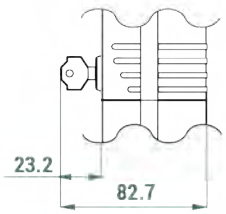
1 mm = 0.03937 inches

1 inch = 25.4 mm

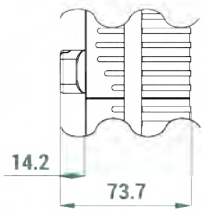
Formula:
- **divide the mm length value by 25.4**
- **multiply the inch length value by 25.4**

Actuators

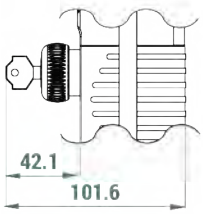
Key selector switches



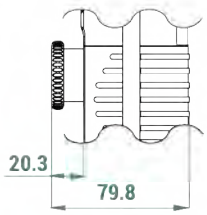
Selector switches



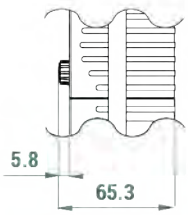
Key mushroom pushbutton



Mushroom pushbutton Ø 40 mm



Potentionmeter



Dimensions of all mushroom pushbuttons refer to the released position.

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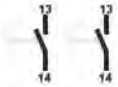
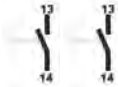
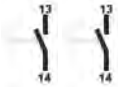
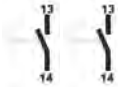
MIKE STANDARD PENDANT CONTROL STATIONS

Standard control stations are not supplied with symbol label sheet. Order PRET0215PE seperately.. Standard control stations are not cULus certified (consult factory for cULus certification). All contact/switches are cULus certified.

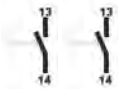
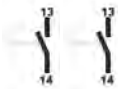
4 Actuators

Reset-Alarm button	Latched mushroom pushbutton	Black buttons mechanically interlocked between pairs		Cover Color	SCC Part No.
No.2 PRSL1800PI 1 NO + 1 NO	No.1 PRSL1801PI 1 NC	No.1 PRSL1800PI 1 NO	No.2 PRSL1800PI 1 NO + 1 NO		
					
1	1	2		Yellow	F70AY12020000001
1	1	2		Black	F70AB12020000001
1	1		2	Yellow	F70AY12000200001
1	1		2	Black	F70AB12000200001

6 Actuators

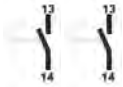
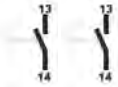
Reset-Alarm button	Latched mushroom pushbutton	Black buttons mechanically interlocked between pairs		Cover Color	SCC Part No.
No.2 PRSL1800PI 1 NO + 1 NO	No.1 PRSL1801PI 1 NC	No.1 PRSL1800PI 1 NO	No.2 PRSL1800PI 1 NO + 1 NO		
					
1	1	4		Yellow	F70EY12040000002
1	1	4		Black	F70EB12040000001
1	1		2	Yellow	F70EY12000400002
1	1		2	Black	F70EB12000400001

8 Actuators

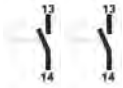
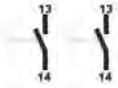
Reset-Alarm button	Latched mushroom pushbutton	Black buttons mechanically interlocked between pairs		Cover Color	SCC Part No.
No.2 PRSL1800PI 1 NO + 1 NO	No.1 PRSL1801PI 1 NC	No.1 PRSL1800PI 1 NO	No.2 PRSL1800PI 1 NO + 1 NO		
					
1	1	6		Yellow	F70BY12060000001
1	1	6		Black	F70BB12060000001
1	1		6	Yellow	F70BY12000600001
1	1		6	Black	F70BB12000600001

STANDARD MIKE PENDANT CONTROL STATIONS

12 Actuators

Reset-Alarm button	Latched mushroom pushbutton	Black buttons mechanically interlocked between pairs		Cover Color	SCC Part No.
No.2 PRSL1800PI 1 NO + 1 NO	No.1 PRSL1801PI 1 NC	No.1 PRSL1800PI 1 NO	No.2 PRSL1800PI 1 NO + 1 NO		
					
1	1	10		Yellow	F70CY12100000001
1	1	10		Black	F70CB12100000001
1	1		10	Yellow	F70CY12001000001
1	1		10	Black	F70CB12001000001

12 Actuators

Reset-Alarm button	Latched mushroom pushbutton	Black buttons mechanically interlocked between pairs		Cover Color	SCC Part No.
No.2 PRSL1800PI 1 NO + 1 NO	No.1 PRSL1801PI 1 NC	No.1 PRSL1800PI 1 NO	No.2 PRSL1800PI 1 NO + 1 NO		
					
1	1	12		Yellow	F70DY12120000001
1	1	12		Black	F70DB12120000001
1	1		12	Yellow	F70DY12001200001
1	1		12	Black	F70DB12001200001

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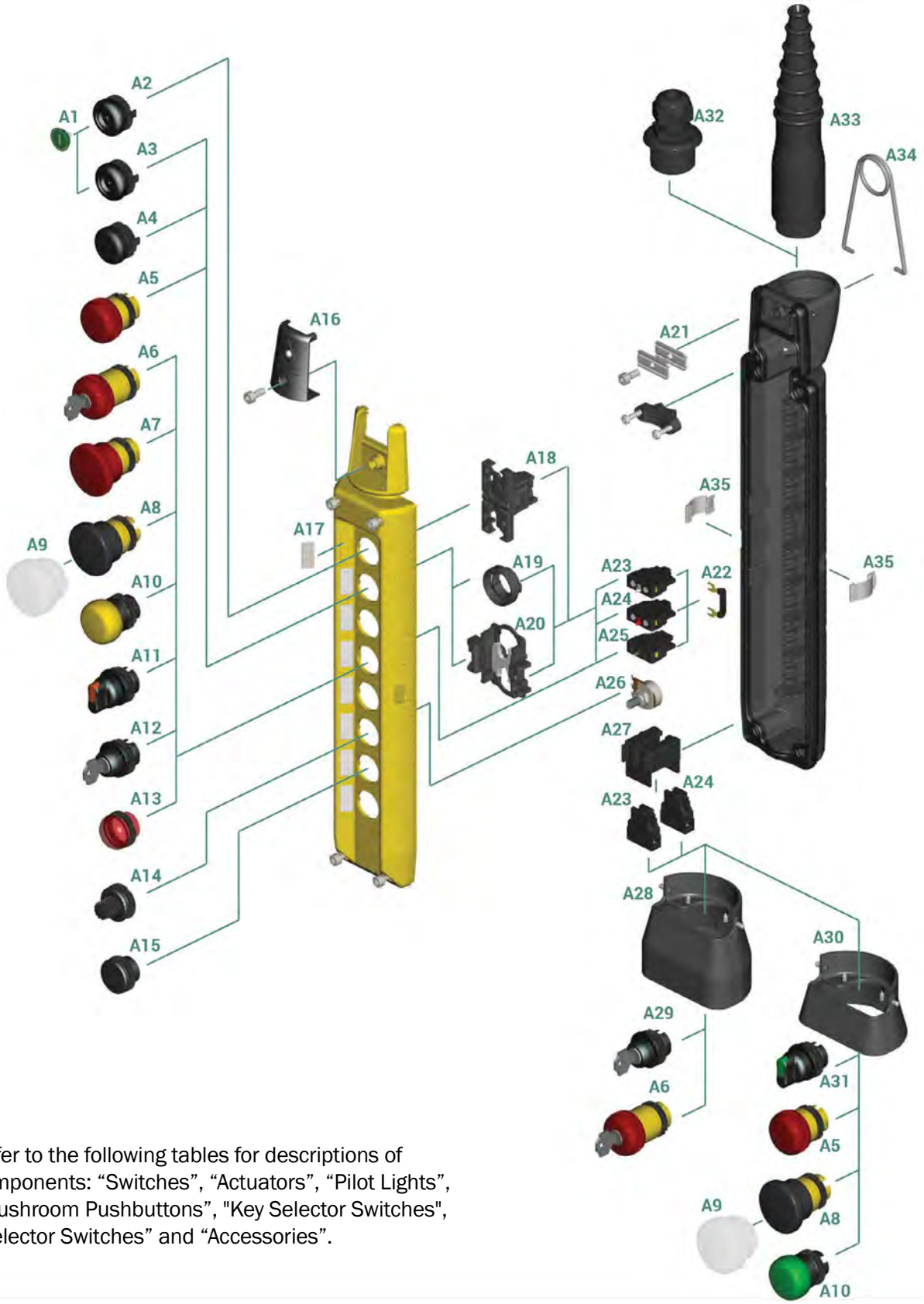
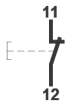
MIKE PENDANT - ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: “Switches”, “Actuators”, “Pilot Lights”, “Mushroom Pushbuttons”, "Key Selector Switches", “Selector Switches” and “Accessories”.

MIKE PENDANT - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A23		1 NO switch		PRSL1800PI
A24		1 NC switch		PRSL1801PI
A25		LED 24/48 Vac/DC		PRSL1820PI
		LED 110/230 Vac and 110 Vdc		PRSL1821PI

Mushroom Pushbuttons

Ref.	Drawing	Description	Head color	SCC Part No.
A5		Latched mushroom pushbutton for emergency stop	Red	PRSL1880PI
A6		Key mushroom pushbutton	Red	PRSL1890PI
A7		Latched mushroom pushbutton for emergency stop Ø 40 mm with yellow base	Red	PRSL1881PI
A8		Impulse mushroom pushbutton Ø 40 mm with yellow base	Black	PRSL1883PI
A10		Impulse mushroom pushbutton Ø 33 mm with black base	Red	PRSL1885ROC
			Blue	PRSL1885BLC
			Yellow	PRSL1885GIC
			Green	PRSL1885VEC
			Orange	PRSL1885ARC
			Black	PRSL1885NEC

Actuators

Ref.	Drawing	Description	SCC Part No.
A1		Disk for pushbutton	PRTA_ _ _ _ _ _ See disk table
A2		Pushbutton for latched ON-OFF maintained acuator	PRSL1803PI
A3		2 speed pushbutton	PRSL1810PI
		1 speed pushbutton	PRSL1811PI
		1 speed illuminated pushbutton	PRSL1815PI
A4		1 speed black pushbutton	PRSL1806PI
		1 speed gray pushbutton	PRSL1807PI
		2 speed black pushbutton	PRSL1808PI
		2 speed gray pushbutton	PRSL1809PI
A15		Blanking plug	PRSL1845PI
A18		Latched ON-OFF maintained actuator	PRSL1804PI

Potentiometers

Ref.	Drawing	Description	SCC Part No.
A14 + A26		Potentiometer 4.7 kΩ	PRSL1891PI
		Potentiometer 10 kΩ	PRSL1892PI
		Potentiometer 1 kΩ	PRS;L1893PI

Pilot Lights

Ref.	Drawing	Description	SCC Part No.
A13		White	PRSL1844PI
		Green	PRSL1841PI
		Blue	PRS;L1846PI
		Red	PRS;L1840PI
		Yellow	PRS;L1842PI
		Orange	PRS;L1843PI

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MIKE PENDANT - ACCESSORY PARTS

Key Selector Switches

Ref.	Drawing	Positions	Spring return	Maintained positions	Pull-out position	SCC Part No.
A12 A29		0/1	X		0	PRSL1867PI
		0/1		X	0	PRSL1868PI
A12		1/0/2	X		0	PRSL1869PI
				X	0	PRSL1870PI
		0/1/1+2	X		0	PRSL1871PI
				X	0	PRSL1072PI
		1/2 change-over	X		1	PRSL1073PI
				X	1	PRSL1074PI
		1/1+2/2	X		1+2	PRSL1075PI
				X	1+2	PRSL1076PI

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11 A31		0/1 Spring return	White		PRSL1855BI
			Green		PRSL1855VE
			Blue		PRSL1855BL
			Red		PRSL1855RO
			Yellow		PRSL1855GI
			Orange		PRSL1855AR
		0/1 Maintained	White		PRSL1856BI
			Green		PRSL1856VE
			Blue		PRSL1856BL
			Red		PRSL1856RO
			Yellow		PRSL1856GI
			Orange		PRSL1856AR
		0/1 Spring return		White	PRSL1855BIC
				Green	PRSL1855VEC
				Blue	PRSL1855BLC
				Red	PRSL1855ROC
				Yellow	PRSL1855GIC
				Orange	PRSL1855ARC
		0/1 Maintained		White	PRSL1856BIC
				Green	PRSL1856VEC
				Blue	PRSL1856BLC
				Red	PRSL1856ROC
				Yellow	PRSL1856GIC
				Orange	PRSL1856ARC

MIKE PENDANT - ACCESSORY PARTS

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/0/2 Spring return	White		PRSL1857BI
			Green		PRSL1857VE
			Blue		PRSL1857BL
			Red		PRSL1857RO
			Yellow		PRSL1857GI
			Orange		PRSL1857AR
		1/0/2 Maintained	White		PRSL1858BI
			Green		PRSL1858VE
			Blue		PRSL1858BL
			Red		PRSL1858RO
			Yellow		PRSL1858GI
			Orange		PRSL1858AR
		1/0/2 Spring return		White	PRSL1857BIC
				Green	PRSL1857VEC
				Blue	PRSL1857BLC
				Red	PRSL1857ROC
				Yellow	PRSL1857GIC
				Orange	PRSL1857ARC
		1/0/2 Maintained		White	PRSL1858BIC
				Green	PRSL1858VEC
				Blue	PRSL1858BLC
				Red	PRSL1858ROC
				Yellow	PRSL1858GIC
				Orange	PRSL1858ARC

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/2 Spring return	White		PRSL1861BI
			Green		PRSL1861VE
			Blue		PRSL1861BL
			Red		PRSL1861RO
			Yellow		PRSL1861GI
			Orange		PRSL1861AR
		1/2 Maintained	White		PRSL1862BI
			Green		PRSL1862VE
			Blue		PRSL1862BL
			Red		PRSL1862RO
			Yellow		PRSL1862GI
			Orange		PRSL1862AR
		1/2 Spring return		White	PRSL1861BIC
				Green	PRSL1861VEC
				Blue	PRSL1861BLC
				Red	PRSL1861ROC
				Yellow	PRSL1861GIC
				Orange	PRSL1861ARC
		1/2 Maintained		White	PRSL1862BIC
				Green	PRSL1862VEC
				Blue	PRSL1862BLC
				Red	PRSL1862ROC
				Yellow	PRSL1862GIC
				Orange	PRSL1862ARC

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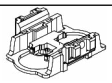
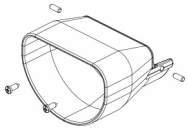
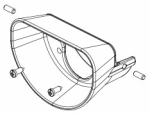
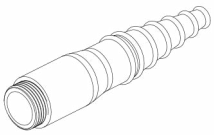
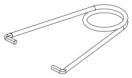
MIKE PENDANT - ACCESSORY PARTS

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/1+2/2 Spring return	White		PRSL1863BI
			Green		PRSL1863VE
			Blue		PRSL1863BL
			Red		PRSL1863RO
			Yellow		PRSL1863GI
			Orange		PRSL1863AR
		1/1+2/2 Maintained	White		PRSL1864BI
			Green		PRSL1864VE
			Blue		PRSL1864BL
			Red		PRSL1864RO
			Yellow		PRSL1864GI
			Orange		PRSL1864AR
		1/1+2/2 Spring return		White	PRSL1863BIC
				Green	PRSL1863VEC
				Blue	PRSL1863BLC
				Red	PRSL1863ROC
				Yellow	PRSL1863GIC
				Orange	PRSL1863ARC
		1/1+2/2 Maintained		White	PRSL1864BIC
				Green	PRSL1864VEC
				Blue	PRSL1864BLC
				Red	PRSL1864ROC
				Yellow	PRSL1864GIC
				Orange	PRSL1864ARC
		0/1/1+2 Spring return	White		PRSL1859BI
			Green		PRSL1859VE
			Blue		PRSL1859BL
			Red		PRSL1859RO
			Yellow		PRSL1859GI
			Orange		PRSL1859AR
		0/1/1+2 Maintained	White		PRSL1860BI
			Green		PRSL1860VE
			Blue		PRSL1860BL
			Red		PRSL1860RO
			Yellow		PRSL1860GI
			Orange		PRSL1860AR
		0/1/1+2 Spring return		White	PRSL1859BIC
				Green	PRSL1859VEC
				Blue	PRSL1859BLC
				Red	PRSL1859ROC
				Yellow	PRSL1859GIC
				Orange	PRSL1859ARC
		0/1/1+2 Maintained		White	PRSL1860BIC
				Green	PRSL1860VEC
				Blue	PRSL1860BLC
				Red	PRSL1860ROC
				Yellow	PRSL1860GIC
				Orange	PRSL1860ARC

MIKE PENDANT - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A9		Transparent protective cap for impulse mushroom pushbutton Ø 40 mm	PRGU6100PE
A16		Cable cover with TER logo	PRSL1832PI
		Blank cable cover	PRSL1836PI
A17		Label Sheet - Symbols	PRET0215PE
		Label Sheet - English	PRET0220EN
		Label Sheet - Spanish	PRET0220ES
A19		Button-switch spacer	PRSL8512PI
A20		Mechanical interlock	PRSL1850PI
A21		Complete wire clamp	PRSL1896PI
A22		Insulated connecting bridge - positions 3-4 (pack/5)	PRSL1911PI
		Insulated connecting bridge - positions 2-4 (pack/5)	PRSL1912PI
		Insulated connecting bridge - positions 1-4 (pack/5)	PRSL1913PI
		Insulated connecting bridge - positions 1-3 (pack/5)	PRSL1914PI
		Insulated connecting bridge - positions 1-2 (pack/5)	PRSL1915PI
		Insulated connecting bridge - positions 1-2-3 (pack/5)	PRSL1916PI
A27		1-2-3 switch holder	PRSL8750PI
A28		Large protection	PRSL1831PI
A30		Small protection	PRSL1830PI
A32		Cable clamp M20 with reduction	PRSL1910PI
A33		Cable sleeve	PRSL0145PE
A34		Hook	PRGA0012PE
A35		Closing clip	PRTR1035PE

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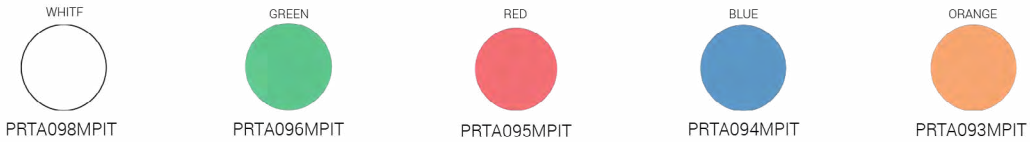
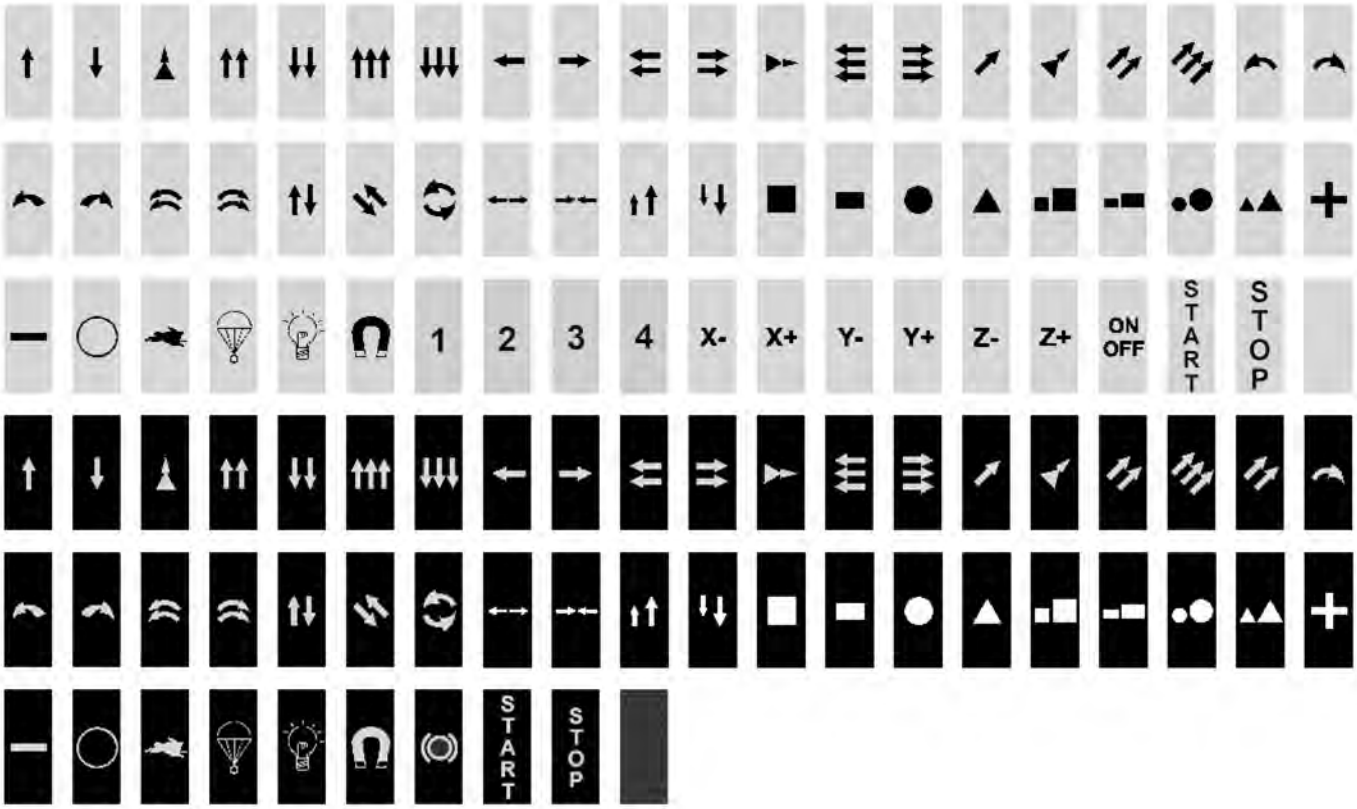
MIKE PENDANT - ACCESSORY PARTS

Full Color Disks

Transparent Disks



Label Sheet - Symbols (SCC Part No. → PRET0215PE)



MIKE PENDANT - ACCESSORY PARTS

Label Sheet - English (SCC Part No. → PRET0220EN)

START	ALARM	RESET ALARM	RESET	STOP	LIGHT	RESET LINE	STOP LINE	START BUCKET	STOP BUCKET
BRAKE	BACK	UP	DOWN	UP LIFTING	DOWN LIFTING	UP LIFTING 1-2 SPEED	DOWN LIFTING 1-2 SPEED	UP LIFTING 3RD SPEED	DOWN LIFTING 3RD SPEED
UP LIFTING FAST	DOWN LIFTING FAST	LIFTING 2ND SPEED	LIFTING 3RDSPEED	UP AUXIL. LIFTING	DOWN AUXIL LIFTING	UP MAIN LIFTING	DOWN MAIN LIFTING	UP FAST MAIN LIFTING	DOWN FAST MAIN LIFTING
UP AUXIL. LIFTING 1-2 S.	DOWN AUXIL. LIFTING 1-2 S.	UP MAIN LIFTING 1-2 S.	DOWN MAIN LIFTING 1-2 S.	UP WINCH	DOWN WINCH	UP WINCH 1-2 SPEED	DOWN WINCH 1-2 SPEED	UP FAST WINCH	DOWN FAST WINCH
UP SLOW RIGHT WINCH	DOWN SLOW RIGHT WINCH	UP FAST RIGHT WINCH	DOWN FAST RIGHT WINCH	UP SLOW LEFT WINCH	UP FAST LEFT WINCH	DOWN FAST LEFT WINCH	UP HOIST	DOWN HOIST	UP HOIST 1-2 SPEED
DOWN HOIST 1-2 SPEED	UP FAST HOIST	DOWN FAST HOIST	FORWARD	BACKWARD	FORWARD TROLLEY	BACKWARD TROLLEY	FORWARD FAST TROLLEY	BACKWARD FAST TROLLEY	FORWARD TROLLEY 1-2 S.
BACKWARD TROLLEY 1-2 S.	FORWARD BRIDGE	BACKWARD BRIDGE	FORWARD FAST BRIDGE	BACKWARD FAST BRIDGE	FORWARD BRIDGE 1-2 S.	BACKWARD BRIDGE 1-2 S.	FORWARD TRANSLATION	BACKWARD TRANSLATION	LEFT
RIGHT	LEFT TROLLEY	RIGHT TROLLEY	LEFT FAST TROLLEY	RIGHT FAST TROLLEY	LEFT TROLLEY 1-2 S.	RIGHT TROLLEY 1-2 S.	LEFT BRIDGE	RIGHT BRIDGE	LEFT FAST BRIDGE
DOWN SLOW LEFT WINCH	RIGHT FAST BRIDGE	LEFT BRIDGE 1-2 S.	RIGHT BRIDGE 1-2 S.	CCW ROTATION	CW ROTATION	CCW FAST ROTATION	CW FAST ROTATION	CCW ROTATION 1-2 S.	CW ROTATION 1-2 S.
CCW ROTATION 3RD SPEED	CW ROTATION 3RD SPEED	LEFT CTRL STATION	RIGHT CTRL STATION	TROLLEY LEFT	TROLLEY RIGHT	SLOW	FAST	FAST TROLLEY	FAST BRIDGE
FAST LIFTING	FAST ROTATION	WINCH MATCHING	OPEN	CLOSE	OPEN GRAPPLE	CLOSE GRAPPLE	OPEN BUCKET	CLOSE BUCKET	OPEN DOOR
CLOSE DOOR	SPEED UP	SPEED DOWN	RAISE	LOWER	LOAD	DOWNLOAD	ENERGIZE	DE-ENERGIZE	ENERGIZE MAGNET
DE-ENERGIZE MAGNET	APPROACH	CONSENT	AUTOMATIC	MANUAL	MAN-0-AUTO	OFF-MAN-AUTO	ON	OFF	ON-OFF
IN	OUT	NORTH	SOUTH	EAST	WEST	OVERLOAD	TARE	1-1+2-2	1-2-1+2
1+2	ON-OFF	A-A+B-B							

Label Sheet - Spanish (SCC Part No. → PRET0220ES)

MARCHA	ALARMA	MARCHA ALARMA	PARO	STOP	LUZ	MARCHA LINEA	PARO LINEA	MARCHA PALA	PARO PALA
FRENO	RETORNO	SUBIR	BAJAR	SUBIR ELEVACION	BAJAR ELEVACION	SUBIR ELEV. 1-2 VEL.	BAJAR ELEV. 1-2 VEL.	SUBIR ELEV. 3ª VEL.	BAJAR ELEV. 3ª VEL.
SUBIR ELEV. RAPIDA	BAJAR ELEV. RAPIDA	2ª VEL. ELEVACION	3ª VEL. ELEVACION	SUBIR AUX. ELEVACION	BAJAR AUX. ELEVACION	SUBIR ELEV. PRINCIPAL	BAJAR ELEV. PRINCIPAL	SUBIR ELEV. PRINC. RAPIDA	BAJAR ELEV. PRINC. RAPIDA
SUBIR AUX. 1-2 VEL.	BAJAR AUX. 1-2 VEL.	SUBIR PRINC. 1-2 VEL.	BAJAR PRINC. 1-2 VEL.	SUBIR POLIPASTO	BAJAR POLIPASTO	SUBIR POLIP. 1-2 VEL.	BAJAR POLIP. 1-2 VEL.	SUBIR POLIP. RAPIDO	BAJAR POLIP. RAPIDO
POLIP. DER. SUBIR LENTO	POLIP. DER. BAJAR LENTO	POLIP. DER. SUBIR RAPIDO	POLIP. DER. BAJAR RAPIDO	POLIP. IZQ. SUBIR LENTO	POLIP. IZQ. SUBIR RAPIDO	POLIP. IZQ. BAJAR RAPIDO	SUBIR GANCHO	BAJAR GANCHO	SUBIR GANCHO 1-2 VEL.
BAJAR GANCHO 1-2 VEL.	SUBIR GANCHO RAPIDO	BAJAR GANCHO RAPIDO	ADELANTE	ATRAS	ADELANTE CARRITO	ATRAS CARRITO	ADELANTE CARR. RAPIDO	ATRAS CARR. RAPIDO	ADELANTE CARR. 1-2 VEL.
ATRAS CARR. 1-2 VEL.	ADELANTE PUENTE	ATRAS PUENTE	ADELANTE PUENTE RAPIDO	ATRAS PUENTE RAPIDO	ADELANTE PUENTE 1-2 VEL.	ATRAS PUENTE 1-2 VEL.	ADELANTE TRASLACION	ATRAS TRASLACION	IZQUIERDA
DERECHA	IZQUIERDA CARRITO	DERECHA CARRITO	IZQUIERDA CARR. RAPIDO	DERECHA CARR. RAPIDO	IZQUIERDA CARR. 1-2 VEL.	DERECHA CARR. 1-2 VEL.	IZQUIERDA PUENTE	DERECHA PUENTE	IZQUIERDA PUENTE RAPIDO
POLIP. IZQUIER. BAJAR LENTO	DERECHA PUENTE RAPIDO	IZQUIERDA PUENTE 1-2 VEL.	DERECHA PUENTE 1-2VEL.	IZQUIERDA ROTACION	DERECHA ROTACION	IZQUIERDA ROT. RAPIDA	DERECHA ROT. RAPIDA	IZQUIERDA ROT. 1-2 VEL.	DERECHA ROT. 1-2 VEL.
IZQUIERDA ROT. 3ª VEL.	DERECHA ROT 3ª VEL.	BOTONERA IZQUIERDA	BOTONERA DERECHA	CARRITO IZQUIERDO	CARRITO DERECHO	LENTO	RAPIDO	CARRITO RAPIDO	PUENTE RAPIDO
ELEVACION RAPIDA	ROTACION RAPIDA	ACOPLAMIENTO POLIPASTO	ABRIR	CERRAR	ABRIR PINZA	CERRAR PINZA	ABRIR PALA	CERRAR PALA	ABRIR PUERTA
CERRAR PUERTA	ACELERAR	DESACELERAR	ELEVAR	DESCENDER	CARGAR	DESCARGAR	IMANTAR	DESIMANTAR	IMANTAR MAGNETO
DESIMANTAR MAGNETO	ACERCAR	CONFIRMAR	AUTOMATICO	MANUAL	MAN-0-AUTO	OFF-MAN-AUTO	ON	OFF	ON-OFF
IN	OUT	NORTE	SUR	ESTE	OESTE	SOBRECARGA	TARA	1-1+2-2	1-2-1+2
1+2	ON-OFF	A-A+B-B							

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MIKE PENDANT - REQUEST FORM FOR NON STANDARD CONTROL STATION

Instructions

(See next page for list of components and legends)

Fill in the chart according to the number of control elements required. Control stations are available with enclosures from 4 to 15 control elements. It is possible to assemble a control element on the bottom of the control station only with enclosures with an odd number of holes.

1. **Control elements**: enter the number corresponding to the control element required (1 to 39) according to the legend. Eg. 25
2. **Button disks**: for pushbuttons (1 to 3) enter the number corresponding to the disk required (50 to 88) according to the legend. Both full color disks and transparent disks (for illuminated buttons) are available. Eg. 57
3. **Color of selectors, mushrooms, pilot lights**: for toggle selector switches (15 to 24), impulse mushroom pushbuttons (7) and pilot lights (11) enter the code corresponding to the color required according to the legend. Eg. RP
4. If you choose disks with arrows (legend 54 to 73), enter the direction of the arrow in the circle. Eg. ↗
5. **Switches, LEDs and potentiometers**: enter the number corresponding to the switch, LED or potentiometer required (90 to 93) according to the legend. It is possible to enter up to 3 switches per position. Eg. 91

   2 speed pushbuttons can activate two switches on the first speed and one switch on the second speed.

   Selector switches can activate only two switches and possibly a LED.

   ATTENTION: LEDs can be placed only in the central position and they are used for illuminated buttons and selector switches.

   (See Control Element legend for switch activation).
6. **Hook**: tick the box at the top or at the bottom if the hook is required. Eg. Hook
7. **Cable sleeve and cable clamp**: tick the box if the cable sleeve or the cable clamp are required.

   Eg. Sleeve
8. **Mechanical interlock and ON-OFF actuator:** tick the boxes where the mechanical interlock (MI) between two control elements or the latched ON-OFF maintained actuator (LA) is required. Eg. ☒
9. **Protection**: when a control element is mounted on the bottom of the control station, it is possible to use a protection; in this case tick the box corresponding to the protection required. Eg. Small
10. **Cover**: tick the box corresponding to the cover color required (the base of the enclosure is always black).
11. **SIL 1 certified**: tick the box if you require SIL 1 certified units.
12. **Label sheet**: stickers with letterings or symbols may be placed on the left and on the right of any control element. If label sheets are required, tick the corresponding box.
13. **cULus certified**: tick the box if you require cULus certified units.

Control element on the bottom of the control station*

☐ Control element 1

☐ Color 3

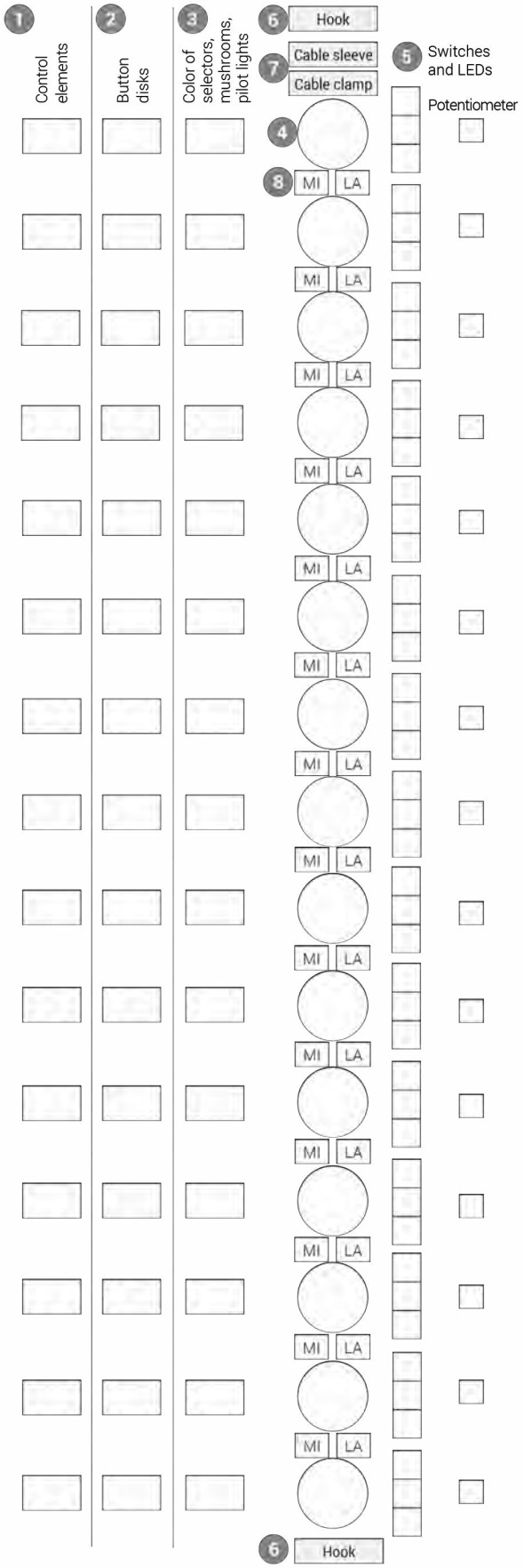
☐ ☐ Switches 5

Small | Large | None Protection 9

*ATTENTION: only mushroom pushbuttons ref. 4, 5, 6 with one or two switches, or **non illuminated** selector switches ref. 15, 16, 30, 31 with only one switch can be assembled on the bottom of the control station. LEDs can not be mounted in this position.

Cover 10	SIL 1 certified 11
☐ Yellow ☐ Black	☐

Label sheet 12	cULus certified 13
☐ Symbols ☐ English ☐ Spanish	☐



MIKE PENDANT - REQUEST FORM FOR NON STANDARD CONTROL STATION

1 Legend - Control elements

* SWITCH ACTIVATION
It is possible to mount up to 3 switches for each control element. The chart on the right of each pushbutton or selector switch specifies which position activates the switch on the top, in the middle or on the bottom. If the selector switches are mounted with the lever facing downwards, then the the activation of the switches is reversed.
Eg.: 2 speed pushbutton: the first speed activates the switches on the top and in the middle, while the second speed activates the switch on the bottom.

Pushbuttons

It is possible to mount up to 3 switches for each button. LEDs can be mounted only in the middle.

		SWITCH ACTIVATION*
1	1 speed pushbutton with disk	speed 1
25	1 speed black pushbutton	speed 1
26	1 speed grey pushbutton	speed 1
2	2 speed pushbutton with disk	speed 1
27	2 speed black pushbutton	speed 1
28	2 speed grey pushbutton	speed 2
3	1 speed illuminated pushbutton with disk	speed 1 / LED / speed 1

Mushroom pushbuttons

All mushroom pushbuttons activate all the switches at the same time.

- 4 Latched mushroom pushbutton for emergency stop
- 5 Latched mushroom pushbutton for emergency stop Ø 40 mm
- 6 Key mushroom pushbutton
- 7 Impulse mushroom pushbutton Ø 33 mm with black base
- 8 Impulse black mushroom pushbutton Ø 40 mm with yellow base
- 9 Impulse black mushroom pushbutton Ø 40 mm with yellow base and protective cap

11 Pilot light

12 Blanking plug

Toggle selector switches

It is possible to mount only 2 switches for each selector. In the middle it is possible to mount only the LED for illuminated selector switches.

		SWITCH ACTIVATION*
15	0/1 spring return	pos 1 / pos 1
16	0/1 maintained positions	pos 1 / pos 1
17	1/0/2 spring return	pos 1 / pos 2
18	1/0/2 maintained positions	pos 1 / pos 2
19	1/1+2/2 spring return	pos 1 and 1+2 / pos 2 and 1+2
20	1/1+2/2 maintained positions	pos 1 and 1+2 / pos 2 and 1+2
21	0/1/1+2 spring return	pos 1+2 / pos 1 and 1+2
22	0/1/1+2 maintained positions	pos 1+2 / pos 1 and 1+2
23	1/2 spring return	pos 1 / pos 2
24	1/2 maintained positions	pos 1 / pos 2

Key selector switches

It is possible to mount only 2 switches for each selector, and no switch/LED in the central position.

		SWITCH ACTIVATION*
30	0/1 spring return key out in position 0	pos 1 / NA / pos 1
31	0/1 maintained positions key out in position 0	pos 1 / NA / pos 1
32	1/0/2 spring return key out in position 0	pos 1 / NA / pos 2
33	1/0/2 maintained positions key out in position 0	pos 1 / NA / pos 2
34	0/1/1+2 spring return key out in position 0	pos 1+2 / NA / pos 1 and 1+2
35	0/1/1+2 maintained positions key out in position 0	pos 1+2 / NA / pos 1 and 1+2
36	1/2 change over spring return key out in position 1	pos 1 / NA / pos 2
37	1/2 change over maintained positions key out in position 1	pos 1 / NA / pos 2
38	1/1+2/2 spring return key out in position 1+2	pos 1 and 1+2 / NA / pos 2 and 1+2
39	1/1+2/2 maintained positions key out in position 1+2	pos 1 and 1+2 / NA / pos 2 and 1+2

2 Legend - Button disks

Full color and symbol disks for pushbuttons (ref. 1 and 2)

50	GREEN	55		60		65		70	RED	75	CLOSE	80	RED
51	RED	56		61		66		71	BLUE	76	YELLOW	81	BLUE
52	YELLOW	57		62		67		72	YELLOW	77	WHITE	82	ORANGE
53	GREEN	58		63		68		73	GREY	78	BLACK		
54		59		64		69	GREEN	74	OPEN	79	GREEN		

Transparent disks for illuminated pushbuttons (ref. 3)

84	RED	86	BLUE	88	ORANGE
85	WHITE	87	GREEN		

3 Legend - Color of selector switches, mushroom pushbuttons, pilot lights

Non-illuminated toggle selector switches (ref. 15 to 24)

RP	Red	BP	Blue	AP	Orange
GP	Yellow	VP	Green	WP	White

Impulse mushroom pushbutton with black base (ref. 7)

R	Red	B	Blue	A	Orange
G	Yellow	V	Green	N	Black

Illuminated toggle selector switches (ref. 15 to 24)

RI	Red	BI	Blue	AI	Orange
GI	Yellow	VI	Green	WI	White

Pilot lights (ref. 11)

R	Red	B	Blue	A	Orange
G	Yellow	V	Green	W	White

5 Legend - Switches, LEDs, potentiometers

- 90 PRSL1800PI - 1NO switch
- 91 PRSL1801PI - 1NC switch
- 92 PRSL1820PI LED 24/48 Vac/dc
- 93 PRSL1821PI LED 110/230 Vac and 110 Vdc
- 94 PRSL1891PI potentiometer 4.7 kΩ
- 95 PRSL1892PI potentiometer 10 kΩ
- 96 PRSL1893PI potentiometer 1 kΩ

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MIKE-D

PENDANT CONTROL STATION

The **Mike-D** pendant control station is similar to the MIKE pendant, however, it includes contacts rated up to 10 amp which allows for direct control of motors without the use of relay or contactors in the circuit. 1 or 2 speed contacts (10 amp rated) available. With up to 3 (1 speed) or 4 (2 speed) positions for controls or indicators, and a unique position labeling feature which allows the control labels to be placed on the buttons themselves or off to the sides. The **Mike-D** can handle the most complicated and diverse control requirements.

Features

- Reduced installation and wiring time and costs: the cable inlet and the switches fitted in the base of the control station are separated from the actuators, mounted on the cover.
- Innovative suspension system with concealed cables to enable rapid, correct, ergonomic installation.
- Rubber pushbuttons with symbol disks to ensure protection against dust and prevent jamming when the control station is used in harsh environments.
- The emergency stop mushroom pushbutton complies with standard ISO 13850.
- IP protection degree: IP66, IP67 and IP69K.
- IK protection degree: IK09.
- Extreme temperature resistance: -13°F to +158°F (-25°C to +70°C)..
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configurations with 3 (1 speed version) or 4 actuators (2 speed version).
- Direct control 1 speed two-pole switches and 1 speed three-pole switches for emergency mushroom pushbutton.
- Mechanical interlock to prevent simultaneous operation of opposite functions.
- 1 speed pushbuttons available in different colors and mushroom pushbuttons with rotation release.
- Available with labels (symbols and lettering) to be applied next to the actuators or with pushbuttons with two-color molded permanent symbols.

Certifications

- CE marking

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR MIKE-D PENDANT STATION

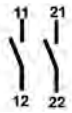
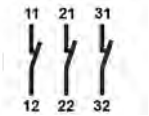
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-3 Low-voltage switch-gear and control-gear | Switches, disconnectors, switch-disconnectors and fuse-combination units
	EN 60529 Degrees of protection provided by enclosures
	ISO 13850 Safety of machinery - Emergency stop - Principles for design
Markings and Homologations	CE

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +70°C)
	Operational: -13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 66 / IP 67 / IP 69K
IK protection degree	IK 09
Insulation category	Class II
Cable entry	Rubber cable sleeve (Ø 8÷26 mm)
	Cable clamp M20
Operating positions	Any position
Pushbuttons mechanical life	10 x 10^6 operations

Technical Specifications — Switches

SCC Part No. →	**PRSL1900PI**	**PRSL1902PI**
Utilisation category	AC 3 - AC 4	AC 23B
Rated operational current	10 A	
Rated operational voltage	400 Vac	
Rated operational power	2.2 kW	
Rated thermal current	20 A	
Rated insulation voltage	660 Vac	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2	
Tightening torque	0.8 Nm	
Microswitch type	1 speed, two-pole single switch	1 speed, three-pole single switch
Contacts	2 NO	3 NC
Scheme		
Markings and Homologations	CE	

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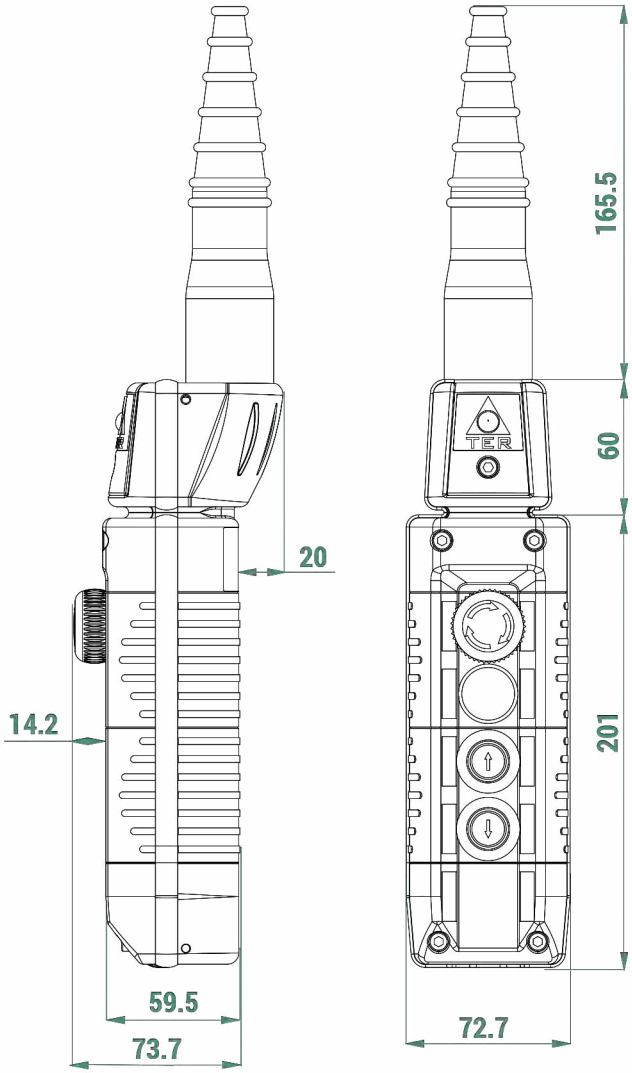
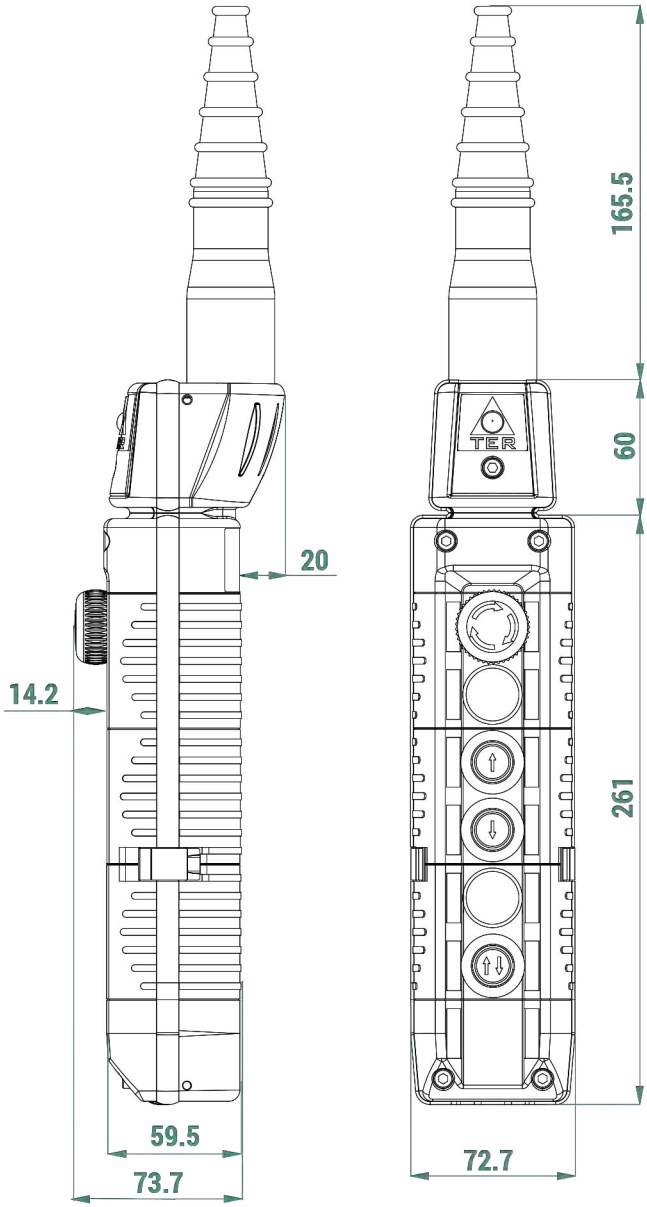
MIKE-D PENDANT - OVERALL DIMENSIONS (mm)

1 speed



2 speed



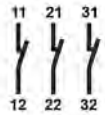
1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

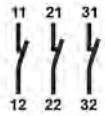
Dimensions of mushroom pushbutton refer to thee released position.

STANDARD MIKE-D PENDANT CONTROL STATIONS

1 Speed

SCC Part No. → F72AY00001				
	Latched mushroom pushbutton		No. 1 PRSL1902PI	
	Blanking plug		-	-
	Two buttons mechanically interlocked		No. 1 PRSL1900PI	
			No. 1 PRSL1900PI	

2 Speeds

SCC Part No. → F72EY00001				
	Latched mushroom pushbutton		No. 1 PRSL1902PI	
	Blanking plug		-	-
	Two buttons mechanically interlocked		No. 1 PRSL1900PI	
			No. 1 PRSL1900PI	
	Blanking plug		-	-
	One button		No. 1 PRSL1900PI	

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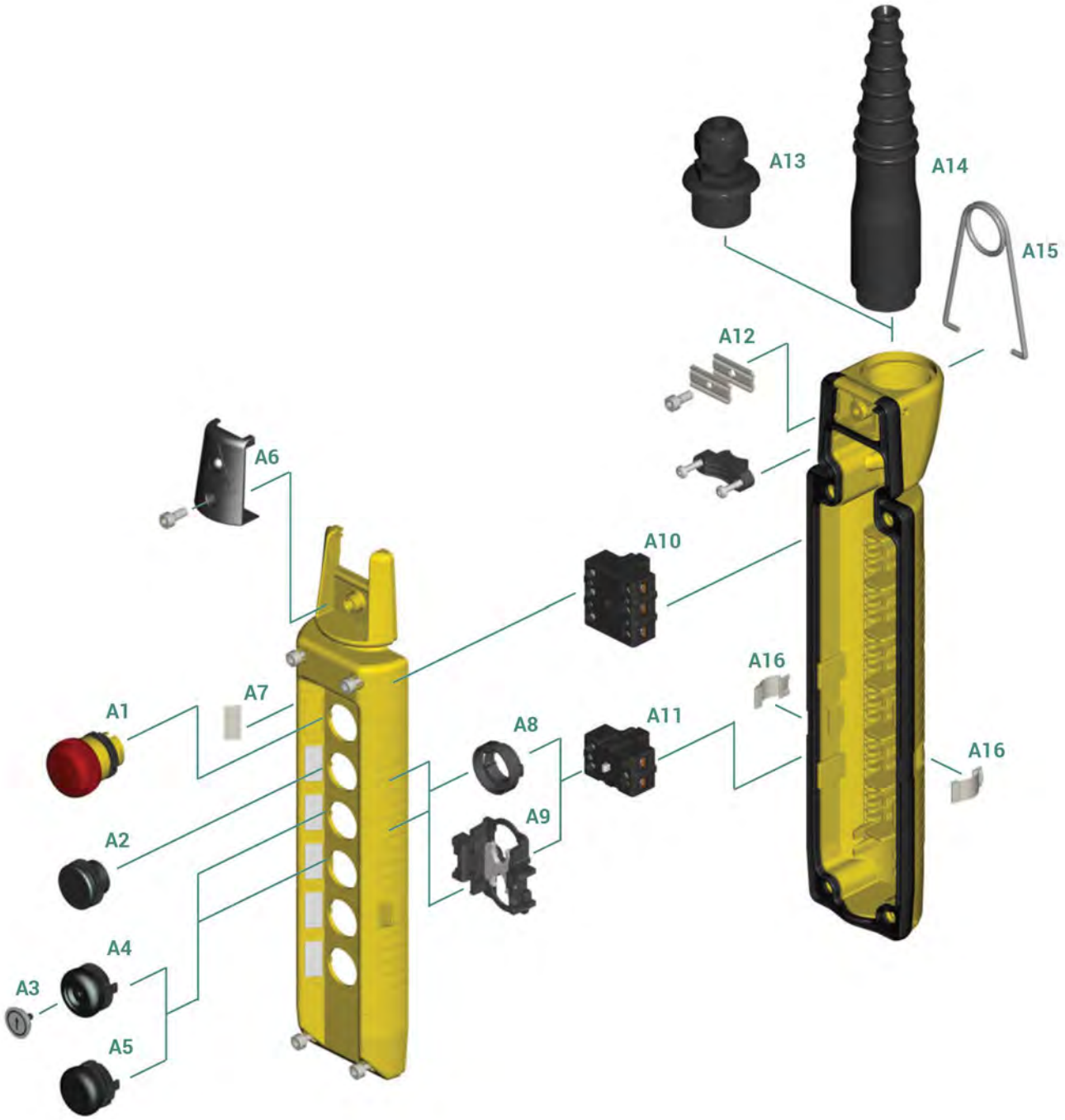
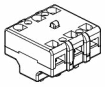
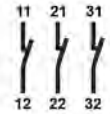
MIKE-D PENDANT - ASSEMBLY DRAWING



See the following tables for description of components: "Switches", "Actuators", "Mushroom Pushbuttons" and "Accessories".

MIKE-D PENDANT - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A10		1 speed three-pole 3NC switch for emergency mushroom pushbutton		PRSL1902PI
A11		1 speed two-pole 2NO switch		PRSL1900PI

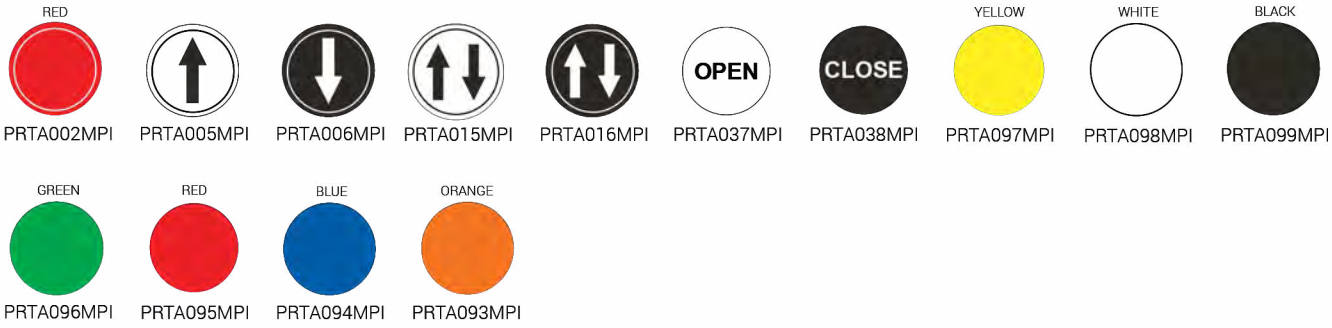
Actuators

Ref.	Drawing	Description	SCC Part No.
A2		Blanking plug	PRSL1845PI
A3		Disk for pushbutton	PRTA _ _ _ _ _ _ See disk table
A4		1 speed pushbutton	PRSL1811PI
A5		1 speed black pushbutton	PRSL1806PI
		1 speed grey pushbutton	PRSL1807PI

Mushroom Pushbuttons

Ref.	Drawing	Description	SCC Part No.
A1		Latched mushroom pushbutton for emergency stop	PRSL1880PI

Disks



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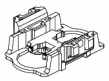
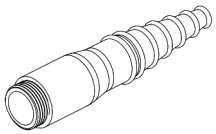
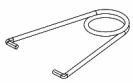
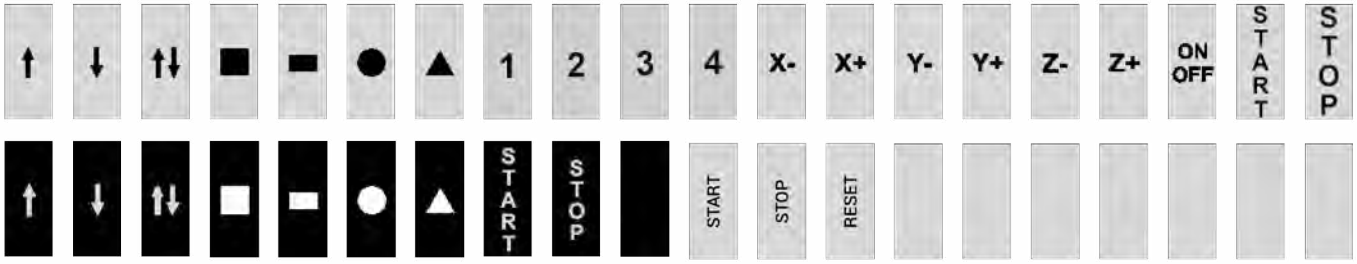
MIKE-D PENDANT - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A6		Cable cover with TER logo	PRSL1832PI
		Blank cable cover	PRSL1836PI
A7		Label Sheet	Part number upon request
A8		Button-switch spacer	PRSL8512PI
A9		Mechanical interlock	PRSL1850PI
A12		Complete wire clamp	PRSL1896PI
A13		Cable clamp M20 with reduction	PRSL1910PI
A14		Cable sleeve	PRSL0145PE
A15		Hook	PRGA0012PEI
A16		Closing clip (only for 2 speed version)	PRTR1035PE

Label Sheet



MIKE-D PENDANT - REQUEST FORM FOR NON STANDARD CONTROL STATION

Instructions

Fill in the chart according to the type of the pendant station required (1 or 2 speeds).

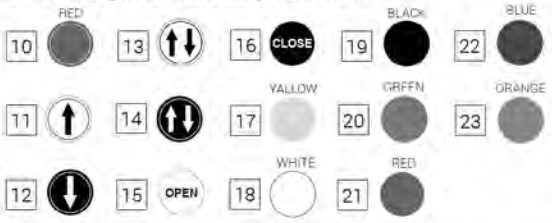
1. **Button disks**: for pushbuttons with disks enter the number corresponding to the disk required (10 to 23) according to the legend.

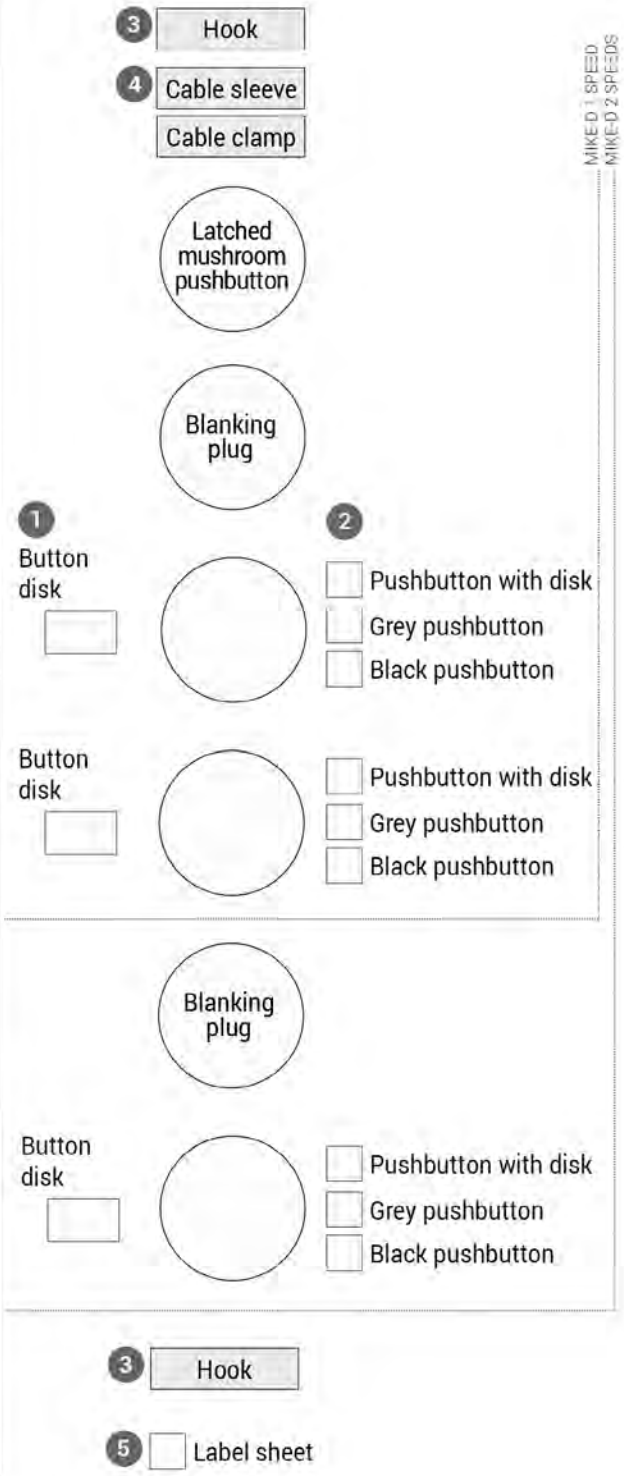
   If you choose **disks with arrows** (legend 11 to 14), enter the direction of the arrow in the circle. Eg.
2. **Pushbuttons**: tick the box corresponding to the type of pushbutton required.
3. **Hook**: tick the box at the top or at the bottom if the hook is required. Eg. Hook
4. **Cable sleeve and cable clamp**: tick the box if the cable sleeve or the cable clamp are required.

   Eg. Sleeve
5. **Label sheet**: stickers with letterings or symbols may be placed on the left and on the right of any control element. If label sheets are required, tick the corresponding box.

1 Legend - Button disks

Color and symbol disks for pushbuttons





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MIKE-X

HAZARDOUS AREAS
PENDANT CONTROL STATION

The **Mike-X** explosion proof pendant control station is certified for use in ATEX & IEC Ex zones 1, 2, 21 & 22. It is certified for Class 1 Div 1 hazardous locations. The **Mike-X** can be fitted with 4-16 operators using 2 speed switches with either NO or NC contacts. Consult factory for 10 button - 16 button part numbers.

Features

- Pendant control station for use in industrial areas and hazardous locations for ATEX and IECEx zones 1, 2, 21, 22.
- Reduced installation and wiring time and costs: the optimized internal space enables easy and quick connections.
- Positive opening NC contacts for safety functions.
- IP protection degree: IP65.
- Extreme temperature resistance: -20°C to +60°C.
- It features solid but light weight body made of powder epoxy painted aluminum or stainless steel AISI 316 (optional), resistant to temperature changes.
- All materials and components used are shock and wear resistant and guarantee protection of the unit against water, dust and oils.

Options

- Available in configurations from 4 to 16 actuators.
- 2 speed switches with NO contacts or 1 speed switches with NC contacts.
- Mechanical interlock to prevent simultaneous operation of opposite functions.
- Connecting bridges to reduce wiring time.
- It can be equipped with thermal protectors and resistances as anti-condensation heaters (max. power 24W).

Certifications

- CE marking.
- Conformity to ATEX Standards EN 60079-0:2012, EN 60079-1:2014, EN 60079-31:2014.
- Conformity to IEC Ex Standards IEC 60079-0:2012, IEC 60079-1:2014, IEC 60079-31:2013.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR MIKE-X PENDANT STATION

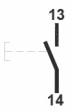
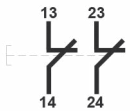
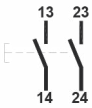
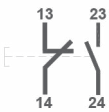
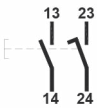
Certifications

Conformity to Atex Standards	EN 60079-0:2012 Explosive atmospheres – Equipment – General requirements
	EN 60079-1:2014 Explosive atmospheres – Equipment protection by flameproof enclosures “d”
	EN 60079-31:2014 Explosive atmospheres – Equipment dust ignition protection by enclosures “t”
Conformity to IECx Standards	IEC 60079-0:2012 Explosive atmospheres – Equipment – General requirements
	IEC 60079-1:2014 Explosive atmospheres – Equipment protection by flameproof enclosures “d”
	IEC 60079-31:2013 Explosive atmospheres – Equipment dust ignition protection by enclosures “t”
Atex Certification	ITS16ATEX101535X
IECEx Certification	ITS 16.0070X
Atex Protection Type	II 2 G Ex db IIC T6 Gb
	II 2 D Ex tb IIIC T85°C Db
	Tamb: -20°C to +60°C
IECEx Protection Type	Ex db IIC T6 Gb
	Ex tb IIIC T85°C Db
	Tamb: -4°F / +140°F (-20°C / +60°C)
Markings and Homologations	CE Ex IEC IECEx ETL

General Technical Specifications

Operational ambient temperature	-4°F / +140°F (-20°C / +60°C)
IP protection degree	IP 66 / IP 67 / IP 69K
Cable entry*	IK 09

Technical Specifications the Switches

Rated operational current	Maz 250 Vdc / 1.1 A					
Rated frequency	Max 240 Vac / 3 A					
Wires	50/60 Hz					
Anti-moisture heater (optional)	Min 0.75 mm^2 - Max 2 mm^2 (ATEX and IEC Ex)					
MIcroswitch Type	1 speed	1 speed	1 speed	1 speed	1 speed	2 speeds
Contacts	1NC (positive opening operation NC contacts ⊖)	1NO	2NC (positive opening operation NC contacts ⊖)	2NO	1NO+1NC (positive opening operation NC contacts ⊖)	2NO
Scheme						
Markings and Homologations	CE UL					

Optionals

Anti-concensation heater
Stainless steel AISI 316 version

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CONFIGURATIONS FOR MIKE-X PENDANT STATION

4 Operator Configurations

SCC Part No. → EXTA4M2		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		

SCC Part No. → EXTA4M2A		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Blank		
Blank		

SCC Part No. → EXTA4M2B		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		

SCC Part No. → EXTA4M2C		
Operator Type	Symbol	Note
Button Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		

SCC Part No. → EXTA4M2D		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		

SCC Part No. → EXTA4M2C		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	2 contacts NC simultaneous
Momentary Button		
Momentary Button		

SCC Part No. → EXTA4M2F		
Operator Type	Symbol	Note
Momentary Button **Start**		
Momentary Stop		1 NC
Momentary Button		
Momentary Button		

6 Operator Configurations

SCC Part No. → EXTA6M3		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3A		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

CONFIGURATIONS FOR MIKE-X PENDANT STATION

6 Operator Configurations

SCC Part No. → EXTA6M3A		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3B		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Start		
Momentary Stop		

SCC Part No. → EXTA6M3C		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	2 NO
Mushroom Head E-stop	Maintained	2 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3D		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Start		
Momentary Stop		

SCC Part No. → EXTA6M3E		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3F		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Start		
Momentary Stop		

SCC Part No. → EXTA6M3G		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3H		
Operator Type	Symbol	Note
Keyed Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
omentary Button		
Momentary Start		
Momentary Stop		

SCC Part No. → EXTA6M3I		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3L		
Operator Type	Symbol	Note
Momentary Start	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Start		
Momentary Stop		

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CONFIGURATIONS FOR MIKE-X PENDANT STATION

6 Operator Configurations

SCC Part No. → EXTA6M3M		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA6M3N		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Keyed Selector Switch	Off-On	
Keyed Selector Switch	Off-On	

8 Operator Configurations

SCC Part No. → EXTA8M3		
Operator Type	Symbol	Note
Key Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3A		
Operator Type	Symbol	Note
Momentary Start		1 NO
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO

SCC Part No. → EXTA8M3B		
Operator Type	Symbol	Note
Momentary Start		2 NO
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3C		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO
Momentary Button		2 NO

SCC Part No. → EXTA8M3D		
Operator Type	Symbol	Note
zmomentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3E		
Operator Type	Symbol	Note
Momentary Start		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Start		1 NO
Momentary Stop		1 NC
Momentary Button		1 NO
Momentary Button		1 NC

8 Operator Configurations

SCC Part No. → EXTA8M3F		
Operator Type	Symbol	Note
Key Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3G		
Operator Type	Symbol	Note
Mushroom Head E-stop	Maintained	1 NC
Momentary Start/Horn		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3H		
Operator Type	Symbol	Note
Momentary Start		2 NO
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

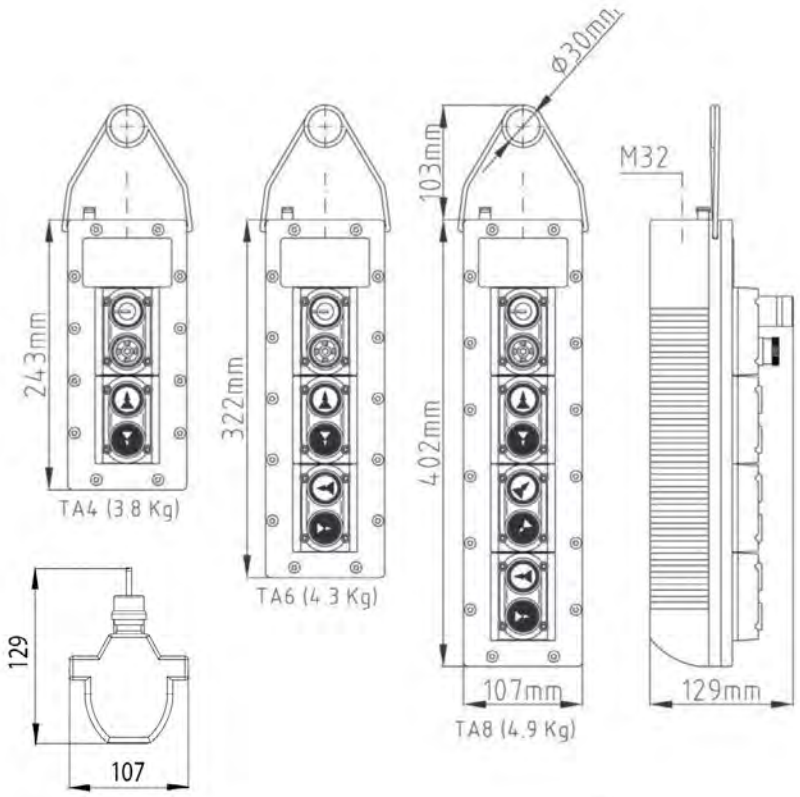
SCC Part No. → EXTA8M3I		
Operator Type	Symbol	Note
Blank		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

SCC Part No. → EXTA8M3L		
Operator Type	Symbol	Note
Momentary Horn		
Mushroom Head E-stop	Maintained	1 NC
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

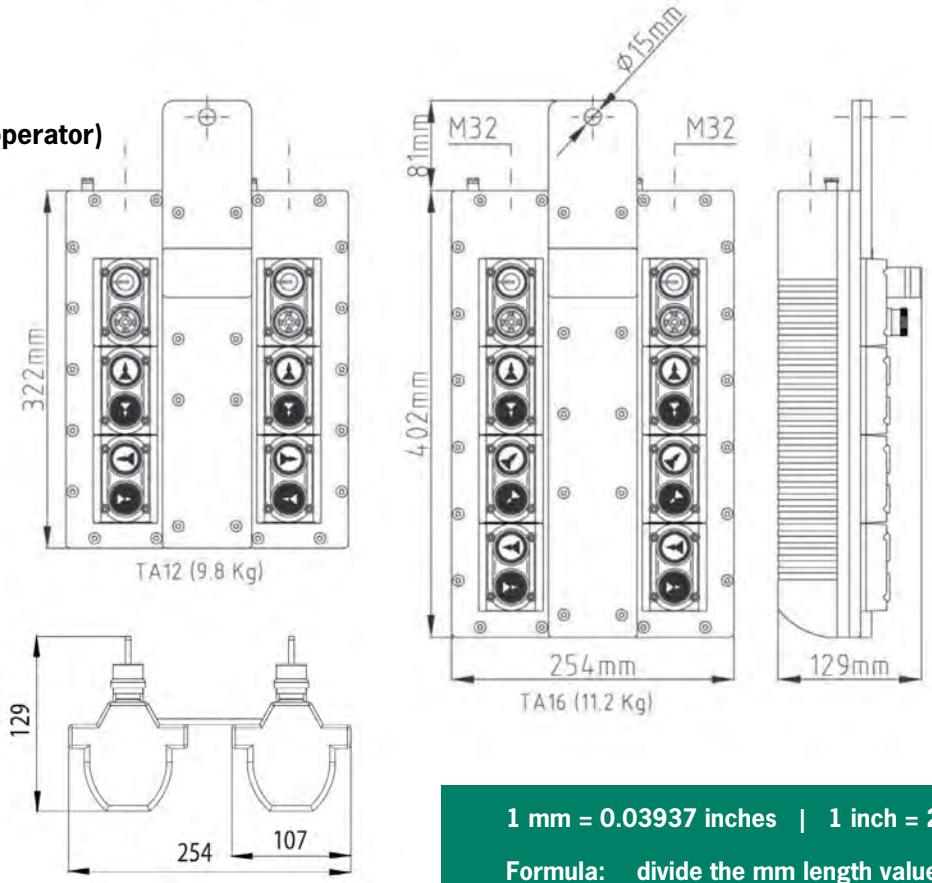
SCC Part No. → EXTA8M3M		
Operator Type	Symbol	Note
Key Selector Switch	Off-On	
Mushroom Head E-stop	Maintained	2 contacts NC simultaneous
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		
Momentary Button		

MIKE-X PENDANT - OVERALL DIMENSIONS (mm)

Single Column
(4, 6, 8 operator)



Double Column
(10, 12, 14, 16 operator)



1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

MIKE-X PENDANT - REQUEST FORM FOR CONTROL STATION

Instructions

Fill in the chart according to the following instructions:

1. **Protection:** tick the box to accept the type of protection provided.
2. **Control station:** tick the box corresponding to the type of control station required (simple or double).
3. **Control elements:** enter in the broken-line box the number corresponding to the control element required (from 1 to 25) according to the legend.

   If you choose **buttons with arrows**, mark the direction of the arrow into the corresponding box. Eg. ↗

   ATTENTION: opposite functions (eg. up /down) must be vertically coupled in columns and they are provided with mechanical interlock.
4. **Switches:** ienter the number corresponding to the switch required (from 30 to 35) according to the legend.
5. **Cable entry:** tick the box corresponding to type of cable entry required.
6. **Optionals:** tick the box corresponding to the eventual optionals required.

Protection 1

☐ Tick the box to accept the type of protection provided.

ATEX	II 2 G Ex db IIC T6 Gb II 2 D Ex tb IIIC T85°C Db
IECEx	Ex db IIC T6 Gb Ex tb IIIC T85°C Db

Control station 2

☐ 4 - 8 actuators: simple control station

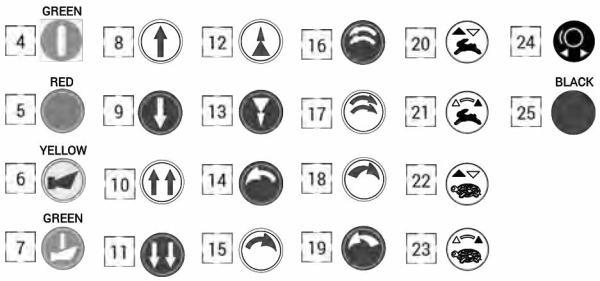
☐ 12 - 16 actuators: double control station

Control elements 3

1 Emergency stop mushroom pushbutton

2 Selector switch - 2 maintained positions 0/1

3 Key selector switch - 3 positions 1/0/2
(1/0 maintained - 0/2 spring return)



Switches 4

30 1NC - 1 speed	33 2NO - 1 speed
31 1NO - 1 speed	34 1NO+1NC - 1 speed
32 2NC - 1 speed	35 2NO - 2 speeds

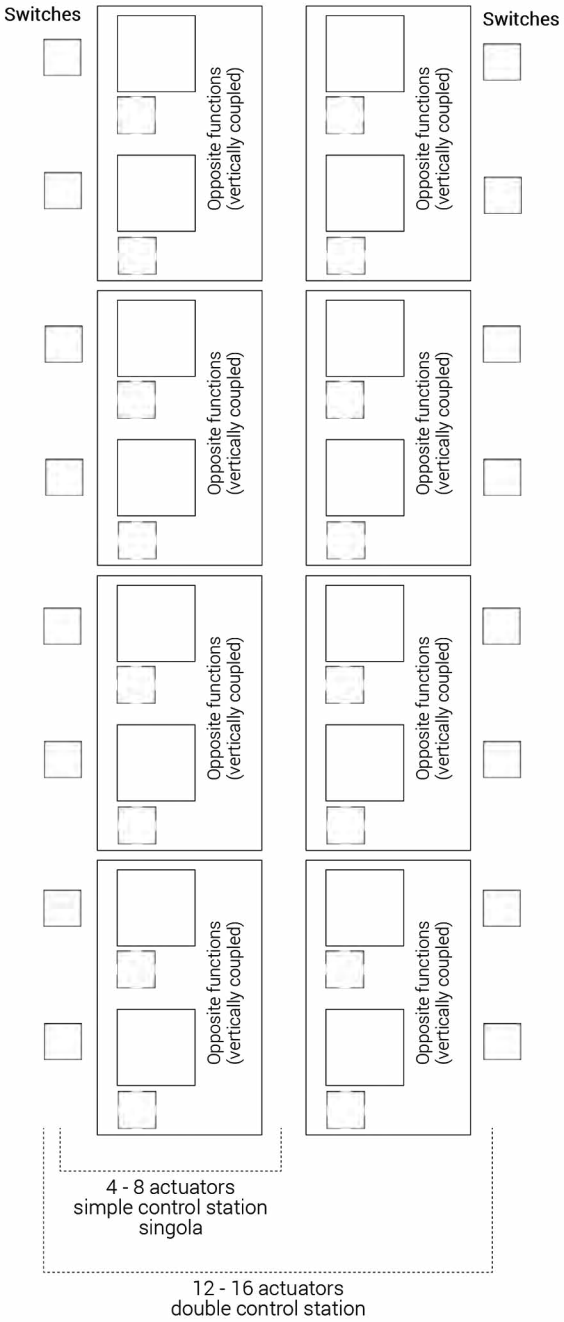
Cable entry 5

☐ M25 x 1,5 ☐ M32 x 1,5

Optionals 6

☐ Anti-condensation heater

☐ Stainless steel AISI 316 version



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NPA

PENDANT CONTROL STATION

TER's well known, classic **NPA** pendant control station is highly configurable with 2 - 12 positions for buttons, selectors, pilot lights or potentiometers. Additionally, the cable sleeve can be angled up to 20° to give the operator the best view of the controls and provide a more natural/comfortable working position. The **NPA** offers 1 to 3 speed operators with the familiar rectangular push buttons as well as an option of dust-tight push buttons arranged in a single column.

Features

- The cable sleeve can be angled up to 20° to give the operator the best view of all the control elements and enable a natural, comfortable working position.
- Rectangular pushbuttons in thermoplastic material or rubber pushbuttons with symbol disks to ensure protection against dust.
- Two-color moulded pushbuttons and disks to guarantee clear reading and wear resistance.
- The emergency stop mushroom pushbutton complies with standard EN 418.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP65.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C)
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configuration from 2 to 12 actuators.
- One, two or three speed switches with NO and/or NC contacts.
- Mechanical interlock to prevent simultaneous operation of opposite functions.
- Custom engraved buttons available.

Certifications

- CE marking and EAC certifications.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR NPA PENDANT STATION

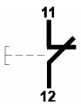
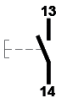
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch gear and control gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +70°C)
	Operational: -13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65
Insulation category	Class II
Cable entry	2÷3 buttons: rubber cable sleeve (Ø 10÷18 mm)
	8÷12 buttons: rubber cable sleeve (Ø 17÷26 mm)
Operating positions	Any position

Technical Specifications — Switches

SCC Part No. →	**PRSL0502PI**	**PRSL0503PI**
Utilisation category	AC 15	
Rated operational current	1.9 A	
Rated operational voltage	380 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Switch type	**Switch with two connecting terminals**	
Contacts	1NC	1 NO
Scheme		
Markings and Homologations	CE cULus	

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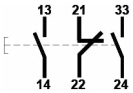
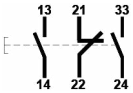
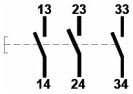
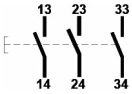
SPECIFICATIONS FOR NPA PENDANT STATION

Technical Specifications — Switches

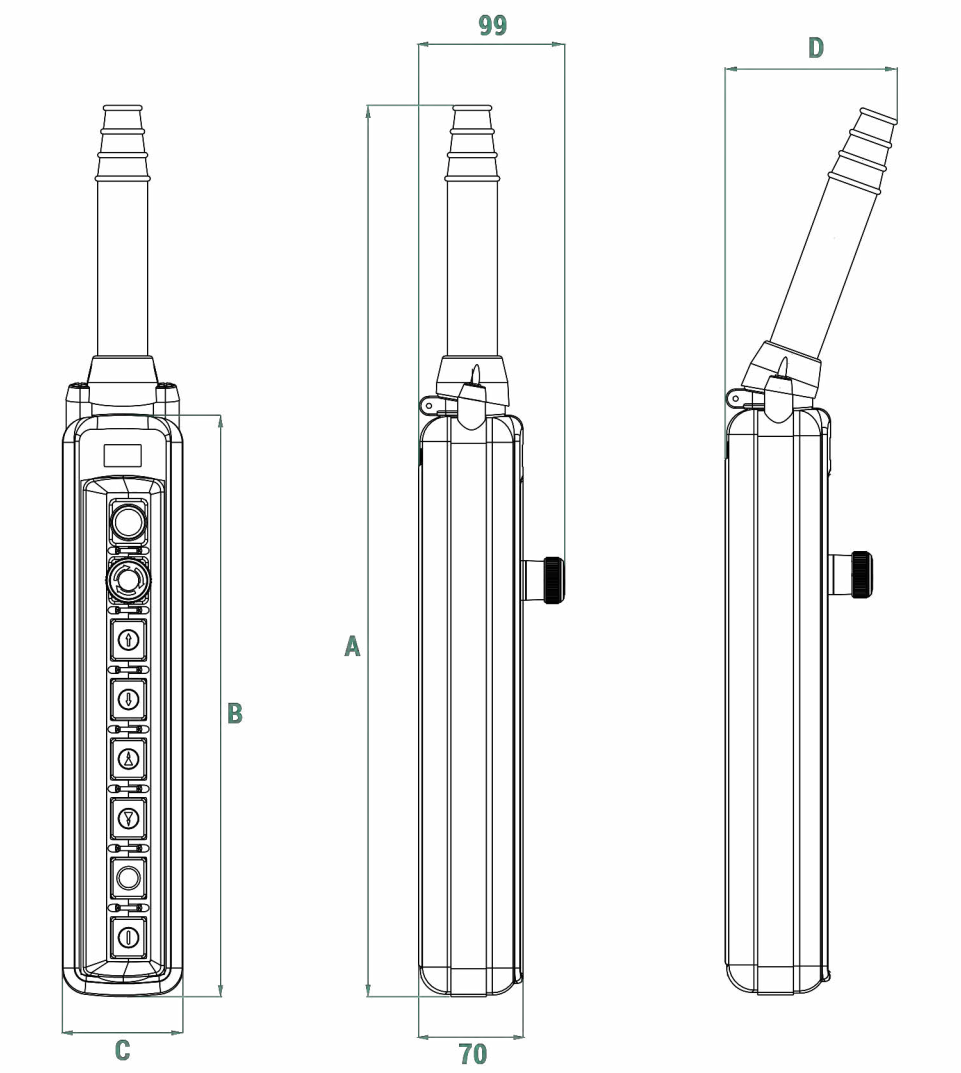
SCC Part No. →	PRSL0504PI	PRSL0505PI
Utilisation category	AC 15	
Rated operational current	1.9 A	
Rated operational voltage	380 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Switch type	**1 speed switch with two connecting terminals each contact**	**2 speed switch with two connecting terminals each contact**
Contacts	1NO+1NC+1NO simultaneous	1NO+1NC+1NO staggered
Scheme		
Markings and Homologations	CE c UL us	

SCC Part No. →	PRSL0506PI	PRSL0507PI
Utilisation category	AC 15	
Rated operational current	1.9 A	
Rated operational voltage	380 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Switch type	**1 speed switch with two connecting terminals each contact**	**3 speed switch with two connecting terminals each contact**
Contacts	3NO simultaneous	3NO staggered
Scheme		
Markings and Homologations	CE c UL us	

Technical Specifications of Lamp Holders

SCC Part No. →	PRSL0501PI
Maximum voltage	125 V
Maximum power	2.6 W
Lamp type	With bayonet coupling
Connections	Screw-type terminals
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2
Tightening torque	0.8 Nm
Markings and Homologations	CE

NPA PENDANT - OVERALL DIMENSIONS (mm)



No. of actuators	Dimensions (mm)				Weight (lbs)
	A	B	C	D	
2	292	140	76	87	0.992
3	333	181	76	87	1.212
4	372	222	76	87	1.433
6	459	307	76	87	1.984
8	605	393	83	116	2.646
10	685	474	83	116	3.086
12	771	560	90	116	3.748

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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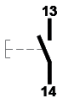
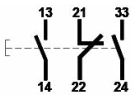
STANDARD NPA PENDANT CONTROL STATIONS

Standard control stations are equipped with cable sleeve, hook and mechanical interlock between opposite function pushbuttons.

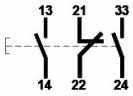
2 Actuators

SCC Part No. →	PF03020005 (standard pushbutton) PF24020002 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

SCC Part No. →	PF03020014 (standard pushbutton) PF24020003 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton

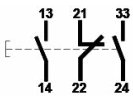
3 Actuators

SCC Part No. →	PF03030004 (standard pushbutton) PF24030004 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

SCC Part No. →	PF03030020 (standard pushbutton) PF24030003 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton

4 Actuators

SCC Part No. →	PF03040105 (standard pushbutton) PF24040024 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0503PI 1NO 1 speed	Pushbutton Green
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

SCC Part No. →	PF03040106 (standard pushbutton) PF24040006 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0503PI 1NO 1 speed	Pushbutton Green
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton

STANDARD NPA PENDANT CONTROL STATIONS

4 Actuators

SCC Part No. →	PF03040022 (standard pushbutton) PF24040001 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 / 14	No.4 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03040030 (standard pushbutton) PF24040003 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 / 14 22 24	No.4 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03040243 (standard pushbutton) PF24040002 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 / 14 22 24	No.1 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
13 21 33 / 14 22 24	No.1 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
13 / 14	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

6 Actuators

SCC Part No. →	PF03060098 (standard pushbutton) PF24060062 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 / 14	No.4 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
-	-	Blanking plug

SCC Part No. →	PF03060139 (standard pushbutton) PF24060011 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 / 14 22 24	No.4 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
-	-	Blanking plug

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STANDARD NPA PENDANT CONTROL STATIONS

6 Actuators

SCC Part No. →	PF03060113 (standard pushbutton) PF24060063 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 / 14 22 24	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
13 / 14	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
-	-	Blanking plug

SCC Part No. →	PF03060293 (standard pushbutton) PF24060029 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 / 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 / 14	No.4 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03060399 (standard pushbutton) PF24060064 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 / 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 / 14 22 24	No.4 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03060192 (standard pushbutton) PF24060031 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 / 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 / 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 / 14 22 24	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
13 / 14	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

8 Actuators

SCC Part No. →	PF03080201 (standard pushbutton) PF24080044 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 14	No.6 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03080471 (standard pushbutton) PF24080101 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 14 22 24	No.6 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03080544 (standard pushbutton) PF24080108 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 14 22 24	No.2 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
13 14	No.4 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03080545 (standard pushbutton) PF24080107 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 21 33 14 22 24	No.4 PRSL0505PI 1NO+1NC+1NO 2 speeds	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
13 14	No.2 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton

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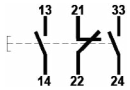
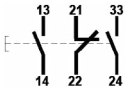
STANDARD NPA PENDANT CONTROL STATIONS

10 Actuators

SCC Part No. →	PF03100334 (standard pushbutton) PF24100051 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.8 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03100398 (standard pushbutton) PF24100072 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.3 PRSL0503PI 1NO 1 speed	Pushbutton Yellow
		Pushbutton
		Pushbutton Green
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.6 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

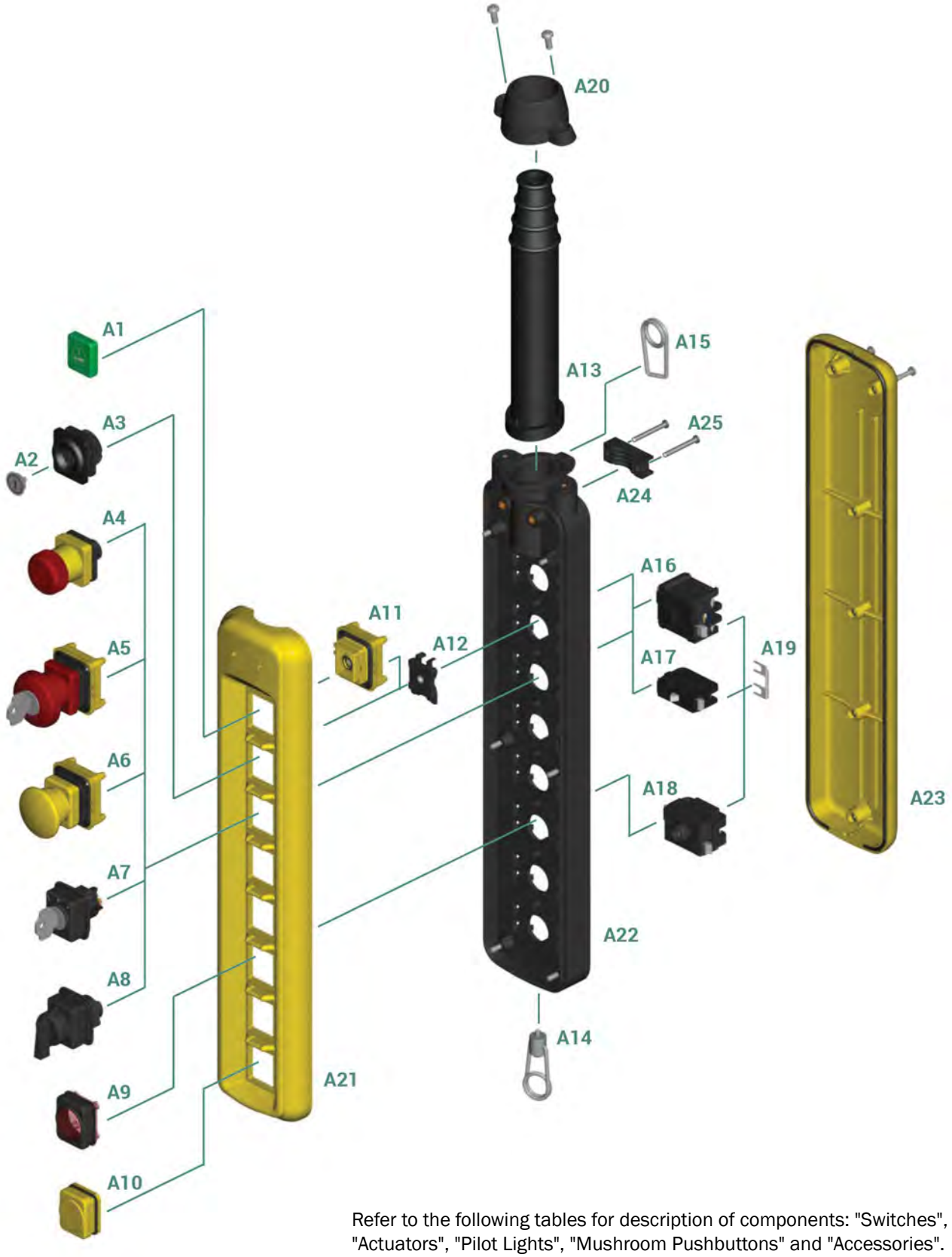
SCC Part No. →	PF03100399 (standard pushbutton) PF24100071 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
	No.8 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

12 Actuators

SCC Part No. →	PF03120282 (standard pushbutton) PF24120031 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 21 33 14 22 24	No.1 PRSL0504PI 1NO+1NC+1NO 1 speed	Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 14	No.10 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

SCC Part No. →	PF03120283 (standard pushbutton) PF24120032 (dust-tight pushbutton)	
Switch scheme	**Switch type**	**Actuator type**
13 14	No.3 PRSL0503PI 1NO 1 speed	Pushbutton Yellow
		Pushbutton
		Pushbutton Green
11 12	No.1 PRSL0502PI 1NC	Latched mushroom pushbutton
13 14	No.8 PRSL0503PI 1NO 1 speed	Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton
		Pushbutton

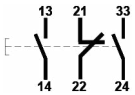
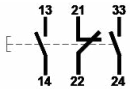
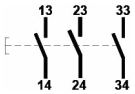
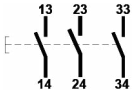
NPA PENDANT - ASSEMBLY DRAWING



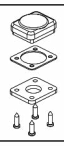
Refer to the following tables for description of components: "Switches", "Actuators", "Pilot Lights", "Mushroom Pushbuttons" and "Accessories".

NPA PENDANT - ACCESSORY PARTS

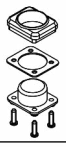
Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A16		1 speed, 1NO+1NC+1NO simultaneous switch		PRSL0504PI
		2 speeds, 1NO+1NC+1NO staggered switch		PRSL0505PI
		1 speed, 3NO simultaneous switch		PRSL0506PI
		3 speeds, 3NO staggered switch		PRSL0507PI
A17		1NC switch		PRSL0502PI
		1NO switch		PRSL0503PI
A18		Lamp holder with bayonet coupling		PRSL0501PI

Actuators

Ref.	Drawing	Description	SCC Part No.
A1		Pushbutton	PRTA _ _ _ _ _ _ See standard buttons
A2		Disk for dust-tight pushbutton	PRTA _ _ _ _ PI See standard disks
A3		Dust-tight pushbutton	PRSL0550PI
A10		Blanking plug	PRSL0517PI
A11		Button housing	PRSL0518PI

Pilot Lights

Ref.	Drawing	Color	SCC Part No.
A9		Red	PRSL0515PI
		Green	PRSL0516PI
		Yellow	PRSL0521PI

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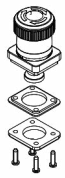
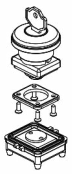
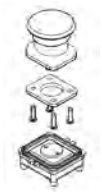
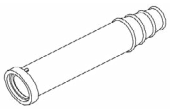
NPA PENDANT - ACCESSORY PARTS

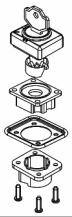
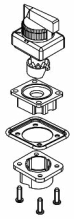
Mushroom Pushbuttons

Ref.	Drawing	Description	SCC Part No.
A4		Latched mushroom pushbutton for emergency stop	PRSL0500PI
A5		Key mushroom pushbutton	PRSL0520PI
A6		Impulse mushroom pushbutton	PRSL0512PI

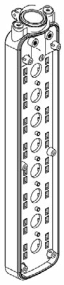
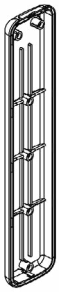
Accessories

Ref.	Drawing	Description	SCC Part No.
A12		Mechanical interlock	PRSL7816PI
A13		Cable sleeve NPA 2-6 buttons	PRG00100PE
		Cable sleeve NPA 8-12 buttons	PRG00105PE
A14		Wire fixing	PRT06626PE
A15		Hook	PRGA0001PE
A19		22 mm connecting bridge	PRTR6120PE
		28 mm connecting bridge	PRTR6121PE
		25 mm connecting bridge	PRTR6122PE
		31 mm connecting bridge	PRTR6123PE
		47 mm connecting bridge	PRTR6124PE
A20		Cable sleeve holder NPA 2-6 buttons	PRSL9735PI
		Cable sleeve holder NPA 8-12 buttons	PRSL9740PI
A24		Cable clamp	PRSL9210AU
A25		Screws for cable clamp	PRVI0089PE

Selector Switches

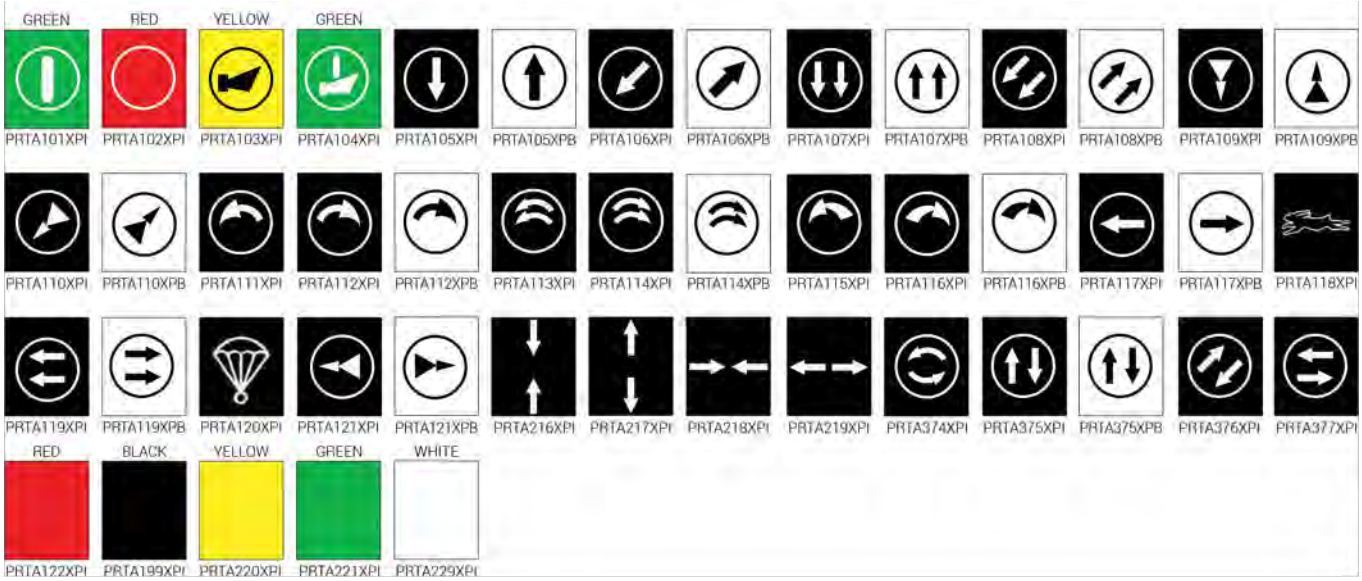
Ref.	Drawing	Description	SCC Part No.
A7		Key selector switch 2 or 3 maintained positions	PRSL0513PI
A8		Selector switch 2 or 3 maintained positions	PRSL0514PI
		Selector switch 2 or 3 spring return positions	PRSL0519PI

Accessories

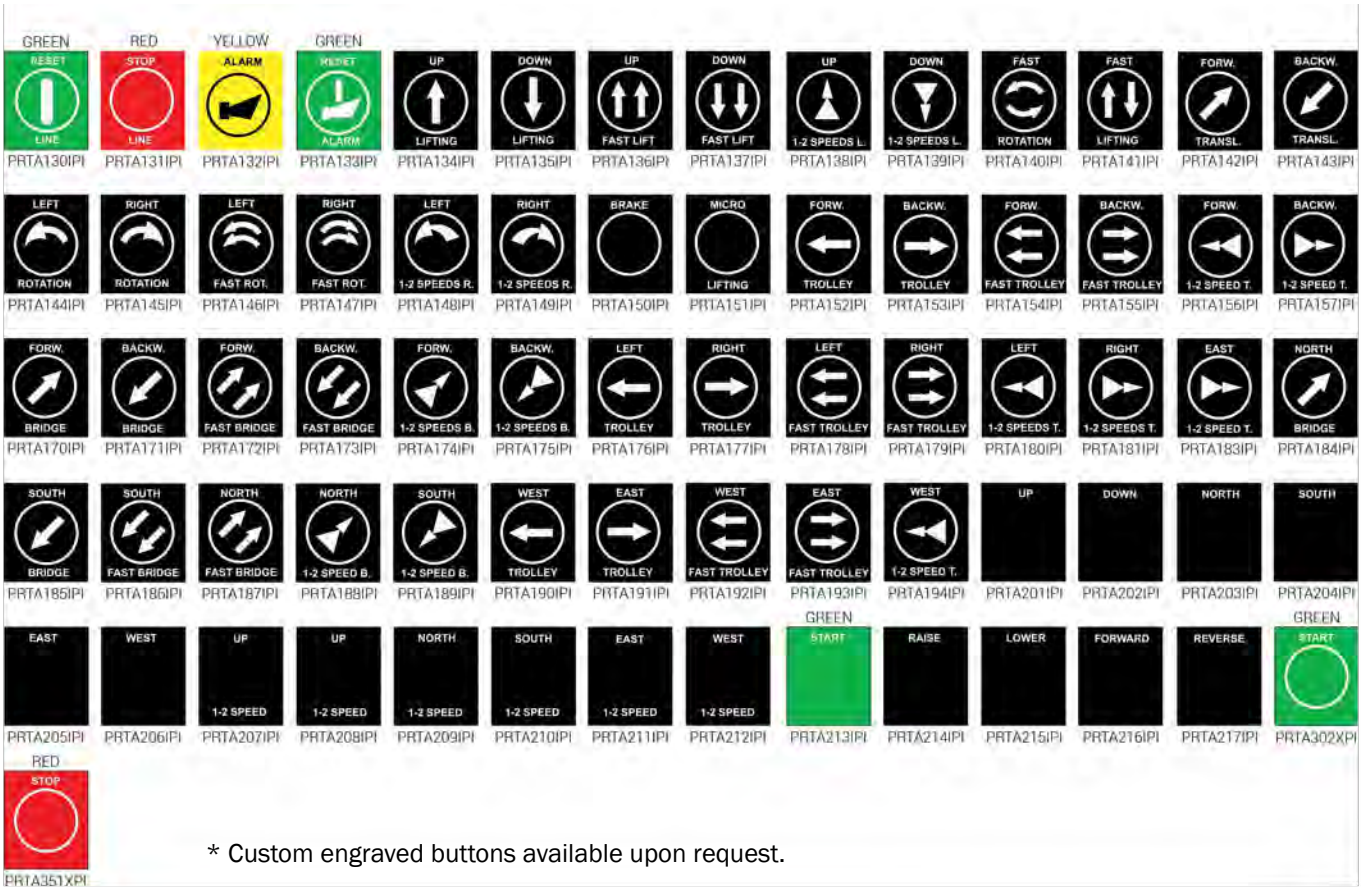
Ref.	Drawing	Description	SCC Part No.
A21		Uppercover with tightening rubber - NPA 2 button	PRSL5810PI
		Uppercover with tightening rubber - NPA 3 button	PRSL5838PI
		Uppercover with tightening rubber - NPA 4 button	PRSL5815PI
		Uppercover with tightening rubber - NPA 6 button	PRSL5820PI
		Uppercover with tightening rubber - NPA 8 button	PRSL5825PI
		Uppercover with tightening rubber - NPA 10 button	PRSL5830PI
		Uppercover with tightening rubber - NPA 12 button	PRSL5835PI
A22		Central selection - NPA 2 buttons	PRSL5811PI
		Central selection - NPA 3 buttons	PRSL5839PI
		Central selection - NPA 4 buttons	PRSL5816PI
		Central selection - NPA 6 buttons	PRSL5821PI
		Central selection - NPA 8 buttons	PRSL5826PI
		Central selection - NPA 10 buttons	PRSL5831PI
		Central selection - NPA 12 buttons	PRSL5836PI
A23		Lower enclosure tighteneing rubber screws - NPA 2 button	PRSL5812PI
		Lower enclosure tighteneing rubber screws - NPA 3 button	PRSL5840PI
		Lower enclosure tighteneing rubber screws - NPA 4 button	PRSL5817PI
		Lower enclosure tighteneing rubber screws - NPA 6 button	PRSL5822PI
		Lower enclosure tighteneing rubber screws - NPA 8 button	PRSL5827PI
		Lower enclosure tighteneing rubber screws - NPA 10 button	PRSL5832PI
		Lower enclosure tighteneing rubber screws - NPA 12 button	PRSL5837PI

NPA PENDANT - ACCESSORY PARTS

Standard Buttons - Symbols



Standard Buttons - English



* Custom engraved buttons available upon request.

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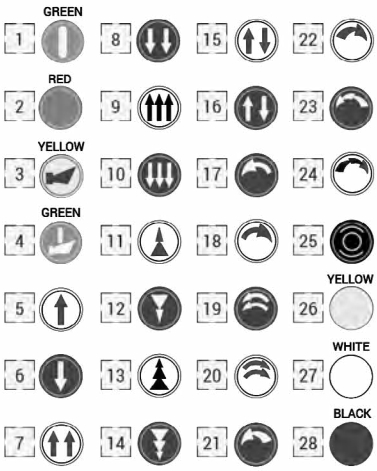
NPA PENDANT - ACCESSORY PARTS

Standard Discs

Notes

NPA PENDANT - REQUEST FORM FOR CONTROL STATION

Disk for dust-tight pushbutton



Switches

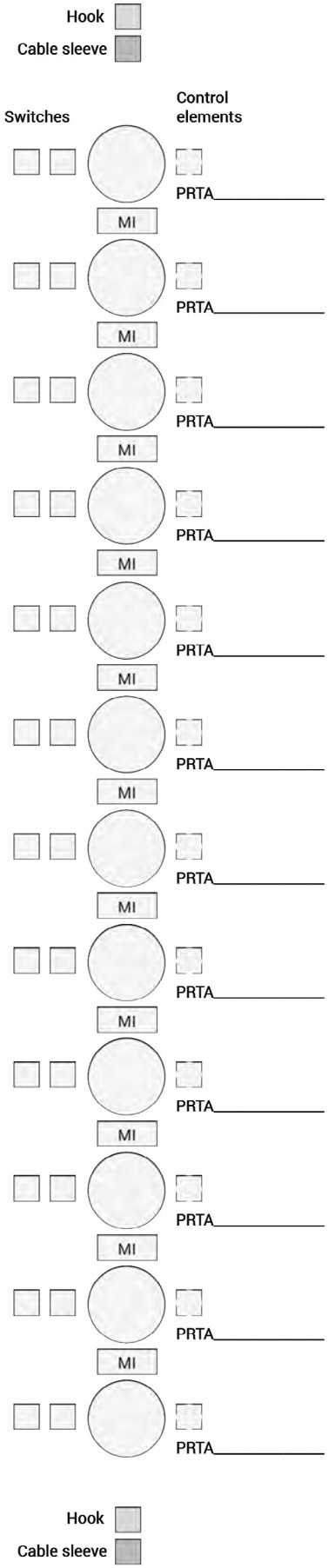
A	PRSL0501PI	Lamp holder
B	PRSL0502PI	Switch 1NC
C	PRSL0503PI	Switch 1NO
D	PRSL0504PI	Switch 1 speed 1NO+1NC+1NO simultaneous
E	PRSL0505PI	Switch 2 speeds 1NO+1NC+1NO sequenced
F	PRSL0506PI	Switch 1 speed 3NO simultaneous
G	PRSL0507PI	Switch 3 speeds 3NO sequenced

Control elements

30	PRTAXXXXXX	Pushbutton
31	PRSL0517PI	Blanking plug
32	PRSL0500PI	Latched mushroom pushbutton for emergency stop
33	PRSL0512PI	Impulse mushroom pushbutton
34	PRSL0520PI	Key mushroom pushbutton (yellow)
35	PRSL0520RO	Key mushroom pushbutton (red)
36	PRSL0513PI	2 or 3 maintained positions key selector switch
37	PRSL0514PI	2 or 3 maintained positions selector switch
38	PRSL0519PI	Spring return 2 or 3 positions selector switch
39	PRSL0515PI	Red pilot light
40	PRSL0516PI	Green pilot light
41	PRSL0521PI	Yellow pilot light

Instructions

- Fill in the chart to the left according to the number of control elements required (2, 3, 4, 6, 8, 10, or 12 actuators).
- Enter the number corresponding to the control element required. For dust-tight pushbuttons enter the number corresponding to the symbol required; for standard pushbuttons write the code number. Mark the direction of the arrow into the corresponding circle.
- Enter the letters corresponding to the switches required (max. 2) into the unbroken boxes.
- Tick the box corresponding to the mechanical interlock between pushbuttons when required . MI
- Tick the appropriate box to show where the cable sleeve and the hook must be assembled (top or bottom).



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NPA-CP

PENDANT CONTROL STATION

THE **NPA-CP** pendant control station is similar to the NPA, however, it includes contacts rated for up to 10A which allows for direct control of motors without the use of relay or contactors in the circuit. The **NPA-CP** has 2-8 positions for buttons, selectors, pilot lights or potentiometers. The reduced number of positions is due to the larger contacts used in the NPA-CP versus the Standard NPA.

Features

- The cable sleeve can be angled up to 20° to give the operator the best view of all the control elements and enable a natural, comfortable working position.
- Rubber pushbuttons with symbol disks to ensure protection against dust and prevent jamming when the control station is used in harsh environments.
- Two-color moulded pushbutton disks to guarantee clear reading and wear resistance
- The emergency stop mushroom pushbutton complies with standard EN 418.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP65.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C)
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust..

Options

- Available in configuration from 2 to 8 actuators.
- 1 or 2 speed two-pole switches or 1 speed three-pole switches, with or without brake contact, for direct control.
- Mechanical interlock to prevent simultaneous operation of opposite functions.

Certifications

- CE marking and EAC certification

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR NPA-CP PENDANT STATION

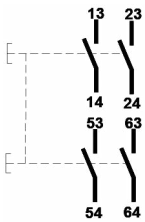
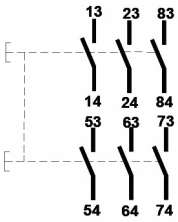
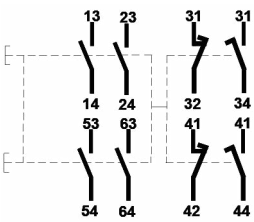
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-3 Low-voltage switch gear and control gear | Switches, disconnectors, switch-disconnectors and fuse-combination units
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage:	-40°F / +158°F (-40°C / +70°C)
	Operational:	-13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65	
Insulation category	Class II	
Cable entry	2÷3 buttons: rubber cable sleeve (Ø 10÷18 mm)	
	8 buttons: rubber cable sleeve (Ø 17÷26 mm)	
Operating positions	Any position	

Technical Specifications — Switches

SCC Part No. →	**PRSL0458PI**	**PRSL0459PI**	**PRSL0460PI**
Utilisation category	AC 3 - AC 4	AC 3 - AC 4	AC 3 - AC 4
Rated operational current	10 A		
Rated operational voltage	400 Vac		
Rated operational power	2.2 kW		
Rated thermal current	20 A		
Rated insulation voltage	660 Vac		
Brake operating contact	-	100 Vac, 0.7 A, L/R= 100ms	-
Mechanical life	1 x 10^6 operations		
Connections	Screw-type terminals with self-lifting pads		
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2		
Tightening torque	0.8 Nm		
Switch type	**1 speed, two-pole double switch**	**1 speed, two pole double switch, with brake contact**	**2 speeds, two-pole double switch**
Scheme			
Markings and Homologations	CE EAC		

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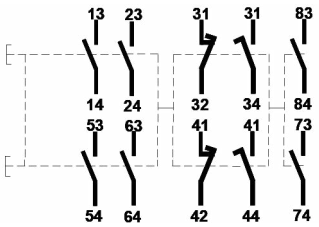
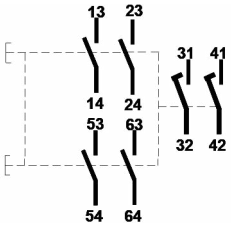
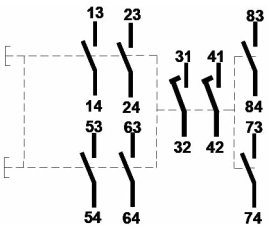
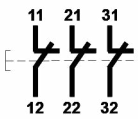
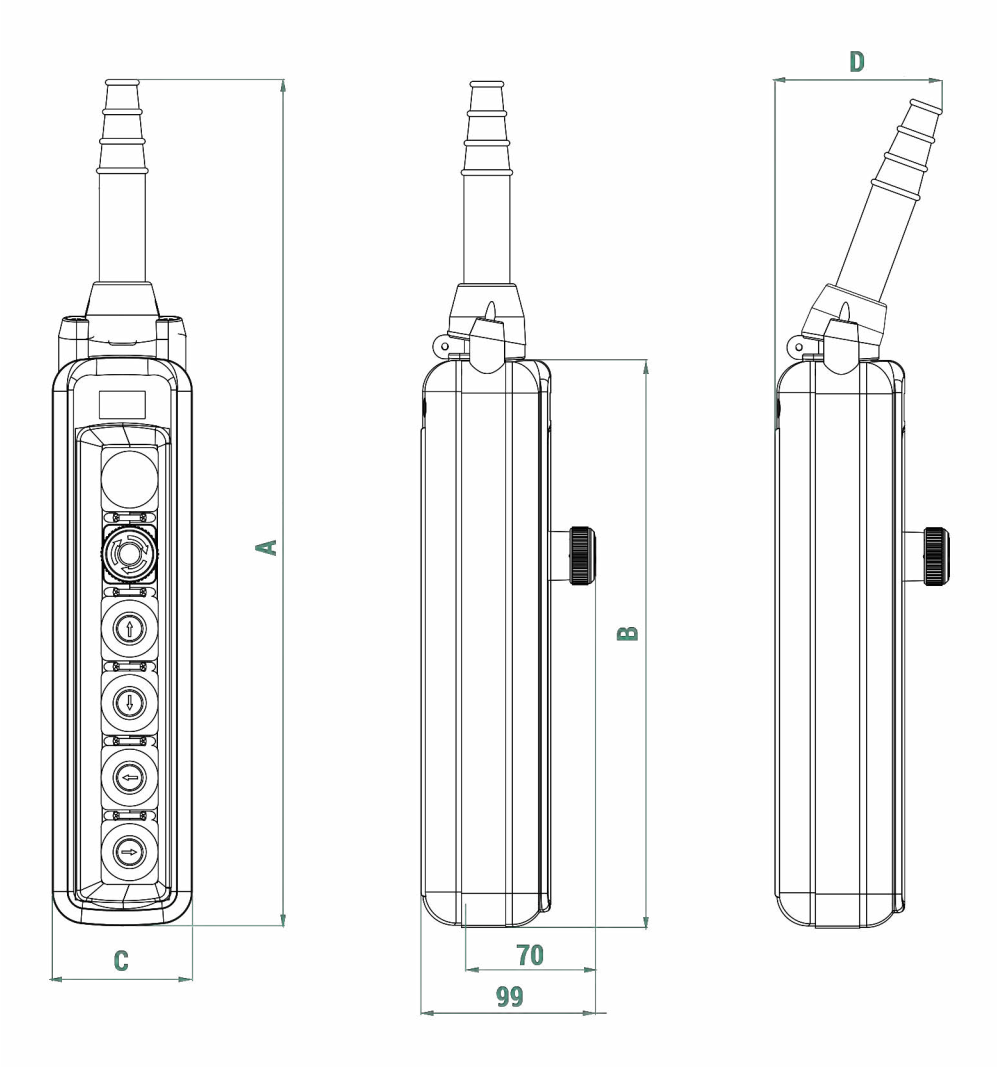
SPECIFICATIONS FOR NPA-CP PENDANT STATION

Technical Specifications — Switches

SCC Part No. →	PRSL0461PI	PRSL0471PI
Utilisation category	AC 3 - AC 4	AC 3 - AC 4
Rated operational current	10 A	
Rated operational voltage	400 Vac	
Rated operational power	2.2 kW	
Rated thermal current	20 A	
Rated insulation voltage	660 Vac	
Brake operating contact	100 Vac. 0.7 A, L/R=100 ms	-
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals with self-lifting pads	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2	
Tightening torque	0.8 Nm	
Switch type	**2 speeds, two-pole double switch, with brake contact**	**1 speed, three-pole double switch**
Scheme		
Markings and Homologations	CE EAC	

SCC Part No. →	PRSL0472PI	PRSL0508PI
Utilisation category	AC 3 - AC 4	AC 23B
Rated operational current	10 A	
Rated operational voltage	400 Vac	
Rated operational power	2.2 kW	
Rated thermal current	20 A	
Rated insulation voltage	660 Vac	
Brake operating contact	100 Vac. 0.7 A, L/R=100 ms	-
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals with self-lifting pads	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2	
Tightening torque	0.8 Nm	
Switch type	**1 speed, three-pole double switch, with brake contact**	**1 speed, three-pole single switch**
Scheme		
Markings and Homologations	CE EAC	

NPA-CP PENDANT - OVERALL DIMENSIONS (mm)



No. of actuators	Dimensions (mm)			
	A	B	C	D
2	292	140	76	87
3	333	181	76	87
4	372	222	76	87
6	459	307	76	87
8	605	393	83	116

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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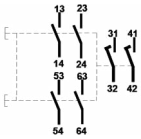
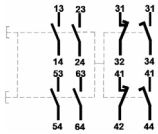
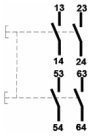
STANDARD NPA-CP PENDANT CONTROL STATIONS

Standard control stations are equipped with cable sleeve, hook and mechanical interlock between opposite function pushbuttons.

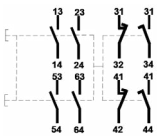
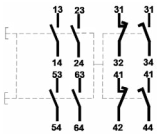
3 Actuators

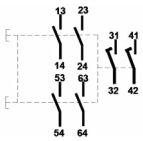
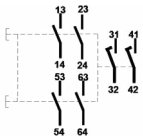
SCC Part No. → PF30030001		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
	PRSL0471PI 1 speed three-pole	Pushbutton
		Pushbutton

SCC Part No. → PF30030003		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
	PRSL0460PI 2 speeds three-pole	Pushbutton
		Pushbutton

SCC Part No. → PF30030004		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton

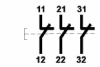
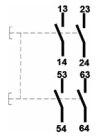
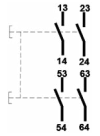
6 Actuators

SCC Part No. → PF30060002		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0460PI 2 speeds two-pole	Pushbutton
		Pushbutton
	PRSL0460PI 2 speeds two-pole	Pushbutton
		Pushbutton

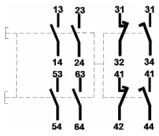
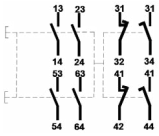
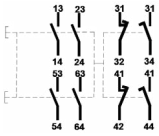
SCC Part No. → PF30060004		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0471PI 1 speed two-pole	Pushbutton
		Pushbutton
	PRSL0471PI 1 speed two-pole	Pushbutton
		Pushbutton

STANDARD NPA-CP PENDANT CONTROL STATIONS

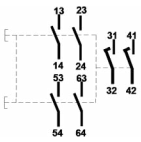
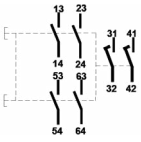
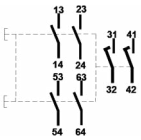
6 Actuators

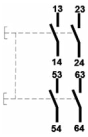
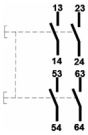
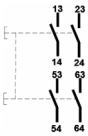
SCC Part No. → PF30060019		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton

8 Actuators

SCC Part No. → PF30080001		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0460PI 2 speeds two-pole	Pushbutton
		Pushbutton
	PRSL0460PI 2 speeds two-pole	Pushbutton
		Pushbutton
	PRSL0460PI 2 speeds two-pole	Pushbutton
		Pushbutton

8 Actuators

SCC Part No. → PF30080010		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0471PI 1 speed three-pole	Pushbutton
		Pushbutton
	PRSL0471PI 1 speed three-pole	Pushbutton
		Pushbutton
	PRSL0471PI 1 speed three-pole	Pushbutton
		Pushbutton

SCC Part No. → PF30080022		
Switch scheme	**Switch type**	**Actuator type**
	PRSL0508PI 3NC 1 speed	Latched mushroom pushbutton
-	-	Blanking plug
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton
	PRSL0458PI 1 speed two-pole	Pushbutton
		Pushbutton

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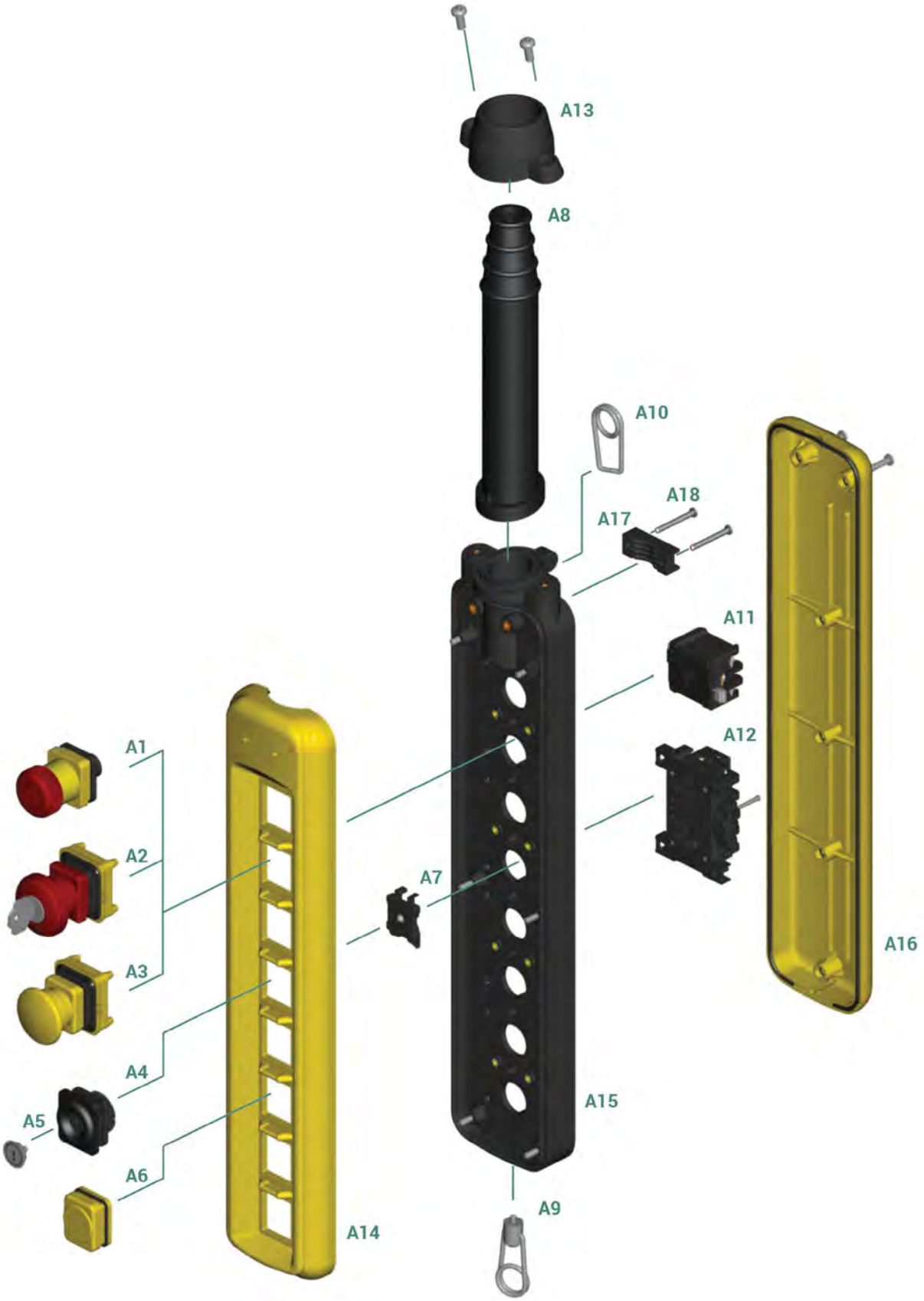
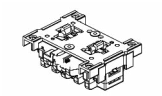
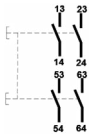
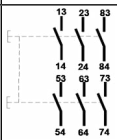
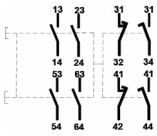
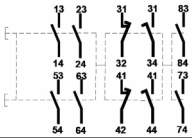
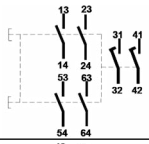
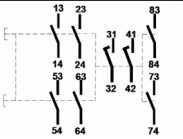
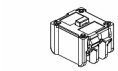
NPA-CP PENDANT - ASSEMBLY DRAWING



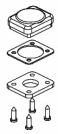
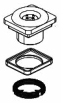
Refer to the following tables for description of components: "Switches", "Actuators", "Mushroom Pushbuttons" and "Accessories".

NPA-CP PENDANT - ACCESSORY PARTS

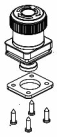
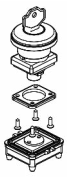
Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A12		1 speed, two-pole double switch		PRSL0458PI
		1 speed, two-pole double switch, with brake contact		PRSL0459PI
		2 speeds, two-pole double switch		PRSL0460PI
		2 speed, two-pole double switch, with brake contact		PRSL0461PI
		1 speed, three-pole double switch		PRSL0471PI
		1 speed, three-pole double switch, with brake contact		PRSL0472PI
A11		1 speed, three-pole single switch, for mushroom pushbutton		PRSL0508PI

Actuators

Ref.	Drawing	Description	SCC Part No.
A6		Blanking plug	PRSL0517PI
A5		Disk for dust-tight pushbutton	PRTA_ _ _ _ _ _ See standard disk
A4		Dust-tight pushbutton	PRSL0550PI

Mushroom Pushbuttons

Ref.	Drawing	Description	SCC Part No.
A1		Latched mushroom pushbutton for emergency stop	PRSL0600PI
A2		Key mushroom pushbutton	PRSL0520PI
A3		Impulse mushroom pushbutton	PRSL0512PI

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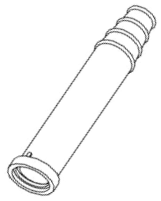
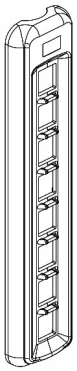
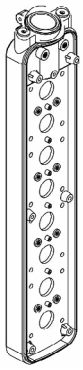
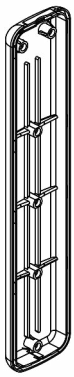
NPA-CP PENDANT - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A7		Mechanical interlock	PRSL7816PI
A8		Cable sleeve NPA 2-6 buttons	PRG00100PE
		Cable sleeve NPA 8 buttons	PRG00105PE
A9		Wire fixing	PRT06626PE
A10		Hook	PRGA0001PE
A13		Cable sleeve holder NPA-CP 2-6 buttons	PRSL9735PI
		Cable sleeve holder NPA-CP 8 buttons	PRSL9740PI
A17		Cable clamp	PRSL9210AU
A18		Screws for cable clamp	PRVI0089PE

Accessories

Ref.	Drawing	Description	SCC Part No.
A14		Uppercover with tightening rubber - NPA-CP 2 button	PRSL5810PI
		Uppercover with tightening rubber - NPA-CP 3 buttons	PRSL5838PI
		Uppercover with tightening rubber - NPA-CP 4 buttons	PRSL5815PI
		Uppercover with tightening rubber - NPA-CP 6 buttons	PRSL5820PI
		Uppercover with tightening rubber - NPA-CP 8 buttons	PRSL5825PI
A15		Central selection - NPA-CP 2 buttons	PRSL5813PI
		Central selection - NPA-CP 3 buttons	PRSL5841PI
		Central selection - NPA 4 buttons	PRSL5818PI
		Central selection - NPA-CP 6 buttons	PRSL5823PI
		Central selection - NPA-CP 8 buttons	PRSL5828PI
A16		Lower enclosure tighteneing rubber screws - NPA-CP 2 buttons	PRSL5812PI
		Lower enclosure tighteneing rubber screws - NPA-CP 3 buttons	PRSL5840PI
		Lower enclosure tighteneing rubber screws - NPA-CP 4 buttons	PRSL5817PI
		Lower enclosure tighteneing rubber screws - NPA-CP 6 buttons	PRSL5822PI
		Lower enclosure tighteneing rubber screws - NPA-CP 8 buttons	PRSL5827PI

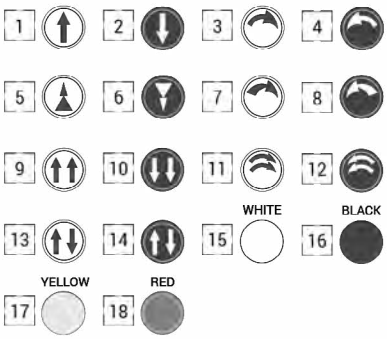
Standard Disks

PRTA002XPI PRTA005XPI PRTA006XPI PRTA007XPI PRTA008XPI PRTA011XPI PRTA012XPI PRTA015XPI PRTA016XPI PRTA018XPI

PRTA019XPI PRTA022XPI PRTA023XPI PRTA026XPI PRTA027XPI PRTA097XPI PRTA098XPI PRTA099XPI

NPA-CP PENDANT - REQUEST FORM FOR CONTROL STATION

Control elements



19 PRSL0517PI Blanking plug

20 PRSL0600PI Emergency stop mushroom pushbutton

21 PRSL0512PI Impulse mushroom pushbutton

22 PRSL0520PI Key mushroom pushbutton (yellow)

23 PRSL0520RO Key mushroom pushbutton (red)

Mushroom pushbuttons are fitted with PRSL0508PI switches (1 speed 3NC).

1 speed switches

A PRSL0458PI Two-pole switch

B PRSL0459PI Two-pole switch with brake contact

C PRSL0471PI Three-pole switch

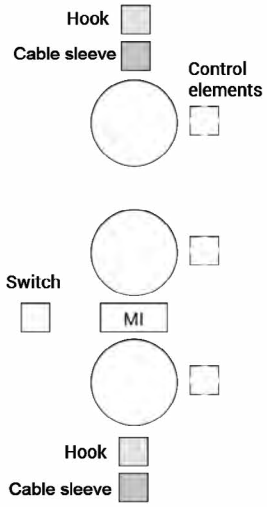
D PRSL0472PI Three-pole switch with brake contact

2 speed switches

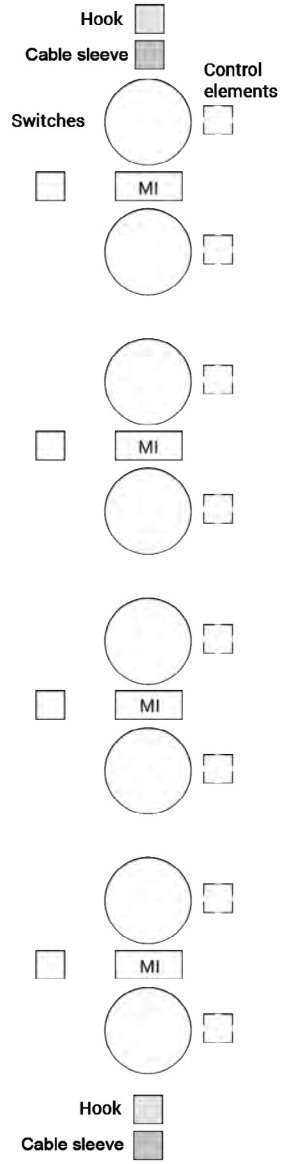
E PRSL0460PI Two-pole switch

F PRSL0461PI Two-pole switch with brake contact

3 actuators



2-4-6-8 actuators



Instructions

- Fill in the chart to the lesft according to the number of control elements required (2, 3, 4, 6, or 8 actuators).
- Enter the number corresponding to the control element required. Mark the direction of arrow into the corresponding circle.
- Enter the letters corresponding to the switches required.
- Tick the box corresponding to the mechanical interlock between pushbuttons when required . MI
- Tick the appropriate box to show where the cable sleeve and the hook must be assembled (top or bottom).

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SPA

PENDANT CONTROL STATION

THE **SPA** pendant control station has a modular configuration which allows the same basic design to be used in a smaller 2 position arrangement up to a whopping 20 positions for buttons, selectors, pilot lights or potentiometers. The unique two column design allows opposite functions (up/down or left/right) paired on a row for intuitive operation. The modular design offers a pendant control station sized specifically for the application requirements while still allowing complete flexibility for expanded controls without changing the basic pendant shape and style. This is a particularly good choice for OEM customers who want to have a familiar pendant style used throughout their product line regardless of the variability in control requirements. Large and rugged, the heavy-duty design withstands the most rigorous working conditions.

Features

- Modular enclosure with actuators placed on a double row to enable grouping of a large number of functions in a single control.
- Rectangular pushbuttons in thermoplastic material or rubber pushbuttons with symbol disks to ensure protection against dust.
- The emergency stop mushroom pushbutton complies with standard EN 418.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP65.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C)
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configuration from 2 to 20 actuators, arranged on a double row.
- One or two speed switches with NO or NC contacts.
- Double switches with mechanical interlock to prevent simultaneous operation of opposite functions.
- Wide range of actuators: pushbuttons, selector switches and key-selector switches, pilot lights, impulse or latched mushroom pushbuttons with rotation release.

Certifications

- CE marking and EAC certification

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR SPA PENDANT STATION

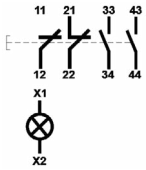
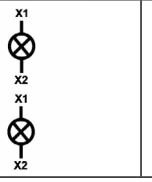
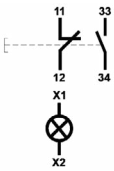
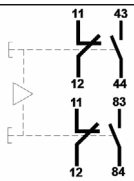
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage:	-40°F / +158°F (-40°C / +70°C)
	Operational:	-13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65	
Insulation category	Class II	
Cable entry	Rubber cable sleeve (Ø 14÷26 mm)	
Operating positions	Any position	

Technical Specifications — Switches

	SCC Part No. →	PRSL0071XX	PRSL0072XX	PRSL0073XX	PRSL0074XX
Switch	**Utilisation category**	AC 15		AC 15	AC 15
	Rated operational current	1.9 A		1.9 A	1.9 A
	Rated operational voltage	380 Vac		380 Vac	380 Vac
	Rated thermal current	10 A		10 A	10 A
	Rated insulation voltage	500 Vac		500 Vac	500 Vac
	Mechanical life	1 x 10^6 operations		1 x 10^6 operations	1 x 10^6 operations
Lamp holder	**Maximum voltage**	125 V	125 V	125 V	
	Maximum power	2.6 W	2.6 W	2.6 W	
	Lamp type	bulb (not supplied) or LED (on request) with bayonet coupling	bulb (not supplied) or LED (on request) with bayonet coupling	bulb (not supplied) or LED (on request) with bayonet coupling	
Connections		Screw-type terminals			
Wires		1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)			
Tightening torque		0.8 Nm			
Switch type		1 speed switch + lamp holder	lamp holder + lamp holder	1 speed switch + lamp holder	1 speed switch + 1 speed switch + mechanical interlock
Contacts		2NC+2NO lamp holder	lamp holder lamp holder	1NC+1NO lamp holder	1NC+1NO 1NC+1NO
Scheme					
Markings and Homologations		CE cULus			

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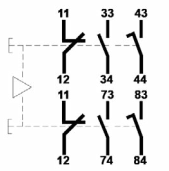
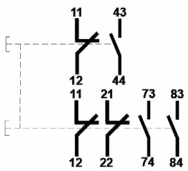
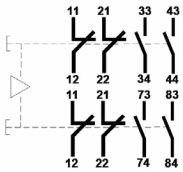
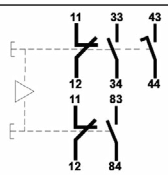
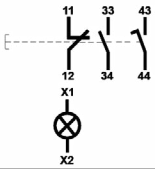
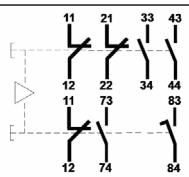
SPECIFICATIONS FOR SPA PENDANT STATION

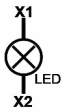
Technical Specifications — Switches

SCC Part No. →		PRSL0075XX	PRSL0076XX	PRSL0077XX
Switch	Utilisation category	AC 15	AC 15	AC 15
	Rated operational current	1.9 A	1.9 A	1.9 A
	Rated operational voltage	380 Vac	380 Vac	380 Vac
	Rated thermal current	10 A	10 A	10 A
	Rated insulation voltage	500 Vac	500 Vac	500 Vac
	Mechanical life	1 x 10^6 operations	1 x 10^6 operations	1 x 10^6 operations
Connections		Screw-type terminals		
Wires		1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)		
Tightening torque		0.8 Nm		
Switch type		2 speed switch + 2 speed switch + mechanical interlock	1 speed switch + 1 speed switch	1 speed switch + 1 speed switch + mechanical interlock
Contacts		1NC+1NO+1NO 1NC+1NO+1NO	1NC+1NO 2NC+2NO	2NC+2NO 2NC+2NO
Scheme				
Markings and Homologations		CE c UL us		

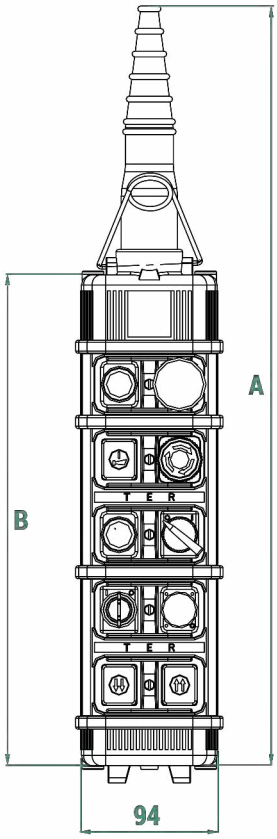
SCC Part No. →		PRSL0087XX	PRSL0089XX	PRSL0090XX
Switch	Utilisation category	AC 15	AC 15	AC 15
	Rated operational current	1.9 A	1.9 A	1.9 A
	Rated operational voltage	380 Vac	380 Vac	380 Vac
	Rated thermal current	10 A	10 A	10 A
	Rated insulation voltage	500 Vac	500 Vac	500 Vac
	Mechanical life	1 x 10^6 operations	1 x 10^6 operations	1 x 10^6 operations
Lamp holder	Maximum voltage		125 V	
	Maximum power		2.6 W	
	Lamp type		bulb (not supplied) or LED (on request) with bayonet coupling	
Connections		Screw-type terminals		
Wires		1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)		
Tightening torque		0.8 Nm		
Switch type		2 speed switch + 1 speed switch + mechanical interlock	2 speed switch + lamp holder	1 speed switch + 2 speed switch + mechanical interlock
Contacts		1NC+1NO+1NO 1NC+1NO	1NC+1NO+1NO portalampada	2NC+2NO 1NC+1NO+1NO
Scheme				
Markings and Homologations		CE c UL us		

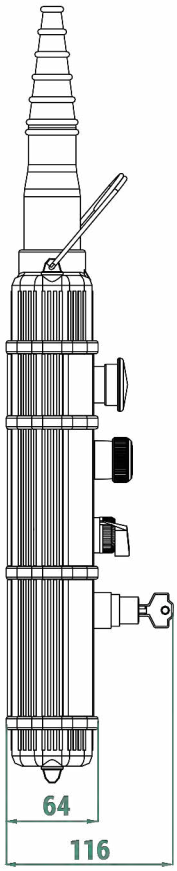
SPECIFICATIONS FOR SPA PENDANT STATION

Technical Specifications — LEDs

SCC Part No. →	PRSL3502PI
Rated operational voltage	24 V ac/dc
Rated current consumption	20mA
Scheme	
Markings and Homologations	CE

SPA PENDANT - OVERALL DIMENSIONS (mm)





No. of actuators	Dimensions (mm)		Weight (lbs)
	A	B	
2	318	132	1.146
4	370	184	1.543
6	422	236	1.940
8	474	288	2.293
10	526	340	2.866
12	578	392	3.042
14	630	444	3.417
16	682	496	3.770
18	734	548	4.167
20	786	600	4.519

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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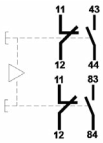
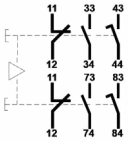
STANDARD SPA PENDANT CONTROL STATIONS

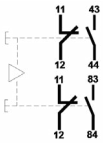
Standard control stations are equipped with cable sleeve, hook and mechanical interlock between opposite function pushbuttons.

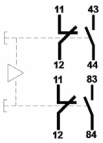
2 Actuators

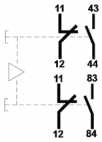
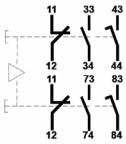
SCC Part No. → PF02020007			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

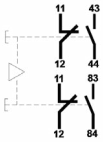
SCC Part No. → PF02020039			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

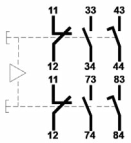
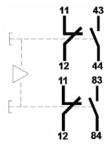
4 Actuators

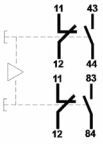
SCC Part No. → PF02040185			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Blanking plug	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02040241			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02040186			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	-	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

SCC Part No. → PF02040240			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

SCC Part No. → PF02040242			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

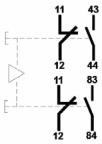
SCC Part No. → PF02040063			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

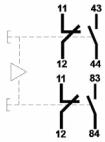
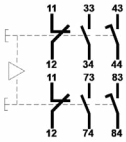
STANDARD SPA PENDANT CONTROL STATIONS

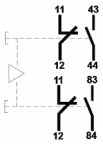
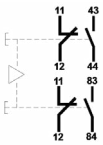
4 Actuators

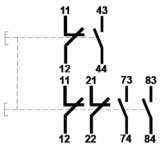
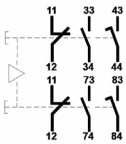
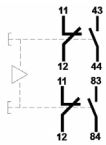
SCC Part No. → PF02040243			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

6 Actuators

SCC Part No. → PF02060455			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Blanking plug	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02060401			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Blanking plug	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

SCC Part No. → PF02060456			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Blanking plug	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02060439			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

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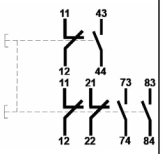
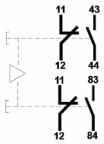
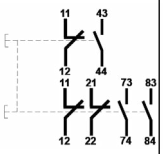
STANDARD SPA PENDANT CONTROL STATIONS

6 Actuators

SCC Part No. → PF02060355

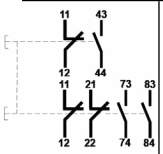
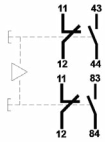
Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02060356

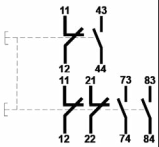
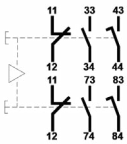
Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

8 Actuators

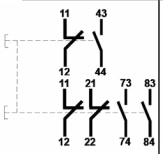
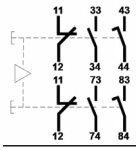
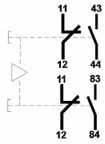
SCC Part No. → PF02080237

Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

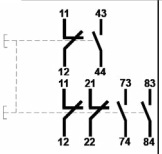
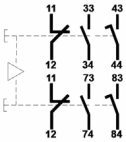
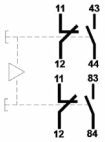
SCC Part No. → PF02080440

Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton

SCC Part No. → PF02080702

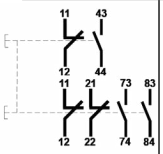
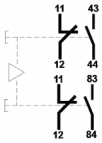
Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

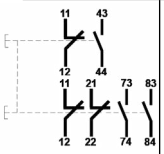
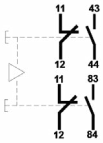
SCC Part No. → PF02080703

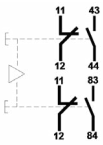
Switch scheme	Switch type	Actuator type	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0075XX 1NO+1NC/1NO+1NC 2 speeds	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

STANDARD SPA PENDANT CONTROL STATIONS

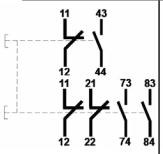
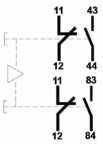
10 Actuators

SCC Part No. → PF02100324			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

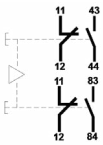
SCC Part No. → PF02100308			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

SCC Part No. → PF02101187			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton YELLOW	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

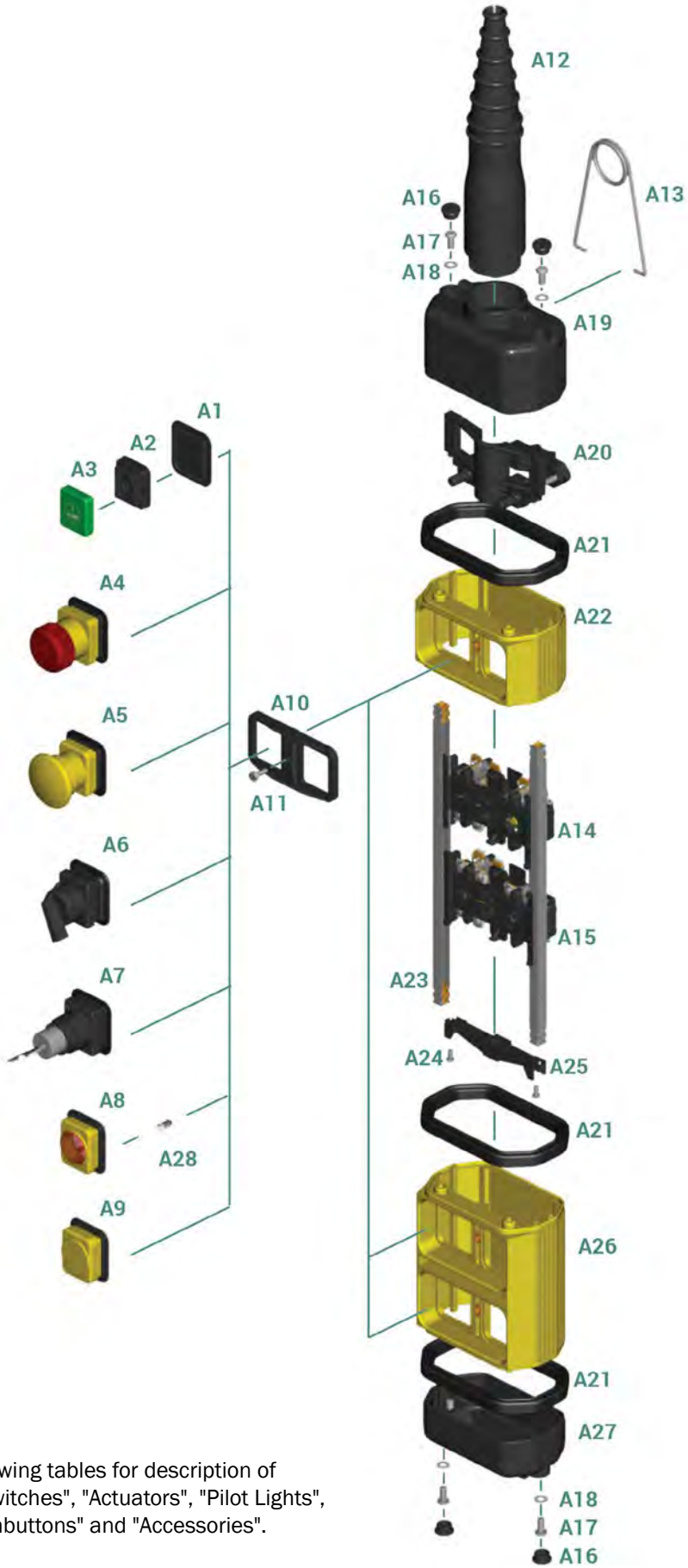
12 Actuators

SCC Part No. → PF02120306			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0076XX 1NO+1NC/2NO+2NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

12 Actuators

SCC Part No. → PF02121167			
Switch scheme	**Switch type**	**Actuator type**	
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton YELLOW	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton GREEN	Latched mushroom pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton
	PRSL0074XX 1NO+1NC/1NO+1NC 1 speed	Pushbutton	Pushbutton

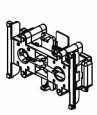
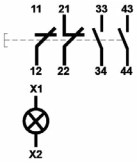
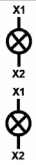
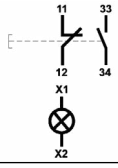
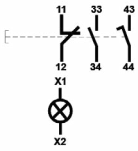
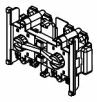
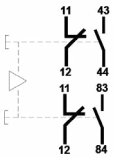
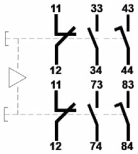
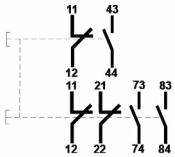
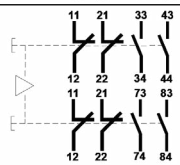
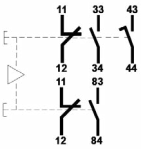
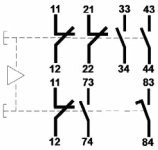
SPA PENDANT - ASSEMBLY DRAWING



Refer to the following tables for description of components: "Switches", "Actuators", "Pilot Lights", "Mushroom Pushbuttons" and "Accessories".

SPA PENDANT - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A14		1 speed switch with 2NC+2NO contacts + lamp holder with bayonet coupling		PRSL0071XX
		2 lamp holders with bayonet coupling		PRSL0072XX
		1 speed switch with 1NC+1NO contacts + lamp holder with bayonet coupling		PRSL0073XX
		2 speed switch with 1NC+1NO+1NO contacts + lamp holder with bayonet coupling		PRSL0089XX
A15		1 speed switch with 1NC+1NO contacts + 1 speed switch with 1NC+1NO contacts + mechanical interlock		PRSL0074XX
		2 speed switch with 1NC+1NO+1NO contacts + 2 speed switch with 1NC+1NO+1NO contacts + mechanical interlock		PRSL0075XX
		1 speed switch with 1NC+1NO contacts + 1 speed switch with 2NC+2NO contacts		PRSL0076XX
		1 speed switch with 2NC+2NO contacts + 1 speed switch with 2NC+2NO contacts + mechanical interlock		PRSL0077XX
		2 speed switch with 1NC+1NO+1NO contacts+ 1 speed switch with 1NC+1NO contacts + mechanical interlock		PRSL0087XX
		1 speed switch with 2NC+2NO contacts + 2 speed switch with 1NC+1NO+1NO contacts + mechanical interlock		PRSL0090XX

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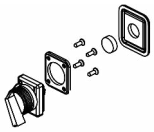
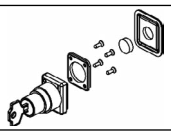
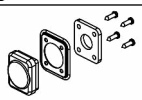
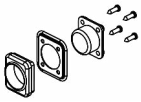
SPA PENDANT - ACCESSORY PARTS

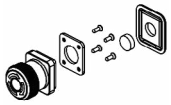
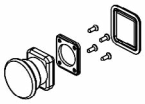
Actuators

Ref.	Drawing	Description	SCC Part No.
A1		Rubber for button	PRGU6031PE
A2		Button holder	PRSL9284PI
A3		Button	PRTA_ _ _ _ _ _ See disk table
A6		Selector switches 0/1 maintained positions	PRSL3540PI
		Selector switch 1/0/2 maintained positions	PRSL3543PI
A7		Key selector switch 0/1 maintained positions, pull-out position 0	PRSL3539PI
A9		Blanking plug	PRSL5557PI

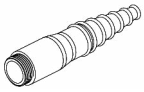
Pilot Lights

Ref.	Drawing	Description	SCC Part No.
A8		Red	PRSL3534PI
		Green	PRSL3535PI
		Yellow	PRS;L3542PI

Mushroom Pushbuttons

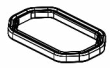
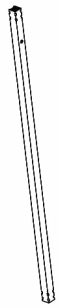
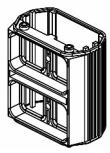
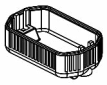
Ref.	Drawing	Description	SCC Part No.
A4		Latched mushroom pushbutton for emergency stop	PRGL3500PI
A5		Impulse mushroom pushbutton	PRSL3531PI

Accessories

Ref.	Drawing	Description	SCC Part No.
A10		Frame with 2 holes	PRSL5535PI
		Frame with 1 hole	PRSL5537PI
		Frame without holes	PRSL5538PI
A11		Screw for frame	PRVI6027PE
A12		Cable sleeve	PRSL0145PE
A13		Hook	PRGA0012PE
A16		Head plug	PRSL8610PI
A17		Head locking screw	PRVI1020PE
A18		Washer	PRRN1061PE
A19		Upper head	PRSL5525PI

SPA PENDANT - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A20		Cable clamp with screws	PRSL3545PI
A21		Tightening rubber	PRGU6021PE
A22		Single section	PRSL5016AU
A23		Rod for SPA 2 buttons	PRTR0071PE
		Rod for SPA 4 buttons	PRTR0076PE
		Rod for SPA 6 buttons	PRTR0081PE
		Rod for SPA 8 buttons	PRTR0086PE
		Rod for SPA 10 buttons	PRTR0091PE
		Rod for SPA 12 buttons	PRTR0096PE
		Rod for SPA 14 buttons	PRTR0101PE
		Rod for SPA 16 buttons	PRTR0106PE
		Rod for SPA 18 buttons	PRTR0111PE
		Rod for SPA 20 buttons	PRTR0116PE
A24		Screw (secure rod)	PRVI0005PE
A25		Switch holder with screw	PRSL3558PI
A26		Double section	PRSL5017AU
A27		Lower head	PRSL5530PI
A28		LED 24 V ac/dc	PRSL3502PI

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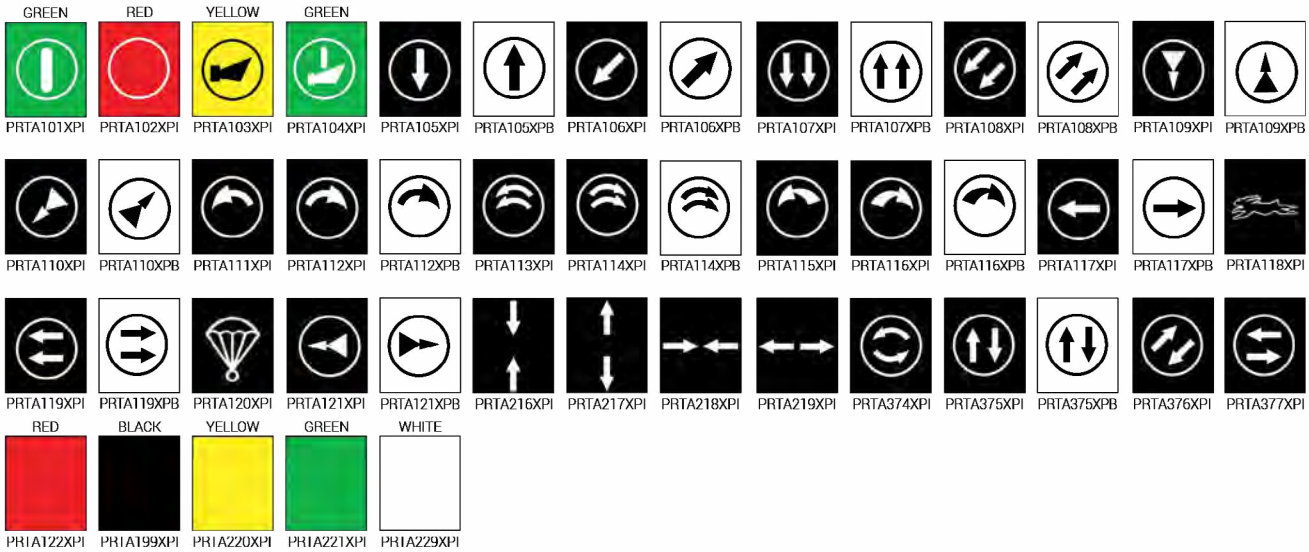
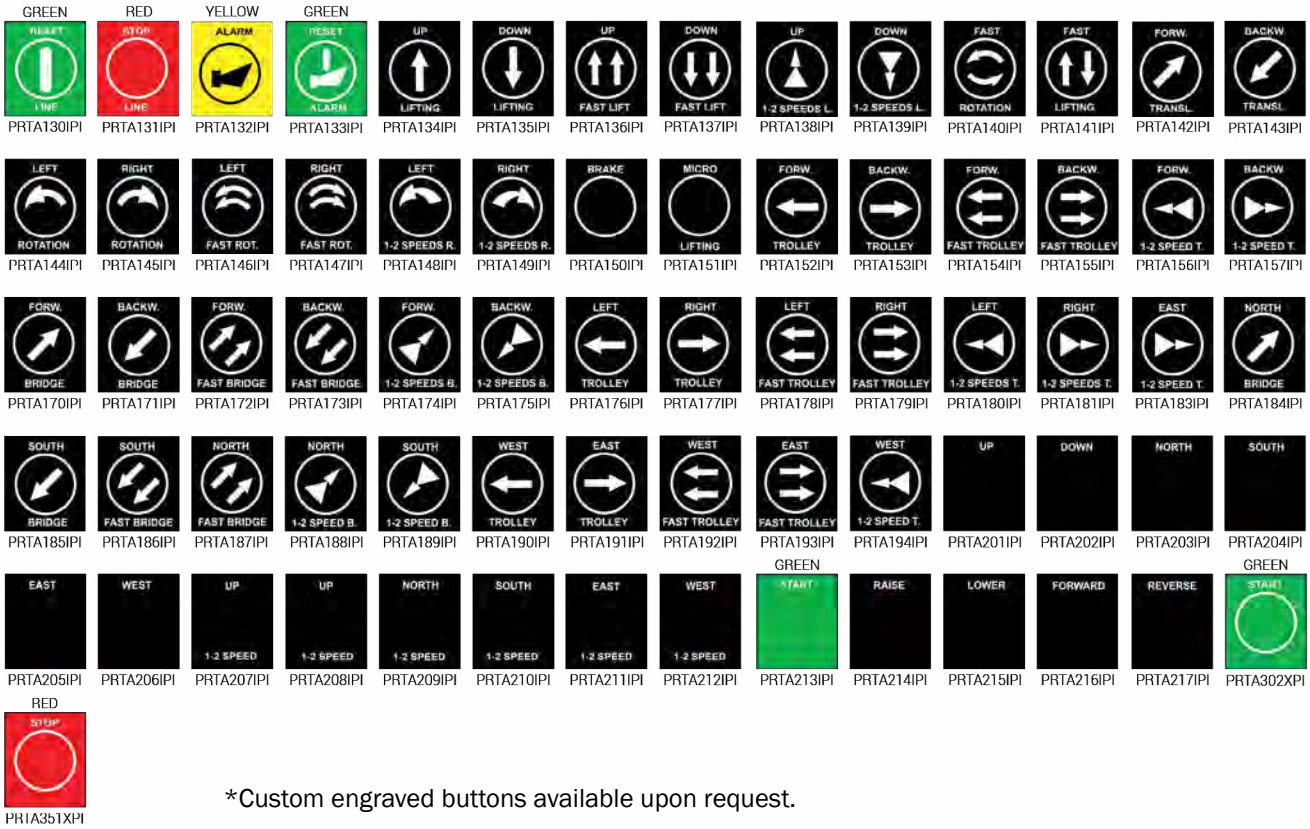
SPA PENDANT - ACCESSORY PARTS

Standard Buttons - Symbols



Standard Buttons - English



*Custom engraved buttons available upon request.

SPA PENDANT - REQUEST FORM FOR CONTROL STATION

Instructions

Fill in the chart to the left according to the number of control elements required (2, 4, 6, 8, 10, 12, 14, 16, 18 or 20 buttons).

1. **Control elements**: enter in the broken-line box the number corresponding to the control element required (from 1 to 9) according to the legend.
2. **Buttons**: when buttons are required, fill in the PRTA____code. If you choose **buttons with arrows**, mark the direction of the arrow into the corresponding box Eg. ↗
3. **Switches**: enter the number corresponding to the switch required (from 20 to 29) according to the legend. ATTENTION: **lamp holders** can be fitted with bulbs (not supplied) or with LEDs (on request).
4. **LED**: tick the box if you require LEDs to be fitted into the lamp holders.
5. **Mechanical interlock**: tick the boxes where the mechanical interlock (MI) between pushbuttons is required. Eg. MI
6. **Cable sleeve and hook**: tick the appropriate boxes to indicate where the cable sleeve and the hook must be assembled (top or bottom). Eg. Cable sleeve Hook

Control elements (1)

1	PRSL3500PI	Emergency stop mushroom pushbutton
2	PRSL3531PI	Impulse mushroom pushbutton
3	PRSL3539PI	2 position key selector switch
4	PRSL3540PI	2 position selector switch
5	PRSL3543PI	3 position selector switch
6	PRSL3534PI	Red pilot light
7	PRSL3535PI	Green pilot light
8	PRSL3542PI	Yellow pilot light
9	PRSL5557PI	Blanking plug

Switches (3)

20	PRSL0071XX	2NC+2NO / Lamp holder
21	PRSL0072XX	Lamp holder / Lamp holder
22	PRSL0073XX	1NC+1NO / Lamp holder
23	PRSL0074XX	1NC+1NO / 1NC+1NO
24	PRSL0075XX	1NC+1NO+1NO / 1NC+1NO+1NO
25	PRSL0076XX	1NC+1NO / 2NC+2NO
26	PRSL0077XX	2NC+2NO / 2NC+2NO
27	PRSL0087XX	1NC+1NO+1NO / 1NC+1NO
29	PRSL0089XX	1NC+1NO+1NO / Lamp holder
29	PRSL0090XX	2NC+2NO / 1NC+1NO+1NO

LED (4)

☐ LED 24 V ac/dc

Hook ☐
Cable sleeve ■

Control elements	Switches	Control elements
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____
PRTA_____	MI	PRTA_____

Hook ☐
Cable sleeve ■

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VICTOR

WALL MOUNTED CONTROL STATION

The **Victor** wall mounted control station comes in a range of sizes from 1 to 8 positions for standard buttons, mushroom head buttons, selectors, pilot lights or potentiometers. Single Mushroom Head operators are commonly used for emergency shut off switches, while the 8-position control station offers an immense degree of control and customizing for more complicated operations. The Victor can be bolted to a wall, structure, or use our magnetic mount to attach it to a steel structure.

Features

- Reduced installation and wiring time and costs: the cable inlet and the switches fitted in the base of the control station are separated from the actuators, installed on the cover.
- Rubber pushbuttons with symbol disks to ensure protection against dust and prevent jamming when the control station is used in harsh environments.
- The emergency stop mushroom pushbutton complies with standard ISO 13850.
- Positive opening NC contacts for safety functions.
- Mechanical life of pushbuttons and switches: 10 million operations.
- IP protection degree: Victor 1-2-3-4 actuators is classified IP66, IP67 and IP69K, Victor 6-8 actuators IP65.
- NEMA protection degree: Victor 1-2-3-4 actuators is classified Type 1, 4 and 4X.
- Extreme temperature resistance: -40°F to 176°F (-40°C to +80°C).
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Available in configuration from 1 to 8 actuators.
- Cable clamp can be installed at the top, at the bottom or on the back of the control station.
- Available with magnetic mounting case to make the control station even more versatile.
- 1NO or 1NC switches, LEDs voltage 24/48 Vac/dc or 110/230 Vac and potentiometers.
- Mechanical interlock to prevent simultaneous operation of opposite functions.
- Wide range of actuators in different colors: one or two speed pushbuttons, selector switches and key-selector switches in various operation configurations, pilot lights, impulse or latched mushroom pushbuttons with rotation or key-operated release.
- One speed pushbuttons and selector switches available in illuminated version in a range of colors.
- Available with labels (symbols and lettering) to be applied next to the actuators, or with pushbuttons with two-color moulded permanent symbols.

Certifications

- CE marking, cULus* marking and EAC certification.
- Victor is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC61508.
- HALT TEST (Highly Accelerated Life Test) passed, simulating conditions largely exceeding standard operating conditions.

Fill-in the "request form" for a custom product configuration

* Not available on all versions

SPECIFICATIONS FOR VICTOR CONTROL STATION

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60947-5-5 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electrical emergency stop device with mechanical latching function
	EN 60529 Degrees of protection provided by enclosures
	ISO 13850 Safety of machinery - Emergency stop - Principles for design
Conformity to cULus Standards	CSA-C22 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
SIL1	IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical / electronic / programmable electronic safety-related systems
HALT TEST	Highly Accelerated Life Test, simulation of conditions largely exceeding the standard operating conditions (data available on request)
Markings and Homologations	CE cULus* EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +176°F (-40°C / +80°C)
	Operational: -40°F / +176°F (-40°C / +80°C)
IP protection degree	Victor 1-2-3-4 actuators IP 66 / IP 67 / IP 69K
	Victor 6-8 actuators IP65
NEMA protection degree	Victor 1-2-3-4 actuators Type 1, 4 and 4X
Insulation category	Class II
Cable entry	Cable clamp M20
	Spiral cable clamp M20
Operating positions	Any position
Mechanical life	1 speed pushbutton: 10 x 10^6 operations
	2 speed pushbutton: 10 x 10^6 operations
	Illuminated pushbutton: 10 x 10^6 operations

* Not available on all versions.

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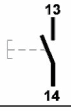
SPECIFICATIONS FOR VICTOR CONTROL STATION

Technical Specifications — Switches

SCC Part No. →	PRSL1800PI	PRSL1801PI
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Electrical Reliability EN 60947-5-4	λ <2.5x10^8 at 24 V, 5mA, 5x10^6 cicles	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	2 x 0.5 mm^2 - 2 x 1.5 mm^2 - 1 x 2.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and stiff or flexible wire 14-22AWG)	
Tightening torque	0.5 Nm	
Microswitch type	Double break, slow action	Double break, slow action
Contacts	1NO	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

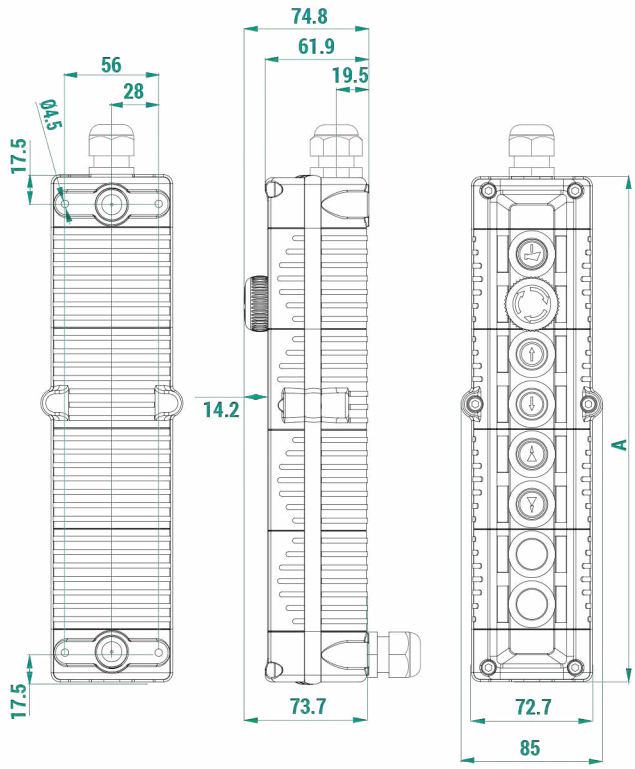
Technical Specifications — LEDs

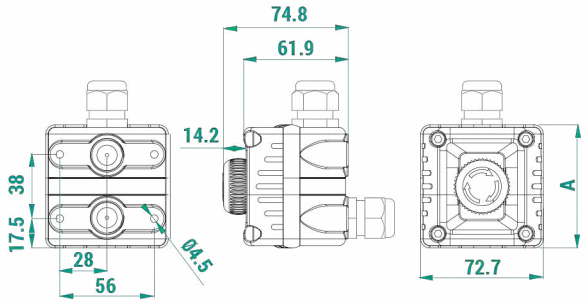
SCC Part No. →	PRSL 1820PI	PRSL1821PI
Rated operational voltage		
Rated current consumption		
Scheme		
Markings and Homologations	CE cULus EAC	

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PRSL 1893PI	PRSL 1891PI	PRSL1892PI
Ohmic value	1 kΩ	4.7 kΩ	10 kΩ
Life time	15 x 10^3 movements (minimum)		
Operational ambient temperature	-13°F / +158°F (-25°C / +70°C)		
Mechanical angle	300°		
Actual electrical angle	267°		
Ohmic value tolerance	±20%		

VICTOR CONTROL STATION - OVERALL DIMENSIONS (mm)





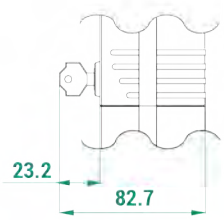
No. of actuators	Dimensions (mm)
	A
1	72.9
2	122
3	152
4	182
6	242
8	302

1 mm = 0.03937 inches | 1 inch = 25.4 mm

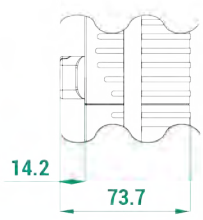
Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

Actuators

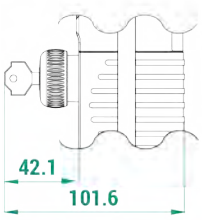
Key selector switches



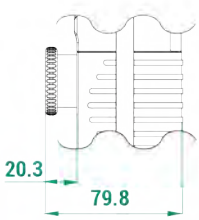
Selector switches



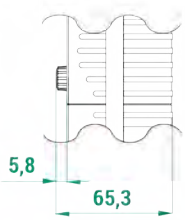
Key mushroom pushbutton



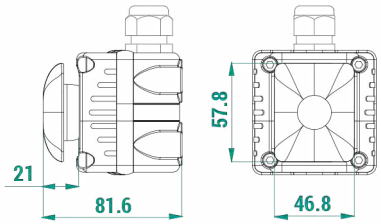
Mushroom pushbutton Ø 40 mm



Potentiometer



Rectangular mushroom pushbutton (available only for Victor with 1 actuator)



Dimensions of all mushroom pushbuttons refer to the released position.

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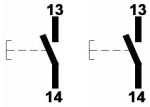
EMPTY VICTOR CONTROL STATIONS

	No. of buttons	Cover color			SCC Part No.
		Gray	Yellow	Black	
	1	X			F71EG00000000001
			X		F71EY00000000001
				X	F71EB00000000001
	2	X			F71FG00000000001
			X		F71FY00000000001
				X	F71FB00000000001
	3	X			F71GG00000000001
			X		F71GY00000000001
				X	F71GB00000000001
	4	X			F71HG00000000001
				X	F71HB00000000001
	6	X			F71IG00000000001
				X	F71IB00000000001
	8	X			F71JG00000000001
				X	F71JB00000000001

STANDARD VICTOR CONTROL STATIONS

1 Actuator

Type of actuator		Cover color			SCC Part No.
		Gray	Yellow	Black	
	Latched mushroom pushbutton PRSL1801PI switch 1NC	X			F71EG10000000001
			X		F71EY10000000001
				X	F71EB10000000001
	Key mushroom pushbutton PRSL1801PI switch 1NC	X			F71EG10000000007
			X		F71EY10000000002
				X	F71EB10000000008
	Impulse mushroom pushbutton PRSL1801PI switch 1NC	X			F71EG10000000022
			X		F71EY10000000003
				X	F71EB10000000009
	2 position selector switch PRSL1800PI switch 1NO	X			F71EG00000001001
			X		F71EY00000001006
				X	F71EB00000001007
	 3 position selector switch No. 2 PRSL1800PI switches 1NO+1NO	X			F71EG00000001012
			X		F71EY00000001007
				X	F71EB00000001008

2 Actuator

Type of actuator			Cover color			SCC Part No.
			Gray	Yellow	Black	
	Latched mushroom pushbutton PRSL1801PI switch 1NC	Start button PRSL1800PI switch 1NO	X			F71FG11000000001
				X		F71FY11000000001
					X	F71FB11000000001
	Key mushroom pushbutton PRSL1801PI switch 1NC	Start button PRSL1800PI switch 1NO	X			F71FG11000000002
				X		F71FY11000000002
					X	F71FB11000000002
	Impulse mushroom pushbutton PRSL1801PI switch 1NC	Black button PRSL1800PI switch 1NO	X			F71FG00020000001
				X		F71FY00020000001
					X	F71FB00020000001

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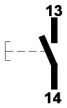
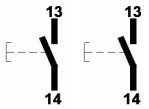
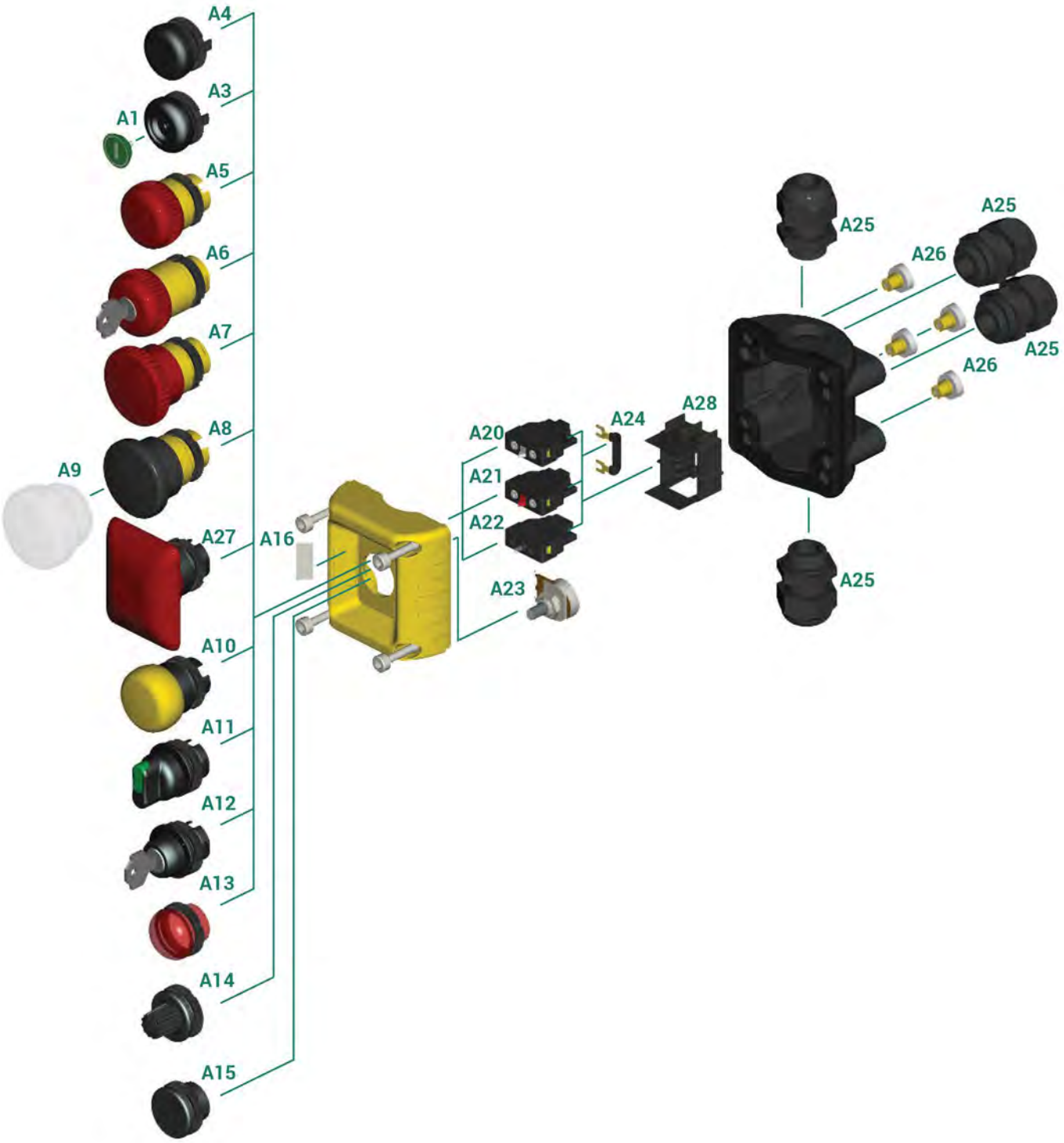
STANDARD VICTOR CONTROL STATIONS

3 Actuator

Type of actuator				Cover color			SCC Part No.
				Gray	Yellow	Black	
	Latched mushroom pushbutton PRSL1801PI switch 1NC	White button PRSL1800PI switch 1NO	Black button PRSL1800PI switch 1NO	X			F71GG10020000001
					X		F71GY10020000001
						X	F71GB10020000001
	Key mushroom pushbutton PRSL1801PI switch 1NC	White button PRSL1800PI switch 1NO	Black button PRSL1800PI switch 1NO	X			F71GG10020000002
					X		F71GY10020000002
						X	F71GB10020000002
	2 position selector switch PRSL1800PI switch 1NO 	Black button PRSL1800PI switch 1NO	Black button PRSL1800PI switch 1NO	X			F71GG00020001014
					X		F71GY00020001010
						X	F71GB00020001004
	3 position selector switch No.2 PRSL1800PI switch 1NO+1NO 	White button PRSL1800PI switch 1NO	Black button PRSL1800PI switch 1NO	X			F71GG00020001015
					X		F71GY00020001011
						X	F71GB00020001005

VICTOR CONTROL STATION - ASSEMBLY DRAWING

1 Actuator



Refer to the following tables for description of components: "Switches", "Potentiometers", "Actuators", "Pilot Lights", "Mushroom Pushbuttons", "Key Selector Switches" and "Accessories".

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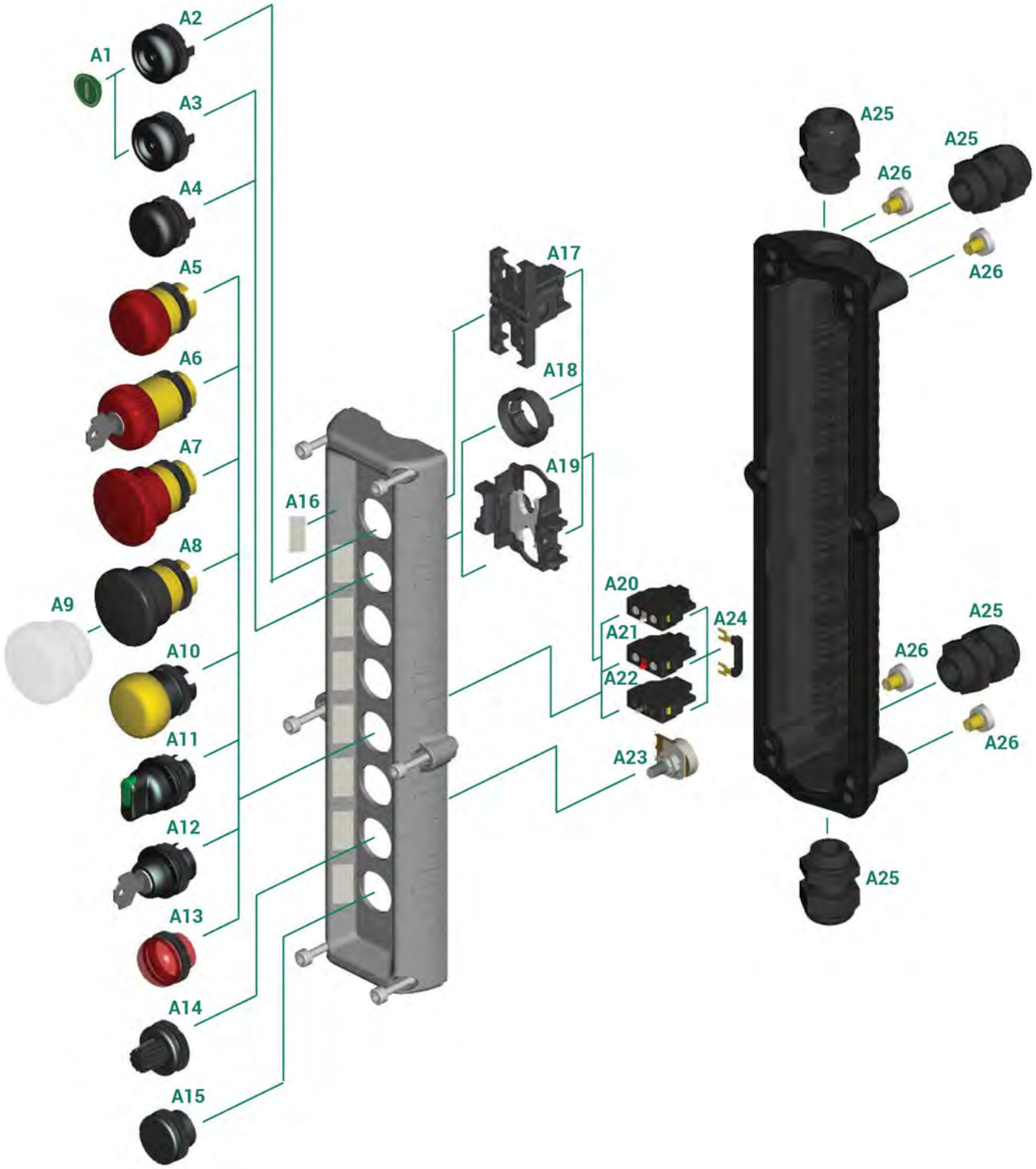
VICTOR CONTROL STATION - ASSEMBLY DRAWING

2 - 8 Actuators



Refer to the following tables for description of components: "Switches", "Potentiometers", "Actuators", "Pilot Lights", "Mushroom Pushbuttons", "Key Selector Switches" and "Accessories".

VICTOR CONTROL STATION - ACCESSORY PARTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A20		1 NO switch		PRSL1800PI
A21		1 NC switch		PRSL1801PI
A22		LED 24/48 Vac/DC		PRSL1820PI
		LED 110/230 Vac and 110 Vdc		PRSL1821PI

Mushroom Pushbuttons

Ref.	Drawing	Description	Head color	SCC Part No.
A5		Latched mushroom pushbutton for emergency stop	Red	PRSL1880PI
A6		Key mushroom pushbutton	Red	PRSL1890PI
A7		Latched mushroom pushbutton for emergency stop Ø 40 mm with yellow base	Red	PRSL1881PI
A8		Impulse mushroom pushbutton Ø 40 mm with yellow base	Black	PRSL1883PI
A10		Impulse mushroom pushbutton Ø 33 mm with black base	Red	PRSL1885ROC
			Blue	PRSL1885BLC
			Yellow	PRSL1885GIC
			Green	PRSL1885VEC
			Orange	PRSL1885ARC
			Black	PRSL1885NEC
A27		Rectangular mushroom pushbutton (available only for Victor with 1 actuator)	Red	PRSL1882PI
			Black	PRSL1882NEC

Actuators

Ref.	Drawing	Description	SCC Part No.
A1		Disk for pushbutton	PRTA_ _ _ _ _ _ See disk table
A2		Pushbutton for latched ON-OFF maintained acuator	PRSL1803PI
A3		2 speed pushbutton	PRSL1810PI
		1 speed pushbutton	PRSL1811PI
		1 speed illuminated pushbutton	PRSL1815PI
A4		1 speed black pushbutton	PRSL1806PI
		1 speed gray pushbutton	PRSL1807PI
		2 speed black pushbutton	PRSL1808PI
		2 speed gray pushbutton	PRSL1809PI
A15		Blanking plug	PRSL1845PI
A17		Latched ON-OFF mainteined actuator	PRSL1804PI

Potentiometers

Ref.	Drawing	Description	SCC Part No.
A14 + A23		Potentiometer 4.7 kΩ	PRSL1891PI
		Potentiometer 10 kΩ	PRSL1892PI
		Potentiometer 1 kΩ	PRS;L1893PI

Pilot Lights

Ref.	Drawing	Description	SCC Part No.
A13		White	PRSL1844PI
		Green	PRSL1841PI
		Blue	PRS;L1846PI
		Red	PRS;L1840PI
		Yellow	PRS;L1842PI
		Orange	PRS;L1843PI

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VICTOR CONTROL STATION - ACCESSORY PARTS

Key Selector Switches

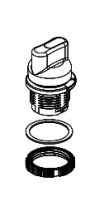
Ref.	Drawing	Positions	Spring return	Maintained positions	Pull-out position	SCC Part No.
A12		0/1	X		0	PRSL1867PI
				X	0	PRSL1868PI
		1/0/2	X		0	PRSL1869PI
				X	0	PRSL1070PI
		0/1/1+2	X		0	PRSL1071PI
				X	0	PRSL1072PI
		1/2 change-over			1	PRSL1073PI
					1	PRSL1074PI
		1/1+2/2	X		1+2	PRSL1075PI
				X	1+2	PRSL1076PI

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		0/1 Spring return	White		PRSL1855BI
			Green		PRSL1855VE
			Blue		PRSL1855BL
			Red		PRSL1855RO
			Yellow		PRSL1855GI
			Orange		PRSL1855AR
		0/1 Maintained	White		PRSL1856BI
			Green		PRSL1856VE
			Blue		PRSL1856BL
			Red		PRSL1856RO
			Yellow		PRSL1856GI
			Orange		PRSL1856AR
		0/1 Spring return		White	PRSL1855BIC
				Green	PRSL1855VEC
				Blue	PRSL1855BLC
				Red	PRSL1855ROC
				Yellow	PRSL1855GIC
				Orange	PRSL1855ARC
		0/1 Maintained		White	PRSL1856BIC
				Green	PRSL1856VEC
				Blue	PRSL1856BLC
				Red	PRSL1856ROC
				Yellow	PRSL1856GIC
				Orange	PRSL1856ARC

VICTOR CONTROL STATION - ACCESSORY PARTS

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/0/2 Spring return	White		PRSL1857BI
			Green		PRSL1857VE
			Blue		PRSL1857BL
			Red		PRSL1857RO
			Yellow		PRSL1857GI
			Orange		PRSL1857AR
		1/0/2 Maintained	White		PRSL1858BI
			Green		PRSL1858VE
			Blue		PRSL1858BL
			Red		PRSL1858RO
			Yellow		PRSL1858GI
			Orange		PRSL1858AR
		1/0/2 Spring return		White	PRSL1857BIC
				Green	PRSL1857VEC
				Blue	PRSL1857BLC
				Red	PRSL1857ROC
				Yellow	PRSL1857GIC
				Orange	PRSL1857ARC
		1/0/2 Maintained		White	PRSL1858BIC
				Green	PRSL1858VEC
				Blue	PRSL1858BLC
				Red	PRSL1858ROC
				Yellow	PRSL1858GIC
				Orange	PRSL1858ARC

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/2 Spring return	White		PRSL1861BI
			Green		PRSL1861VE
			Blue		PRSL1861BL
			Red		PRSL1861RO
			Yellow		PRSL1861GI
			Orange		PRSL1861AR
		1/2 Maintained	White		PRSL1862BI
			Green		PRSL1862VE
			Blue		PRSL1862BL
			Red		PRSL1862RO
			Yellow		PRSL1862GI
			Orange		PRSL1862AR
		1/2 Spring return		White	PRSL1861BIC
				Green	PRSL1861VEC
				Blue	PRSL1861BLC
				Red	PRSL1861ROC
				Yellow	PRSL1861GIC
				Orange	PRSL1861ARC
		1/2 Maintained		White	PRSL1862BIC
				Green	PRSL1862VEC
				Blue	PRSL1862BLC
				Red	PRSL1862ROC
				Yellow	PRSL1862GIC
				Orange	PRSL1862ARC

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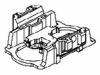
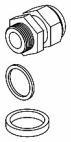
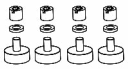
VICTOR CONTROL STATION - ACCESSORY PARTS

Selector Switches

Ref.	Drawing	Positions	Color		SCC Part No.
			Transparent	Full	
A11		1/1+2/2 Spring return	White		PRSL1863BI
			Green		PRSL1863VE
			Blue		PRSL1863BL
			Red		PRSL1863RO
			Yellow		PRSL1863GI
			Orange		PRSL1863AR
		1/1+2/2 Maintained	White		PRSL1864BI
			Green		PRSL1864VE
			Blue		PRSL1864BL
			Red		PRSL1864RO
			Yellow		PRSL1864GI
			Orange		PRSL1864AR
		1/1+2/2 Spring return		White	PRSL1863BIC
				Green	PRSL1863VEC
				Blue	PRSL1863BLC
				Red	PRSL1863ROC
				Yellow	PRSL1863GIC
				Orange	PRSL1863ARC
		1/1+2/2 Maintained		White	PRSL1864BIC
				Green	PRSL1864VEC
				Blue	PRSL1864BLC
				Red	PRSL1864ROC
				Yellow	PRSL1864GIC
				Orange	PRSL1864ARC
		0/1/1+2 Spring return	White		PRSL1859BI
			Green		PRSL1859VE
			Blue		PRSL1859BL
			Red		PRSL1859RO
			Yellow		PRSL1859GI
			Orange		PRSL1859AR
		0/1/1+2 Maintained	White		PRSL1860BI
			Green		PRSL1860VE
			Blue		PRSL1860BL
			Red		PRSL1860RO
			Yellow		PRSL1860GI
			Orange		PRSL1860AR
		0/1/1+2 Spring return		White	PRSL1859BIC
				Green	PRSL1859VEC
				Blue	PRSL1859BLC
				Red	PRSL1859ROC
				Yellow	PRSL1859GIC
				Orange	PRSL1859ARC
		0/1/1+2 Maintained		White	PRSL1860BIC
				Green	PRSL1860VEC
				Blue	PRSL1860BLC
				Red	PRSL1860ROC
				Yellow	PRSL1860GIC
				Orange	PRSL1860ARC

VICTOR CONTROL STATION - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A9		Transpa→ctive cap for impulse mushroom pushbutton Ø 40 mm	PRGU6100PE
A16		Label Sheet - Symbols	PRET0215PE
		Label Sheet - English	PRET0220EN
		Label Sheet - Spanish	PRET0220ES
A18		Button-switch spacer	PRSL8512PI
A19		Mechanical interlock	PRSL1850PI
A24		Insulated connecting bridge - positions 3-4 (pack/5)	PRSL1911PI
		Insulated connecting bridge - positions 2-4 (pack/5)	PRSL1912PI
		Insulated connecting bridge - positions 1-4 (pack/5)	PRSL1913PI
		Insulated connecting bridge - positions 1-3 (pack/5)	PRSL1914PI
		Insulated connecting bridge - positions 1-2 (pack/5)	PRSL1915PI
		Insulated connecting bridge - positions 1-2-3 (pack/5)	PRSL1916PI
A25		Cable clamp M20 for 5-10 mm cables + washers (for Standard version)	PRSL1849PI
		Cable clamp M20 for 7-13 mm cables + washers (for Standard version)	PRSL1837PI
		Cable clamp M20 for 6-12 mm cables + washers (for cULus version)	PRSL1848UL
		Cable clamp M20 for 10-14 mm cables + washers (for cULus version)	PRSL1837UL
		Spiral cable clamp M20 for 7-13 mm cables + washers (for Standard version)	PRSL1822PI
		Spiral cable clamp M20 for 6-12 mm cables + washers (for cULus version)	PRSL1920PI
		Spiral cable clamp M20 for 10-14 mm cables + washers (for cULus version)	PRSL1921PI
A26		Magnetic mounting kit	PRSL1851PI
A28		1-2-3 switch holder	PRSL8750PI

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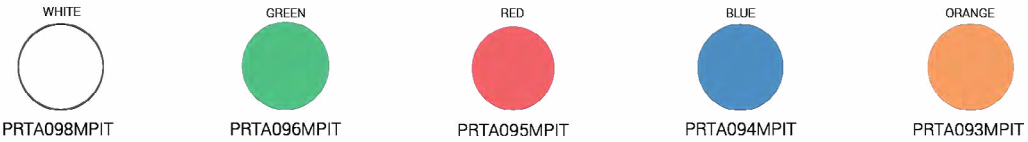
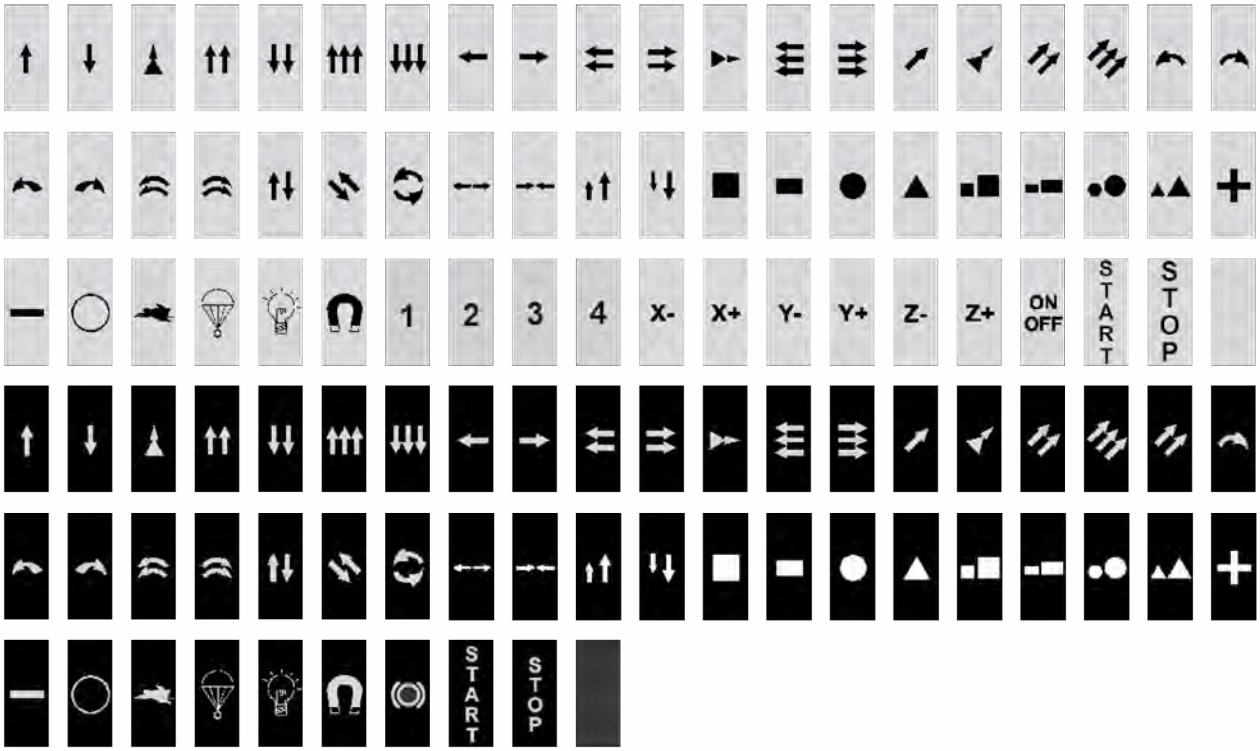
VICTOR CONTROL STATION - ACCESSORY PARTS

Full Color Disks

Transparent Disks



Label Sheet - Symbols (SCC Part No. → PRET0215PE)



VICTOR CONTROL STATION - ACCESSORY PARTS

Label Sheet - English (SCC Part No. → PRET0220EN)

START	ALARM	RESET ALARM	RESET	STOP	LIGHT	RESET LINE	STOP LINE	START BUCKET	STOP BUCKET
BRAKE	BACK	UP	DOWN	UP LIFTING	DOWN LIFTING	UP LIFTING 1-2 SPEED	DOWN LIFTING 1-2 SPEED	UP LIFTING 3RD SPEED	DOWN LIFTING 3RD SPEED
UP LIFTING FAST	DOWN LIFTING FAST	LIFTING 2ND SPEED	LIFTING 3RDSPEED	UP AUXIL. LIFTING	DOWN AUXIL LIFTING	UP MAIN LIFTING	DOWN MAIN LIFTING	UP FAST MAIN LIFTING	DOWN FAST MAIN LIFTING
UP AUXIL. LIFTING 1-2 S.	DOWN AUXIL. LIFTING 1-2 S.	UP MAIN LIFTING 1-2 S.	DOWN MAIN LIFTING 1-2 S.	UP WINCH	DOWN WINCH	UP WINCH 1-2 SPEED	DOWN WINCH 1-2 SPEED	UP FAST WINCH	DOWN FAST WINCH
UP SLOW RIGHT WINCH	DOWN SLOW RIGHT WINCH	UP FAST RIGHT WINCH	DOWN FAST RIGHT WINCH	UP SLOW LEFT WINCH	UP FAST LEFT WINCH	DOWN FAST LEFT WINCH	UP HOIST	DOWN HOIST	UP HOIST 1-2 SPEED
DOWN HOIST 1-2 SPEED	UP FAST HOIST	DOWN FAST HOIST	FORWARD	BACKWARD	FORWARD TROLLEY	BACKWARD TROLLEY	FORWARD FAST TROLLEY	BACKWARD FAST TROLLEY	FORWARD TROLLEY 1-2 S.
BACKWARD TROLLEY 1-2 S.	FORWARD BRIDGE	BACKWARD BRIDGE	FORWARD FAST BRIDGE	BACKWARD FAST BRIDGE	FORWARD BRIDGE 1-2 S.	BACKWARD BRIDGE 1-2 S.	FORWARD TRANSLATION	BACKWARD TRANSLATION	LEFT
RIGHT	LEFT TROLLEY	RIGHT TROLLEY	LEFT FAST TROLLEY	RIGHT FAST TROLLEY	LEFT TROLLEY 1-2 S.	RIGHT TROLLEY 1-2 S.	LEFT BRIDGE	RIGHT BRIDGE	LEFT FAST BRIDGE
DOWN SLOW LEFT WINCH	RIGHT FAST BRIDGE	LEFT BRIDGE 1-2 S.	RIGHT BRIDGE 1-2 S.	CCW ROTATION	CW ROTATION	CCW FAST ROTATION	CW FAST ROTATION	CCW ROTATION 1-2 S.	CW ROTATION 1-2 S.
CCW ROTATION 3RD SPEED	CW ROTATION 3RD SPEED	LEFT CTRL STATION	RIGHT CTRL STATION	TROLLEY LEFT	TROLLEY RIGHT	SLOW	FAST	FAST TROLLEY	FAST BRIDGE
FAST LIFTING	FAST ROTATION	WINCH MATCHING	OPEN	CLOSE	OPEN GRAPPLE	CLOSE GRAPPLE	OPEN BUCKET	CLOSE BUCKET	OPEN DOOR
CLOSE DOOR	SPEED UP	SPEED DOWN	RAISE	LOWER	LOAD	DOWNLOAD	ENERGIZE	DE-ENERGIZE	ENERGIZE MAGNET
DE-ENERGIZE MAGNET	APPROACH	CONSENT	AUTOMATIC	MANUAL	MAN-0-AUTO	OFF-MAN-AUTO	ON	OFF	ON-OFF
IN	OUT	NORTH	SOUTH	EAST	WEST	OVERLOAD	TARE	1-1+2-2	1-2-1+2
1+2	ON-OFF	A-A+B-B							

Label Sheet - Spanish (SCC Part No. → PRET0220ES)

MARCHA	ALARMA	MARCHA ALARMA	PARO	STOP	LUZ	MARCHA LINEA	PARO LINEA	MARCHA PALA	PARO PALA
FRENO	RETORNO	SUBIR	BAJAR	SUBIR ELEVACION	BAJAR ELEVACION	SUBIR ELEV. 1-2 VEL.	BAJAR ELEV. 1-2 VEL.	SUBIR ELEV. 3ª VEL.	BAJAR ELEV. 3ª VEL.
SUBIR ELEV. RAPIDA	BAJAR ELEV. RAPIDA	2ª VEL. ELEVACION	3ª VEL. ELEVACION	SUBIR AUX. ELEVACION	BAJAR AUX. ELEVACION	SUBIR ELEV. PRINCIPAL	BAJAR ELEV. PRINCIPAL	SUBIR ELEV. PRINC. RAPIDA	BAJAR ELEV. PRINC. RAPIDA
SUBIR AUX. 1-2 VEL.	BAJAR AUX. 1-2 VEL.	SUBIR PRINC. 1-2 VEL.	BAJAR PRINC. 1-2 VEL.	SUBIR POLIPASTO	BAJAR POLIPASTO	SUBIR POLIP. 1-2 VEL.	BAJAR POLIP. 1-2 VEL.	SUBIR POLIP. RAPIDO	BAJAR POLIP. RAPIDO
POLIP. DER. SUBIR LENTO	POLIP. DER. BAJAR LENTO	POLIP. DER. SUBIR RAPIDO	POLIP. DER. BAJAR RAPIDO	POLIP. IZQ. SUBIR LENTO	POLIP. IZQ. SUBIR RAPIDO	POLIP. IZQ. BAJAR RAPIDO	SUBIR GANCHO	BAJAR GANCHO	SUBIR GANCHO 1-2 VEL.
BAJAR GANCHO 1-2 VEL.	SUBIR GANCHO RAPIDO	BAJAR GANCHO RAPIDO	ADELANTE	ATRAS	ADELANTE CARRITO	ATRAS CARRITO	ADELANTE CARR. RAPIDO	ATRAS CARR. RAPIDO	ADELANTE CARR. 1-2 VEL.
ATRAS CARR. 1-2 VEL.	ADELANTE PUENTE	ATRAS PUENTE	ADELANTE PUENTE RAPIDO	ATRAS PUENTE RAPIDO	ADELANTE PUENTE 1-2 VEL.	ATRAS PUENTE 1-2 VEL.	ADELANTE TRASLACION	ATRAS TRASLACION	IZQUIERDA
DERECHA	IZQUIERDA CARRITO	DERECHA CARRITO	IZQUIERDA CARR. RAPIDO	DERECHA CARR. RAPIDO	IZQUIERDA CARR. 1-2 VEL.	DERECHA CARR. 1-2 VEL.	IZQUIERDA PUENTE	DERECHA PUENTE	IZQUIERDA PUENTE RAPIDO
POLIP. IZQUIER. BAJAR LENTO	DERECHA PUENTE RAPIDO	IZQUIERDA PUENTE 1-2 VEL.	DERECHA PUENTE 1-2VEL.	IZQUIERDA ROTACION	DERECHA ROTACION	IZQUIERDA ROT. RAPIDA	DERECHA ROT. RAPIDA	IZQUIERDA ROT. 1-2 VEL.	DERECHA ROT. 1-2 VEL.
IZQUIERDA ROT. 3ª VEL.	DERECHA ROT. 3ª VEL.	BOTONERA IZQUIERDA	BOTONERA DERECHA	CARRITO IZQUIERDO	CARRITO DERECHO	LENTO	RÁPIDO	CARRITO RAPIDO	PUENTE RAPIDO
ELEVACION RAPIDA	ROTACION RAPIDA	ACOPLAMIENTO POLIPASTO	ABRIR	CERRAR	ABRIR PINZA	CERRAR PINZA	ABRIR PALA	CERRAR PALA	ABRIR PUERTA
CERRAR PUERTA	ACELERAR	DESACELERAR	ELEVAR	DESCENDER	CARGAR	DESCARGAR	IMANTAR	DESIMANTAR	IMANTAR MAGNETO
DESIMANTAR MAGNETO	ACERCAR	CONFIRMAR	AUTOMATICO	MANUAL	MAN-0-AUTO	OFF-MAN-AUTO	ON	OFF	ON-OFF
IN	OUT	NORTE	SUR	ESTE	OESTE	SOBRECARGA	TARA	1-1+2-2	1-2-1+2
1+2	ON-OFF	A-A+B-B							

VICTOR - REQUEST FORM FOR NON STANDARD CONTROL STATION

Instructions

(See next page for list of components and legends)

Fill in the chart to the left according to the number of control elements required. Control stations are available with 1-2-3-4-6-8 control elements.

1. **Control elements**: enter the number corresponding to the control element required (1 to 39) according to the legend. Eg. 25

   ATTENTION: the rectangular mushroom pushbutton (10 - 11) is available only for Victor with 1 actuator.

2. **Button disks**: for pushbuttons (1 to 3) enter the number corresponding to the disk required (50 to 88) according to the legend. Both full color disks and transparent disks (for illuminated buttons) are available. Eg. 57

3. **Color of selectors, mushrooms, pilot lights**: for toggle selector switches (15 to 24), impulse mushroom pushbuttons (7) and pilot lights (12) enter the code corresponding to the color required according to the legend. Eg. RP

4. If you choose **disks with arrows** (legend 54 to 73), enter the direction of the arrow in the circle. Eg. ↗

5. **Switches, LEDs and potentiometers**: enter the number corresponding to the switch, LED or potentiometer required (90 to 96) according to the legend. It is possible to enter up to 3 switches per position. Eg. 91

   2 speed pushbuttons can activate two switches on the first speed and one switch on the second speed.

   Selector switches can activate only two switches and possibly a LED.

   ATTENTION: LEDs can be placed only in the central position and they are used for illuminated buttons and selector switches.

   (See Control Element legend for switch activation)

6. **Mechanical interlock and ON-OFF actuator**: tick the boxes where the mechanical interlock (MI) between two control elements or the latched ON-OFF maintained actuator (LA) is required. Eg. ☒

7. **Cover**: tick the box corresponding to the cover color required (the base of the enclosure is always black).

   ATTENTION: the yellow cover is available only for Victor with 1-2-3 actuators.

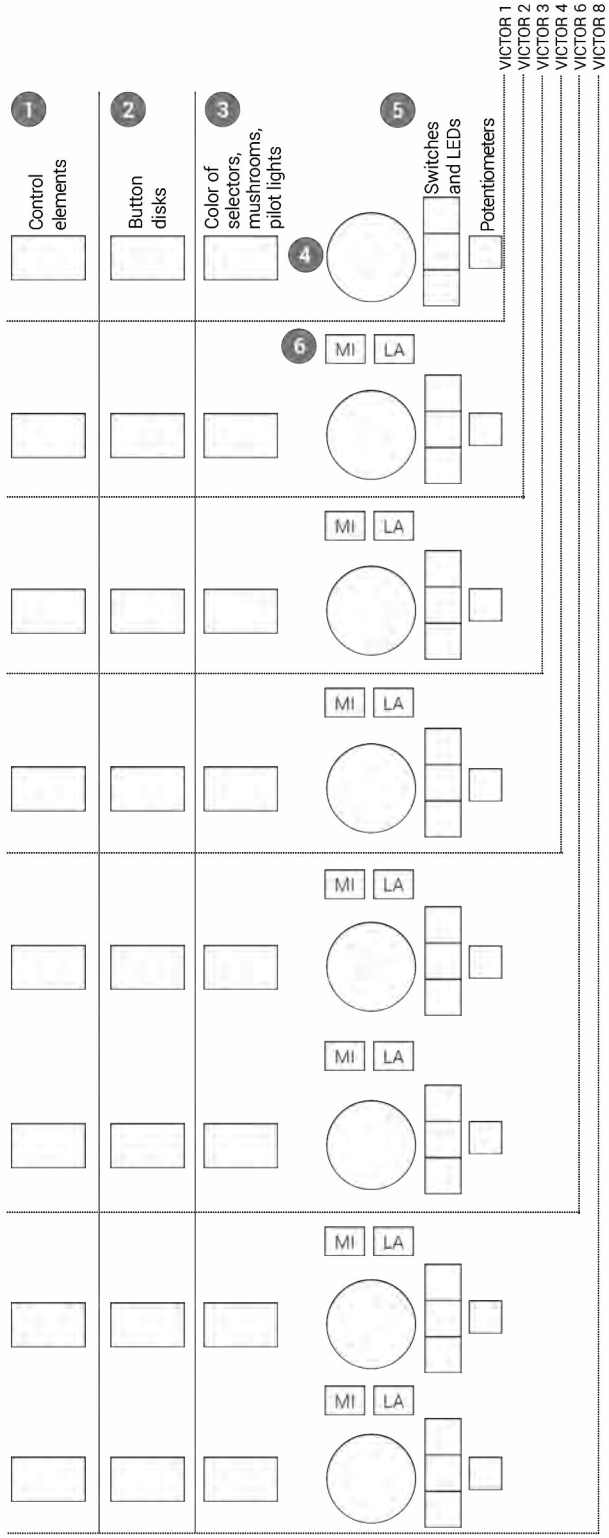
8. **SIL 1 certified**: tick the box if you require SIL 1 certified units.

9. **Label sheet**: stickers with letterings or symbols may be placed on the left and on the right of any control element. If label sheets are required, tick the corresponding box.

10. **Magnetic version**: tick the box if you require magnetic mounting case.

11. **cULus certified**: tick the box if you require cULus certified units. Not available on Victor with 6-8 actuators.

12. **Cable clamp**: tick the box corresponding to the cable clamp M20 required.



Cable clamp 12

Standard version

- ☐ For 5-10 mm cables
- ☐ For 7-13 mm cables
- ☐ Spiral type, for 7-13 mm cables

cULus version

- ☐ For 6-12 mm cables
- ☐ For 10-14 mm cables
- ☐ Spiral type, for 6-12 mm cables
- ☐ Spiral type, for 10-14 mm cables

Cover 7

☐ Grey ☐ Black ☐ Yellow

SIL 1 certified 8

☐

Label sheet 9

☐ Symbols ☐ English ☐ Spanish

Magnetic version 10

☐

cULus certified 11

☐

VICTOR - REQUEST FORM FOR NON STANDARD CONTROL STATION

1 Legend - Control elements

* SWITCH ACTIVATION
It is possible to mount up to 3 switches for each control element. The chart on the right of each pushbutton or selector switch specifies which position activates the switch on the top, in the middle or on the bottom. If the selector switches are mounted with the lever facing downwards, then the the activation of the switches is reversed.
Eg.: 2 speed pushbutton: the first speed activates the switches on the top and in the middle, while the second speed activates the switch on the bottom.

Pushbuttons

It is possible to mount up to 3 switches for each button. LEDs can be mounted only in the middle.

		SWITCH ACTIVATION*
1	1 speed pushbutton with disk	speed 1
25	1 speed black pushbutton	speed 1
26	1 speed grey pushbutton	speed 1
2	2 speed pushbutton with disk	speed 1
27	2 speed black pushbutton	speed 1
28	2 speed grey pushbutton	speed 2
3	1 speed illuminated pushbutton with disk	speed 1 / LED / speed 1

Mushroom pushbuttons

All mushroom pushbuttons activate all the switches at the same time.

- 4 Latched mushroom pushbutton for emergency stop
- 5 Latched mushroom pushbutton for emergency stop Ø 40 mm
- 6 Key mushroom pushbutton
- 7 Impulse mushroom pushbutton Ø 33 mm with black base
- 8 Impulse black mushroom pushbutton Ø 40 mm with yellow base
- 9 Impulse black mushroom pushbutton Ø 40 mm with yellow base and protective cap
- 10 Rectangular red mushroom pushbutton
- 11 Rectangular black mushroom pushbutton

12 Pilot light

13 Blanking plug

Toggle selector switches

It is possible to mount only 2 switches for each selector. In the middle it is possible to mount only the LED for illuminated selector switches.

		SWITCH ACTIVATION*
15	0/1 spring return	pos 1 / pos 1
16	0/1 maintained positions	pos 1 / pos 1
17	1/0/2 spring return	pos 1 / pos 2
18	1/0/2 maintained positions	pos 1 / pos 2
19	1/1+2/2 spring return	pos 1 and 1+2 / pos 2 and 1+2
20	1/1+2/2 maintained positions	pos 1 and 1+2 / pos 2 and 1+2
21	0/1/1+2 spring return	pos 1+2 / pos 1 and 1+2
22	0/1/1+2 maintained positions	pos 1+2 / pos 1 and 1+2
23	1/2 spring return	pos 1 / pos 2
24	1/2 maintained positions	pos 1 / pos 2

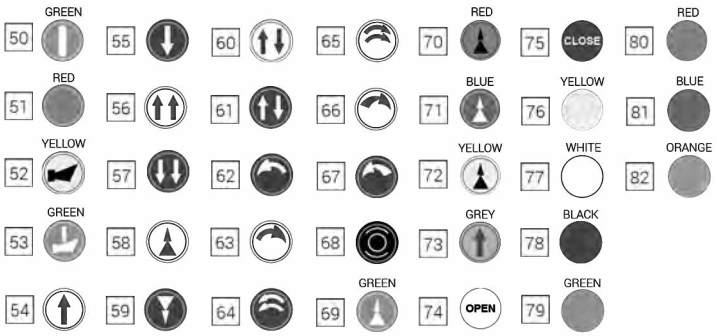
Key selector switches

It is possible to mount only 2 switches for each selector, and no switch/LED in the central position.

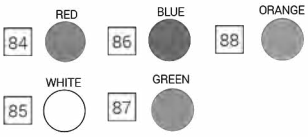
		SWITCH ACTIVATION*
30	0/1 spring return key out in position 0	pos 1 / NA / pos 1
31	0/1 maintained positions key out in position 0	pos 1 / NA / pos 1
32	1/0/2 spring return key out in position 0	pos 1 / NA / pos 2
33	1/0/2 maintained positions key out in position 0	pos 1 / NA / pos 2
34	0/1/1+2 spring return key out in position 0	pos 1+2 / NA / pos 1 and 1+2
35	0/1/1+2 maintained positions key out in position 0	pos 1+2 / NA / pos 1 and 1+2
36	1/2 change over spring return key out in position 1	pos 1 / NA / pos 2
37	1/2 change over maintained positions key out in positione 1	pos 1 / NA / pos 2
38	1/1+2/2 spring return key out in position 1+2	pos 1 and 1+2 / NA / pos 2 and 1+2
39	1/1+2/2 maintained positions key out in position 1+2	pos 1 and 1+2 / NA / pos 2 and 1+2

2 Legend - Button disks

Full color and symbol disks for pushbuttons (ref. 1 and 2)



Transparent disks for illuminated pushbuttons (ref. 3)



3 Legend - Color of selector switches, mushroom pushbuttons, pilot lights

Non-illuminated toggle selector switches (ref. 15 to 24)

RP	Red	BP	Blue	AP	Orange
GP	Yellow	VP	Green	WP	White

Impulse mushroom pushbutton with black base (ref. 7)

R	Red	B	Blue	A	Orange
G	Yellow	V	Green	N	Black

Illuminated toggle selector switches (ref. 15 to 24)

RI	Red	BI	Blue	AI	Orange
GI	Yellow	VI	Green	WI	White

Pilot lights (ref. 12)

R	Red	B	Blue	A	Orange
G	Yellow	V	Green	W	White

5 Legend - Switches, LEDs, potentiometers

- 90 PRSL1800PI - Switch 1NO
- 91 PRSL1801PI - Switch 1NC
- 92 PRSL1820PI LED 24/48 V AC/DC
- 93 PRSL1821PI LED 110/230 V AC and 110 V DC
- 94 PRSL1891PI potentiometer 4.7 kΩ
- 95 PRSL1892PI potentiometer 10 kΩ
- 96 PRSL1893PI potentiometer 1 kΩ

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Industrial Electrical Controls

SPRINGER® controls company

Crane & Hoist Control

ROTARY GEAR LIMIT SWITCHES

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ROTARY GEAR LIMIT SWITCHES

Springer Controls is the North American distributor for **Tecno Elettrica Ravasi (TER)** of Italy. **TER** is a world leader in the manufacturing of crane and hoist controls. **Springer / TER** offer multiple options of Rotary Gear Limit Switches.

Springer Controls stocks all models in the U.S. and can customize units to meet your specification.

INDEX

BASE
1:15 - 1:1500 ratio | 2–6 switches ..... 5 – 17

FOX
1:3 - 1:2870 ratio | 2–5 switches ..... 19 – 31

OSCAR
1:1 - 1:1550 ratio | 2–12 switches ..... 33 – 49

TOP
1:1 - 1:8100 ratio | 2–15 switches ..... 51 – 67

GF4C
1:1 - 1:969 ratio | 2–7 switches ..... 69 – 83

ATLANTE
Electronic Limit Switch | Abs, Encoder, 1024 ppr ..... 85 – 88

LIMITEX AG
Explosion Proof | 1:15 - 1:499 ratio | 2–4 switches ..... 89 – 94

BASE

ROTARY LIMIT SWITCH

The **BASE** rotary gear limit switch is the most economical option. It is a small compact unit with gear ratios from 1:15 to 1:1500. The BASE can be equipped with 2 to 6 switches. Springer Controls can custom build any ratio required and ship immediately.

Features

- Consists of a gear motor that transfers movement through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- IP protection degree: Base is classified IP42, IP65 or IP66, IP67 and IP69K.
- NEMA protection degree: Base IP66, IP67 and IP69K is classified Type 3; Base IP42 is classified Type 1.
- Extreme temperature resistance: -40°F to +176°F (-40°C to +80°C).
- Features stainless steel transmission and gear driving shafts, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- Sintered bronze bushings are moulded into the base of the limit switch to optimize shaft rotation and prevent rubbing with plastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:15 to 1:1500, achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC change-over contacts.
- Can be equipped with a cam set with maximum 6 switches.
- Dedicated cable clamps or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, to improve transpiration for the limit switch whilst maintaining protection against water.
- Available with flanges, pinions and couplings.
- Available with direct control switches to enable direct action on the motor.

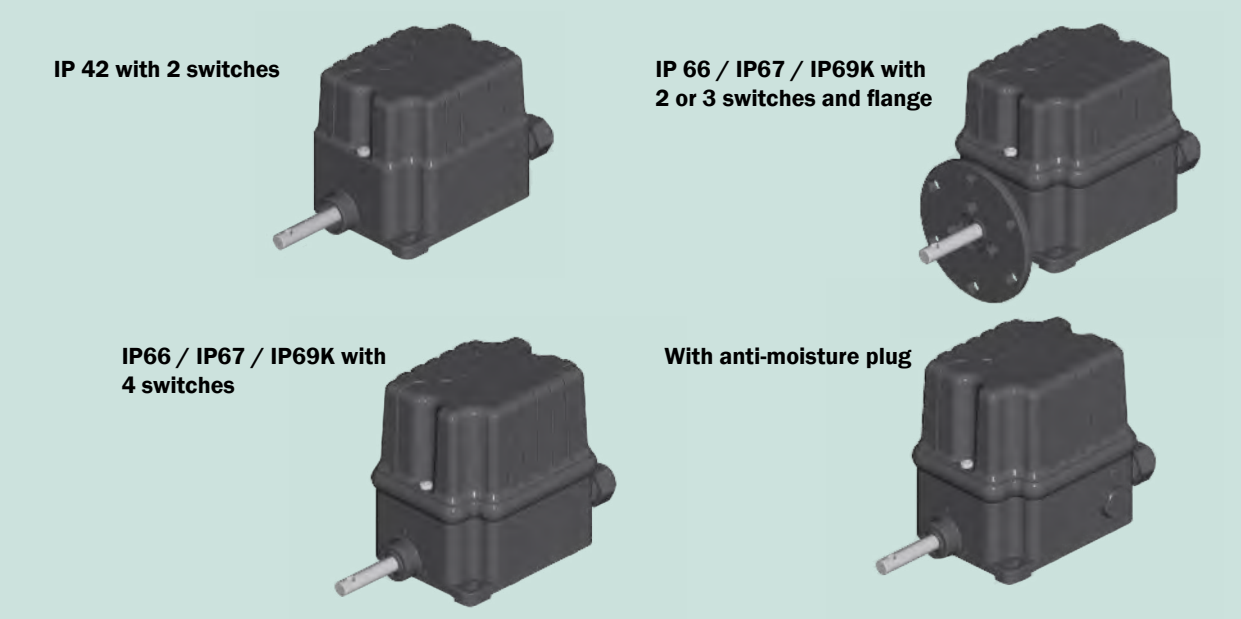
Certifications

- CE marking, cURus* and EAC certifications.

Fill-in the "request form" for a custom product configuration

* Not available on all versions

Possible Assemblies



Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	Version IP42 or IP65: CE EAC
	Version IP66/ IP67 / IP69K: CE c UL us* EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +176°F (-40°C / +80°C)
	Operational: -40°F / +176°F (-40°C / +80°C)
IP protection degree	IP42
	IP65
	IP66 / IP67 / IP69K
NEMA protection degree	Type 3 (version IP66 / IP67 / IP69K)
Insulation category	Class II
Maximum rotation speed	800 rpm
Cable entry	Cable clamp M16
Shafts	Stainless steel AISI 430F

* Not available on all versions

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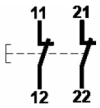
SPECIFICATIONS FOR BASE

Technical Specifications — Switches for Auxiliary Control

SCC Part No. →	PRSL0003XX	PRSL0011XX	PRSL0017XX	PRSL0195XX
Utilisation category	AC 15 - B300		AC 15 - C300	
Rated operational voltage	250 Vac			
Rated operational current	3 A			
Rated thermal current	5 A		2.5 A	
Rated insulation voltage	300 Vac			
Mechanical life	1 x 10^6 operations			
Connections	6.3 mm Faston taps	Screw-type terminals	Screw-type terminals	6.3 mm Faston taps
Wires	-	2x0.5 mm^2, 2x1.5 mm^2, 1x2.5 mm^2	2x0.5 mm^2, 2x1.5 mm^2, 1x2.5 mm^2	-
Tightening torque	-	0.5 Nm	0.5 Nm	-
Microswitch type	Single break, snap action			
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1 NO+1NC	1 NO+1NC	1 NO+1NC
Scheme				
Markings and Homologations	CE cULus EAC		CE cULus	

Technical Specifications — Switches for Direct Control

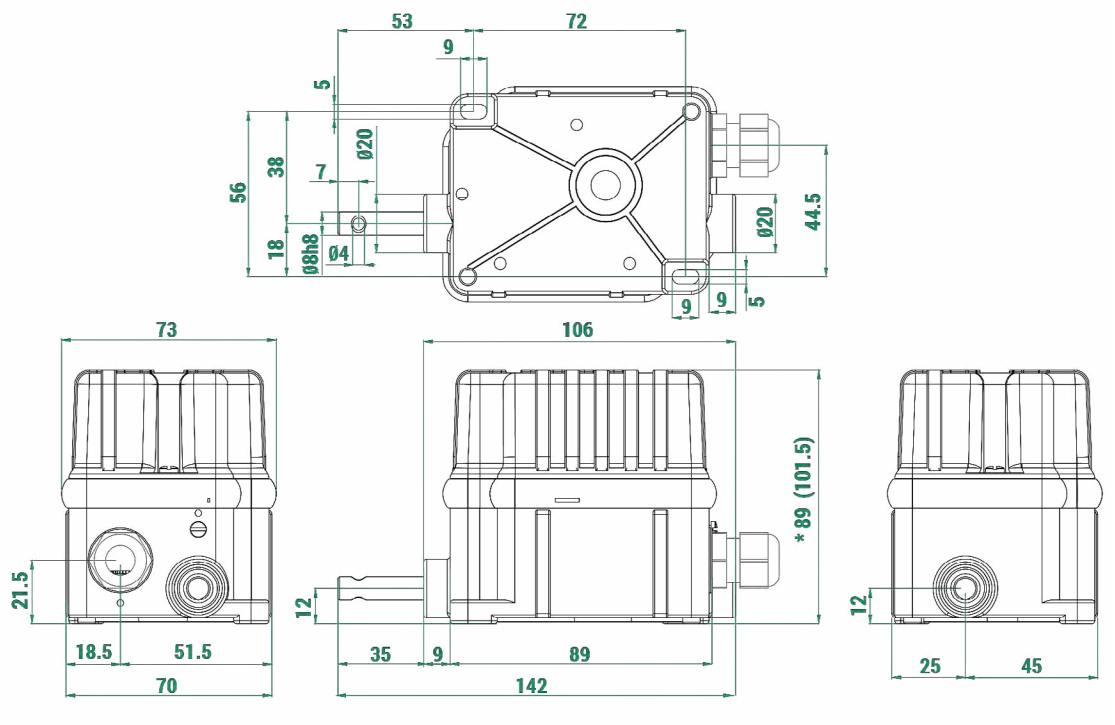
SCC Part No. →	PRSL0455PI
Utilisation category	AC 3
Rated operational current	400 Vac
Rated operational voltage	10 A
Rated thermal current	20 A
Rated insulation voltage	660 Vac
Mechanical life	1 x 10^6 operations
Connections	Screw-type terminals
Wires	2 x 1.5 mm^2, 1 x 2.5 mm^2
Tightening torque	0.8 Nm
Microswitch type	Two-pole
Contacts	2NC
Scheme	
Markings and Homologations	CE

BASE - OVERALL DIMENSIONS (mm)

Limit switches with sets of 5 or 6 switches PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX or with sets of 2 switches PRSL0455PI are availabel only with protection degree IP66 / IP67 / IP69K and a special cover, or in the IP00 version without cover. Both configurations are not cURus certified. Overall dimensions and code numbers are available upon request.

IP66 / IP67 / IP69K

* 2/3 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches or 1 PRSL0455PI switch.
() 4 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches.



1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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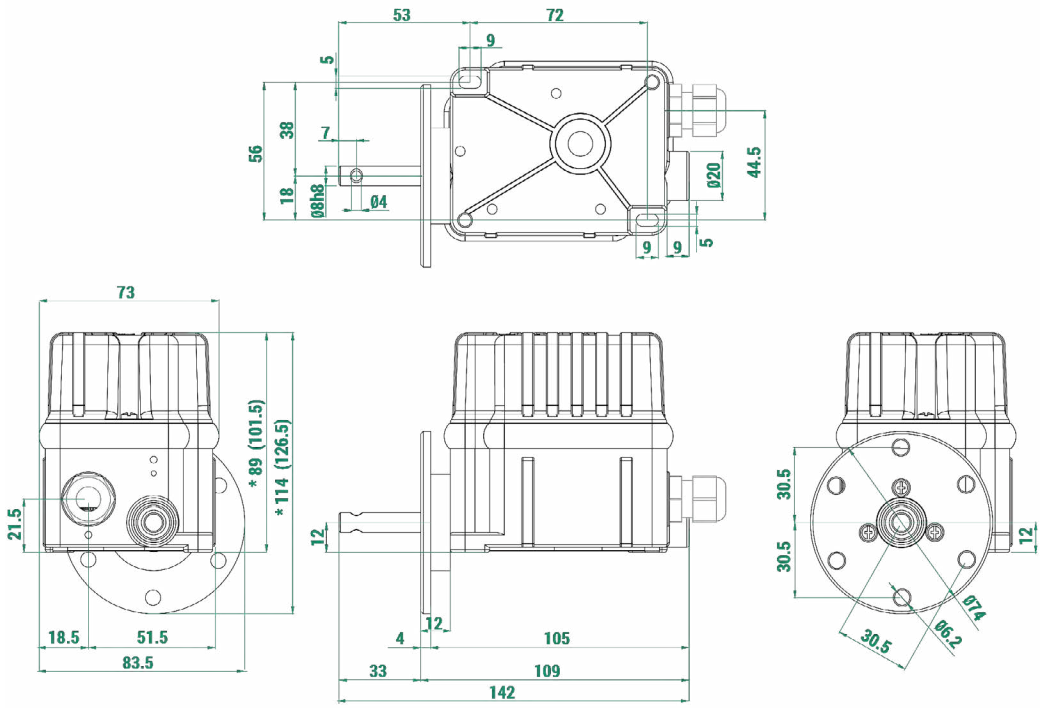
BASE - OVERALL DIMENSIONS (mm)

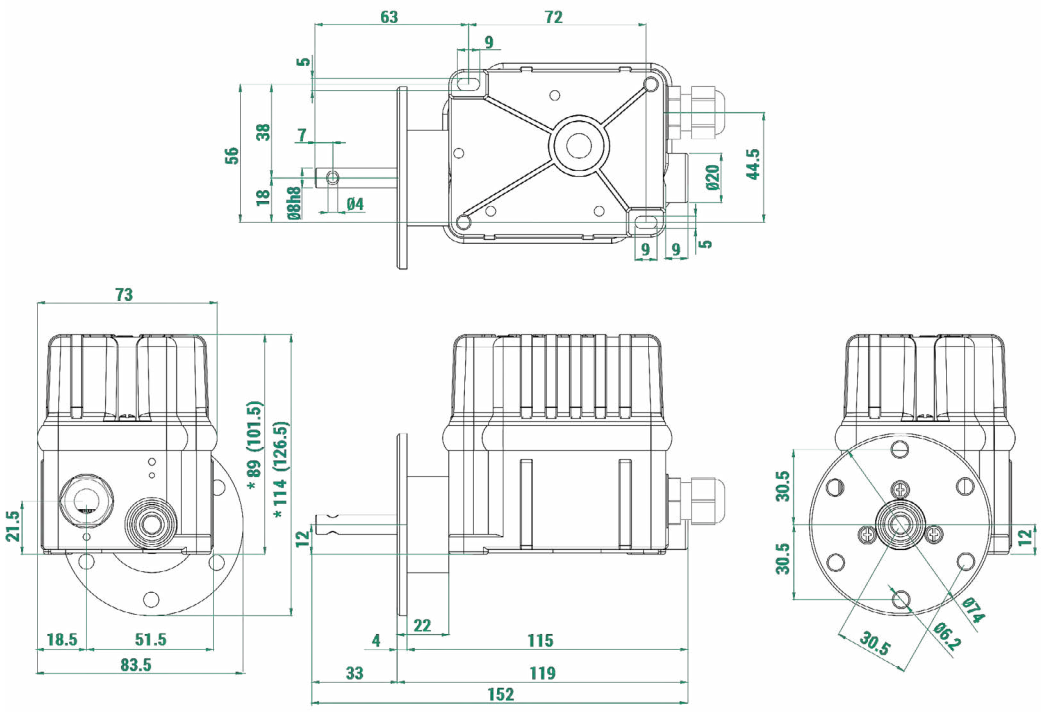
IP66 / IP67 / IP69K with 12 mm high flange

* 2/3 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches or 1 PRSL0455PI switch.
() 4 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches.



IP66 / IP67 / IP69K with 22 mm high flange

* 2/3 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches or 1 PRSL0455PI switch.
() 4 PRSL0003XX / PRSL0011XX / PRSL0017XX / PRSL0195XX switches.

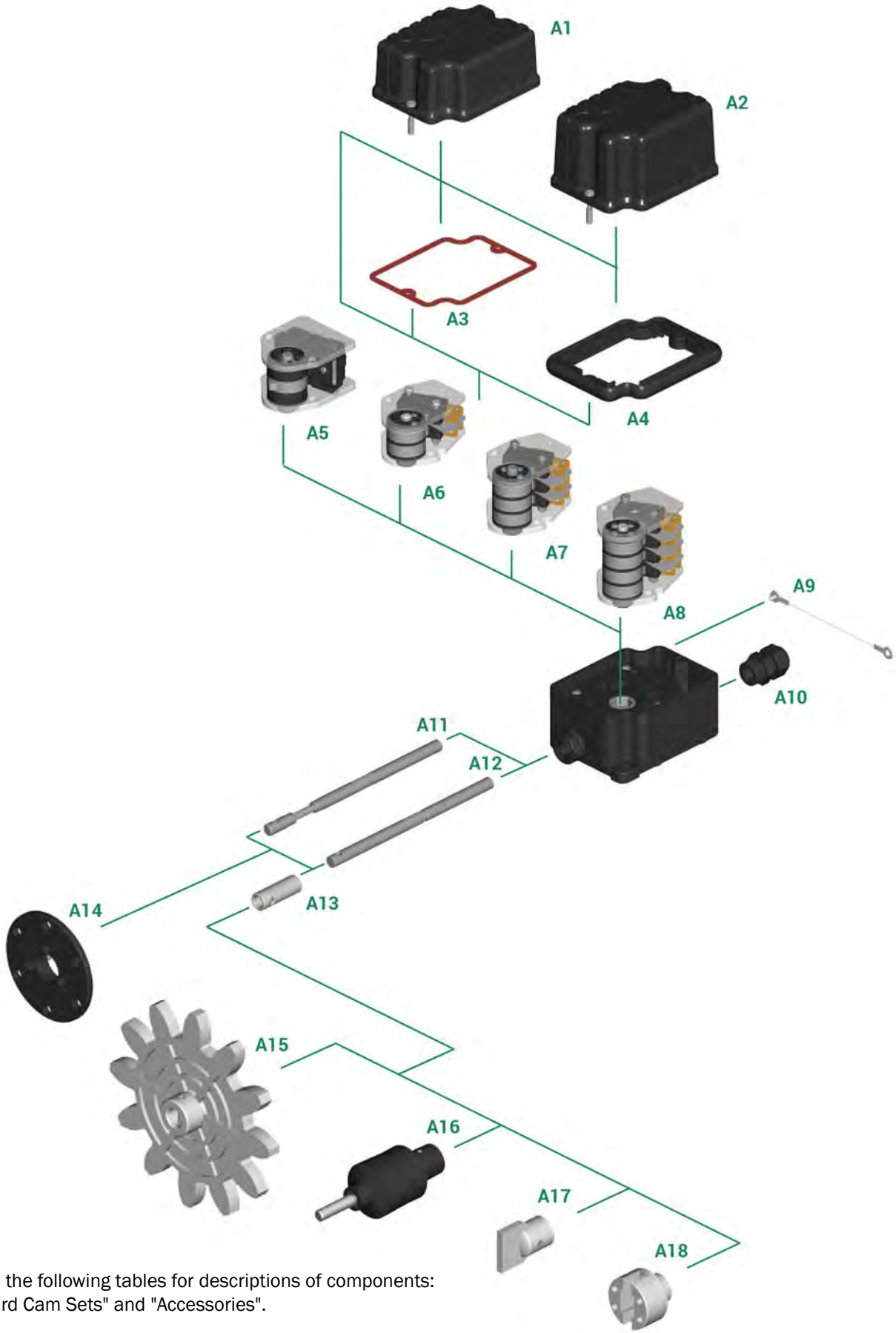


STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7140PI and auxiliary control switches PRSL0003XX with 1NO+1NC contacts .

Rated revolution ratio	Real revolution ratio	No. of cams and switches	IP66 / IP67 / IP69K SCC Part No.
1:15	1:15.82	2	PFA9067A0015001
		3	PFA9067A0015003
		4	PFA9067A0015002
1:20	1:20.37	2	PFA9067A0020001
		3	PFA9067A0020003
		4	PFA9067A0020002
1:25	1:25.96	2	PFA9067A0025001
		3	PFA9067A0025003
		4	PFA9067A0025002
1:50	1:50	2	PFA9067A0050001
		3	PFA9067A0050003
		4	PFA9067A0050002
1:75	1:75	2	PFA9067A0075001
		3	PFA9067A0075003
		4	PFA9067A0075002
1:100	1:103.57	2	PFA9067A0103001
		3	PFA9067A0103003
		4	PFA9067A0103002
1:150	1:158.02	2	PFA9067A0158001
		3	PFA9067A0158003
		4	PFA9067A0158002

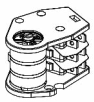
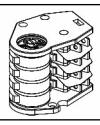
BASE ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard Cam Sets" and "Accessories".

BASE - ACCESSORY PARTS

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A5		1 cam A	1 PRSL0455PI switch	PRFC0101PC
A6		2 cams A	2 PRSL0003XX switches	PRFC0008PEC
		2 cams C	2 PRSL0003XX switches	PRFC0009PEC
A7		3 cams A	3 PRSL0003XX switches	PRFC0004PEC
		3 cams C	3 PRSL0003XX switches	PRFC0006PEC
A8		4 cams A	4 PRSL0003XX switches	PRFC0202PEC
		4 cams C	4 PRSL0003XX switches	PRFC0198PEC

Other sets with 2/3/4/5 or 6 switches PRSL0003XX / PRSL0011XX / PRSL0017XX/ PRSL0195XX or with 1 or 2 switches PRSL0455PI are available upon request.

Cam Reference Chart

Cam			Switching angle	SCC Part No.
A		1 point	20.5° ±0.5°	PRSL7140PI
B		10 points	14.0° ±0.5°	PRSL7142PI
C		60° sector	78.0° ±0.5°	PRSL7141PI
E		180° sector	199.5° ±0.5°	PRSL7144PI
H		335° sector	344.0° ±0.5°	PRSL7143PI

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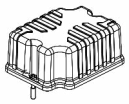
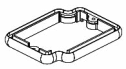
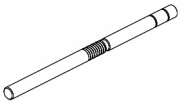
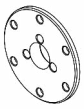
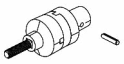
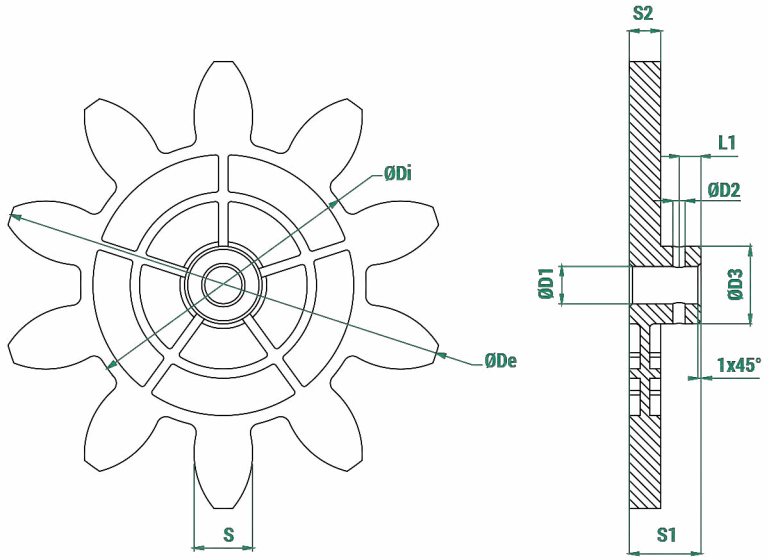
BASE - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A1		Cover with screws for BASE IP42 or IP65 with 2 switches	PA090013
		Cover with screws for BASE IP66 / IP67 / IP69K with 2/3 switches	PA090010
A2		Cover with screws for BASE IP42 or IP65 or IP66 / IP67 / IP69K with 2/3 switches	PA090011
A3		Gasket for BASE IP65	PRGU1085PE
A4		Tightening rubber for BASE IP66 / IP67 / IP69K	PRGU1200PE
A9		Cover holding wire + screw (bag of 10)	PRSL0358PI
A10		Cable clamp M16	PR[S0062PE
A11		Flexible shaft	ALL1F00001
A12		Standard shaft	ALL1R00001
		Shaft for 22 mm high flange	ALL1R00121
A13		Brush Ø8 to Ø12 for pinion gear/coupling	PRT01075PE
A14		12 mm high flange	PRT04040PE
		22 mm high flange	PRSL8087PI
A15		Pinion gear	See pinion gear tables
A16		Coupling wit pin	PRSL0981PI
A17		Male coupling with pin	PRSL0919PI
A18		Female coupling with pin	PRSL0920PI

Moulded Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1	SCC Part No.
8	2.50	20.00	25.00	14.15	2.50	2.93	3.93	20.00	8.00	2.50	14.00	18.00	8.00	4.00	PRSL0971PI
8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0915PI
9	2.50	22.50	27.50	16.25	2.50	3.13	3.93	20.00	8.00	2.50	13.50	18.00	8.00	4.00	PRSL0964PI
9	3.50	31.50	38.50	23.40	3.50	4.10	4.71	20.00	8.00	2.50	14.00	18.00	8.00	4.00	PRSL0963PI
9	5.00	45.0	56.00	36.00	5.50	4.50	9.19	20.00	8.00	2.50	16.00	18.00	8.00	4.00	PRSL0892PI
10	3.00	30.00	36.00	23.00	3.00	3.51	4.71	20.00	8.00	2.50	14.00	18.00	8.00	4.00	PRSL0968PI
10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00	PRSL0912PI
10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00	PRSL0913PI
10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0914PI
11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00	PRSL0917PI
12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00	PRSL0916PI
12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	3.90	21.50	23.50	10.00	7.00	PRSL0918PI
12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00	PRSL0911PI
12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0944PI

Measuring unit: mm

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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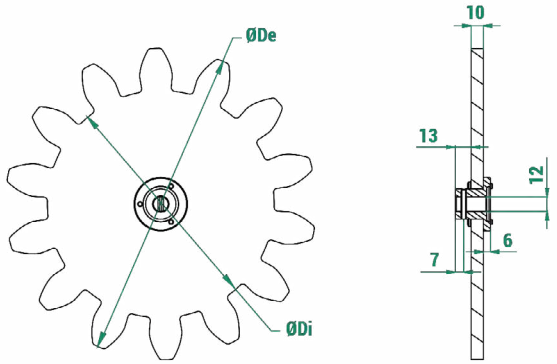
BASE - ACCESSORY PARTS

Waterjet Cut Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	Alpha	SCC Part No.
8	18.00	144.00	180.00	102.00	18.00	21.00	20.00	PRSL0857PI
8	24.00	192.00	240.00	136.00	24.00	28.00	20.00	PRSL0855PI
9	10.00	90.00	110.00	66.67	10.00	11.67	20.00	PRSL0992PI
9	16.00	144.00	176.00	106.67	16.00	18.67	20.00	PRSL0879PI
9	18.00	162.00	198.00	120.00	18.00	21.00	20.00	PRSL0854PI
9	20.00	180.00	220.00	133.33	20.00	23.33	20.00	PRSL0871PI
9	24.00	216.00	264.00	160.00	24.00	28.00	20.00	PRSL0849PI
10	10.00	100.00	120.00	76.67	10.00	11.67	20.00	PRSL0846PI
10	18.00	180.00	216.00	138.00	18.00	21.00	20.00	PRSL0993PI
10	22.00	220.00	264.00	168.52	22.00	25.74	20.00	PRSL0970PI
10	24.00	240.00	288.00	18.00	24.00	28.00	20.00	PRSL0856PI
11	12.00	132.00	156.00	104.00	12.00	14.00	20.00	PRSL0861PI
11	18.00	198.00	234.00	156.00	18.00	21.00	20.00	PRSL0998PI
11	20.00	220.00	260.00	173.36	20.00	23.32	20.00	PRSL0997PI
11	24.00	264.00	312.00	204.00	24.00	30.00	20.00	PRSL0859PI
12	14.00	168.00	196.00	133.00	14.00	17.50	20.00	PRSL0863PI
12	16.00	192.00	224.00	154.67	16.00	18.67	20.00	PRSL0897PI
12	18.00	216.00	252.00	173.88	18.00	21.06	20.00	PRSL0972PI
12	20.00	240.00	280.00	193.34	20.00	23.32	20.00	PRSL0845PI
12	24.00	288.00	336.00	232.00	24.00	28.00	20.00	PRSL0878PI
13	6.00	78.00	90.00	63.00	6.00	7.50	20.00	PRSL0860PI
13	12.00	156.00	178.59	126.00	11.29	15.00	20.00	PRSL0853PI
13	16.00	208.00	240.00	170.67	16.00	18.66	20.00	PRSL0898PI
14	10.00	140.00	169.00	125.00	15.00	7.50	20.00	PRSL0862PI
14	16.00	224.00	256.00	186.67	16.00	18.67	20.00	PRSL0896PI
14	18.00	252.00	288.00	210.00	18.00	21.00	20.00	PRSL0999PI
14	20.00	280.00	320.00	233.33	20.00	23.33	20.00	PRSL0848PI
15	18.00	270.00	306.00	228.00	18.00	21.00	20.00	PRSL0858PI
16	20.00	320.00	360.00	273.33	20.00	23.33	20.00	PRSL0847PI
17	10.00	170.00	190.00	145.00	10.00	12.50	22.89	PRSL0973PI
17	14.00	238.00	266.00	203.00	14.00	17.50	22.89	PRSL0974PI
20	6.00	120.00	132.00	105.00	6.00	7.50	22.89	PRSL0851PI
25	1.00	25.00	27.00	22.50	1.00	1.25	22.89	PRSL0844PI

Measuring unit: mm

BASE REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions
(See next page for list of components and legends)

1. **Version**: tick the required version.
   ATTENTION: Limit switches with sets of 5/6 switches PRSL0003XX/PRSL0011XX/ PRSL0017XX/PRSL0195XX or of 2 switches PRSL0455PI are available only with protection degree IP 66 / IP 67 / IP 69K and with a special cover, or in the IP 00 version without cover. These configurations are not cURus certified.
   Limit switches with switches PRSL0455PI are not EAC nor cURus certified.
2. **Standard cam set**: write the code of the cam set required.
3. **Customized cam set**: for non standard cam sets, fill in the scheme choosing the cams and the switches required. In case switch PRSL0455PI is required, it is possible to use max two switch.
   Customized cams are available on request.
4. **Version with anti-moisture plug**: tick when the anti-moisture plug is required.
   ATTENTION: Limit switches with anti-moisture pluga are not cURus certified.
5. **Cover holding wire:** tick when the cover holding wire is required.
6. **Revolution ratio**: write the required revolution ratio.
7. **Shaft**: tick the shaft type required.
   Customized shafts are available on request.
8. **Coupling, flange, pinion gear**: tick the box when coupling, flange or pinion gear are required.
   When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.

Version 1

☐ IP00 (without cover) CE EAC

☐ IP42 CE EAC

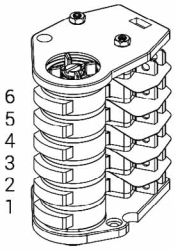
☐ IP66 / IP67 / IP69K CE EAC cULus

Standard cam set 2

Cam set code

_____

Customized cam set 3



Cam code	Switch code
6 _____	_____
5 _____	_____
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Version with anti-moisture plug 4

☐

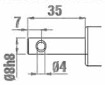
Cover holding wire 5

☐

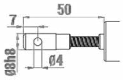
Revolution ratio 6

☐ 1:15	☐ 1:75
☐ 1:20	☐ 1:100
☐ 1:25	☐ 1:150
☐ 1:50	☐ 1: _____

☐ **Standard shaft** 7



☐ **Flexible shaft**



☐ **Male coupling** 8

☐ **Female coupling**

☐ **Coupling**

☐ **12 mm high flange**

☐ **22 mm high flange**

☐ **Pinion gear**

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

Notes

_____

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BASE REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

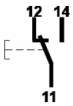
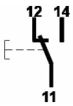
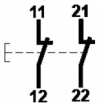
2 Legend - Standard Cam Sets

No. & types of switches	No & type of cams	SCC Part No.
1 x PRSL0455PI	1 cam A	PRFC0101PEC
2 x PRSL0003XX	2 cams A	PRFC0008PEC
	2 cams C	PRFC0009PEC
3 x PRLS0003XX	3 cams A	PRFC0004PEC
	3 cams C	PRFC0006PEC
4 x PRLS0003XX	4 cams A	PRFC0202PEC
	4 cams C	PRFC0198PEC

3 Legend - Standard Cams

Cam			Switching angle	SCC Part No.
A		1 point	20.5° ±0.5°	PRSL7140PI
B		10 points	14.0° ±0.5°	PRSL7142PI
C		60° sector	78.0° ±0.5°	PRSL7141PI
E		180° sector	199.5° ±0.5°	PRSL7144PI
H		335° sector	344.0° ±0.5°	PRSL7143PI

Legend - Switches

Types of switches	Auxiliary control				Direct control
	PRSL0003XX	PRSL0011XX	PRSL0017XX	PRSL0195XX	PRSL0455PI
Utilisation category	AC 15 - B300	AC 15 - B300	AC 15 - C300	AC 15 - C300	AC 3
Connections	6.3 mm Faston taps	Screw-type terminals	Screw-type terminals	6.3 mm Faston Taps	Screw-type terminals
Contacts	1NO+1NC	1NO+1NC	1NO+1NC 	1NO+1NC 	2NC 

FOX

ROTARY LIMIT SWITCH

The **FOX** rotary gear limit switch is durable yet compact with a 1/2" (12 mm) shaft size. Gear ratios from 1:3 to 1:2870 are available and it can be fitted with up to 5 switches as well as potentiometers or encoders. It features a worm gear transmission shaft rotating on ball bearings inside a techno polymer housing. It can also be used with a universal mounting plate to directly replace rotary limit switches from other manufacturers or previous & obsolete models from Springer Controls.

Features

- Consists of a gear motor that transfers movement to the cams and the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: IP66, IP67 and IP69K.
- NEMA protection degree: Type 4X*.
- Extreme temperature resistance: -40°F to +176°F (-40°C to +80°C).
- Features transmission and gear driving shafts made of stainless steel AISI 430F or AISI 303. worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:3 to 1:2870. achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC change-over contacts or slow action switches with 1NC contact.
- Can be equipped with a cam set (with up to 5 switches) and potentiometers, encoders. Yankee absolute encoders.
- Dedicated cable clamps or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, to improve transpiration for the limit switch while maintaining protection against water.
- Available with flanges, pinions and couplings.
- Plates with universal adapter to replace existing systems.

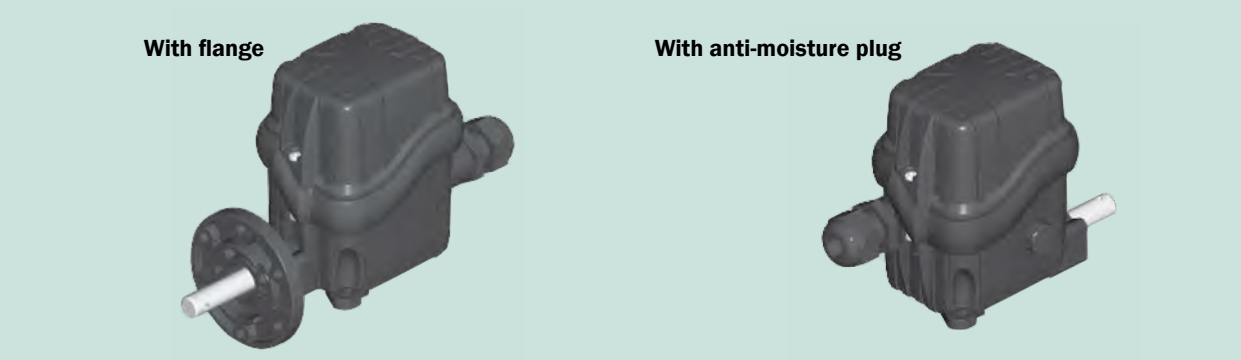
Certifications

- CE marking, cULus* marking and EAC certification.
- Fox is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC61508.
- HALT TEST (Highly Accelerated Life Test) passed. simulating conditions largely exceeding standard operating conditions.

* Not available on all versions

Fill-in the "request form" for a custom product configuration

Possible Assemblies



Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
HALT TEST	Highly Accelerated Life Test, simulation of conditions largely exceeding the standard operating conditions (date available on request).
Markings and Homologations	CE, cULus*, EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +176°F (-40°C / +80°C)
	Operational: -40°F / +176°F (-40°C / +80°C)
IP protection degree	IP66 / IP67 / IP69K
NEMA protection degree	Type 4X*
Insulation category	Class II
Maximum rotation speed	Revolution ratios ≥ 1:16: max. 800 rpm
	Revolution ratios < 1:16: max. 200 rpm
	Revolution ratios = 1:50 amd 1:100: max. 1500 rpm
Cable entry	Cable clamp M20
	Cable clamp M20+M16
	Cable clamp M20+M20
Shafts	Stainless steel AISI 430F (version not cULus)
	Stainless steel AISI 303

* Not available on all versions

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SPECIFICATIONS FOR FOX

Technical Specifications — Switches

SCC Part No. →	PRSL0110XX	PRSL0111XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL(c)UL: use 140°F or 167°F (60°C or 75°C) copper (CU) conductors and stiff or flexible wire 14-22 AWG)	
Tightening torque	0.5 Nm	
Microswitch type	Double break, snap action	Double break, slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE, UL, EAC	

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PA020001	PA020002
Ohmic value	MCB 10 kΩ	10 kΩ mechanical stop
Resolution	Infinite	
Independent linearity	± 1%	
Life time	10 x 10^6 movements	
Operational ambient temperature	-67°F / +221°F (-55°C / +105°C)	
Continuous rotation (without stop)	360°	
Continuous rotation (with stop)	333° ±5°	
Actual electrical angle	310° ±5°	
Ohmic value tolerance	±20%	

SCC Part No. → Potentiometer with support	PA020003	PA020004	PA020005
Ohmic value	10 kΩ	10 kΩ	5 kΩ
Connections	4 turrets	3 turrets	4 turrets
Independent linearity (over AEA -3°)	≤± 1%	≤± 0.35%	≤± 1%
Life time	5 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	340° ±5°		
Ohmic value tolerance	Max ±20% at 68°F (20°C)	Max ±10% at 68°F (20°C)	Max ±20% at 68°F (20°C)

Technical Specifications — Encoders

SCC Part No. → with support	PA030001	PA030002
Resolution	36 pulses/rev.	150 pulses/rev.
Operational ambient temperature	-40°F / +185°F (-40°C / +85°C)	
Code	Incremental	
Supply voltage	4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load)	
Output voltage	Low: 500 mV max. at 10 mA High: (Vin – 0.6) at -10 mA (Vin – 1.3) at -25mA	
Output current	25 mA max. load per output channel	
Phase sense	A leads B clockwise (CW) from the mounting end of the encoder	
Accuracy	+/- 0.8 arc-min	
Outputs	Push pull	
Electrical protection	Protection against reverse polarity and output short-circuit	

Certifications — Absolute Encoder Yankee

Conformity to Community Directives	2014/30/UE Low Electromagnetic Compatibility (EMC) Directive
	2006/42/CE Machinery Directive
	2014/35/UE Low Voltage Directive (LVD)
Conformity to CE Standards	EN 601326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE c UL us

General Technical Specifications — Absolute Encoder Yankee

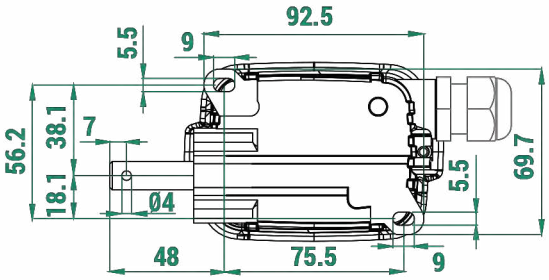
Ambient temperature	Storage:	-40°F / +176°F (-40°C / +80°C)
	Operational:	-40°F / +176°F (-40°C / +80°C)
IP protection degree	IP20	
Free rotation	360°	
Maximum rotation speed	800 rpm	

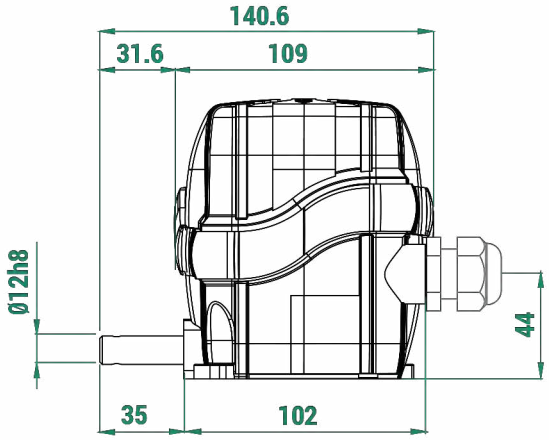
Electrical Specifications — Absolute Encoder Yankee

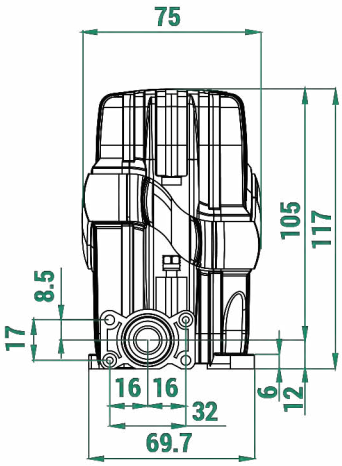
SCC Part No. →	PA01AA01	PA01AB01	PA01AC01
Analog output	Current 4 ÷ 20 mA	Voltage 0 ÷ 10 V	PWM 0 ÷ 100%
Power supply	12 ÷ 48 Vdc / 12 ÷ 48 Vac		
Protection against reverse polarity	Yes		
Absorption	50 mA		
Resolution	12 bit		
Linearity	+/- 0.5°		
Max hysteresis	0.1°		
Zero Point setting	Through button/wire		
Signal increment direction	CW (standard) / CCW (on request)		
Connections	Terminal board		
Terminal wires	0.14 mm^2 - 1.5 mm^2		
Terminal tightening torque	0.22 Nm - 0.25 Nm		

FOX - OVERALL DIMENSIONS (mm)

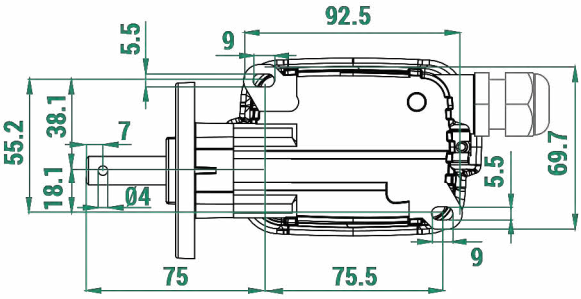
Standard





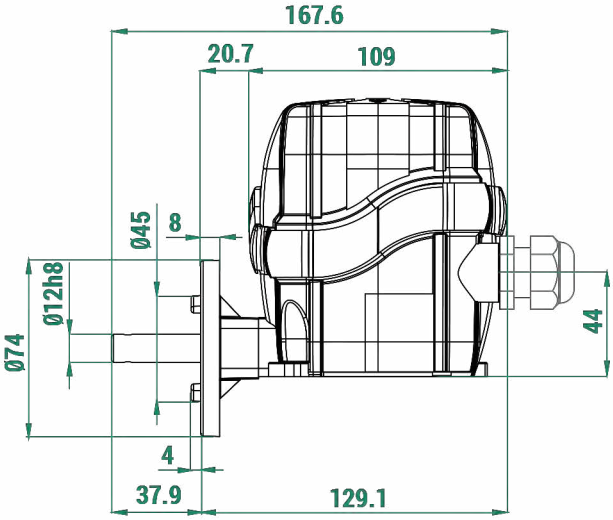


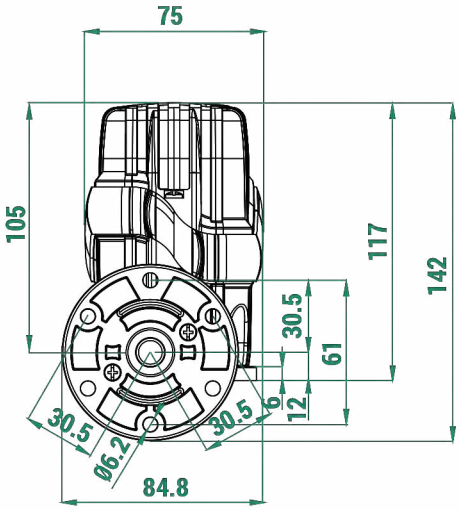
With flange



1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4



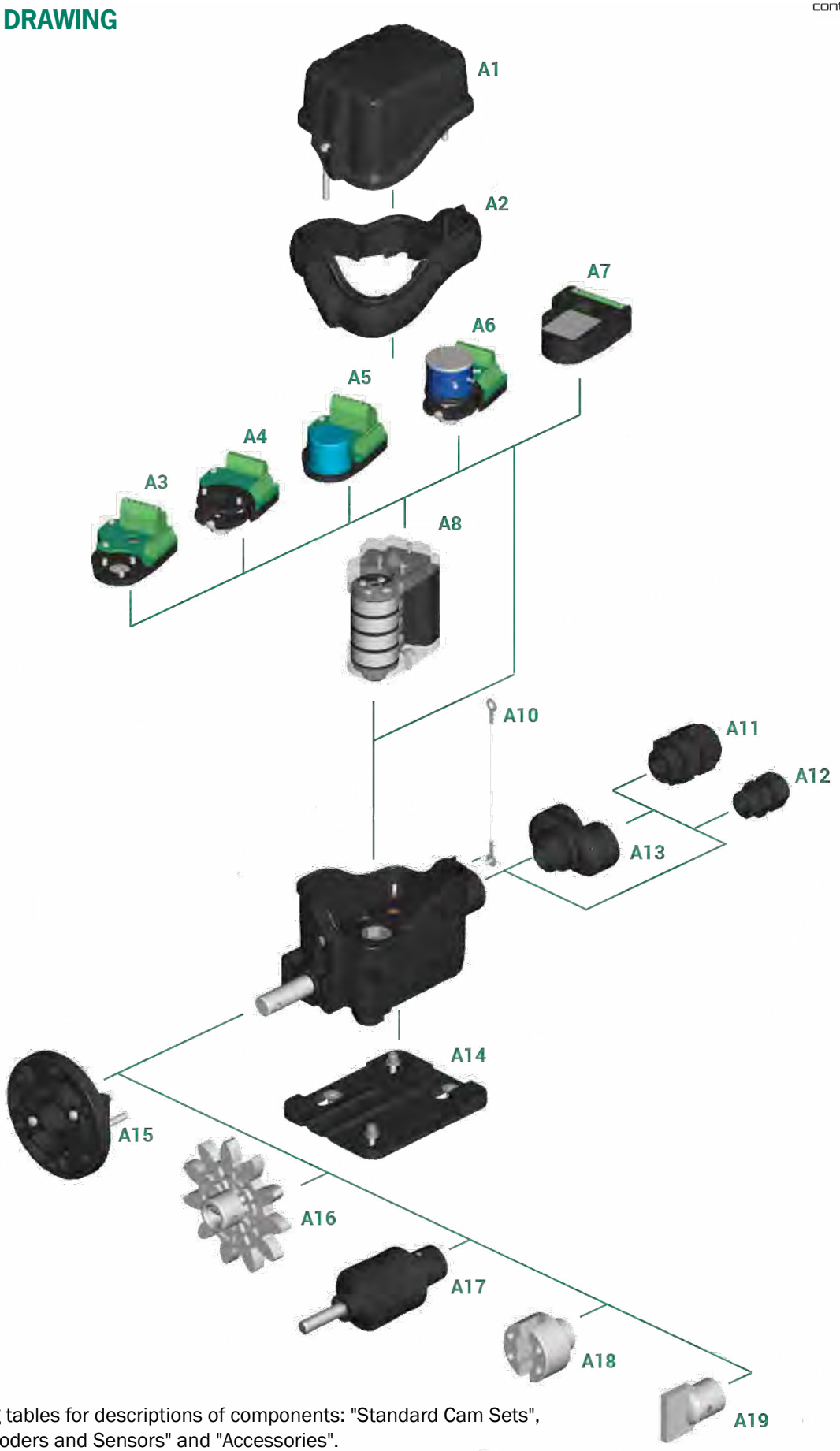


STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI and shafts made of stainless steel AISI 430F.
Standard limit switches are not cULus certified.

			Switches	
Rated Revolution Ratio	**Real Revolution Ration**	**No. of Cams and Switches**	**PRSL0110XX 1NO+1NC** (snap-action)	**PRSL0111XX 1NC** (slow-action)
			SCC Part No.	
1:15	1:16	2	PFB9067L0016010	PFB9067L0016012
		3	PFB9067L0016011	PFB9067L0016013
		4	PFB9067L0016008	PFB9067L0016014
1:20	1:20.21	2	PFB9067L0020006	PFB9067L0020008
		3	PFB9067L0020007	PFB9067L0020009
		4	PFB9067L0020004	PFB9067L0020010
1:25	1:27.27	2	PFB9067L0027007	PFB9067L0027017
		3	PFB9067L0027016	PFB9067L0027018
		4	PFB9067L0027014	PFB9067L0027019
1:50	1:62	2	PFB9067L0062033	PFB9067L0062045
		3	PFB9067L0062044	PFB9067L0062046
		4	PFB9067L0062003	PFB9067L0062025
1:75	1:75.48	2	PFB9067L0075008	PFB9067L0075010
		3	PFB9067L0075009	PFB9067L0075004
		4	PFB9067L0075006	PFB9067L0075011
1:100	1:103.44	2	PFB9067L0103037	PFB9067L0103038
		3	PFB9067L0103049	PFB9067L0103027
		4	PFB9067L0103030	PFB9067L0103050
1:150	1:162.52	2	PFB9067L0162007	PFB9067L0162008
		3	PFB9067L0162006	PFB9067L0162009
		4	PFB9067L0162003	PFB9067L0162002
1:200	1:222.58	2	PFB9067L0222011	PFB9067L0222014
		3	PFB9067L0222013	PFB9067L0222015
		4	PFB9067L0222010	PFB9067L0222016
1:250	1:254.57	2	PFB9067L0254019	PFB9067L0254010
		3	PFB9067L0254020	PFB9067L0254021
		4	PFB9067L0254008	PFB9067L0254022

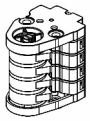
FOX ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard Cam Sets", "Potentiometers, Encoders and Sensors" and "Accessories".

FOX - ACCESSORY PARTS

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A8		2 cams A	2 PRSL0110XX switches	FCL20001
		2 cams A	2 PRSL0111XX switches	FCL20002
		Cams A+C	2 PRSL0110XX switches	FCL20003
		Cams A+C	2 PRSL0111XX switches	FCL20004
		2 cams C	2 PRSL0110XX switches	FCL20005
		2 cams C	2 PRSL0111XX switches	FCL20006
		Cams D+D+B+F	4 PRSL0110XX switches	FCL40001
		Cams D+D+B+F	4 PRSL0111XX switches	FCL40002
		4 cams A	4 PRSL0110XX switches	FCL40003
		4 cams A	4 PRSL0111XX switches	FCL40004
		Cams A+A+C+C	4 PRSL0110XX switches	FCL40005
		Cams A+A+C+C	4 PRSL0111XX switches	FCL40006
		4 cams C	4 PRSL0110XX switches	FCL40007
		4 cams C	4 PRSL0111XX switches	FCL40008
		Cams C+C+C+E	4 PRSL0110XX switches	FCL40009
		Cams C+C+C+E	4 PRSL0111XX switches	FCL40010
		Cams A+A+E+E	4 PRSL0110XX switches	FCL40011
		Cams A+A+E+E	4 PRSL0111XX switches	FCL40012

Other sets with 2/3/4 or 5 cams/switches are available upon request.

Cam Reference Chart

Cam		Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A	1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B	10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C	60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D	72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E	180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F	305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

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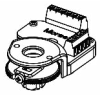
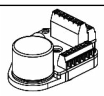
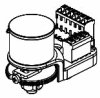
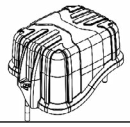
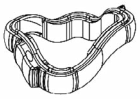
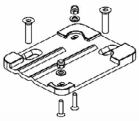
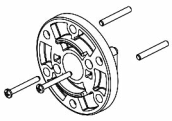
FOX - ACCESSORY PARTS

Potentiometers, Encoders and Sensors

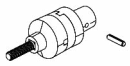
Ref.	Drawing	Description	SCC Part No.
A3		Support for encoder	PA030000
A4		Support for potentiometer	PA020000
A5		Encoder 36 pulses./rev. with support	PA030001
		Encoder 150 pulses. / rev. with support	PA030002
A6		Potentiometer MCB 10 kΩ with support	PA020001
		Potentiometer 10 kΩ mechanical stop with support	PA020002
		Potentiometer 10 kΩ ± 10% 4 pins with support	PA020003
		Potentiometer 10 kΩ ± 10% 3 pins with support	PA020004
		Potentiometer 5 kΩ ± 10% with support	PA020005
A7		Absolute encoder Yankee - current output	PA01AA01
		Absolute encoder Yankee - voltage output	PA01AB01
		Absolute encoder Yankee - PWM output	PA01AC01

Accessories

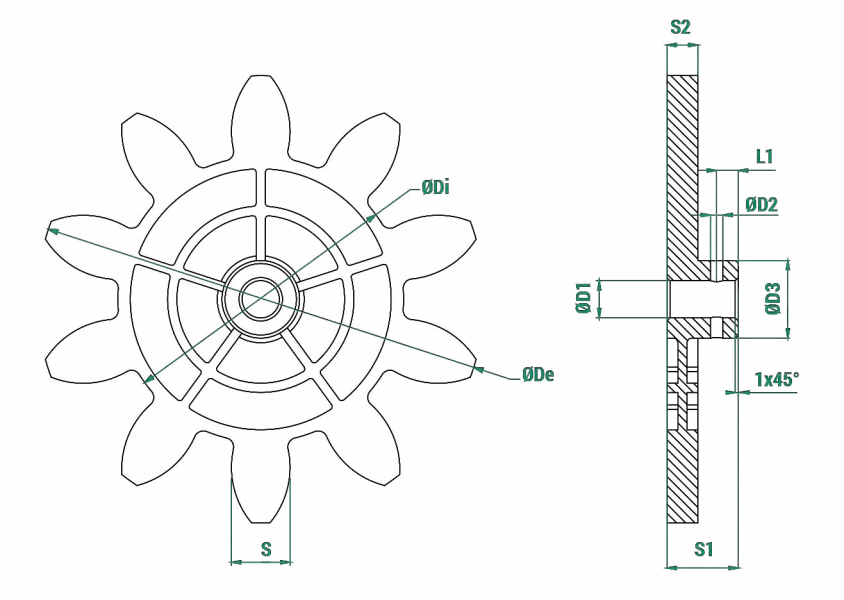
Ref.	Drawing	Description	SCC Part No.
A1		Cover with screws	PA090017
A2		Tightening rubber	PRGU1500PE
A10		Cover holding wire + screws (bag of 10)	PRSL0358PI
A11		Cable clamp M20	PRPS0064PE
A12		Cable clamp M16	PRPS0062PE
A13		Cable clamp holder with 2 outputs M20	PRSL9051PI
		Cable clamp holder with 2 outputs M20+M16	PRSL9052PI
A14		Fixing plate	PRSL0430PI
A15		Flange with screws and pins	PRSL0356PI

FOX - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A16		Pinion gear	See pinion gear tables
A17		Coupling with pin	PRSL0981PI
A18		Female coupling with pin	PRSL0920PI
A19		Male coupling with pin	RSL0919PI

Moulded Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1	SCC Part No.
8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0915PI
10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00	PRSL0912PI
10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00	PRSL0913PI
10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0914PI
11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00	PRSL0917PI
12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00	PRSL0916PI
12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	3.90	21.50	23.50	10.00	7.00	PRSL0918PI
12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00	PRSL0911PI
12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0944PI

Measuring unit: mm

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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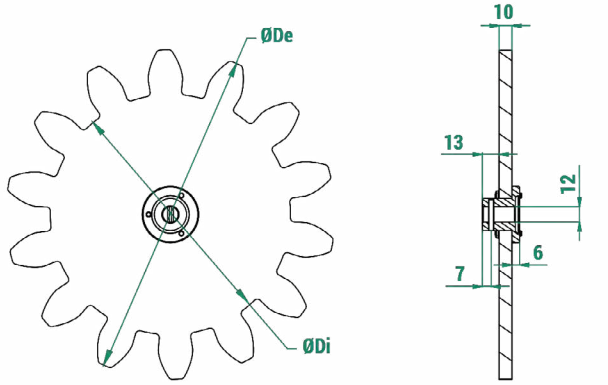
FOX - ACCESSORY PARTS

Waterjet Cut Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	Alpha	SCC Part No.
8	18.00	144.00	180.00	102.00	18.00	21.00	20.00	PRSL0857PI
8	24.00	192.00	240.00	136.00	24.00	28.00	20.00	PRSL0855PI
9	10.00	90.00	110.00	66.67	10.00	11.67	20.00	PRSL0992PI
9	16.00	144.00	176.00	106.67	16.00	18.67	20.00	PRSL0879PI
9	18.00	162.00	198.00	120.00	18.00	21.00	20.00	PRSL0854PI
9	20.00	180.00	220.00	133.33	20.00	23.33	20.00	PRSL0871PI
9	24.00	216.00	264.00	160.00	24.00	28.00	20.00	PRSL0849PI
10	10.00	100.00	120.00	76.67	10.00	11.67	20.00	PRSL0846PI
10	18.00	180.00	216.00	138.00	18.00	21.00	20.00	PRSL0993PI
10	22.00	220.00	264.00	168.52	22.00	25.74	20.00	PRSL0970PI
10	24.00	240.00	288.00	18.00	24.00	28.00	20.00	PRSL0856PI
11	12.00	132.00	156.00	104.00	12.00	14.00	20.00	PRSL0861PI
11	18.00	198.00	234.00	156.00	18.00	21.00	20.00	PRSL0998PI
11	20.00	220.00	260.00	173.36	20.00	23.32	20.00	PRSL0997PI
11	24.00	264.00	312.00	204.00	24.00	30.00	20.00	PRSL0859PI
12	14.00	168.00	196.00	133.00	14.00	17.50	20.00	PRSL0863PI
12	16.00	192.00	224.00	154.67	16.00	18.67	20.00	PRSL0897PI
12	18.00	216.00	252.00	173.88	18.00	21.06	20.00	PRSL0972PI
12	20.00	240.00	280.00	193.34	20.00	23.32	20.00	PRSL0845PI
12	24.00	288.00	336.00	232.00	24.00	28.00	20.00	PRSL0878PI
13	6.00	78.00	90.00	63.00	6.00	7.50	20.00	PRSL0860PI
13	12.00	156.00	178.59	126.00	11.29	15.00	20.00	PRSL0853PI
13	16.00	208.00	240.00	170.67	16.00	18.66	20.00	PRSL0898PI
14	10.00	140.00	169.00	125.00	15.00	7.50	20.00	PRSL0862PI
14	16.00	224.00	256.00	186.67	16.00	18.67	20.00	PRSL0896PI
14	18.00	252.00	288.00	210.00	18.00	21.00	20.00	PRSL0999PI
14	20.00	280.00	320.00	233.33	20.00	23.33	20.00	PRSL0848PI
15	18.00	270.00	306.00	228.00	18.00	21.00	20.00	PRSL0858PI
16	20.00	320.00	360.00	273.33	20.00	23.33	20.00	PRSL0847PI
17	10.00	170.00	190.00	145.00	10.00	12.50	22.89	PRSL0973PI
17	14.00	238.00	266.00	203.00	14.00	17.50	22.89	PRSL0974PI
20	6.00	120.00	132.00	105.00	6.00	7.50	22.89	PRSL0851PI
25	1.00	25.00	27.00	22.50	1.00	1.25	22.89	PRSL0844PI

Measuring unit: mm

FOX - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next page for list of components and legends)

1. **Version:** tick the required version.
2. **SIL 1 certified**: tick the box if you require SIL 1 certified units.
3. **Revolution ratio**: write the required revolution ratio.
4. **Standard cam set**: write the code of the cam set required.
5. **Customized cam set**: for non standard cam sets, fill in the scheme choosing the cams and the switches required. It is possible to assemble sets with 2, 3, 4 or 5 cams/switches.

   Customized cams are available on request.
6. **Potentiometer. encoder. Yankee**: write the code of the potentiometer, encoder or Yankee required.

   ATTENTION: it is possible to mount a potentiometer or an encoder alone or together with a set of 2 or 3 cams/switches. Potentiometers PA020001 and PA020002 can be mounted only with sets of 2 cams/switches.

   ATTENTION: Yankee may be mouted alone or together with a set of max. 4 cams/switches.
7. **Cable clamp:** tick the cable clamp required.
8. **Coupling, flange, pinion gear:** tick the box when coupling, flange or pinion gear are required.

   When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.

   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
9. **Shaft:** tick the shaft type required.
   Customized shafts are available on request.
10. **Cover holding wire:** tick when the cover holding wire is required.

Version (1)

☐ Version CE EAC

☐ Version cULus CE EAC

☐ Version with anti-moisture plug CE EAC

ATTENTION: Limit switches with shafts made of stainless steel AISI 430F are not cULus certified.

☐ SIL1 certified (2)

Revolution ratio (3)

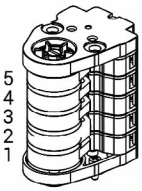
☐ 1:15	☐ 1:150
☐ 1:20	☐ 1:200
☐ 1:25	☐ 1:250
☐ 1:50	☐ 1:300
☐ 1:75	☐ 1:450
☐ 1:100	☐ 1: ____

Standard cam set (4)

Cam set code

_____

Customized cam set (5)



Cam code	Switch code
5 _____	_____
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Potentiometer. encoder. Yankee (6)

Code _____

Cable clamp (7)

☐ M20 ☐ M20+M16

☐ M20+M20

☐ **Male coupling** ☐ **Coupling** (8)

☐ **Female coupling** ☐ **Flange**

☐ **Pinion gear**

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

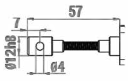
Primitive diameter _____

Standard shaft (9)

☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

Flexible shaft



☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

Cover holding wire (10)

☐

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FOX - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

4 Legend - Standard Cam Sets

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0110XX	2 cams A	FCL20001
	Cams A+C	FCL20003
	2 cams C	FCL20005
4 x PRSL0110XX	Cams D+D+B+F	FCL40001
	4 cams A	FCL40003
	Cams A+A+C+C	FCL40005
	4 cams C	FCL40007
	Cams C+C+C+E	FCL40009
	Cams A+A+E+E	FCL40011
2 x PRSL0111XX	2 cams A	FCL20002
	Cams A+C	FCL20004
	2 cams C	FCL20006
4 x PRSL0111XX	Cams D+D+B+F	FCL40002
	4 cams A	FCL40004
	Cams A+A+C+C	FCL40006
	4 cams C	FCL40008
	Cams C+C+C+E	FCL40010
	Cams A+A+E+E	FCL40012

6 Legend - Potentiometers, Encoders and Yankee

Description	SCC Part No.
Potentiometer MCB 10 kΩ with support	PA020001
Potentiometer 10 kΩ mechanical stop with support	PA020002
Potentiometer 10 kΩ ±10% 4 pins with support	PA020003
Potentiometer 10 kΩ ±10% 3 pins with support	PA020004
Potentiometer 5kΩ ±10% with support	PA020005
Encoder 36 pulses./rev. with support	PA030001
Encoder 150 pulses./rev. with support	PA030002
Yankee - current output	PA01AA01
Yankee - voltage output	PA01AB01
Yankee - PWM output	PA01AC01

5 Legend - Switches

PRSL00110XX	PRSL0111XX
1NO+1NC	1NC

5 Legend - Standard Cams

Cam			Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A		1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B		10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C		60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D		72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E		180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F		305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

OSCAR

ROTARY LIMIT SWITCH

The **OSCAR** rotary gear limit switch is used in a wide variety of applications from wind turbines to controlling the movement of a variety of industrial machines. Gear ratios from 1:1 to 1:1550 are available and features two separate outputs that can be set to different gear ratios to perform separate operations at different points in the movement. Up to 12 total switches, as well as potentiometers and encoders can be used with the OSCAR. The shaft diameter is 1/2" (12 mm). The unit is IP67 with a durable polycarbonate cover.

Features

- Consists of a gear motor that transfers movement to the cams and the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages.
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Oscar is classified IP66, IP67 and IP69K.
- NEMA protection degree: Oscar is classified Type 4X*.
- Extreme temperature resistance: -63.4°F to +176°F (-53°C to +80°C).
- Features transmission and gear driving shafts made of stainless steel AISI 430F or AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:1 to 1:1550, achieved by combining different secondary output stages.
- Each of the two outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap action switches with 1NO+1NC change-over contacts or slow action switches with 1 NC contact.
- It can be equipped with 2 cam sets (with up to 10 switches), potentiometers and encoders (alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 3 switches).
- XL version featuring cover rise available with 2 cam sets (with up to 12 switches), potentiometers and encoders (alone or on top of cam sets with up to 5 switches) and Yankee absolute encoders (on top of cam sets with up to 6 switches).
- Dedicated cable clamps or connectors.
- Available with anti-moisture plug fitted to the base by means of a lock nut, to improve transpiration for the limit switch while maintaining protection against water
- Available with flanges, pinions and couplings.
- Plates with universal adapter to replace existing systems.

Certifications

- CE marking, cULus* marking and EAC certification.
- Oscar is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC61508.
- HALT TEST (Highly Accelerated Life Test) passed. simulating conditions largely exceeding standard operating conditions.

* Not available on all versions

Fill-in the "request form" for a custom product configuration

Possible Assemblies

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
SIL1	IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical/electronic/ programmable electronic safety-related systems.
HALT TEST	Highly Accelerated Life Test, simulation of conditions largely exceeding the standard operating conditions (date available on request).
Markings and Homologations	CE cULus* EAC*

General Technical Specifications

Ambient temperature	Storage: -63.4°F / +176°F (-53°C / +80°C)
	Operational: -63.4°F / +176°F (-53°C / +80°C)
IP protection degree	IP66 / IP67 / IP69K
	IP66 / IP67 (version with cover rise)
NEMA protection degree	Type 4X*
Insulation category	Class II
Maximum rotation speed	800 rpm (Output 1 > 1:22, Output 2 > 1:22 or = 1:1)
	200 rpm (Output 1 ≤ 1:22, Output 2 ≤ 1:22 or = 1:1)
Cable entry	Cable clamp M20 - M16 (8 max)
Shafts	Stainless steel AISI 430F (version not cULus)
	Stainless steel AISI 303

* Not available on all versions

SPECIFICATIONS FOR OSCAR

Technical Specifications — Switches

SCC Part No. →	PRSL0110XX	PRSL0111XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL(c)UL: use 140°F or 167°F (60°C or 75°C) copper (CU) conductors and stiff or flexible wire 14-22 AWG)	
Tightening torque	0.5 Nm	
Microswitch type	Double break, snap action	Double break, slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

Switches PRSL0100XX available upon request.

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PA020001	PA020002
Ohmic value	MCB 10 kΩ	10 kΩ mechanical stop
Resolution	Infinite	
Independent linearity	± 1%	
Life time	10 x 10^6 movements	
Operational ambient temperature	-67°F / +221°F (-55°C / +105°C)	
Continuous rotation (without stop)	360°	
Continuous rotation (with stop)	333° ±5°	
Actual electrical angle	310° ±5°	
Ohmic value tolerance	±20%	

SCC Part No. → Potentiometer with support	PA020003	PA020004	PA020005
Ohmic value	10 kΩ	10 kΩ	5 kΩ
Connections	4 turrets	3 turrets	4 turrets
Independent linearity (over AEA -3°)	≤± 1%	≤± 0.35%	≤± 1%
Life time	5 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	340° ±5°		
Ohmic value tolerance	Max ±20% at 68°F (20°C)	Max ±10% at 68°F (20°C)	Max ±20% at 68°F (20°C)

SCC Part No. → Potentiometer with support	PA020006	PA020007	PA020008
Ohmic value	4.7 kΩ	Megatron 10 kΩ	2.2 kΩ
Independent linearity (ref. AEA -3°)	± 25%		
Life time	3 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	355° ±5°		
Ohmic value tolerance	±5°		
Temperature drift	< 50 PPM/°C		

SCC Part No. → Potentiometer with support	PA020009
Ohmic value	2 kΩ
Resolution	Better than 0.008°
Linearity	± 0.075%
Independent linearity	± 0.075%
Life time	100 x 10^6 movements
Operational ambient temperature	-40°F / +212°F (-40°C / +100°C)
Mechanical angle	360° continuous
Actual electrical travel	350° ±2°
Ohmic value tolerance	±20%

Technical Specifications — Encoders

SCC Part No. → with support	PA030001	PA030002
Resolution	36 pulses/rev.	150 pulses/rev.
Operational ambient temperature	-40°F / +185°F (-40°C / +85°C)	
Code	Incremental	
Supply voltage	4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load)	
Output voltage	Low: 500 mV max. at 10 mA High: (Vin – 0.6) at -10 mA (Vin – 1.3) at -25mA	
Output current	25 mA max. load per output channel	
Phase sense	A leads B clockwise (CW) from the mounting end of the encoder	
Accuracy	+/- 0.8 arc-min	
Outputs	Push pull	
Electrical protection	Protection against reverse polarity and output short-circuit	

SPECIFICATIONS FOR OSCAR

Certifications — Absolute Encoder Yankee

Conformity to Community Directives	2014/30/UE Low Electromagnetic Compatibility (EMC) Directive
	2006/42/CE Machinery Directive
	2014/35/UE Low Voltage Directive (LVD)
Conformity to CE Standards	EN 601326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE c UL us

General Technical Specifications — Absolute Encoder Yankee

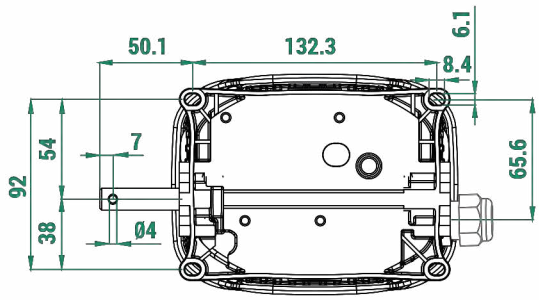
Ambient temperature	Storage:	-40°F / +176°F (-40°C / +80°C)
	Operational:	-40°F / +176°F (-40°C / +80°C)
IP protection degree	IP20	
Free rotation	360°	
Maximum rotation speed	800 rpm	

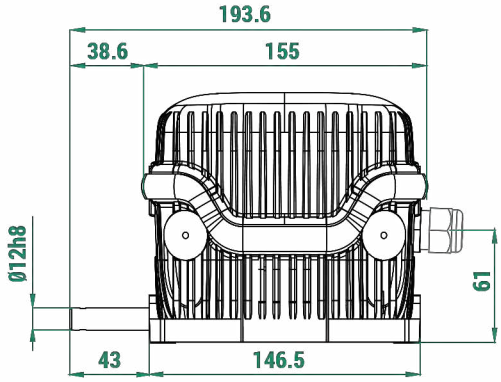
Electrical Specifications — Absolute Encoder Yankee

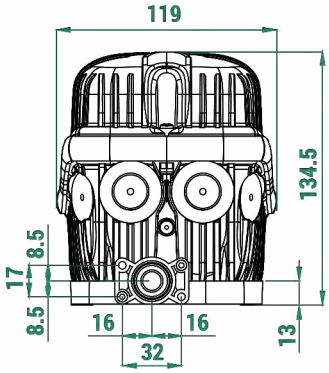
SCC Part No. →	**PA01AA01**	**PA01AB01**	**PA01AC01**
Analog output	Current 4 ÷ 20 mA	Voltage 0 ÷ 10 V	PWM 0 ÷ 100%
Power supply	12 ÷ 48 Vdc / 12 ÷ 48 Vac		
Protection against reverse polarity	Yes		
Absorption	50 mA		
Resolution	12 bit		
Linearity	+/- 0.5°		
Max hysteresis	0.1°		
Zero Point setting	Through button/wire		
Signal increment direction	CW (standard) / CCW (on request)		
Connections	Terminal board		
Terminal wires	0.14 mm^2 - 1.5 mm^2		
Terminal tightening torque	0.22 Nm - 0.25 Nm		

OSCAR - OVERALL DIMENSIONS (mm)

Standard



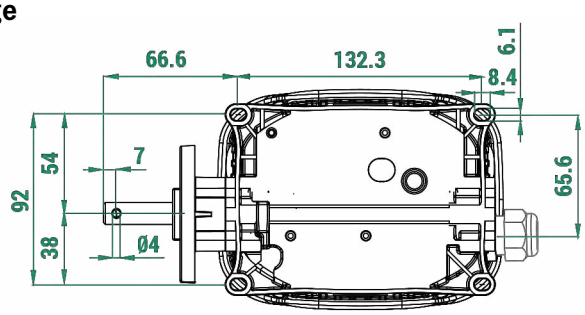


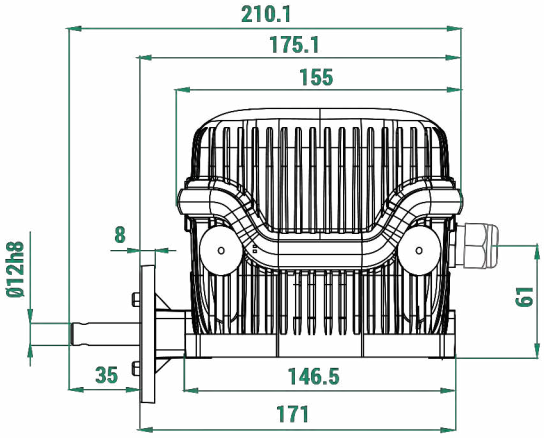


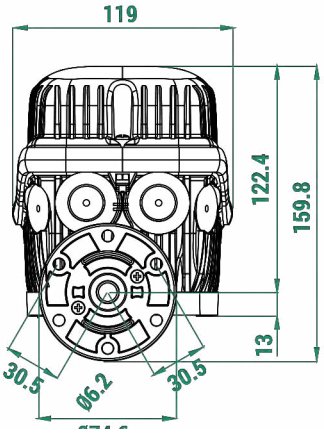
1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

With flange







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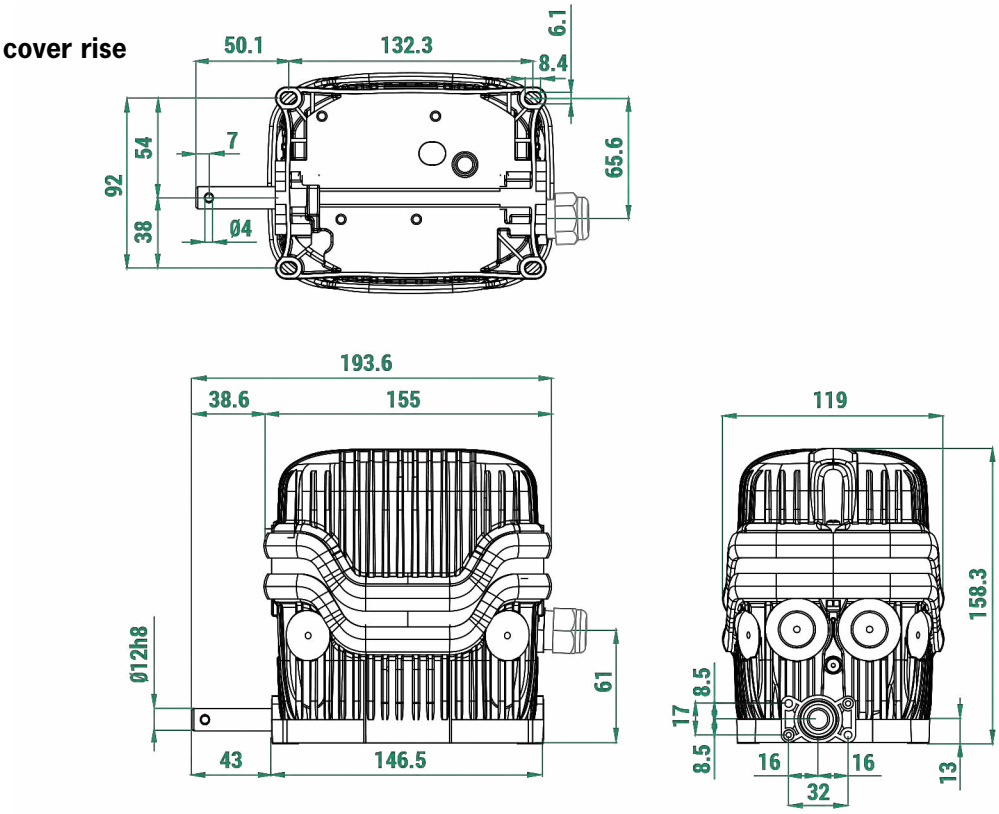
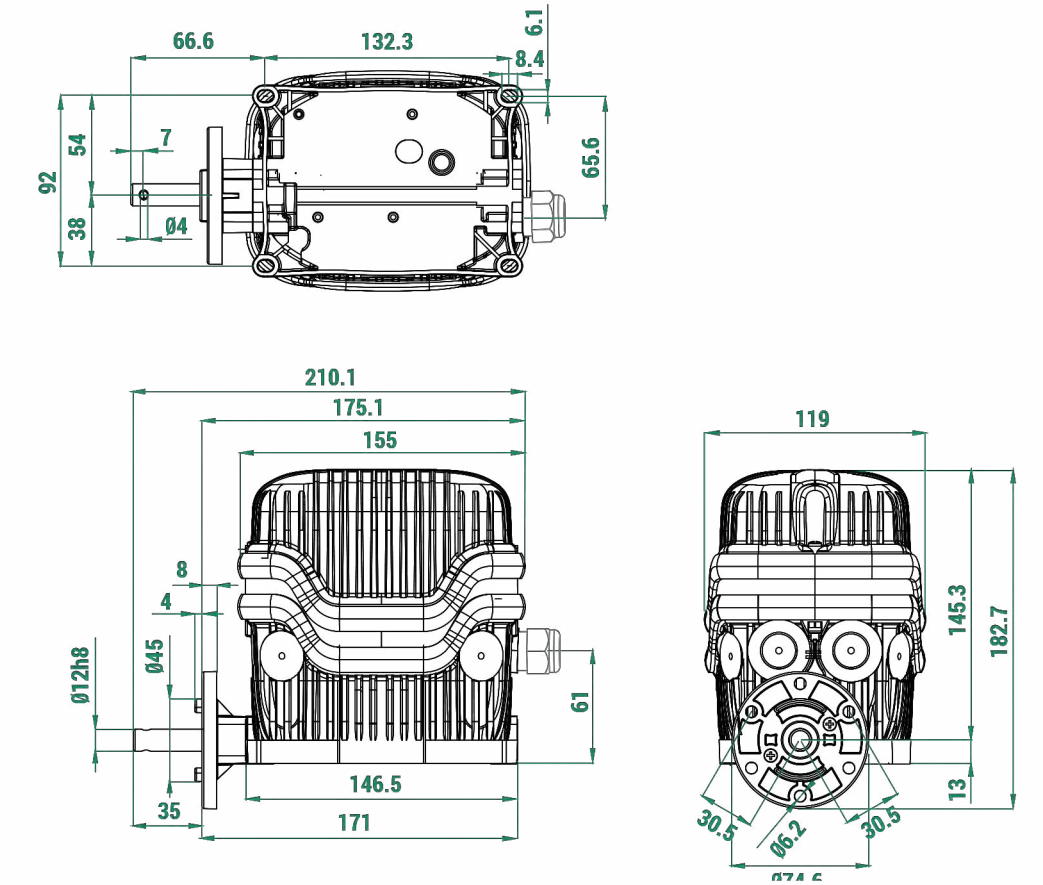
OSCAR - OVERALL DIMENSIONS (mm)

OSCAR XL with cover rise



OSCAR XL with cover rise and flange



STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI and shafts made of stainless steel AISI 430F.
Standard limit switches are not cULus certified.

Output 1 Rated Revolution Ratio	Real Revolution Ration	Output 2 Rated Revolution Ratio	No. of Cams and Switches	Switches	
				PRSL0110XX 1NO+1NC (snap-action)	PRSL0111XX 1NC (slow-action)
				SCC Part No.	
1:1	1:1	1:1	2	PFC9067L0001007	PFC9067L0001013
		1:1	4	PFC9067L0001008	PFC9067L0001012
		1:1	4+2	PFC9067L0001010	PFC9067L0001014
		1:1	4+4	PFC9067L0001011	PFC9067L0001015
1:5	1:5.83	1:5	2	PFC9067L0005007	PFC9067L0005008
		1:1	2	PFC9067L0005009	PFC9067L0005010
		1:5	4	PFC9067L0005011	PFC9067L0005012
		1:1	4	PFC9067L0005013	PFC9067L0005014
		1:5	4+2	PFC9067L0005015	PFC9067L0005016
		1:5	4+4	PFC9067L0005017	PFC9067L0005018
1:10	1:11.66	1:10	2	PFC9067L0011002	PFC9067L0011003
		1:1	2	PFC9067L0011004	PFC9067L0011005
		1:10	4	PFC9067L0011006	PFC9067L0011007
		1:1	4	PFC9067L0011008	PFC9067L0011009
		1:10	4+2	PFC9067L0011010	PFC9067L0011011
		1:10	4+4	PFC9067L0011012	PFC9067L0011013
1:15	1:17	1:15	2	PFC9067L0017005	PFC9067L0017006
		1:1	2	PFC9067L0017007	PFC9067L0017008
		1:15	4	PFC9067L0017009	PFC9067L0017010
		1:1	4	PFC9067L0017011	PFC9067L0017012
		1:15	4+2	PFC9067L0017013	PFC9067L0017014
		1:15	4+4	PFC9067L0017015	PFC9067L0017016
1:20	1:22.15	1:20	2	PFC9067L0022018	PFC9067L0022019
		1:1	2	PFC9067L0022020	PFC9067L0022022
		1:20	4	PFC9067L0022023	PFC9067L0022024
		1:1	4	PFC9067L0022026	PFC9067L0022021
		1:20	4+2	PFC9067L0022027	PFC9067L0022028
		1:20	4+4	PFC9067L0022029	PFC9067L0022030
1:25	1:31.00	1:25	2	PFC9067L0031032	PFC9067L0031033
		1:1	2	PFC9067L0031034	PFC9067L0031035
		1:25	4	PFC9067L0031031	PFC9067L0031036
		1:1	4	PFC9067L0031037	PFC9067L0031038
		1:25	4+2	PFC9067L0031039	PFC9067L0031040
		1:25	4+4	PFC9067L0031041	PFC9067L0031042
1:50	1:62	1:50	2	PFC9067L0062004	PFC9067L0062014
		1:1	2	PFC9067L0062012	PFC9067L0062015
		1:50	4	PFC9067L0062005	PFC9067L0062016
		1:1	4	PFC9067L0062013	PFC9067L0062017
		1:50	4+2	PFC9067L0062006	PFC9067L0062021
		1:50	4+4	PFC9067L0062007	PFC9067L0062022

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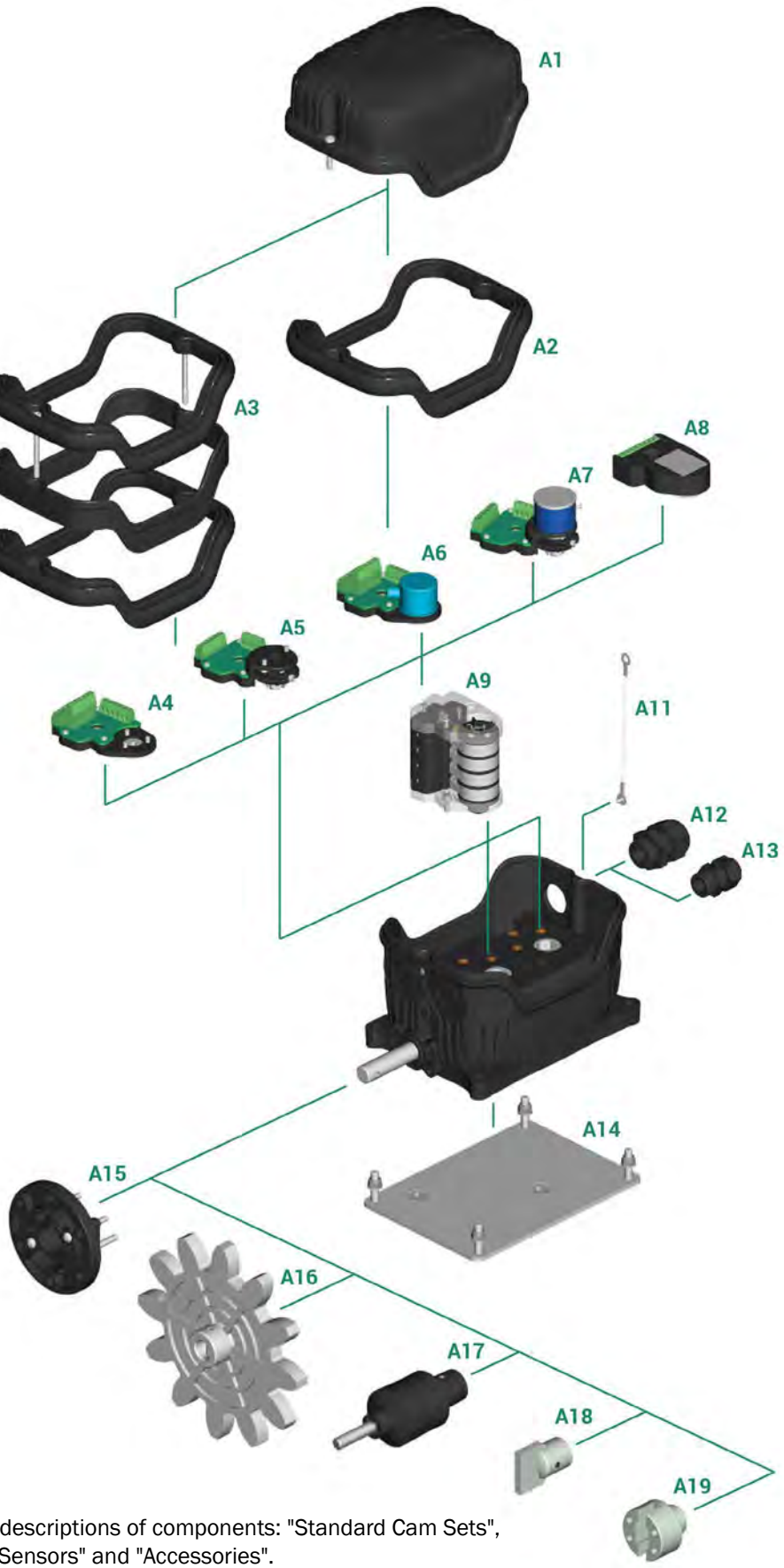
STANDARD LIMIT SWITCHES

Output 1 Rated Revolution Ratio	Real Revolution Ration	Output 2 Rated Revolution Ratio	No. of Cams and Switches	Switches	
				PRSL0110XX 1NO+1NC (snap-action)	PRSL0111XX 1NC (slow-action)
				SCC Part No.	
1:70	1:73.63	1:70	2	PFC9067L0073004	PFC9067L0073009
		1:1	2	PFC9067L0073005	PFC9067L0073010
		1:70	4	PFC9067L0073003	PFC9067L0073011
		1:1	4	PFC9067L0073006	PFC9067L0073012
		1:70	4+2	PFC9067L0073007	PFC9067L0073013
		1:70	4+4	PFC9067L0073008	PFC9067L0073014
1:100	1:107	1:100	2	PFC9067L0107014	PFC9067L0107025
		1:1	2	PFC9067L0107019	PFC9067L0107026
		1:100	4	PFC9067L0107015	PFC9067L0107004
		1:1	4	PFC9067L0107020	PFC9067L0107018
		1:100	4+2	PFC9067L0107016	PFC9067L0107027
		1:100	4+4	PFC9067L0107017	PFC9067L0107028
1:150	1:56.50	1:150	2	PFC9067L0156004	PFC9067L0156011
		1:1	2	PFC9067L0156007	PFC9067L0156012
		1:150	4	PFC9067L0156005	PFC9067L0156013
		1:1	4	PFC9067L0156008	PFC9067L0156014
		1:150	4+2	PFC9067L0156006	PFC9067L0156015
		1:150	4+4	PFC9067L0156009	PFC9067L0156016
1:200	1:214.20	1:200	2	PFC9067L0214004	PFC9067L0214010
		1:1	2	PFC9067L0214006	PFC9067L0214011
		1:200	4	PFC9067L0214005	PFC9067L0214002
		1:1	4	PFC9067L0214007	PFC9067L0214012
		1:200	4+2	PFC9067L0214008	PFC9067L0214013
		1:200	4+4	PFC9067L0214009	PFC9067L0214014
1:250	1:254.30	1:250	2	PFC9067L0254004	PFC9067L0254014
		1:1	2	PFC9067L0254007	PFC9067L0254015
		1:250	4	PFC9067L0254005	PFC9067L0254016
		1:1	4	PFC9067L0254008	PFC9067L0254017
		1:250	4+2	PFC9067L0254009	PFC9067L0254018
		1:250	4+4	PFC9067L0254010	PFC9067L0254019
1:300	1:313	1:300	2	PFC9067L0313023	PFC9067L0313030
		1:1	2	PFC9067L0313025	PFC9067L0313031
		1:300	4	PFC9067L0313024	PFC9067L0313032
		1:1	4	PFC9067L0313026	PFC9067L0313033
		1:300	4+2	PFC9067L0313027	PFC9067L0313034
		1:300	4+4	PFC9067L0313028	PFC9067L0313025
1:450	1:471.20	1:450	2	PFC9067L0471002	PFC9067L0471008
		1:1	2	PFC9067L0471003	PFC9067L0471009
		1:450	4	PFC9067L0471004	PFC9067L0471001
		1:1	4	PFC9067L0471005	PFC9067L0471010
		1:450	4+2	PFC9067L0471006	PFC9067L0471011
		1:450	4+4	PFC9067L0471007	PFC9067L0471012

OSCAR ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard Cam Sets", "Potentiometers, Encoders and Sensors" and "Accessories".

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OSCAR - ACCESSORY PARTS

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A9		2 cams A	2 PRSL0110XX switches	FCL20001
		2 cams A	2 PRSL0111XX switches	FCL20002
		Cams A+C	2 PRSL0110XX switches	FCL20003
		Cams A+C	2 PRSL0111XX switches	FCL20004
		2 cams C	2 PRSL0110XX switches	FCL20005
		2 cams C	2 PRSL0111XX switches	FCL20006
		Cams D+D+B+F	4 PRSL0110XX switches	FCL40001
		Cams D+D+B+F	4 PRSL0111XX switches	FCL40002
		4 cams A	4 PRSL0110XX switches	FCL40003
		4 cams A	4 PRSL0111XX switches	FCL40004
		Cams A+A+C+C	4 PRSL0110XX switches	FCL40005
		Cams A+A+C+C	4 PRSL0111XX switches	FCL40006
		4 cams C	4 PRSL0110XX switches	FCL40007
		4 cams C	4 PRSL0111XX switches	FCL40008
		Cams C+C+C+E	4 PRSL0110XX switches	FCL40009
		Cams C+C+C+E	4 PRSL0111XX switches	FCL40010
		Cams A+A+E+E	4 PRSL0110XX switches	FCL40011
		Cams A+A+E+E	4 PRSL0111XX switches	FCL40012
		5 cams A	5 PRSL0110XX switches	FCL50006
		5 cams A	5 PRSL0111XX switches	FCL50005
		5 cams C	5 PRSL0110XX switches	FCL50001
		5 cams C	5 PRSL0111XX switches	FCL50010
		6 cams A	6 PRSL0110XX switches	FCL60003
		6 cams A	6 PRSL0111XX switches	FCL60006
		6 cams C	6 PRSL0110XX switches	FCL60001
		6 cams C	6 PRSL0111XX switches	FCL60010

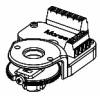
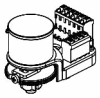
Other sets with 2/3/4/5 or 6 cams/switches are available upon request.

Cam Reference Chart

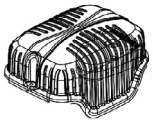
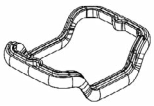
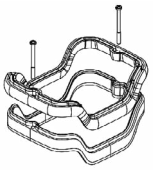
Cam			Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A		1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B		10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C		60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D		72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E		180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F		305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

OSCAR - ACCESSORY PARTS

Potentiometers, Encoders and Sensors

Ref.	Drawing	Description	SCC Part No.
A4		Support for encoder	PA030000
A5		Support for potentiometer	PA020000
A6		Encoder 36 pulses./rev. with support	PA030001
		Encoder 150 pulses./rev. with support	PA030002
A7		Potentiometer MCB 10 kΩ with support	PA020001
		Potentiometer 10 kΩ mechanical stop with support	PA020002
		Potentiometer 10 kΩ ± 10% 4 pins with support	PA020003
		Potentiometer 10 kΩ ± 10% 3 pins with support	PA020004
		Potentiometer 5 kΩ ± 10% with support	PA020005
		Potentiometer 4.7 kΩ with support	PA020006
		Potentiometer Megatron 10 kΩ with support	PA020007
		Potentiometer 2.2 kΩ with support	PA020008
		Potentiometer 2 KΩ with support	PA020009
A8		Absolute encoder Yankee - current output	PA01AA01
		Absolute encoder Yankee - voltage output	PA01AB01
		Absolute encoder Yankee - PWM output	PA01AC01

Accessories

Ref.	Drawing	Description	SCC Part No.
A1		Cover with screws	PA090016
A2		Tightening rubber	PRGU1510PE
A10		Cover rise with tightening rubber and screws	PRSL0703PI
A11		Cover holding wire + screw (bag with 10 pieces)	PRPL0358PI
A12		Cable clamp M20 x 1.5	PRPS0063PE
A13		Cable clamp M16	PRPS0062PE

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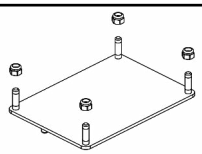
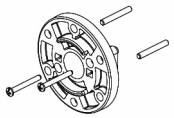
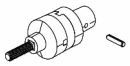
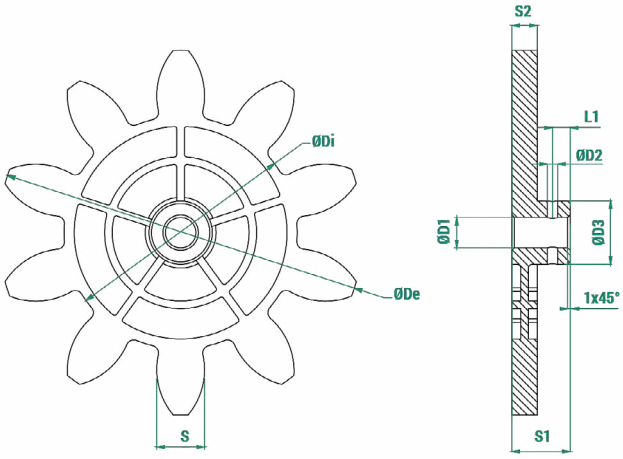
OSCAR - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A14		Fixing plate	PRSL0729PI
A15		Flange with screw and pins	PRSL0356PI
A16		Pinion gear	See pinion gear table
A17		Coupling with pin	PRSL0981PI
A18		Male coupling with pin	PRSL0919PI
A19		Female coupling with pin	PRSL0920PI

Moulded Pinion Gears

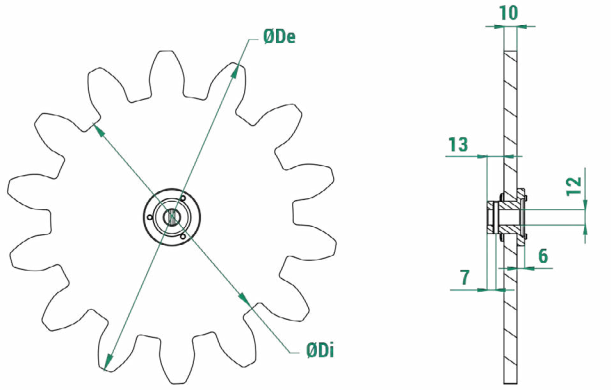


Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1	SCC Part No.
8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0915PI
10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00	PRSL0912PI
10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00	PRSL0913PI
10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0914PI
11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00	PRSL0917PI
12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00	PRSL0916PI
12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	3.90	21.50	23.50	10.00	7.00	PRSL0918PI
12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00	PRSL0911PI
12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0944PI

Measuring unit: mm

Waterjet Cut Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	Alpha	SCC Part No.
8	18.00	144.00	180.00	102.00	18.00	21.00	20.00	PRSL0857PI
8	24.00	192.00	240.00	136.00	24.00	28.00	20.00	PRSL0855PI
9	10.00	90.00	110.00	66.67	10.00	11.67	20.00	PRSL0992PI
9	16.00	144.00	176.00	106.67	16.00	18.67	20.00	PRSL0879PI
9	18.00	162.00	198.00	120.00	18.00	21.00	20.00	PRSL0854PI
9	20.00	180.00	220.00	133.33	20.00	23.33	20.00	PRSL0871PI
9	24.00	216.00	264.00	160.00	24.00	28.00	20.00	PRSL0849PI
10	10.00	100.00	120.00	76.67	10.00	11.67	20.00	PRSL0846PI
10	18.00	180.00	216.00	138.00	18.00	21.00	20.00	PRSL0993PI
10	22.00	220.00	264.00	168.52	22.00	25.74	20.00	PRSL0970PI
10	24.00	240.00	288.00	18.00	24.00	28.00	20.00	PRSL0856PI
11	12.00	132.00	156.00	104.00	12.00	14.00	20.00	PRSL0861PI
11	18.00	198.00	234.00	156.00	18.00	21.00	20.00	PRSL0998PI
11	20.00	220.00	260.00	173.36	20.00	23.32	20.00	PRSL0997PI
11	24.00	264.00	312.00	204.00	24.00	30.00	20.00	PRSL0859PI
12	14.00	168.00	196.00	133.00	14.00	17.50	20.00	PRSL0863PI
12	16.00	192.00	224.00	154.67	16.00	18.67	20.00	PRSL0897PI
12	18.00	216.00	252.00	173.88	18.00	21.06	20.00	PRSL0972PI
12	20.00	240.00	280.00	193.34	20.00	23.32	20.00	PRSL0845PI
12	24.00	288.00	336.00	232.00	24.00	28.00	20.00	PRSL0878PI
13	6.00	78.00	90.00	63.00	6.00	7.50	20.00	PRSL0860PI
13	12.00	156.00	178.59	126.00	11.29	15.00	20.00	PRSL0853PI
13	16.00	208.00	240.00	170.67	16.00	18.66	20.00	PRSL0898PI
14	10.00	140.00	169.00	125.00	15.00	7.50	20.00	PRSL0862PI
14	16.00	224.00	256.00	186.67	16.00	18.67	20.00	PRSL0896PI
14	18.00	252.00	288.00	210.00	18.00	21.00	20.00	PRSL0999PI
14	20.00	280.00	320.00	233.33	20.00	23.33	20.00	PRSL0848PI
15	18.00	270.00	306.00	228.00	18.00	21.00	20.00	PRSL0858PI
16	20.00	320.00	360.00	273.33	20.00	23.33	20.00	PRSL0847PI
17	10.00	170.00	190.00	145.00	10.00	12.50	22.89	PRSL0973PI
17	14.00	238.00	266.00	203.00	14.00	17.50	22.89	PRSL0974PI
20	6.00	120.00	132.00	105.00	6.00	7.50	22.89	PRSL0851PI
25	1.00	25.00	27.00	22.50	1.00	1.25	22.89	PRSL0844PI

Measuring unit: mm

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OSCAR - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next pages for list of components and legends)

1. **Version:** tick the required version.
2. **Lima:** tick the box if you require Lima system.
3. **SIL 1 certified:** tick the box if you require SIL 1 certified units.
4. **Revolution ratio:** write the required revolution ratio for each output.
5. **Standard cam sets:** write the code of the cam set required for each output.
6. **Customized cam sets:** for non standard cam sets, fill in the scheme choosing the cams and the switches required. It is possible to assemble sets with 2, 3, 4, 5 or 6 cams/switches. Customized cams are available on request.
7. **Potentiometers, encoders, Yankee:** write the code of the potentiometer, encoder or Yankee required.
   ATTENTION: potentiometer PA020009 can be mounted only alone, i.e. with NO sets of cams.
   Please refer to the table on the next pages for all other possible configurations.
8. **Coupling, flange, pinion gear:** tick the box when coupling, flange or pinion gear are required.
   When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.
   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
9. **Shaft:** tick the shaft type required. Limit switches with Lima are available only with shafts made of high resistance stainless steel AISI 303
   Customized shafts are available on request.
10. **Cable clamps**: tick type and position of the cable clamps (8 max).

Version 1

☐ Version CE EAC

☐ Version cULus CE EAC

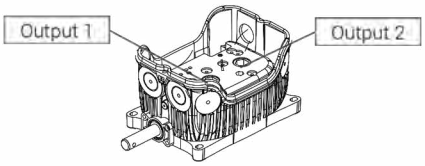
☐ Version with anti-moisture plug CE EAC

ATTENTION: Limit switches with Lima are only CE marked.
ATTENTION: Limit switches with shafts made of stainless steel AISI 430F are not cULus certified.

☐ **Lima** 2

☐ **SIL1 certified** 3

ATTENTION: Oscar XL with cover rise are not SIL1 certified.



Revolution ratio 4

Output 1			Output 2
☐ 1:1	☐ 1:25	☐ 1:200	☐ 1:1
☐ 1:5	☐ 1:50	☐ 1:250	☐ Revolution ratio equal to output 1
☐ 1:10	☐ 1:70	☐ 1:300	
☐ 1:15	☐ 1:100	☐ 1:450	
☐ 1:20	☐ 1:150	☐ 1: ____	

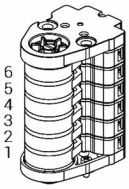
Standard cam sets 5

Cam set code

_____ Output 1

_____ Output 2

Customized cam sets 6



Output 1 Cam code	Switch code
6 _____	_____
5 _____	_____
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Output 2 Cam code	Switch code
6 _____	_____
5 _____	_____
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Potentiometers, encoders, Yankee 7

	Output 1	Output 2
Code	_____	_____

☐ **Male coupling** ☐ **Coupling** 8

☐ **Female coupling** ☐ **Flange**

☐ **Pinion gear**

Pinion gear code _____

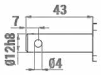
Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

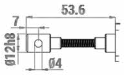
Standard shaft 9



☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

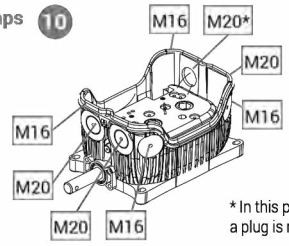
Flexible shaft



☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

Cable clamps 10



* In this position an M20 cable clamp or a plug is mandatory.

OSCAR - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

5 Legend - Standard Cam Sets

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0110XX	2 cams A	FCL20001
	Cams A+C	FCL20003
	2 cams C	FCL20005
4 x PRSL0110XX	Cams D+D+B+F	FCL40001
	4 cams A	FCL40003
	Cams A+A+C+C	FCL40005
	4 cams C	FCL40007
	Cams C+C+C+E	FCL40009
	Cams A+A+E+E	FCL40011
5 x PRSL0110XX	5 cams A	FCL50006
	5 cams C	FCL50001
6 x PRSL0110XX	5 cams A	FCL60003
	5 cams C	FCL60001

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0111XX	2 cams A	FCL20002
	Cams A+C	FCL20004
	2 cams C	FCL20006
4 x PRSL0111XX	Cams D+D+B+F	FCL40002
	4 cams A	FCL40004
	Cams A+A+C+C	FCL40006
	4 cams C	FCL40008
	Cams C+C+C+E	FCL40010
	Cams A+A+E+E	FCL40012
5 x PRSL0111XX	5 cams A	FCL50005
	5 cams C	FCL50010
6 x PRSL0111XX	6 cams A	FCL60006
	6 cams C	FCL60010

6 Legend - Switches

PRSL00110XX	PRSL0111XX
1NO+1NC	1NC

6 Legend - Standard Cams

Cam			Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A		1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B		10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C		60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D		72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E		180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F		305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

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OSCAR - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

7 Legend - Potentiometers, Encoders and Yankee

Description	SCC Part No.
Potentiometer MCB 10 kΩ with support	PA020001
Potentiometer 10 kΩ mechanical stop with support	PA020002
Potentiometer 10 kΩ ±10% 4 pins with support	PA020003
Potentiometer 10 kΩ ±10% 3 pins with support	PA020004
Potentiometer 5kΩ ±10% with support	PA020005
Potentiometer 4.7 kΩ with support	PA020006
Potentiometer Megatron 10 kΩ with support	PA020007
Potentiometer 2.2 kΩ with support	PA020008
Potentiometer 2 KΩ with support	PA020009
Encoder 36 pulses./rev. with support	PA030001
Encoder 150 pulses./rev. with support	PA030002
Yankee - current output	PA01AA01
Yankee - voltage output	PA01AB01
Yankee - PWM output	PA01AC01

7 Configuration Table

The following table shows possible configurations of Oscar and Oscar XL.

When it is not possible to mount a set of cams together with a potentiometer/encoder, the table shows "not available".

When the standard cover PA090008 is not high enough to hold the elements mounted inside the limit switch, it is possible to use the cover rise PRSL0703PI (the table shows "Oscar XL").

In all other cases it is possible to mount the sets of cams and potentiometer/encoder with the standard cover PA090008 (the table shows "Oscar").

	Set of cams with 2 switches	Set of cams with 3 switches	Set of cams with 4 switches	Set of cams with 5 switches	Set of cams with 6 switches
Set of cams only	Oscar	Oscar	Oscar	Oscar	Oscar XL
Set of cams + Yankee1	Oscar	Oscar	Oscar	Oscar XL	Oscar XL
Set of cams + PA020001	Oscar	Oscar XL	Oscar XL	not available	not available
Set of cams + PA020002	Oscar	Oscar XL	Oscar XL	not available	not available
Set of cams + PA020003	Oscar	Oscar	Oscar XL	Oscar XL	not available
Set of cams + PA020004	Oscar	Oscar	Oscar XL	Oscar XL	not available
Set of cams + PA020005	Oscar	Oscar	Oscar XL	Oscar XL	not available
Set of cams + PA020006	Oscar	Oscar XL	Oscar XL	not available	not available
Set of cams + PA020007	Oscar	Oscar XL	Oscar XL	not available	not available
Set of cams + PA020008	Oscar	Oscar XL	Oscar XL	not available	not available
Set of cams + PA030001	Oscar	Oscar	Oscar XL	Oscar XL	not available
Set of cams + PA030002	Oscar	Oscar	Oscar XL	Oscar XL	not available

TOP

ROTARY LIMIT SWITCH

The **TOP** rotary gear limit switch is the premier switch available in the world. The TOP has an IP67 rugged cast aluminum housing which provides the ultimate protection in the most demanding applications. Gear ratios from 1:1 to 1:8100 are available and the TOP features 3 separate outputs which can each be set to different gear ratios to provide the ultimate in control flexibility. Potentiometers and encoders can also be fitted to the TOP rotary limit switch. The shaft diameter is 1/2" (12 mm).

Features

- Consists of a gear motor that transfers movement to the cams and the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Top is classified IP66, IP67 and IP69K.
- NEMA protection degree: Top is classified Type 4X*.
- Extreme temperature resistance: -40°F to +176°F (-40°C to +80°C).
- Saline fog resistant.
- Features base and cover made of electrostatic varnished die-cast aluminum, transmission and gear driving shafts made of stainless steel AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:1 to 1:8100, achieved by combining different secondary output stages.
- Each of the three outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap action switches with 1NO+1NC change-over contacts or slow action switches with 1 NC contact.
- It can be equipped with 3 cam sets (with up to 15 switches), potentiometers and encoders (alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 4 switches).
- XL version featuring cover rise available with 3 cam sets (with up to 18 switches), potentiometers and encoders (alone or on top of cam sets with up to 5 switches) and Yankee absolute encoders (on top of cam sets with up to 6 switches).
- Dedicated cable clamps or connectors.
- Available with flanges, pinions and couplings.
- Plates with universal adapter to replace existing systems.

Certifications

- CE marking, cULus* marking and EAC certification.
- TOP is available, upon request, with the SIL1 certification (Safety Integrity Level 1), according to Standard IEC61508.

* Not available on all versions

Fill-in the "request form" for a custom product configuration

Possible Assemblies

TOP XL with cover rise

With anti-moisture plug

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
SIL1	IEC 61508:2010 Part 2-4-6-7 Functional safety of electrical/electronic/ programmable electronic safety-related systems.
Markings and Homologations	CE, cULus*, EAC*

General Technical Specifications

Ambient temperature	Storage: -40°F / +176°F (-40°C / +80°C)
	Operational: -40°F / +176°F (-40°C / +80°C)
IP protection degree	IP66 / IP67 / IP69K
NEMA protection degree	Type 4X*
Insulation category	Class I
Maximum rotation speed	800 rpm
Cable entry	Cable clamp M20
Shafts	Stainless steel AISI 303

SPECIFICATIONS FOR TOP

Technical Specifications — Switches

SCC Part No. →	PRSL0110XX	PRSL0111XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL(c)UL: use 140°F or 167°F (60°C or 75°C) copper (CU) conductors and stiff or flexible wire 14-22 AWG)	
Tightening torque	0.5 Nm	
Micro-switch type	Double break, snap action	Double break, slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE UL EAC	

Switches PRSL0100XX available upon request.

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PA020001	PA020002
Ohmic value	MCB 10 kΩ	10 kΩ mechanical stop
Resolution	Infinite	
Independent linearity	± 1%	
Life time	10 x 10^6 movements	
Operational ambient temperature	-67°F / +221°F (-55°C / +105°C)	
Continuous rotation (without stop)	360°	
Continuous rotation (with stop)	333° ±5°	
Actual electrical angle	310° ±5°	
Ohmic value tolerance	±20%	

SCC Part No. → Potentiometer with support	PA020003	PA020004	PA020005
Ohmic value	10 kΩ	10 kΩ	5 kΩ
Connections	4 turrets	3 turrets	4 turrets
Independent linearity (over AEA -3°)	≤± 1%	≤± 0.35%	≤± 1%
Life time	5 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	340° ±5°		
Ohmic value tolerance	Max ±20% at 68°F (20°C)	Max ±10% at 68°F (20°C)	Max ±20% at 68°F (20°C)

SPECIFICATIONS FOR TOP

SCC Part No. → Potentiometer with support	PA020006	PA020007	PA020008
Ohmic value	4.7 kΩ	Megatron 10 kΩ	2.2 kΩ
Independent linearity (ref. AEA -3°)	± 25%		
Life time	3 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	355° ±5°		
Ohmic value tolerance	±5°		
Temperature drift	< 50 PPM/°C		

SCC Part No. → Potentiometer with support	PA020009
Ohmic value	2 kΩ
Resolution	Better than 0.008°
Linearity	± 0.075%
Independent linearity	± 0.075%
Life time	100 x 10^6 movements
Operational ambient temperature	-40°F / +212°F (-40°C / +100°C)
Mechanical angle	360° continuous
Actual electrical travel	350° ±2°
Ohmic value tolerance	±20%

Technical Specifications — Encoders

SCC Part No. → with support	PA030001	PA030002
Resolution	36 pulses/rev.	150 pulses/rev.
Operational ambient temperature	-40°F / +185°F (-40°C / +85°C)	
Code	Incremental	
Supply voltage	4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load)	
Output voltage	Low: 500 mV max. at 10 mA High: (Vin – 0.6) at -10 mA (Vin – 1.3) at -25mA	
Output current	25 mA max. load per output channel	
Phase sense	A leads B clockwise (CW) from the mounting end of the encoder	
Accuracy	+/- 0.8 arc-min	
Outputs	Push pull	
Electrical protection	Protection against reverse polarity and output short-circuit	

SPECIFICATIONS FOR TOP

Certifications — Absolute Encoder Yankee

Conformity to Community Directives	2014/30/UE Low Electromagnetic Compatibility (EMC) Directive
	2006/42/CE Machinery Directive
	2014/35/UE Low Voltage Directive (LVD)
Conformity to CE Standards	EN 601326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE c UL us

General Technical Specifications — Absolute Encoder Yankee

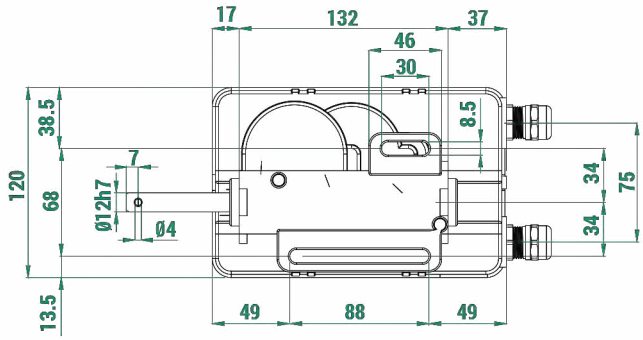
Ambient temperature	Storage:	-40°F / +176°F (-40°C / +80°C)
	Operational:	-40°F / +176°F (-40°C / +80°C)
IP protection degree	IP20	
Free rotation	360°	
Maximum rotation speed	800 rpm	

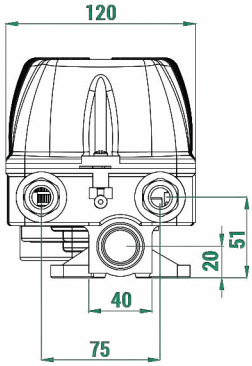
Electrical Specifications — Absolute Encoder Yankee

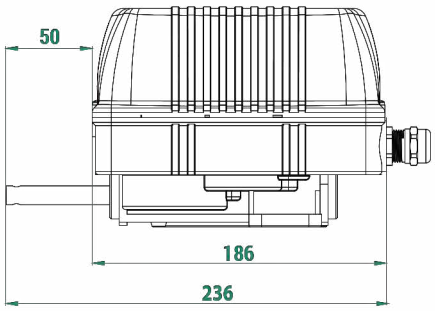
SCC Part No. →	**PA01AA01**	**PA01AB01**	**PA01AC01**
Analog output	Current 4 ÷ 20 mA	Voltage 0 ÷ 10 V	PWM 0 ÷ 100%
Power supply	12 ÷ 48 Vdc / 12 ÷ 48 Vac		
Protection against reverse polarity	Yes		
Absorption	50 mA		
Resolution	12 bit		
Linearity	+/- 0.5°		
Max hysteresis	0.1°		
Zero Point setting	Through button/wire		
Signal increment direction	CW (standard) / CCW (on request)		
Connections	Terminal board		
Terminal wires	0.14 mm^2 - 1.5 mm^2		
Terminal tightening torque	0.22 Nm - 0.25 Nm		

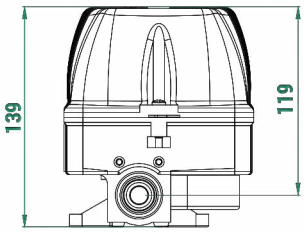
TOP - OVERALL DIMENSIONS (mm)

Standard





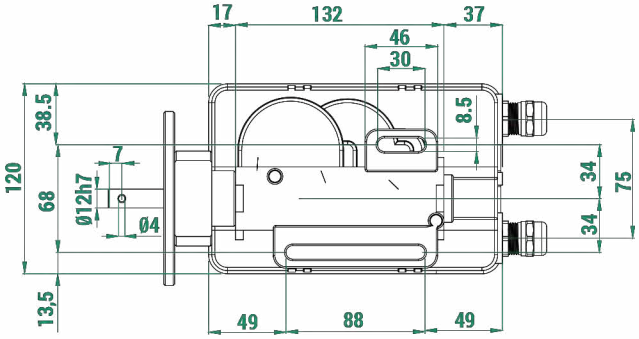


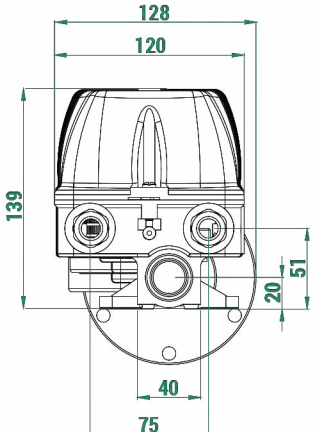


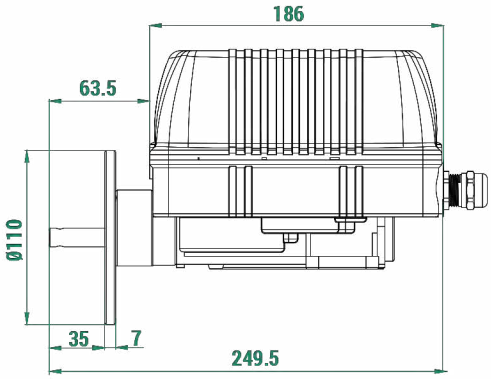
1 mm = 0.03937 inches | 1 inch = 25.4 mm

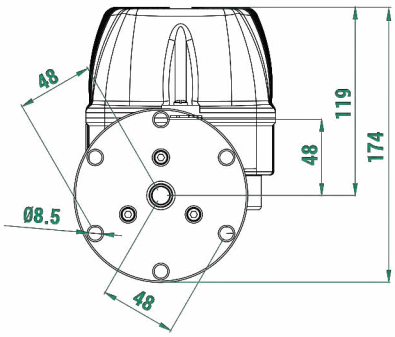
Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

With flange









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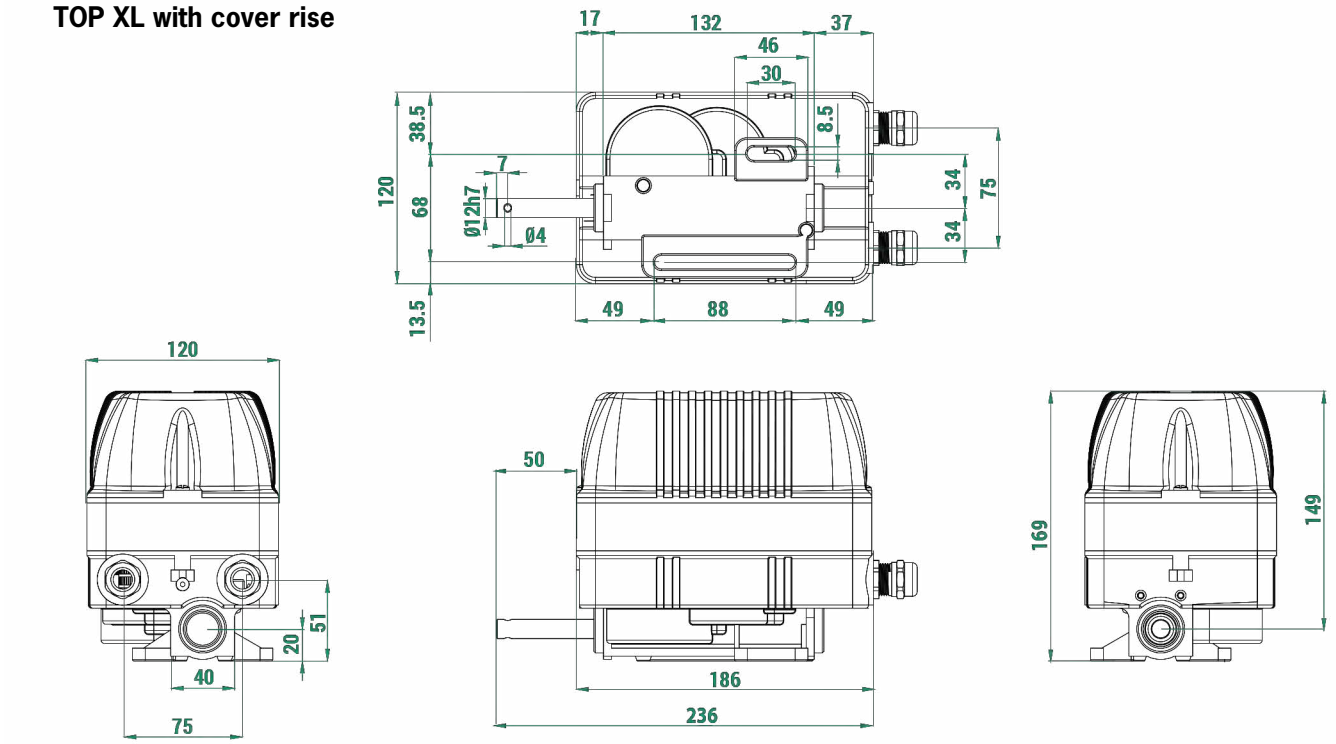
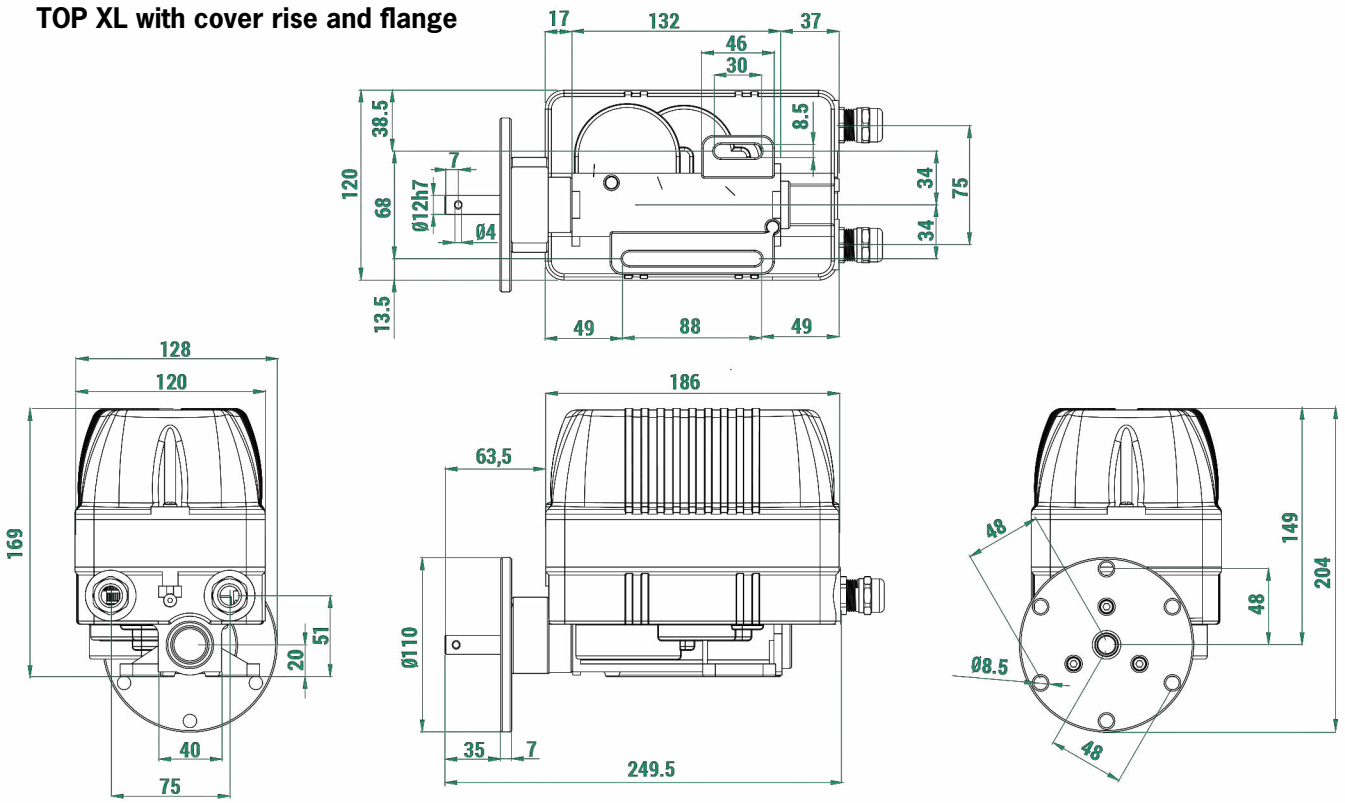
TOP - OVERALL DIMENSIONS (mm)

TOP XL with cover rise



TOP XL with cover rise and flange



STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI .
Standard limit switches are not cULus certified.

Rated Revolution Ratio	Real Revolution Ratio	No. of Cams and Switches	Switches	
			PRSL0110XX 1NO+1NC (snap-action)	PRSL0111XX 1NC (slow-action)
			SCC Part No.	
1:1	1:1	2	PFD9067L0001002	PFD9067L0001008
		4	PFD9067L0001003	PFD9067L0001009
		4+2	PFD9067L0001004	PFD9067L0001010
		4+4	PFD9067L0001005	PFD9067L0001011
		4+4+2	PFD9067L0001006	PFD9067L0001012
		4+4+4	PFD9067L0001007	PFD9067L0001013
1:5	1:5	2	PFD9067L0005004	PFD9067L0005008
		4	PFD9067L0005005	PFD9067L0005009
		4+2	PFD9067L0005006	PFD9067L0005010
		4+4	PFD9067L0005002	PFD9067L0005011
		4+4+2	PFD9067L0005007	PFD9067L0005012
		4+4+4	PFD9067L0005003	PFD9067L0005013
1:10	1:10	2	PFD9067L0010008	PFD9067L0010012
		4	PFD9067L0010005	PFD9067L0010013
		4+2	PFD9067L0010004	PFD9067L0010014
		4+4	PFD9067L0010009	PFD9067L0010015
		4+4+2	PFD9067L0010010	PFD9067L0010016
		4+4+4	PFD9067L0010011	PFD9067L0010017
1:15	1:15.92	2	PFD9067L0015003	PFD9067L0015009
		4	PFD9067L0015004	PFD9067L0015010
		4+2	PFD9067L0015005	PFD9067L0015011
		4+4	PFD9067L0015006	PFD9067L0015012
		4+4+2	PFD9067L0015007	PFD9067L0015013
		4+4+4	PFD9067L0015008	PFD9067L0015014
1:20	1:20	2	PFD9067L0020006	PFD9067L0020009
		4	PFD9067L0020002	PFD9067L0020010
		4+2	PFD9067L0020003	PFD9067L0020011
		4+4	PFD9067L0020007	PFD9067L0020012
		4+4+2	PFD9067L0020004	PFD9067L0020013
		4+4+4	PFD9067L0020008	PFD9067L0020014
1:25	1:25	2	PFD9067L0025009	PFD9067L0025012
		4	PFD9067L0025004	PFD9067L0025013
		4+2	PFD9067L0025005	PFD9067L0025014
		4+4	PFD9067L0025010	PFD9067L0025015
		4+4+2	PFD9067L0025006	PFD9067L0025016
		4+4+4	PFD9067L0025011	PFD9067L0025017
1:50	1:50	2	PFD9067L0050009	PFD9067L0050013
		4	PFD9067L0050010	PFD9067L0050016
		4+2	PFD9067L0050011	PFD9067L0050017
		4+4	PFD9067L0050012	PFD9067L0050018
		4+4+2	PFD9067L0050014	PFD9067L0050019
		4+4+4	PFD9067L0050015	PFD9067L0050020

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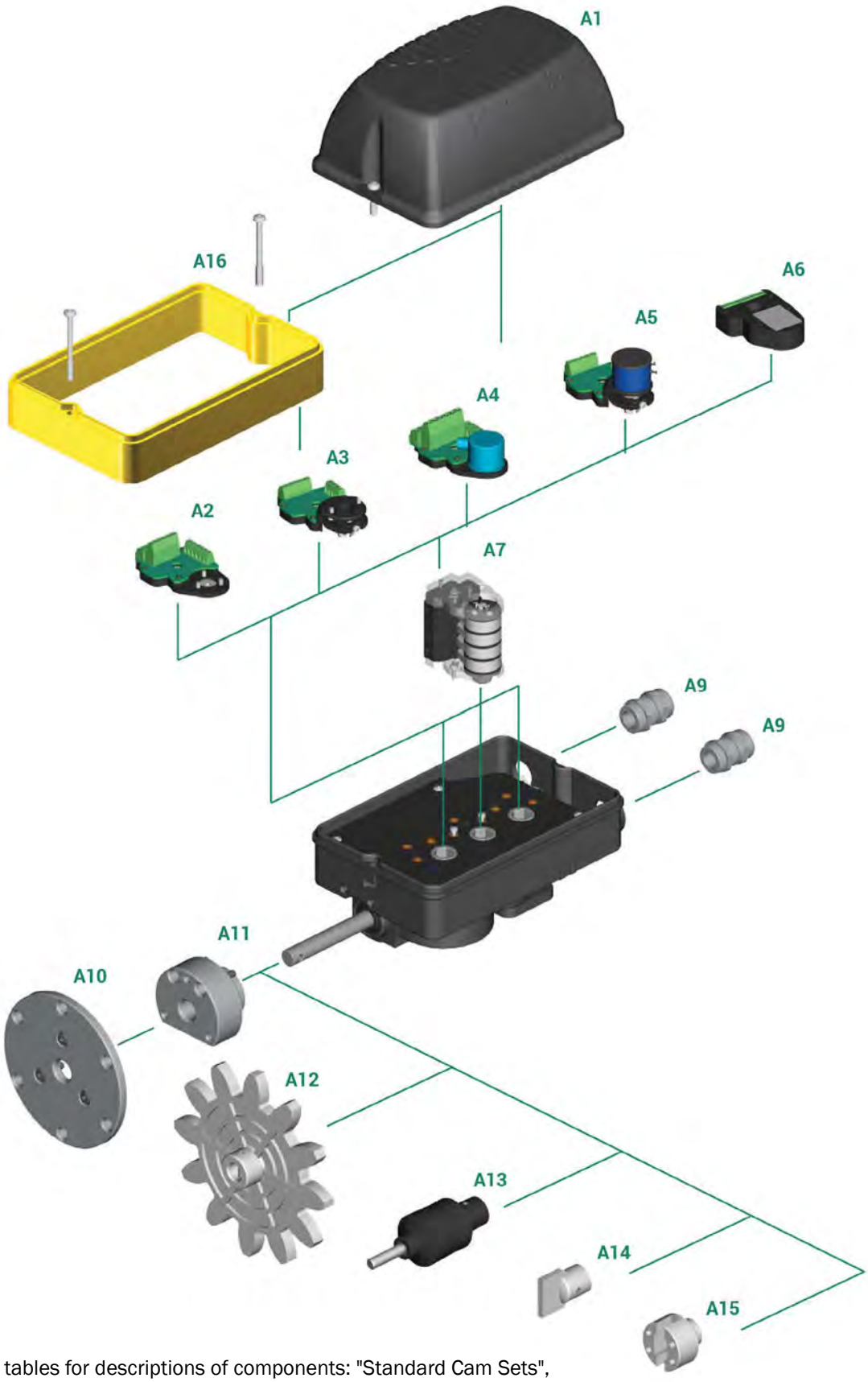
STANDARD LIMIT SWITCHES

Rated Revolution Ratio	Real Revolution Ratio	No. of Cams and Switches	Switches	
			PRSL0110XX 1NO+1NC (snap-action)	PRSL0111XX 1NC (slow-action)
			SCC Part No.	
1:75	1:75	2	PFD9067L0075002	PFD9067L0075009
		4	PFD9067L0075004	PFD9067L0075003
		4+2	PFD9067L0075005	PFD9067L0075010
		4+4	PFD9067L0075006	PFD9067L0075011
		4+4+2	PFD9067L0075007	PFD9067L0075012
		4+4+4	PFD9067L0075008	PFD9067L0075013
1:100	1:100	2	PFD9067L0100013	PFD9067L0100020
		4	PFD9067L0100015	PFD9067L0100021
		4+2	PFD9067L0100016	PFD9067L0100022
		4+4	PFD9067L0100017	PFD9067L0100023
		4+4+2	PFD9067L0100018	PFD9067L0100024
		4+4+4	PFD9067L0100019	PFD9067L0100025
1:150	1:150	2	PFD9067L0150007	PFD9067L0150012
		4	PFD9067L0150005	PFD9067L0150013
		4+2	PFD9067L0150008	PFD9067L0150014
		4+4	PFD9067L0150009	PFD9067L0150015
		4+4+2	PFD9067L0150010	PFD9067L0150016
		4+4+4	PFD9067L0150011	PFD9067L0150017
1:200	1:200	2	PFD9067L0200004	PFD9067L0200009
		4	PFD9067L0200005	PFD9067L0200010
		4+2	PFD9067L0200006	PFD9067L0200011
		4+4	PFD9067L0200002	PFD9067L0200012
		4+4+2	PFD9067L0200007	PFD9067L0200013
		4+4+4	PFD9067L0200008	PFD9067L0200014
1:250	1:250	2	PFD9067L0250012	PFD9067L0250016
		4	PFD9067L0250013	PFD9067L0250010
		4+2	PFD9067L0250009	PFD9067L0250017
		4+4	PFD9067L0250001	PFD9067L0250028
		4+4+2	PFD9067L0250014	PFD9067L0250019
		4+4+4	PFD9067L0250015	PFD9067L0250011
1:300	1:300	2	PFD9067L0300004	PFD9067L0300010
		4	PFD9067L0300005	PFD9067L0300011
		4+2	PFD9067L0300006	PFD9067L0300012
		4+4	PFD9067L0300007	PFD9067L0300013
		4+4+2	PFD9067L0300008	PFD9067L0300014
		4+4+4	PFD9067L0300009	PFD9067L0300015
1:450	1:450	2	PFD9067L0450001	PFD9067L0450008
		4	PFD9067L0450003	PFD9067L0450002
		4+2	PFD9067L0450004	PFD9067L0450009
		4+4	PFD9067L0450005	PFD9067L0450010
		4+4+2	PFD9067L0450006	PFD9067L0450011
		4+4+4	PFD9067L0450007	PFD9067L0450012

TOP ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard Cam Sets", "Potentiometers, Encoders and Sensors" and "Accessories".

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TOP - ACCESSORY PARTS

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A7		2 cams A	2 PRSL0110XX switches	FCL20001
		2 cams A	2 PRSL0111XX switches	FCL20002
		Cams A+C	2 PRSL0110XX switches	FCL20003
		Cams A+C	2 PRSL0111XX switches	FCL20004
		2 cams C	2 PRSL0110XX switches	FCL20005
		2 cams C	2 PRSL0111XX switches	FCL20006
		Cams D+D+B+F	4 PRSL0110XX switches	FCL40001
		Cams D+D+B+F	4 PRSL0111XX switches	FCL40002
		4 cams A	4 PRSL0110XX switches	FCL40003
		4 cams A	4 PRSL0111XX switches	FCL40004
		Cams A+A+C+C	4 PRSL0110XX switches	FCL40005
		Cams A+A+C+C	4 PRSL0111XX switches	FCL40006
		4 cams C	4 PRSL0110XX switches	FCL40007
		4 cams C	4 PRSL0111XX switches	FCL40008
		Cams C+C+C+E	4 PRSL0110XX switches	FCL40009
		Cams C+C+C+E	4 PRSL0111XX switches	FCL40010
		Cams A+A+E+E	4 PRSL0110XX switches	FCL40011
		Cams A+A+E+E	4 PRSL0111XX switches	FCL40012

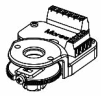
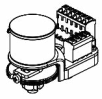
Other sets with 2/3/4/5 or 6 cams/switches are available upon request.

Cam Reference Chart

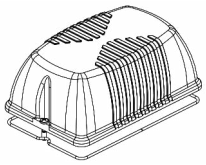
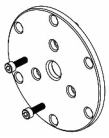
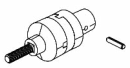
Cam			Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A		1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B		10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C		60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D		72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E		180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F		305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

TOP - ACCESSORY PARTS

Potentiometers, Encoders and Sensors

Ref.	Drawing	Description	SCC Part No.
A2		Support for encoder	PA030000
A3		Support for potentiometer	PA020000
A4		Encoder 36 pulses. / rev. with support	PA030001
		Encoder 150 pulses. / rev. with support	PA030002
A5		Potentiometer MCB 10 kΩ with support	PA020001
		Potentiometer 10 kΩ mechanical stop with support	PA020002
		Potentiometer 10 kΩ ± 10% 4 pins with support	PA020003
		Potentiometer 10 kΩ ± 10% 3 pins with support	PA020004
		Potentiometer 5 kΩ ± 10% with support	PA020005
		Potentiometer 4.7 kΩ with support	PA020006
		Potentiometer Megatron 10 kΩ with support	PA020007
		Potentiometer 2.2 kΩ with support	PA020008
		Potentiometer 2 KΩ with support	PA020009
A6		Absolute encoder Yankee - current output	PA01AA01
		Absolute encoder Yankee - voltage output	PA01AB01
		Absolute encoder Yankee - PWM output	PA01AC01

Accessories

Ref.	Drawing	Description	SCC Part No.
A1		Cover with gasket, screws and earth cable	PA090018
A9		Cable clamp M20X1.5	PRPS1075PE
A10		Flange with screws	PRTR1300PE
A11		Flange support	PRTO3018PE
A12		Pinion gear	See pinion gear tables
A13		Coupling with pin	PRSL0981PI

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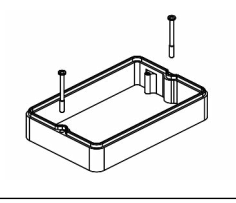
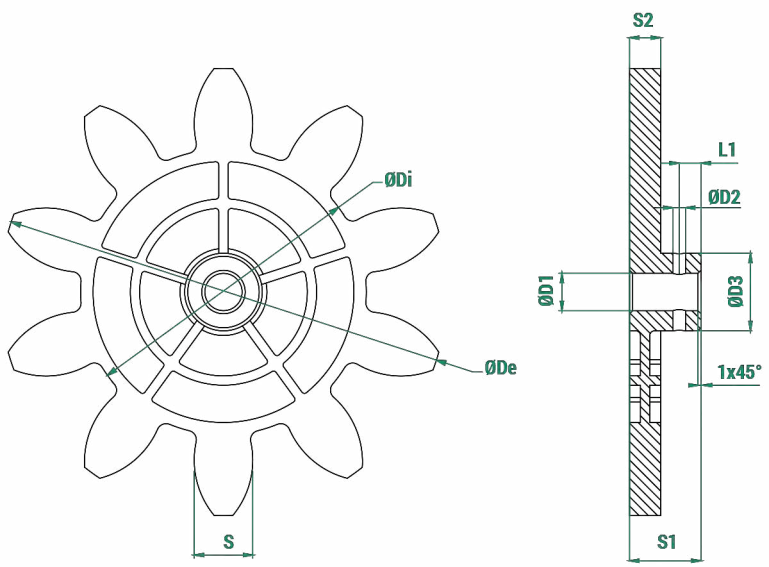
TOP - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A14		Male coupling with pin	PRSL0919PI
A15		Female coupling with pin	PRSL0920PI
A16		Cover rise with gasket, screws and earth cable	PRLS0707PI

Moulded Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

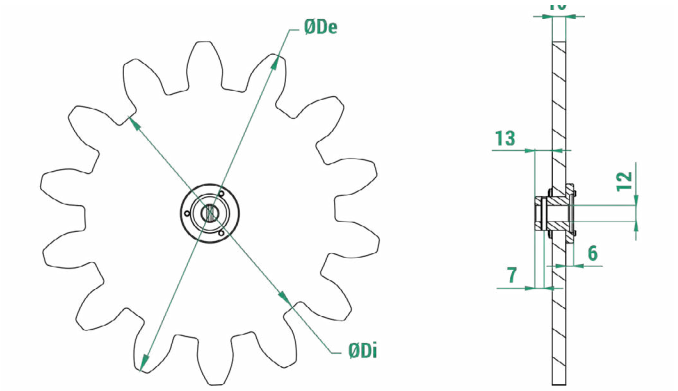
Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1	SCC Part No.
8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0915PI
10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00	PRSL0912PI
10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00	PRSL0913PI
10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0914PI
11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00	PRSL0917PI
12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00	PRSL0916PI
12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	3.90	21.50	23.50	10.00	7.00	PRSL0918PI
12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00	PRSL0911PI
12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0944PI

Measuring unit: mm

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

Waterjet Cut Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	Alpha	SCC Part No.
8	18.00	144.00	180.00	102.00	18.00	21.00	20.00	PRSL0857PI
8	24.00	192.00	240.00	136.00	24.00	28.00	20.00	PRSL0855PI
9	10.00	90.00	110.00	66.67	10.00	11.67	20.00	PRSL0992PI
9	16.00	144.00	176.00	106.67	16.00	18.67	20.00	PRSL0879PI
9	18.00	162.00	198.00	120.00	18.00	21.00	20.00	PRSL0854PI
9	20.00	180.00	220.00	133.33	20.00	23.33	20.00	PRSL0871PI
9	24.00	216.00	264.00	160.00	24.00	28.00	20.00	PRSL0849PI
10	10.00	100.00	120.00	76.67	10.00	11.67	20.00	PRSL0846PI
10	18.00	180.00	216.00	138.00	18.00	21.00	20.00	PRSL0993PI
10	22.00	220.00	264.00	168.52	22.00	25.74	20.00	PRSL0970PI
10	24.00	240.00	288.00	18.00	24.00	28.00	20.00	PRSL0856PI
11	12.00	132.00	156.00	104.00	12.00	14.00	20.00	PRSL0861PI
11	18.00	198.00	234.00	156.00	18.00	21.00	20.00	PRSL0998PI
11	20.00	220.00	260.00	173.36	20.00	23.32	20.00	PRSL0997PI
11	24.00	264.00	312.00	204.00	24.00	30.00	20.00	PRSL0859PI
12	14.00	168.00	196.00	133.00	14.00	17.50	20.00	PRSL0863PI
12	16.00	192.00	224.00	154.67	16.00	18.67	20.00	PRSL0897PI
12	18.00	216.00	252.00	173.88	18.00	21.06	20.00	PRSL0972PI
12	20.00	240.00	280.00	193.34	20.00	23.32	20.00	PRSL0845PI
12	24.00	288.00	336.00	232.00	24.00	28.00	20.00	PRSL0878PI
13	6.00	78.00	90.00	63.00	6.00	7.50	20.00	PRSL0860PI
13	12.00	156.00	178.59	126.00	11.29	15.00	20.00	PRSL0853PI
13	16.00	208.00	240.00	170.67	16.00	18.66	20.00	PRSL0898PI
14	10.00	140.00	169.00	125.00	15.00	7.50	20.00	PRSL0862PI
14	16.00	224.00	256.00	186.67	16.00	18.67	20.00	PRSL0896PI
14	18.00	252.00	288.00	210.00	18.00	21.00	20.00	PRSL0999PI
14	20.00	280.00	320.00	233.33	20.00	23.33	20.00	PRSL0848PI
15	18.00	270.00	306.00	228.00	18.00	21.00	20.00	PRSL0858PI
16	20.00	320.00	360.00	273.33	20.00	23.33	20.00	PRSL0847PI
17	10.00	170.00	190.00	145.00	10.00	12.50	22.89	PRSL0973PI
17	14.00	238.00	266.00	203.00	14.00	17.50	22.89	PRSL0974PI
20	6.00	120.00	132.00	105.00	6.00	7.50	22.89	PRSL0851PI
25	1.00	25.00	27.00	22.50	1.00	1.25	22.89	PRSL0844PI

Measuring unit: mm

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TOP - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next pages for list of components and legends)

1. **Version**: tick the required version.
2. **SIL 1 certified**: tick the box if you require SIL 1 certified units.
3. **Revolution ratio**: write the required revolution ratio for each output.
4. **Standard cam sets**: write the code of the cam set required for each output.
5. **Customized cam sets**: for non standard cam sets, fill in the scheme choosing the cams and the switches required. It is possible to assemble sets with 2, 3, 4, 5 or 6 cams/switches.

   Customized cams are available on request.
6. **Potentiometers, encoders, Yankee**: write the code of the potentiometer, encoder or Yankee required.

   ATTENTION: potentiometer PA020009 can be mounted only alone, i.e. with NO sets of cams.

   Please refer to the table on the next pages for all other possible configurations.
7. **Shaft**: tick the shaft type required.

   Customized shafts are available on request.
8. **Coupling, flange, pinion gear**: tick the box when coupling, flange or pinion gear are required.

   When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.

   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.

Version 1

☐ Version CE EAC

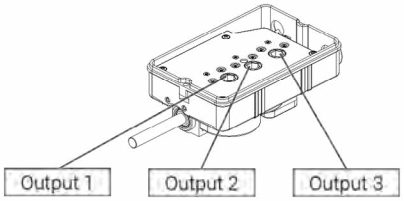
☐ Version cULus CE EAC

☐ Version with anti-moisture plug CE EAC

ATTENTION: Top XL with cover rise are not cULus certified.

☐ **SIL 1 certified** 2

ATTENTION: Top XL with cover rise are not SIL1 certified.



Revolution ratio 3

Output 1	Output 2	Output 3		Output 1	Output 2	Output 3		Output 1	Output 2	Output 3	
☐	☐	☐	1:1	☐	☐	☐	1:50	☐	☐	☐	1:300
☐	☐	☐	1:5	☐	☐	☐	1:75	☐	☐	☐	1:450
☐	☐	☐	1:10	☐	☐	☐	1:100	☐	☐	☐	1: ____
☐	☐	☐	1:15	☐	☐	☐	1:150	☐	☐	☐	1: ____
☐	☐	☐	1:20	☐	☐	☐	1:200	☐	☐	☐	1: ____
☐	☐	☐	1:25	☐	☐	☐	1:250				

Standard cam sets 4

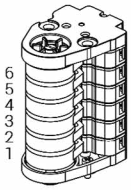
Cam set code

_____ Output 1

_____ Output 2

_____ Output 3

Customized cam sets 5



Output 1

Cam code		Switch code
6	_____	_____
5	_____	_____
4	_____	_____
3	_____	_____
2	_____	_____
1	_____	_____

Output 2

Cam code		Switch code
6	_____	_____
5	_____	_____
4	_____	_____
3	_____	_____
2	_____	_____
1	_____	_____

Output 3

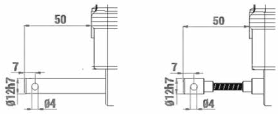
Cam code		Switch code
6	_____	_____
5	_____	_____
4	_____	_____
3	_____	_____
2	_____	_____
1	_____	_____

Potentiometers, encoders, Yankee 6

	Output 1	Output 2	Output 3
Code	_____	_____	_____

☐ **Standard shaft** 7

☐ **Flexible shaft**



☐ **Male coupling** ☐ **Coupling** 8

☐ **Female coupling** ☐ **Flange**

☐ **Pinion gear**

Pinion gear code _____

Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

TOP - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

4 Legend - Standard Cam Sets

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0110XX	2 cams A	FCL20001
	Cams A+C	FCL20003
	2 cams C	FCL20005
4 x PRSL0110XX	Cams D+D+B+F	FCL40001
	4 cams A	FCL40003
	Cams A+A+C+C	FCL40005
	4 cams C	FCL40007
	Cams C+C+C+E	FCL40009
	Cams A+A+E+E	FCL40011

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0111XX	2 cams A	FCL20002
	Cams A+C	FCL20004
	2 cams C	FCL20006
4 x PRSL0111XX	Cams D+D+B+F	FCL40002
	4 cams A	FCL40004
	Cams A+A+C+C	FCL40006
	4 cams C	FCL40008
	Cams C+C+C+E	FCL40010
	Cams A+A+E+E	FCL40012

5 Legend - Switches

PRSL00110XX	PRSL0111XX
1NO+1NC	1NC

5 Legend - Standard Cams

Cam			Switching angle with PRSL0011XX	SCC Part No. for PRSL0110XX switches	Switching angle with PRSL0111XX	SCC Part No. for PRSL0111XX switches
A		1 point	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°	PRSL7194PI
B		10 points	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°	PRSL7193PI
C		60° sector	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°	PRSL7195PI
D		72° sector	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°	PRSL7196PI
E		180° sector	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°	PRSL7191PI
F		305° sector	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°	PRSL7192PI

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TOP - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

7 Legend - Potentiometers, Encoders and Yankee

Description	SCC Part No.
Potentiometer MCB 10 kΩ with support	PA020001
Potentiometer 10 kΩ mechanical stop with support	PA020002
Potentiometer 10 kΩ ±10% 4 pins with support	PA020003
Potentiometer 10 kΩ ±10% 3 pins with support	PA020004
Potentiometer 5kΩ ±10% with support	PA020005
Potentiometer 4.7 kΩ with support	PA020006
Potentiometer Megatron 10 kΩ with support	PA020007
Potentiometer 2.2 kΩ with support	PA020008
Potentiometer 2 KΩ with support	PA020009
Encoder 36 pulses./rev. with support	PA030001
Encoder 150 pulses./rev. with support	PA030002
Yankee - current output	PA01AA01
Yankee - voltage output	PA01AB01
Yankee - PWM output	PA01AC01

7 Configuration Table

The following table shows possible configurations of Oscar and Oscar XL.

When it is not possible to mount a set of cams together with a potentiometer/encoder, the table shows "not available".

When the standard cover PA090008 is not high enough to hold the elements mounted inside the limit switch, it is possible to use the cover rise PRSL0703PI (the table shows "Oscar XL").

In all other cases it is possible to mount the sets of cams and potentiometer/encoder with the standard cover PA090008 (the table shows "Oscar").

	Set of cams with 2 switches	Set of cams with 3 switches	Set of cams with 4 switches	Set of cams with 5 switches	Set of cams with 6 switches
Set of cams only	Top	Top	Top	Top	Top XL
Set of cams + Yankee1	Top	Top	Top	Top XL	Top XL
Set of cams + PA020001	Top	Top XL	Top XL	not available	not available
Set of cams + PA020002	Top	Top XL	Top XL	not available	not available
Set of cams + PA020003	Top	Top XL	Top XL	Top XL	not available
Set of cams + PA020004	Top	Top XL	Top XL	Top XL	not available
Set of cams + PA020005	Top	Top XL	Top XL	Top XL	not available
Set of cams + PA020006	Top	Top XL	Top XL	not available	not available
Set of cams + PA020007	Top	Top XL	Top XL	not available	not available
Set of cams + PA020008	Top	Top XL	Top XL	not available	not available
Set of cams + PA030001	Top	Top XL	Top XL	Top XL	not available
Set of cams + PA030002	Top	Top XL	Top XL	Top XL	not available

GF4C

ROTARY LIMIT SWITCH

TER's well known classic **GF4C** rotary gear limit switch is highly configurable. It has gear ratio's from 1:1 to 1:969 with two separate outputs that can be set to different gear ratios to perform separate operations at different points in movement. Up to 7 total switches, as well as potentiometers and encoders can be used with the GF4C. The shaft diameter is 1/2" (12 mm). This unit is IP65 with a durable yellow polycarbonate cover.

Features

- Consists of a gear motor that transfers movement to the cams and the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages.
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 1 million operations.
- IP protection degree: GF4C is classified IP65.
- Extreme temperature resistance: -13°F to +158°F (-25°C to +70°C).
- Features transmission and gear driving shafts made of stainless steel, self-lubricating technopolymer gears and driving bushes and sintered bronze bushes moulded into the base of the limit switch to prevent rubbing against plastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:1 to 1:969, achieved by combining different secondary output stages.
- Each of the two outputs can be set to a different revolution ratio to enable diversified control of the machine when special requirements need to be met.
- Snap actions switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- It can be equipped with 2 cam sets (with up to 7 switches), potentiometers and encoders (alone or on top of cam sets with up to 2 switches) and Yankee absolute encoders (on top of cam sets with up to 3 switches).
- Available with flanges, pinion gears and couplings.
- Available with direct control switches to enable direct action on the motor.

Certifications

- CE marking and cULus* marking.

* Not available on all versions

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR GF4C

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE, cULus*

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +80°C)
	Operational: -13°F / +158°F (-25°C / +80°C)
IP protection degree	IP65
Insulation category	Class II
Maximum rotation speed	800 rpm
Cable entry	Cable clamp M20
Shafts	Stainless steel AISI 303

Technical Specifications — Switches for Auxiliary Control

SCC Part No. →	**PRSL0036XX**	**PRSL0037XX**
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL(c)UL: use 140°F or 167°F (60°C or 75°C) copper (CU) conductors and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Switch type	Double break, snap action	Double break, slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE, cULus, EAC	

*not available on all versions

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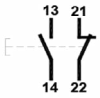
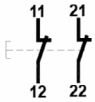
SPECIFICATIONS FOR GF4C

SCC Part No. →	PRSL0110XX	PRSL0111XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	10 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL(c)UL: use 140°F or 167°F (60°C or 75°C) copper (CU) conductors and stiff or flexible wire 14-22 AWG)	
Tightening torque	0.5 Nm	
Micro-switch type	Double break, snap action	Double break, slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

Technical Specifications — Switches for Direct Control

SCC Part No. →	PRSL0455PI
Utilisation category	AC 3
Rated operational current	400 Vac
Rated operational voltage	10 A
Rated thermal current	20 A
Rated insulation voltage	660 Vac
Mechanical life	1 x 10^6 operations
Connections	Screw-type terminals
Wires	2 x 1.5 mm^2, 1 x 2.5 mm^2
Tightening torque	0.8 Nm
Microswitch type	Two-pole
Contacts	2NC
Scheme	
Markings and Homologations	CE

Technical Specifications — Potentiometers

SCC Part No. → Potentiometer with support	PA020001	PA020002
Ohmic value	MCB 10 kΩ	10 kΩ mechanical stop
Resolution	Infinite	
Independent linearity	± 1%	
Life time	10 x 10^6 movements	
Operational ambient temperature	-67°F / +221°F (-55°C / +105°C)	
Continuous rotation (without stop)	360°	
Continuous rotation (with stop)	333° ±5°	
Actual electrical angle	310° ±5°	
Ohmic value tolerance	±20%	

SCC Part No. → Potentiometer with support	PA020003	PA020004	PA020005
Ohmic value	10 kΩ	10 kΩ	5 kΩ
Connections	4 turrets	3 turrets	4 turrets
Independent linearity (over AEA -3°)	≤± 1%	≤± 0.35%	≤± 1%
Life time	5 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	340° ±5°		
Ohmic value tolerance	Max ±20% at 68°F (20°C)	Max ±10% at 68°F (20°C)	Max ±20% at 68°F (20°C)

SCC Part No. → Potentiometer with support	PA020006	PA020007	PA020008
Ohmic value	4.7 kΩ	Megatron 10 kΩ	2.2 kΩ
Independent linearity (ref. AEA -3°)	± 25%		
Life time	3 x 10^6 movements		
Operational ambient temperature	-67°F / +257°F (-55°C / +125°C)		
Mechanical angle	360° continuous		
Actual Electrical Angle (AEA)	355° ±5°		
Ohmic value tolerance	±5°		
Temperature drift	< 50 PPM/°C		

SCC Part No. → Potentiometer with support	PA020009
Ohmic value	2 kΩ
Resolution	Better than 0.008°
Linearity	± 0.075%
Independent linearity	± 0.075%
Life time	100 x 10^6 movements
Operational ambient temperature	-40°F / +212°F (-40°C / +100°C)
Mechanical angle	360° continuous
Actual electrical travel	350° ±2°
Ohmic value tolerance	±20%

SPECIFICATIONS FOR GF4C

Technical Specifications — Encoders

SCC Part No. → with support	PA030001	PA030002
Resolution	36 pulses/rev.	150 pulses/rev.
Operational ambient temperature	-40°F / +185°F (-40°C / +85°C)	
Code	Incremental	
Supply voltage	4.5 Vdc min. to 30 Vdc max. (35 mA max. - no load)	
Output voltage	Low: 500 mV max. at 10 mA High: (Vin – 0.6) at -10 mA (Vin – 1.3) at -25mA	
Output current	25 mA max. load per output channel	
Phase sense	A leads B clockwise (CW) from the mounting end of the encoder	
Accuracy	+/- 0.8 arc-min	
Outputs	Push pull	
Electrical protection	Protection against reverse polarity and output short-circuit	

Certifications — Absolute Encoder Yankee

Conformity to Community Directives	2014/30/UE Low Electromagnetic Compatibility (EMC) Directive
	2006/42/CE Machinery Directive
	2014/35/UE Low Voltage Directive (LVD)
Conformity to CE Standards	EN 601326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-13 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE c UL us

General Technical Specifications — Absolute Encoder Yankee

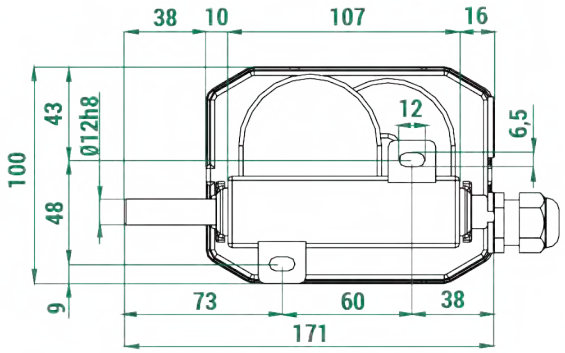
Ambient temperature	Storage:	-40°F / +176°F (-40°C / +80°C)
	Operational:	-40°F / +176°F (-40°C / +80°C)
IP protection degree	IP20	
Free rotation	360°	
Maximum rotation speed	800 rpm	

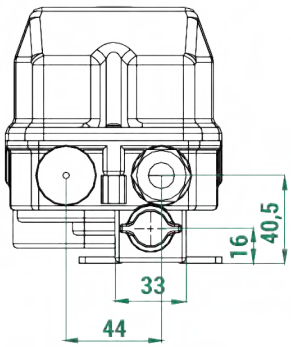
Electrical Specifications — Absolute Encoder Yankee

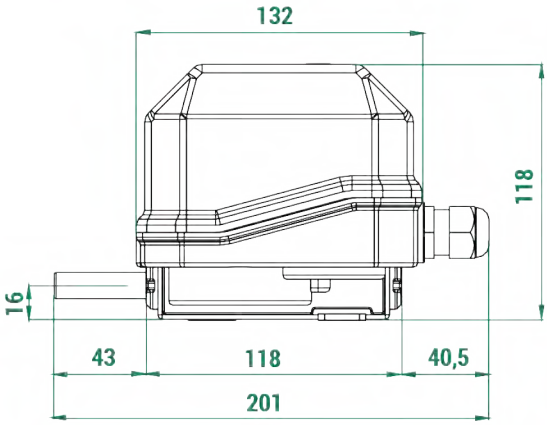
SCC Part No. →	PA01AA01	PA01AB01	PA01AC01
Analog output	Current 4 ÷ 20 mA	Voltage 0 ÷ 10 V	PWM 0 ÷ 100%
Power supply	12 ÷ 48 Vdc / 12 ÷ 48 Vac		
Protection against reverse polarity	Yes		
Absorption	50 mA		
Resolution	12 bit		
Linearity	+/- 0.5°		
Max hysteresis	0.1°		
Zero Point setting	Through button/wire		
Signal increment direction	CW (standard) / CCW (on request)		
Connections	Terminal board		
Terminal wires	0.14 mm^2 - 1.5 mm^2		
Terminal tightening torque	0.22 Nm - 0.25 Nm		

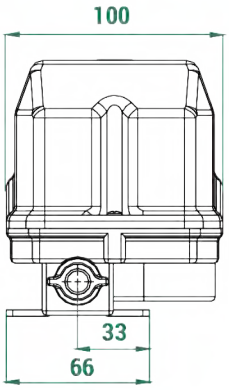
GF4C - OVERALL DIMENSIONS (mm)

Standard

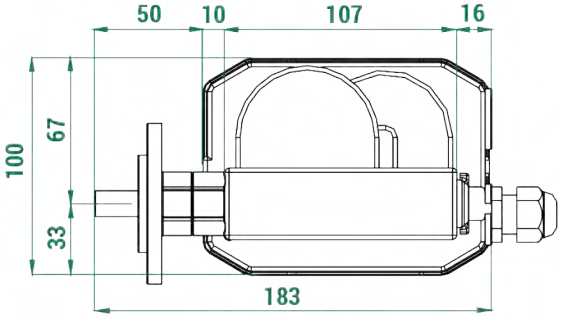








With flange

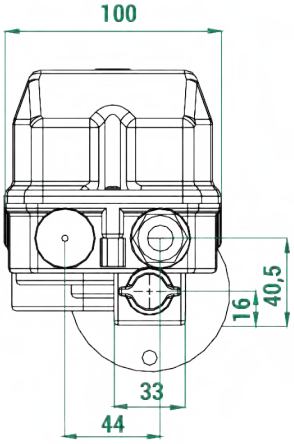


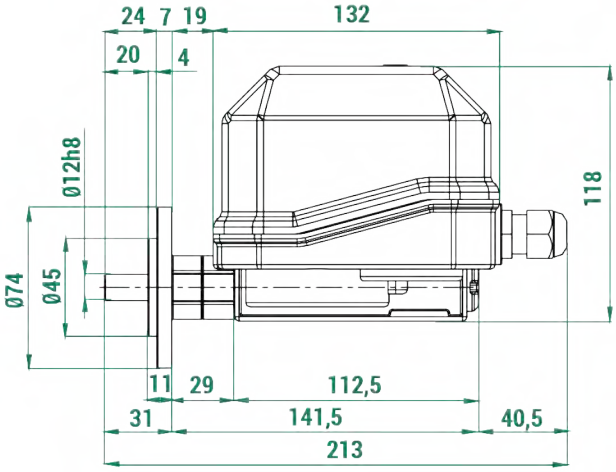
1 mm = 0.03937 inches
1 inch = 25.4 mm

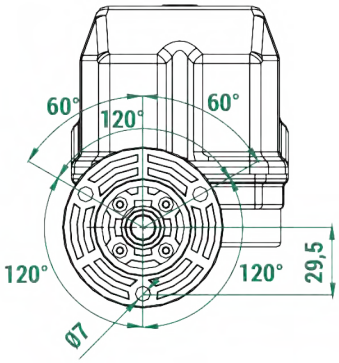
Formula:

divide
the mm length value by 25.4

multiply
the inch length value by 25.4







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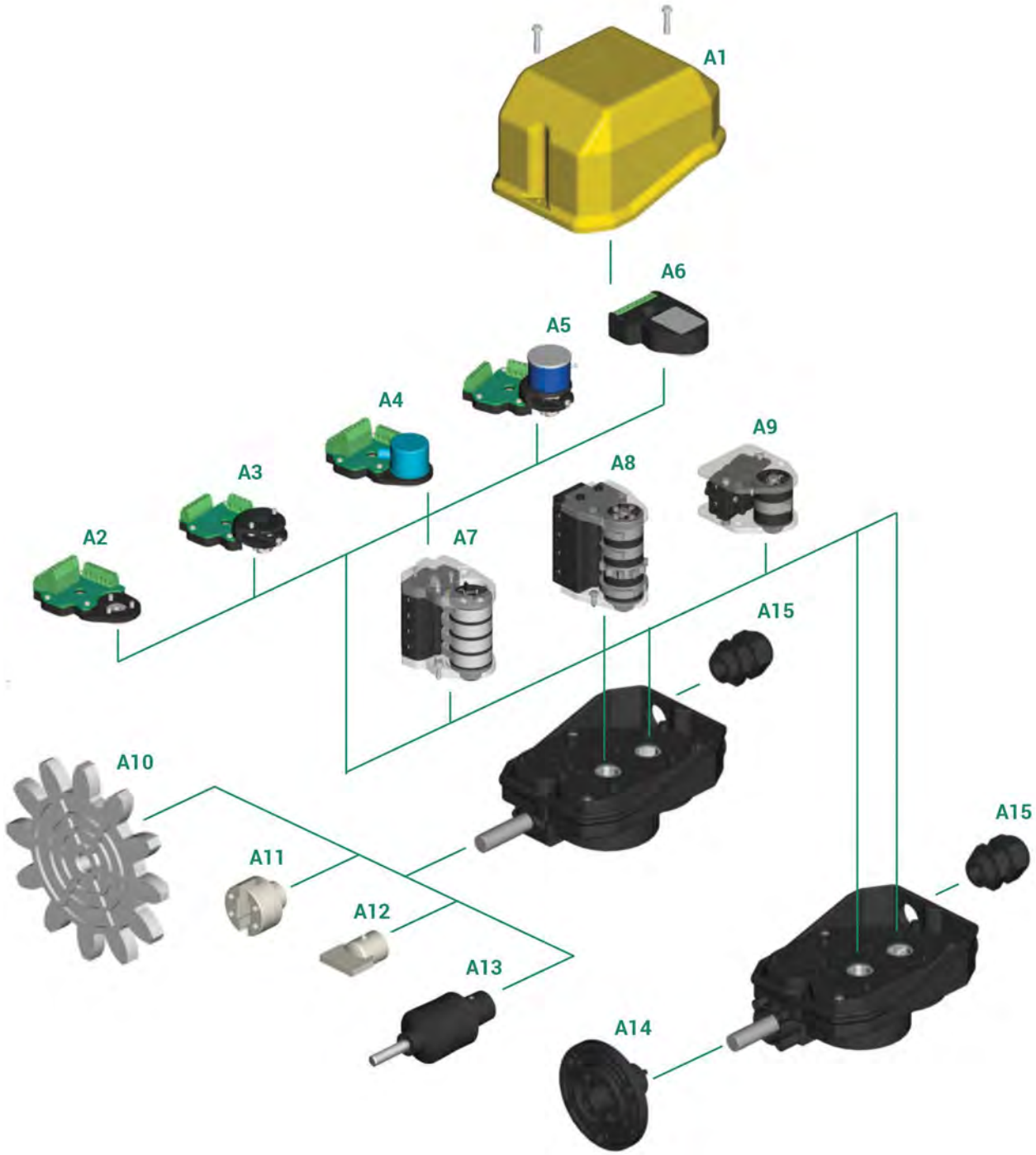
STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7140PI .

Rated Revolution Ratio	No. of Cams and Switches	Switches	
		PRSL0036XX 1NO+1NC (snap-action)	PRSL0037XX 1NC (slow-action)
		SCC Part No.	
1:1	2	PF090300010003	PF090300010004
	3	PF090300010002	PF090300010005
	4	PF090300010001	PF090300010006
1:5	2	PF090300050002	PF090300050004
	3	PF090300050003	PF090300050005
	4	PF090300050001	PF090300050006
1:10	2	PF090300100003	PF090300100005
	3	PF090300100004	PF090300100006
	4	PF090300100002	PF090300100007
1:15	2	PF090300150004	PF090300150007
	3	PF090300150003	PF090300150008
	4	PF090300150002	PF090300150001
1:20	2	PF090300200002	PF090300200004
	3	PF090300200003	PF090300200005
	4	PF090300200001	PF090300200006
1:25	2	PF090300250006	PF090300250007
	3	PF090300250003	PF090300250008
	4	PF090300250001	PF090300250002
1:50	2	PF090300500002	PF090300500028
	3	PF090300500003	PF090300500017
	4	PF090300500006	PF090300500007
1:75	2	PF090300750007	PF090300750009
	3	PF090300750008	PF090300750010
	4	PF090300750004	PF090300750006
1:100	2	PF090301000002	PF090301000001
	3	PF090301000006	PF090301000013
	4	PF090301000003	PF090301000004
1:150	2	PF090301500002	PF090301500001
	3	PF090301500011	PF090301500009
	4	PF090301500008	PF090301500003
1:200	2	PF090302000006	PF090302000007
	3	PF090302000002	PF090302000004
	4	PF090302000003	PF090302000008
1:250	2	PF090302500003	PF090302500009
	3	PF090302500007	PF090302500010
	4	PF090302500008	PF090302500011
1:300	2	PF090303000004	PF090303000008
	3	PF090303000006	PF090303000009
	4	PF090303000007	PF090303000010

GF4C ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Standard Cam Sets", "Potentiometers, Encoders and Sensors" and "Accessories".

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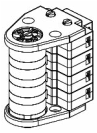
GF4C - ACCESSORY PARTS

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A7		2 cams A	2 PRSL0110XX switches	FCL20001
		2 cams A	2 PRSL0111XX switches	FCL20002
		Cams A+C	2 PRSL0110XX switches	FCL20003
		Cams A+C	2 PRSL0111XX switches	FCL20004
		2 cams C	2 PRSL0110XX switches	FCL20005
		2 cams C	2 PRSL0111XX switches	FCL20006
		Cams D+D+B+F	4 PRSL0110XX switches	FCL40001
		Cams D+D+B+F	4 PRSL0111XX switches	FCL40002
		4 cams A	4 PRSL0110XX switches	FCL40003
		4 cams A	4 PRSL0111XX switches	FCL40004
		Cams A+A+C+C	4 PRSL0110XX switches	FCL40005
		Cams A+A+C+C	4 PRSL0111XX switches	FCL40006
		4 cams C	4 PRSL0110XX switches	FCL40007
		4 cams C	4 PRSL0111XX switches	FCL40008
		Cams C+C+C+E	4 PRSL0110XX switches	FCL40009
		Cams C+C+C+E	4 PRSL0111XX switches	FCL40010
		Cams A+A+E+E	4 PRSL0110XX switches	FCL40011
		Cams A+A+E+E	4 PRSL0111XX switches	FCL40012
A8		2 cams A	2 PRSL0036XX switches	PRFC0010PE
		2 cams A	2 PRSL0037XX switches	PRFC0011PE
		2 cams C	2 PRSL0036XX switches	PRFC0012PE
		2 cams C	2 PRSL0037XX switches	PRFC0013PE
		3 cams A	3 PRSL0036XX switches	PRFC0020PE
		3 cams A	3 PRSL0037XX switches	PRFC0021PE
		3 cams C	3 PRSL0036XX switches	PRFC0022PE
		3 cams C	3 PRSL0037XX switches	PRFC0024PE
		4 cams A	4 PRSL0036XX switches	PRFC0030PE
		4 cams A	4 PRSL0037XX switches	PRFC0031PE
		4 cams C	4 PRSL0036XX switches	PRFC0032PE
		4 cams C	4 PRSL0037XX switches	PRFC0034PE
A9		1 cam A	1 PRSL0455XX switch	PRFC0101PE
		2 cam A	2 PRSL0455XX switches	PRFC0103PE

Other sets with 2/3/4 switches PRSL0036XX / PRSL0037XX / PRSL0110XX / PRSL0111XX or with 1 or 2 switches PRSL0455PI are available upon request.

GF4C - ACCESSORY PARTS

Cam Reference Chart for Sets with Switches PRSL0110XX AND PRSL0111XX

Cam		Switching angle with PRSL0011XX	Switching angle with PRSL0111XX	SCC Part No.
A	1 point	21.5° ±0.5°	23.0° ±0.5°	PRSL7194PI
B	10 points	21.5° ±0.5°	23.0° ±0.5°	PRSL7193PI
C	60° sector	82.0° ±0.5°	86.0° ±0.5°	PRSL7195PI
D	72° sector	94.0° ±0.5°	97.5° ±0.5°	PRSL7196PI
E	180° sector	204.5° ±0.5°	203.0° ±0.5°	PRSL7191PI
F	305° sector	328.5° ±0.5°	327.0° ±0.5°	PRSL7192PI

Cam Reference Chart for Sets with Switches PRSL0036XX AND PRSL0037XX

Cam		Switching angle with PRSL0036XX	Switching angle with PRSL0037XX	SCC Part No.
A	1 point	21.0° ±0.5°	25.0° ±0.5°	PRSL7140PI
B	10 points	16.5° ±0.5°	21.5° ±0.5°	PRSL7142PI
C	60° sector	80.0° ±0.5°	86.0° ±0.5°	PRSL7141PI
E	180° sector	199.5° ±0.5°	205.5° ±0.5°	PRSL7144PI
H	335° sector	343.5° ±0.5°	349.0° ±0.5°	PRSL7143PI

Potentiometers, Encoders and Sensors

Ref.	Drawing	Description	SCC Part No.
A2		Support for encoder	PA030000
A3		Support for potentiometer	PA020000
A4		Encoder 36 pulses. / rev. with support	PA030001
		Encoder 150 pulses. / rev. with support	PA030002
A5		Potentiometer MCB 10 kΩ with support	PA020001
		Potentiometer 10 kΩ mechanical stop with support	PA020002
		Potentiometer 10 kΩ ± 10% 4 pins with support	PA020003
		Potentiometer 10 kΩ ± 10% 3 pins with support	PA020004
		Potentiometer 5 kΩ ± 10% with support	PA020005
		Potentiometer 4.7 kΩ with support	PA020006
		Potentiometer Megatron 10 kΩ with support	PA020007
		Potentiometer 2.2 kΩ with support	PA020008
		Potentiometer 2 KΩ with support	PA020009
A6		Absolute encoder Yankee - current output	PA01AA01
		Absolute encoder Yankee - voltage output	PA01AB01
		Absolute encoder Yankee - PWM output	PA01AC01

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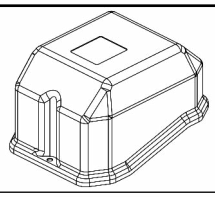
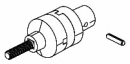
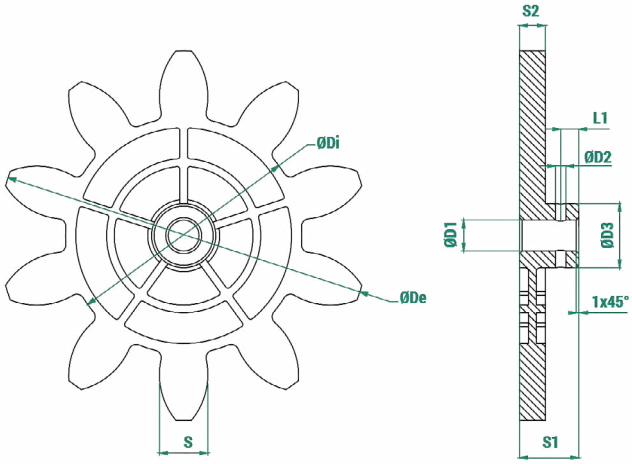
GF4C - ACCESSORY PARTS

Accessories

Ref.	Drawing	Description	SCC Part No.
A1		Cover	PRSL5582PI
A10		Pinion gear	See pinion gear tables
A11		Female coupling with pin	PRSL0920PI
A12		Male coupling with pin	PRSL0919PI
A13		Coupling wing pin	PRSL0981PI
A14		Flange with pin	PRSL0947PI
A15		Cable clamp M20	PRSL0964PI

Moulded Pinion Gears



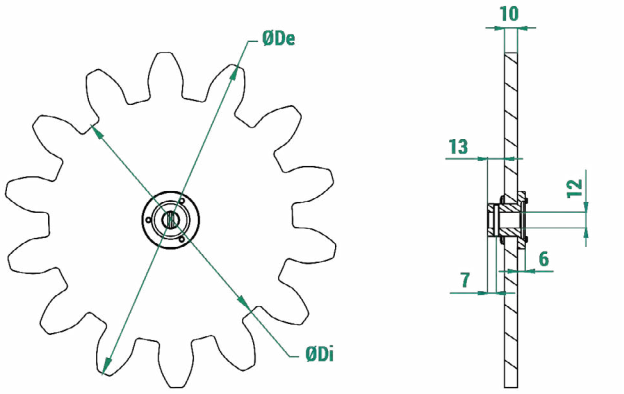
Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1	SCC Part No.
8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0915PI
10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00	PRSL0912PI
10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00	PRSL0913PI
10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0914PI
11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00	PRSL0917PI
12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00	PRSL0916PI
12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	3.90	21.50	23.50	10.00	7.00	PRSL0918PI
12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00	PRSL0911PI
12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00	PRSL0944PI

Measuring unit: mm

GF4C - ACCESSORY PARTS

Waterjet Cut Pinion Gears



Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Z	M	Dp	De	Di	a	d	Alpha	SCC Part No.
8	18.00	144.00	180.00	102.00	18.00	21.00	20.00	PRSL0857PI
8	24.00	192.00	240.00	136.00	24.00	28.00	20.00	PRSL0855PI
9	10.00	90.00	110.00	66.67	10.00	11.67	20.00	PRSL0992PI
9	16.00	144.00	176.00	106.67	16.00	18.67	20.00	PRSL0879PI
9	18.00	162.00	198.00	120.00	18.00	21.00	20.00	PRSL0854PI
9	20.00	180.00	220.00	133.33	20.00	23.33	20.00	PRSL0871PI
9	24.00	216.00	264.00	160.00	24.00	28.00	20.00	PRSL0849PI
10	10.00	100.00	120.00	76.67	10.00	11.67	20.00	PRSL0846PI
10	18.00	180.00	216.00	138.00	18.00	21.00	20.00	PRSL0993PI
10	22.00	220.00	264.00	168.52	22.00	25.74	20.00	PRSL0970PI
10	24.00	240.00	288.00	18.00	24.00	28.00	20.00	PRSL0856PI
11	12.00	132.00	156.00	104.00	12.00	14.00	20.00	PRSL0861PI
11	18.00	198.00	234.00	156.00	18.00	21.00	20.00	PRSL0998PI
11	20.00	220.00	260.00	173.36	20.00	23.32	20.00	PRSL0997PI
11	24.00	264.00	312.00	204.00	24.00	30.00	20.00	PRSL0859PI
12	14.00	168.00	196.00	133.00	14.00	17.50	20.00	PRSL0863PI
12	16.00	192.00	224.00	154.67	16.00	18.67	20.00	PRSL0897PI
12	18.00	216.00	252.00	173.88	18.00	21.06	20.00	PRSL0972PI
12	20.00	240.00	280.00	193.34	20.00	23.32	20.00	PRSL0845PI
12	24.00	288.00	336.00	232.00	24.00	28.00	20.00	PRSL0878PI
13	6.00	78.00	90.00	63.00	6.00	7.50	20.00	PRSL0860PI
13	12.00	156.00	178.59	126.00	11.29	15.00	20.00	PRSL0853PI
13	16.00	208.00	240.00	170.67	16.00	18.66	20.00	PRSL0898PI
14	10.00	140.00	169.00	125.00	15.00	7.50	20.00	PRSL0862PI
14	16.00	224.00	256.00	186.67	16.00	18.67	20.00	PRSL0896PI
14	18.00	252.00	288.00	210.00	18.00	21.00	20.00	PRSL0999PI
14	20.00	280.00	320.00	233.33	20.00	23.33	20.00	PRSL0848PI
15	18.00	270.00	306.00	228.00	18.00	21.00	20.00	PRSL0858PI
16	20.00	320.00	360.00	273.33	20.00	23.33	20.00	PRSL0847PI
17	10.00	170.00	190.00	145.00	10.00	12.50	22.89	PRSL0973PI
17	14.00	238.00	266.00	203.00	14.00	17.50	22.89	PRSL0974PI
20	6.00	120.00	132.00	105.00	6.00	7.50	22.89	PRSL0851PI
25	1.00	25.00	27.00	22.50	1.00	1.25	22.89	PRSL0844PI

Measuring unit: mm

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GF4C - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

(See next pages for list of components and legends)

1. **Version**: tick the required version.
2. **Revolution ration:** write the required revolution ratio for each output.
3. **Standard cam sets**: write the code of the cam set required for each output.

   ATTENTION: refer to table "Configurations with sets of cams/ switches" for possible configurations.
4. **Customized cam sets**: for non standard cam sets, fill in the scheme choosing the cams and the switches required.

   ATTENTION: refer to table "Configurations with sets of cams/ switches" for possible configurations.

   Customized cams are available on request.
5. **Potentiometers, encoders, Yankee**: write the code of the potentiometer, encoder or Yankee required. Refer to table "Configurations with potentiometers, encoders and Yankee" for possible configurations.
6. **Cable clamps:** choose the number of cable clamps required.
7. **Coupling, flange, pinion gear:** thicj the box when coupling, flange or pinion gear are required.

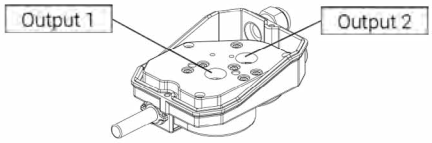
   When a standard pinion gear is required, write the code number listed in the pinion gear table in the catalogue.

   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
8. **Shaft:** thick the shaft type required.
   Customized shafts are available on request.

Version 1

☐ Version IP00 (without cover)

☐ Version IP65



Revolution ratio 2

Output 1

☐ 1:1 ☐ 1:25 ☐ 1:200

☐ 1:5 ☐ 1:50 ☐ 1:250

☐ 1:10 ☐ 1:70 ☐ 1:300

☐ 1:15 ☐ 1:100 ☐ 1:450

☐ 1:20 ☐ 1:150 ☐ 1: ____

Output 2

1: ____

Not all revolution ratios are available

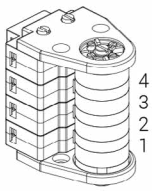
Standard cam sets 3

Cam set code

_____ Output 1

_____ Output 2

Customized cam sets 4



Output 1

Cam code	Switch code
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Output 2

Cam code	Switch code
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Potentiometers, encoders, Yankee 5

	Output 1	Output 2
Code	_____	_____

Cable clamps 6

☐ No. 1 cable clamp M20

☐ No. 2 cable clamps M20

☐ **Male coupling** ☐ **Coupling** 7

☐ **Female coupling** ☐ **Flange**

☐ **Pinion gear**

Pinion gear code _____

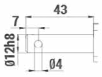
Customized pinion gear

No. of teeth _____

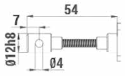
Module _____

Primitive diameter _____

☐ **Standard shaft** 8



☐ **Flexible shaft**



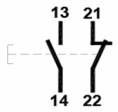
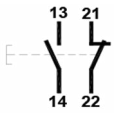
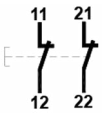
GF4C - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

3 Legend - Standard Cam Sets

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0110XX	2 cams A	FCL20001
	Cams A+C	FCL20003
	2 cams C	FCL20005
4 x PRSL0110XX	Cams D+D+B+F	FCL40001
	4 cams A	FCL40003
	Cams A+A+C+C	FCL40005
	4 cams C	FCL40007
	Cams C+C+C+E	FCL40009
	Cams A+A+E+E	FCL40011
2 x PRSL0111XX	2 cams A	FCL20002
	Cams A+C	FCL20004
	2 cams C	FCL20006
4 x PRSL0111XX	Cams D+D+B+F	FCL40002
	4 cams A	FCL40004
	Cams A+A+C+C	FCL40006
	4 cams C	FCL40008
	Cams C+C+C+E	FCL40010
	Cams A+A+E+E	FCL40012

No. & types of switches	No. & type of cams	SCC Part No.
2 x PRSL0036XX	2 cams A	PRFC0010PE
	2 cams C	PRFC0012PE
2 x PRSL0037XX	2 cams A	PRFC0011PE
	2 cams C	PRFC0013PE
3 x PRSL0036XX	3 cams A	PRFC0020PE
	3 cams C	PRFC0022PE
3 x PRSL0037XX	3 cams A	PRFC0021PE
	3 cams C	PRFC0024PE
4 x PRSL0036XX	4 cams A	PRFC0030PE
	4 cams C	PRFC0032PE
4 x PRSL0037XX	4 cams A	PRFC0031PE
	4 cams C	PRFC0024PE
1 x PRSL0455PI	1 cam A	PRFC0101PE
2 x PRSL0455PI	2 cams A	PRFC0103PE

4 Legend - Switches

Auxiliary Control				Direct Control
PRSL0036XX	PRSL0037XX	PRSL0110XX	PRSL0110XX	PRSL0455PI
1NO+1NC 	1NC	1NO+1NC 	1NC	2NC 

4 Legend - Standard Cams

	Cam	Switching angle with PRSL0036XX	Switching angle with PRSL0037XX	SCC Part No. for PRSL0036XX PRSL0037XX PRSL0455PI switches	Switching angle with PRSL0110XX	Switching angle with PRSL0111XX	SCC Part No. for PRSL0110XX PRSL0111XX switches
A	1 point	21.0° ±0.5°	25.0° ±0.5°	PRSL7140PI	21.5° ±0.5°	23.0° ±0.5°	PRSL7194PI
B	10 points	16.5° ±0.5°	21.5° ±0.5°	PRSL7142PI	21.5° ±0.5°	23.0° ±0.5°	PRSL7193PI
C	60° sector	80.0° ±0.5°	86.0° ±0.5°	PRSL7141PI	82.0° ±0.5°	86.0° ±0.5°	PRSL7195PI
D	72° sector	/	/	/	94.0° ±0.5°	97.5° ±0.5°	PRSL7196PI
E	180° sector	199.5° ±0.5°	205.5° ±0.5°	PRSL7144PI	204.5° ±0.5°	203.0° ±0.5°	PRSL7191PI
F	305° sector	/	/	/	328.5° ±0.5°	327.0° ±0.5°	PRSL7192PI
H	335° sector	343.5° ±0.5°	349.0° ±0.5°	PRSL7143PI	/	/	/

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GF4C - REQUEST FORM FOR NON STANDARD LIMIT SWITCH - Legends

7 Legend - Potentiometers, Encoders and Yankee

Description	SCC Part No.
Potentiometer MCB 10 kΩ with support	PA020001
Potentiometer 10 kΩ mechanical stop with support	PA020002
Potentiometer 10 kΩ ±10% 4 pins with support	PA020003
Potentiometer 10 kΩ ±10% 3 pins with support	PA020004
Potentiometer 5kΩ ±10% with support	PA020005
Potentiometer 4.7 kΩ with support	PA020006
Potentiometer Megatron 10 kΩ with support	PA020007
Potentiometer 2.2 kΩ with support	PA020008
Potentiometer 2 KΩ with support	PA020009
Encoder 36 pulses./rev. with support	PA030001
Encoder 150 pulses./rev. with support	PA030002
Yankee - current output	PA01AA01
Yankee - voltage output	PA01AB01
Yankee - PWM output	PA01AC01

4 Table - Configurations with sets of cams/switches

Sets of cams with switches PRSL0036XX and PRSL0037XX
When using sets of cams with switches PRSL0036XX abd PRSL0037XX:
- it is possible to mount up to 4 switches on output 2
- it is possible to mount up to 3 switches on output 1
It is possible to mount 4 switches on output 1 only when ouput 2 is left empty.

Sets of cams with switches PRSL0110XX and PRSL0111XX
When using sets of cams with switches PSL0110XX and PRSL0111XX, it is possible to mount up to 4 switches on each output.

Sets of cams with switches PRSL0455PI
When using sets of cams with switches PRSL0455PI, it is possible to mount only 1 switch on each output. 2 switches can be mounted on output 1 only when output 2 is left empty.

5 Table - Configurations with potentiometers, encoders and Yankee

With sets of cams/switches PRSL0036XX and PRSL0037XX
When using sets of cams with switches PRSL0036XX and PRSL0037XX, it is possible to mount potentiometers, encoders and Yankee only on the output where there is no set of cam/switches. Potentiometers, encoders nor Yankee can be mounted on top of a set of cams/switches.

*Potentiometers marked with * can be mounted on output 1 or output 2, but the other output must be left empty.

Sets of cams with switches PRSL0110XX and PRSL0111XX
Potentiometers, encoders and Yankee can be mounted on output 1 and 2 alone (no. of switches =0), or on top of a set of cams with switches PSL0110XX and PRSL0111XX according to the possible configurations shown in the following table.

*Potentiometers marked with * can be mounted on output 1 or output 2, but the other output must be left empty.

Potentiometers, Encoders and Yankee	Output 1 No. of switches PRSL0110XX - PRSL0111XX					Output 2 No. of switches PRSL0110XX - PRSL0111XX				
	0	1	2	3	4	0	1	2	3	4
PA020001	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
PA020002	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
PA020003	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
PA020004	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
PA020005	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
PA020006*	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
PA020007*	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
PA020008*	YES	YES	NO	NO	NO	YES	YES	NO	NO	NO
PA020009*	YES	NO	NO	NO	NO	YES	NO	NO	NO	NO
PA030001	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
PA030002	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
PA01AA01	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO
PA01AB01	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO
PA01AC01	YES	YES	YES	YES	NO	YES	YES	YES	YES	NO

ATLANTE

ELECTRONIC LIMIT SWITCH

The **ATLANTE** is an electronic rotary limit switch utilizing an electronic multi turn magnetic absolute encoder. The absolute encoder interfaces with rotating elements and returns a signal according to the angular position. Made with high quality components to guarantee long mechanical life, precision and repeat accuracy in extreme conditions.

Features

- Used in a variety of industrial sectors, from lifting to automation. Designed to record absolute positions regardless of the mechanic of the system and of its complexity.
- Featuring integrated SSI interface.
- Designed for easy wiring.
- Accuracy guaranteed by 1024 points per revolution.
- IP protection degree: IP65, IP67 and IP69K.
- Extreme temperature resistance: from -13°F to +176°F(-25°C to +80°C).
- Made with high quality materials and components to guarantee long mechanical life, precision and repeat accuracy even in extreme conditions.

Options

- Equipped with flange or, on request, with pinion gear and flange mounted on the side.

Certifications

- CE marking and EAC certification.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR ATLANTE

Internal View and Possible Assemblies

Certifications

Conformity to Community Directives	2014/30/UE Electromagnetic Compatibility (EMC) Directive
	2006/42/CE Machinery Directive
	2014/35/UE Low Voltage Directive (LVD)
Conformity to CE Standards	EN 61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements.
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage: -13°F / +176°F (-25°C / +80°C)
	Operational: -13°F / +176°F (-25°C / +80°C)
IP protection degree	IP66 / IP67 / IP69K
Insulation category	Class II
Maximum rotation speed	6000 rpm
Connections	Male connector 8 PIN M12

Electrical Specifications

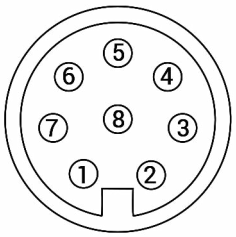
Power supply	4.5 ... 30 Vdc
Consumption without load	Typ. 80 mA (5 Vdc)
Initializing time	Typ. 170 ms after power on
Interface	SSI
Points per revolution	≤ 1024 / 10 bit
Number of revolutions	≤ 4096 / 12 bit
Accuracy	± 0.4° (20 ± 15°C) tbc
	± 0.5° (-40 ... +85°C) tbc
Code	Binary
Code sequence	CW default programmable
Inputs	SSI clock: Line receiver RS422 - Zero setting input, direction input
Output stage	SSI date driver for RS422
SSI clock frequency	Max. 2 MHz
Zero setting	High-impulse duration: ≥ 100 ms

Male Connector Specifications

Number of PINs	8
Insulation resistance	≥ 100 MΩ
Maximum voltage	0.8 kV
Wires	24 - 20 AWG
Contacts	CuZn
Mating	Connector, 8 PIN, female connector M12, A-coded (Phoenix Contact 1513347)

SPECIFICATIONS and OVERAL DIMENSIONS (mm) FOR ATLANTE

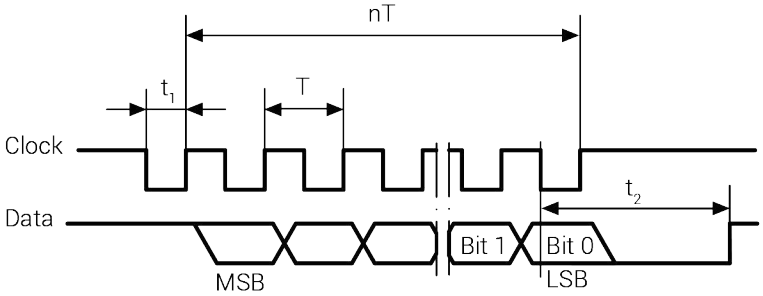
Male Connector Assignment



Male connector
(rear view)

Pin	Signal	Description
1	+Vs	Supply voltage
2	DIR	Input direction
3	Data+	Data signal
4	Data-	Data signal
5	Clock-	Clock signal
6	Clock+	Clock signal
7	SET	Zero setting
8	O V	Supply voltage

SSI Signal Output



T = 0.5...10 µs

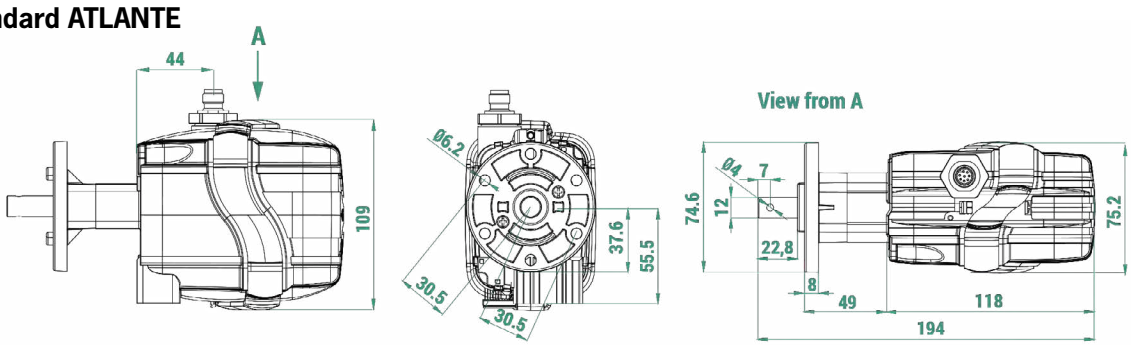
$t_2 \leq 20 \pm 2$ µs

t_1 = 0.25...5 µs

f max. = 2 MHz

Overall Dimensions (mm)

Standard ATLANTE



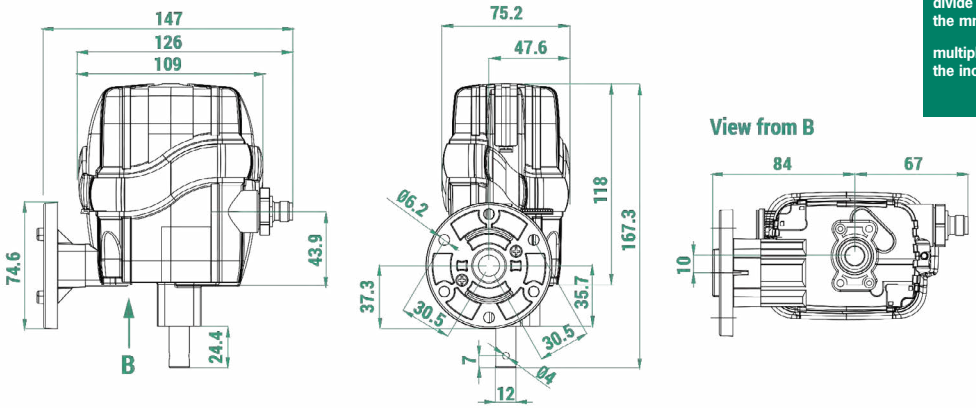
1 mm = 0.03937 inches
1 inch = 25.4 mm

Formula:

divide
the mm length value by 25.4

multiply
the inch length value by 25.4

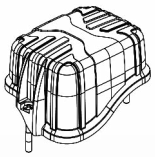
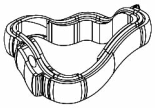
ATLANTE with lateral flange



ATLANTE ASSEMBLY DRAWING & ACCESSORY PARTS

Refer to the following table for descriptions of components: "Accessories".

Accessories

Ref.	Drawing	Description	SCC Part No.
A1		Cover with screws	PA090017
A2		Tightening rubber	PRGU1500PE
A3		Female connector (not included, available on demand)	PRVV9505PE

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LIMITEX AG

HAZARDOUS AREAS ROTARY LIMIT SWITCH

The **LIMITEX AG** explosion proof limit switch is certified for use in ATEX & IEC Ex zones 1,2, 21 and 22. Available in gear ratios from 1:15 to 1:499, with up to 4 switches to control industrial machinery in hazardous / explosive environments.

Features

- Consists of a gear motor that transfers movement through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- IP protection degree: IP66.
- Extreme temperature resistance: -58°F to +140°F(-50°C to +60°C).
- Features rugged external enclosure made of G20 cast iron, stainless steel transmission and gear driving shafts, self-lubricating technopolymer gears and driving bushes.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Revolution ratios from 1:15 to 1:499, achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC change-over contacts.
- It can be equipped with a cam set with 2-3-4 switches.
- Available with flange for direct coupling to the motor.
- Available with direct control switches to enable direct action on the motor.

Certifications

- CE marking.
- Atex certification EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009.
- Conformity to Standards IEC Ex IEC 60079-0:2011, IEC 60079-1:2007-04 and IEC 60079-31:2008.

Fill-in the "request form" for a custom product configuration

SPECIFICATIONS FOR LIMITEX AG

Certifications

Conformity to Atex Standards	EN 60079-0:2009 Explosive atmospheres - Equipment- General requirements
	EN 60079-1:2007 Explosive atmospheres - Equipment protection by flameproof enclosures "d"
	EN 60079-31:2009 Explosive atmospheres - Equipment dust ignition protection by enclosure "t"
Conformity to IECEx Standards	IEC 60079-0:2011 Explosive atmospheres - Equipment - General requirements
	IEC 60079-1:2007-04 Explosive atmospheres - Equipment protection by flameproof enclosures "d"
	IEC 60079-31:2008 Explosive atmospheres - Equipment dust ignition protection by enclosure "t"
Atex Certification	INERIS 13ATEX0020X
IECEx Certification	IECEx INE 13.0051X
Certification for equipment Group I, IIA, IIB and LLC with the following marks*	MINING: I M2 EX D I MB (ATEX) EX D I MB (IECEx)
	GAS Zone 1 and 2: II2G Ex d IIB T6 Gb or Ex d IIC T6 Gb (ATEX) EX D IIB T6 OR EX D IIC T6 GB (IECEx)
	DUST Zone 21 and 22: II2D Ex tb IIIC T85°C Db IP66 (ATEX) EX TB IIC T85°C DB IP66 (IECEx)
	GAS & DUST: 112 GD Ex d IIB or IIC T6 Gb Ex tb IIC T85°C Db IP66
Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60204-32 Safety of machinery - Electrical equipment of machines - Requirements for hoisting machines
	EN 60947-1 Low-voltage switch gear and control gear
	EN 60947-5-1 Low-voltage switch gear and control gear - Control circuit devices and switching elements - Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE Ex IEC IECEx

General Safety Specifications

Maximum supply voltage	300 Vac
Maximum current intensity	3 A
Maximum dissipated power	2 Watt
Rated frequency	50 / 60 hz

General Technical Specifications

Operational ambient temperature	-58°F / +140°F (-50°C / +60°C)
IP protection degree	IP66
Maximum rotation speed	800 rev./min.
Cable entry	No. 2 M20x1.5 (standard)
	No. 2 M25x1.5 (available upon request)
	No. 2 ½ NPT (available upon request)

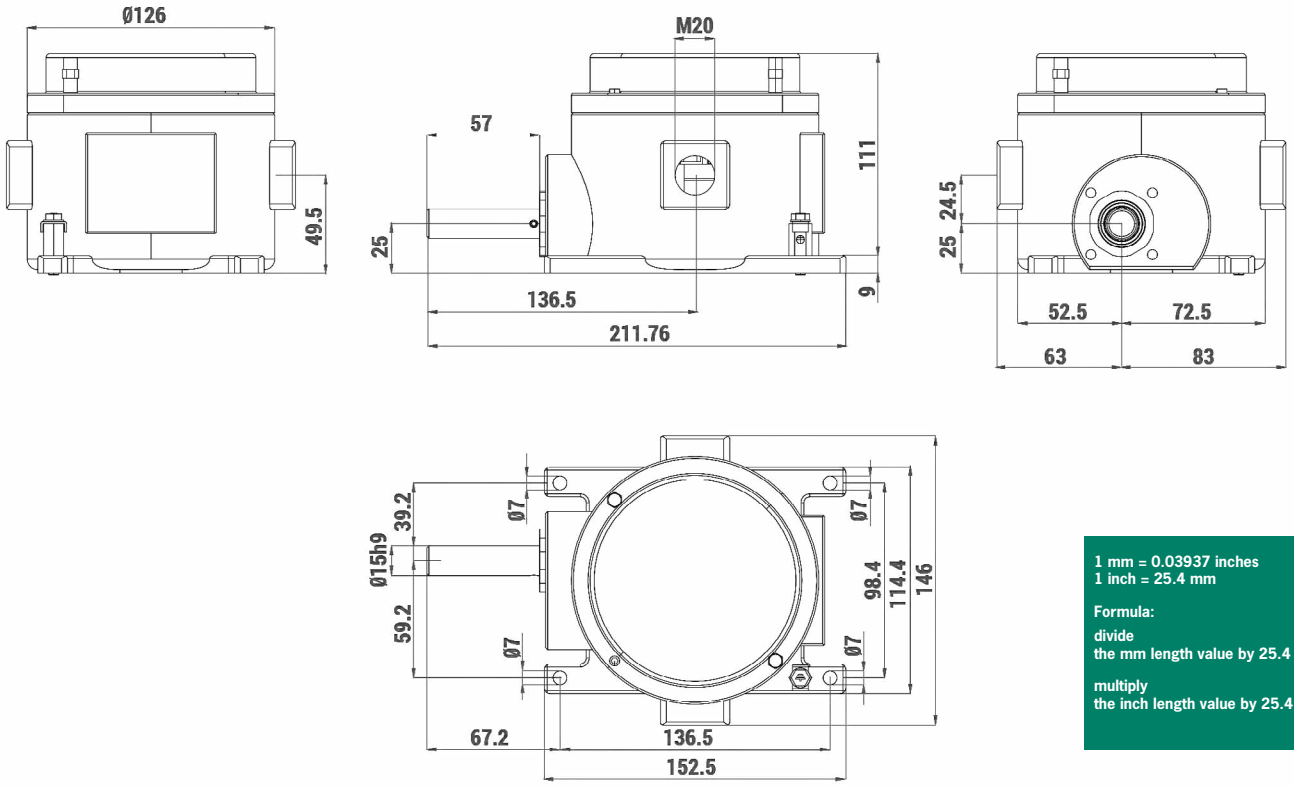
* The user is responsible for choosing the proper protection type, group and maximum case temperature of the limit switch to be installed. The user is also responsible for the correct installation, connection to the electrical network and use and maintenance of all electrical devices.

SPECIFICATIONS AND OVERALL DIMENSIONS (mm) FOR LIMITEX AG

Technical Specifications — Switches

SCC Part No. →	PRSL0003XX	PRSL0011XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	6.3 mm Faston taps	Screw-type terminals
Wires	-	2x0.5 mm^2, 2x1.5 mm^2, 1x2.5mm^2
Tightening torque		0.8 Nm
Micro-switch type	Single break, snap action	
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NO+1NC
Scheme		
Markings and Homologations	CE cULus EAC	

Overall Dimensions (mm)



1 mm = 0.03937 inches
1 inch = 25.4 mm

Formula:

divide
the mm length value by 25.4

multiply
the inch length value by 25.4

LIMITEX AG - STANDARD LIMIT SWITCHES

Rated revolution ratio	Real revolution ratio	No. of cams and switches	SCC Part No.
1:25	1:25.96	2	EXA9000A0025011
		4	EXA9000A0025010
1:50	1:50	2	EXA9000A0050046
		4	EXA9000A0050024
1:75	1:75	2	EXA9000A0075011
		4	EXA9000A0075009
1:100	1:103.57	2	EXA9000A0103014
		4	EXA9000A0103017
1:150	1:158.02	2	EXA9000A0158010
		4	EXA9000A0158009

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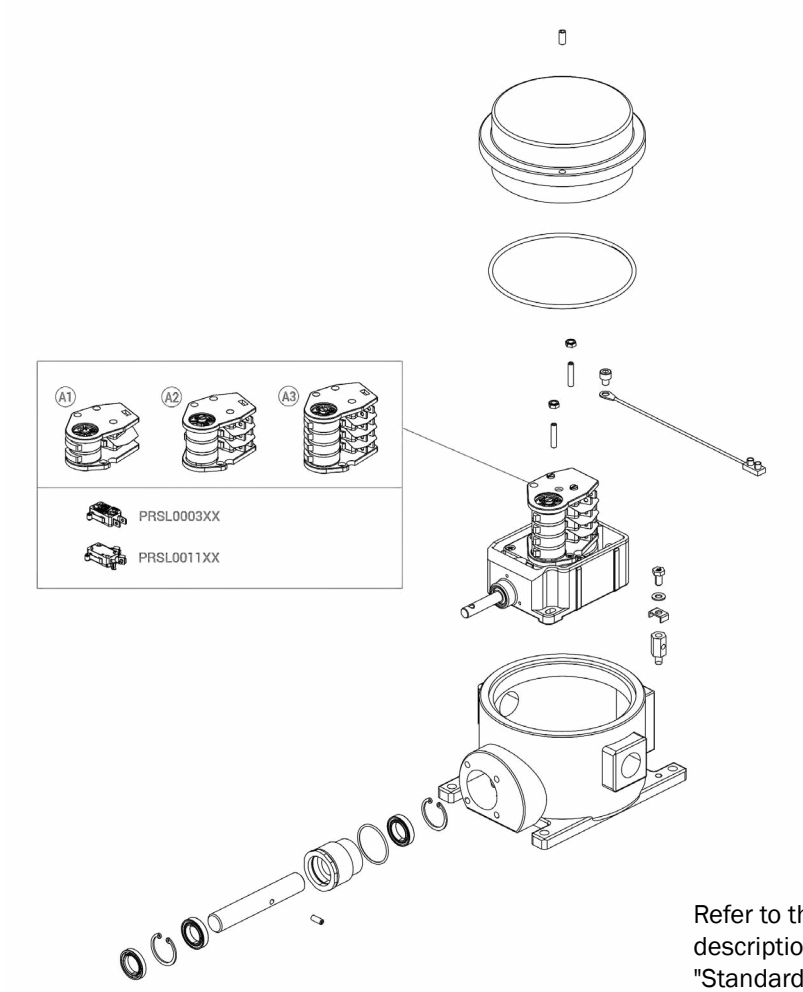
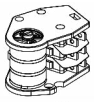
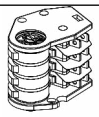
LIMITEX AG - ASSEMBLY DRAWING AND PARTS



Refer to the following table for descriptions of components: "Standard Cam Sets".

Standard Cam Sets

Ref.	Drawing	No. and type of cams	No. and type of switches	SCC Part No.
A1		2 cams A	2 PRSL0003XX switches	PRFC0008PEC
		2 cams C	2 PRSL0003XX switches	PRFC0009PEC
A2		3 cams A	3 PRSL0003XX switches	PRFC0004PEC
		3 cams C	3 PRSL0003XX switches	PRFC0006PEC
A3		4 cams A	4 PRSL0003XX switches	PRFC0202PEC
		4 cams C	4 PRSL0003XX switches	PRFC0198PEC

Other sets with 2,3 or 4 switches are available upon request.

Cam Reference Chart

Cam			Switching angle	SCC Part No.
A		1 point	20.5° ±0.5°	PRSL7140PI
B		10 points	14.0° ±0.5°	PRSL7142PI
C		60° sector	78.0° ±0.5°	PRSL7141PI
E		180° sector	199.5° ±0.5°	PRSL7144PI
H		335° sector	344.0° ±0.5°	PRSL7143PI

LIMITEX AG - REQUEST FORM FOR NON STANDARD LIMIT SWITCH

Instructions

1. **Standard cam set**: write the code of the cam set required.
2. **Customized cam set**: for non standard cam sets, fill in the scheme choosing the cams and the switches required.

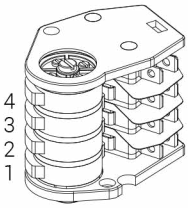
   Customized cams are available on request.
3. **Revolution ratio**: write the required revolution ratio.
4. **Cable entry**: tick the cable entry required.

Standard cam set (1)

Cam set code

_____

Customized cam set (2)



Cam code	Switch code
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

Revolution ratio (3)

- ☐ 1:15
- ☐ 1:20
- ☐ 1:25
- ☐ 1:50
- ☐ 1:75
- ☐ 1:100
- ☐ 1:150
- ☐ 1: _____

Cable entry (4)

- ☐ No. 2 M20x1,5 (standard)
- ☐ No. 2 M25x1,5 (available on request)
- ☐ No. 2 ½ NPT (available on request)

(1) Legend - Standard cam sets

No. & type of switches	No. & type of cams	Code
2 x PRSL0003XX	2 cams A	PRFC0008PEC
	2 cams C	PRFC0009PEC
3 x PRSL0003XX	3 cams A	PRFC0004PEC
	3 cams C	PRFC0006PEC
4 x PRSL0003XX	4 cams A	PRFC0202PEC
	4 cams C	PRFC0198PEC

(2) Legend - Standard cams

Cam		Switching angle	Code
A	1 point	20,5° ±0,5°	PRSL7140PI
B	10 points	14,0° ±0,5°	PRSL7142PI
C	60° sector	78,0° ±0,5°	PRSL7141PI
E	180° sector	199,5° ±0,5°	PRSL7144PI
H	335° sector	344,0° ±0,5°	PRSL7143PI

Legend - Switches

PRSL0003XX	PRSL0011XX
1NO+1NC	1NO+1NC

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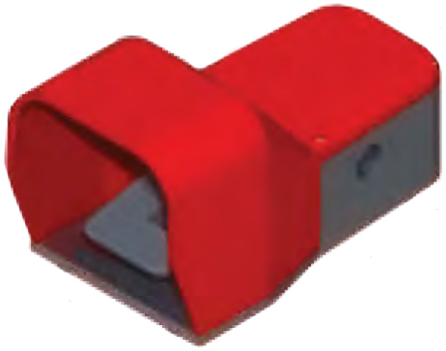
Industrial Electrical Controls

SPRINGER® controls company

Crane & Hoist Control

OMICRON Series



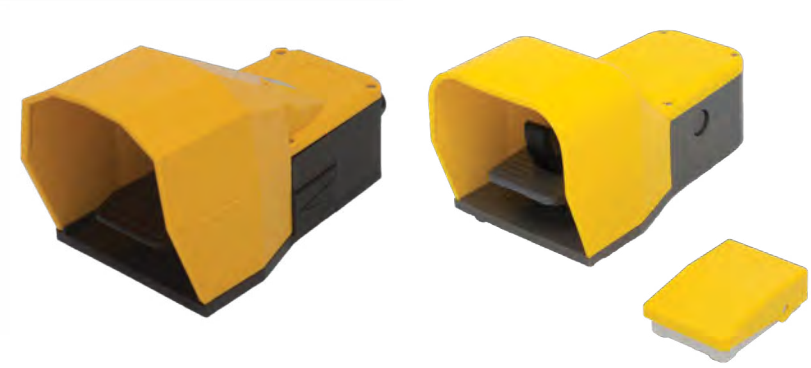
6100 / 6200 Series

SPRINGER® controls company

TER

INDUSTRIAL FOOTSWITCHES

springercontrols.com



INDEX

Springer Controls offers 4 models of footswitches designed for use with auxiliary control of industrial machines. A footswitch acts on the machine's motor through a power interface, such as a contactor.

The series **6100 and 6200 footswitch** can be configured with 1 or 2 switches and options include; standard or large cover (safety shoes), polycarbonate or aluminum material, "lock-release" device (prevents accidental contact with pedal) and single or double footswitches fixed on a metal mounting plate. The 6100 is designed with a metal plate on the back for connecting to pneumatic valves. The 6200 does not include the metal plate on the back and may be a more economical solution. All 6100/6200 series come with bright yellow cover with black base.

The **OMICRON** series footswitch offers similar features, as well as a 2-stage actuating option (2-speed) and a mini-footswitch configuration.

The Omicron series comes in a red/grey or yellow/grey.

All models include the base, cover and pedals made of shock resistant polycarbonate material or an option of die-cast aluminum (base).

Snap action switches are available with 1NO+1NC contacts and Slow action switches are available as 1NO+1NC contacts or 2NO+2NC contacts. The exception is the mini footswitch that comes with a single changeover style switch.

INDUSTRIAL FOOTSWITCHES

6100/6200 Series Description / Features / Specifications **4**
6100/6200 Dimensions **6**
6100/6200 Part Numbers **8**
6100/6200 Components / Request Form **10**

OMICRON Series Description / Features / Specifications **11**
OMICRON Dimensions **13**
OMICRON Part Numbers **14**
OMICRON Request Form **15**

6100/6200

FOOTSWITCH

Footswitch for auxiliary control of motors on tool machines, conveyors, lifts and other auxiliary foot operated devices.

Features

- The emergency stop mushroom push button complies with standard EN 418.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- IP protection degree: footswitch 6100/6200 is classified IP53.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C)
- Made of plastic material or die-cast aluminium.
- Materials and components are shock and wear resistant.

Options

- Available with standard protection cover or large cover for safety shoes (6100 version).
- Single or double footswitches fixed on a metal plate, with emergency mushroom push button.
- Special footswitch design for pneumatic valve with fixing plate (6100 version).
- It may be fitted with “lock-release” device used for keeping the pedal pressed or with safety device to prevent accidental operation.
- Snap or slow action switches with 1NO+1NC contacts, or slow action switches with 2NO+2NC contacts.

Certifications

- CE marking

Fill-in the "request form" for a custom product configuration

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SPECIFICATIONS for 6100/6200

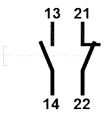
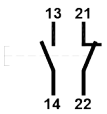
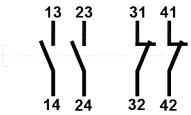
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 418 Safety of machinery - Emergency stop equipment, functional
Markings and Homologations	CE

General Technical Specifications

Ambient temperature	Storage:	-40°F / +158°F (-40°C / +70°C)
	Operational:	-13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 53	
Insulation category	Class I	
Cable entry	Cable clamps M20	

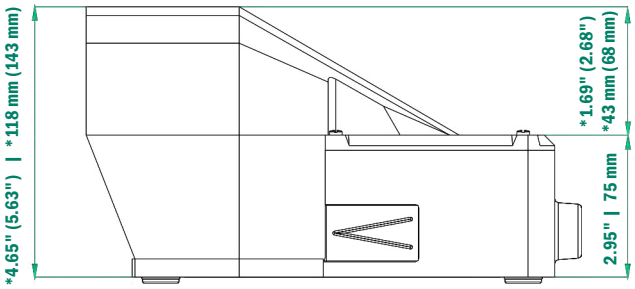
Technical Specifications of the Switches

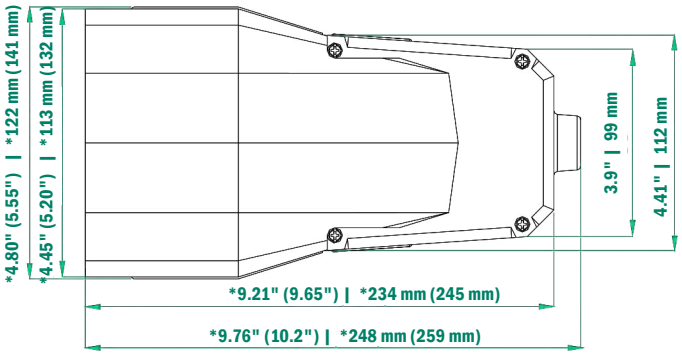
SCC Part No. →	**PRSL0036XX**	**PRSL0045PI**	**PRSL0047PI**
Utilisation category	AC 15	AC 15	
Rated operational current	3 A	1.9 A	
Rated operational voltage	250 Vac	380 Vac	
Rated thermal current	10 A	10 A	
Rated insulation voltage	300 Vac	500 Vac	
Mechanical life	1×10^6 operations		
Connections	Screw-type terminals		
Wires	$1 \times 2.5\ mm^2$, $2 \times 1.5\ mm^2$ (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)		
Tightening torque	0.8 Nm		
Microswitch type	Double break, snap action	Double break, slow action	Double break, slow action
Contact	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NO+1NC	2NO+2NC
Scheme			
Markings and Homologations	CE c UL us EAC	CE c UL us	

FOOTSWITCH 6100 - OVERALL DIMENSIONS

Simple

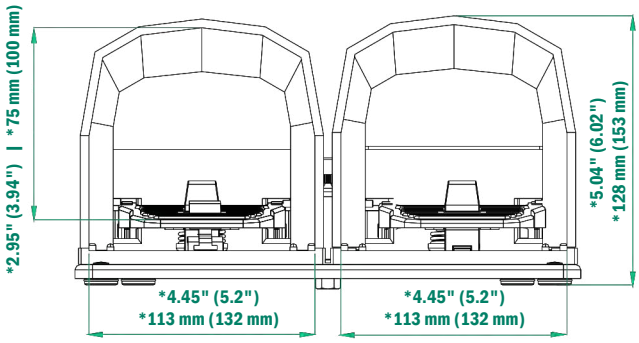
*with standard protection
() with large protection

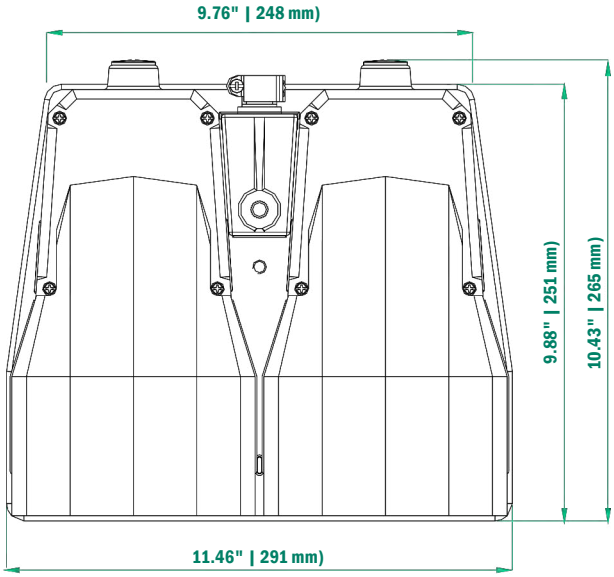




Double

*with standard protection
() with large protection





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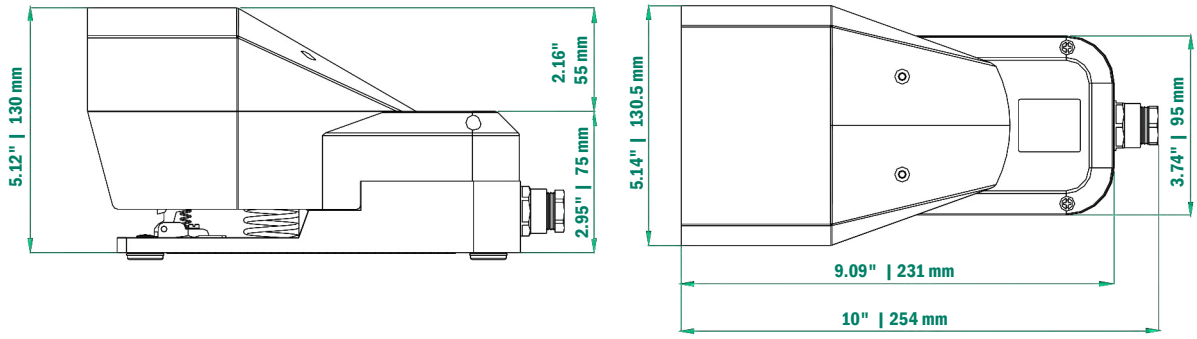
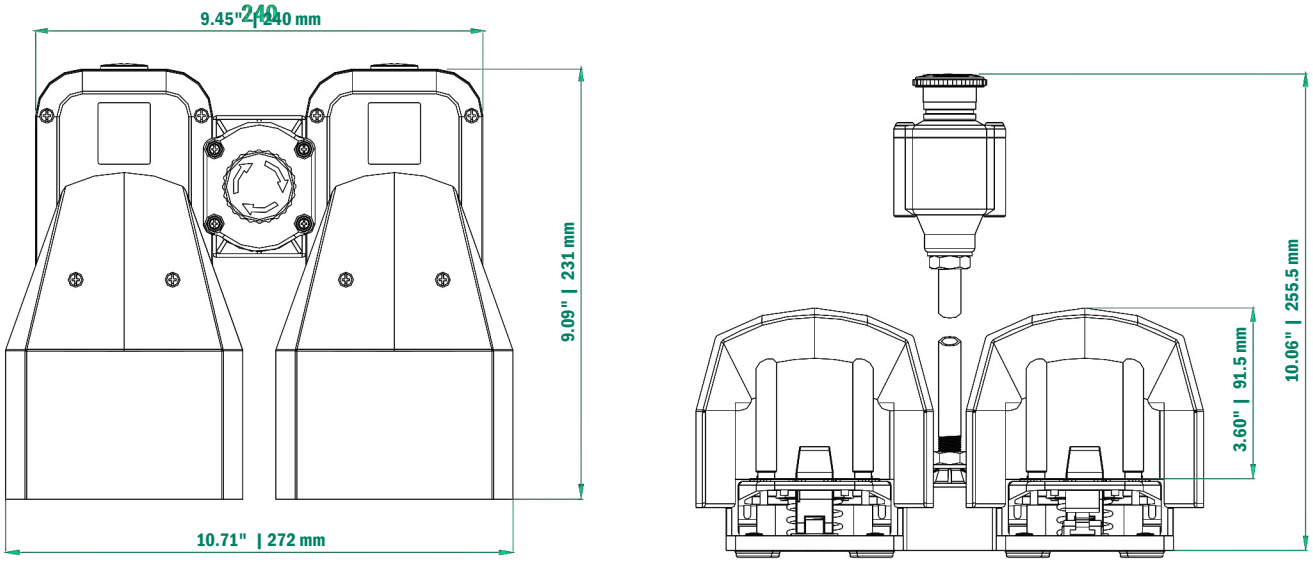
FOOTSWITCH 6200 - OVERALL DIMENSIONS

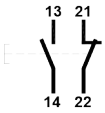
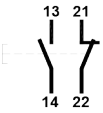
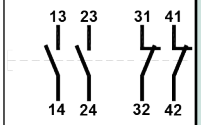
Simple



Double



6100 FOOTSWITCHES

Material	Footswitch Type			Foot Opening		Number of Switches			SCC Part No.
	Single	Double	For Valves	Standard	Large	PRSL0036XX 1NO+1NC snap action 	PRSL0045PI 1NO+1NC slow action 	PRSL0047PI 2NO+2NC slow action 	
Poly-Carbonate	X				X	1			**PF04612100 (stock)**
	X				X	2			PF04612200
	X				X	3			PF04612300
	X				X		1		PF04612500
	X				X			1	PF04612600
	X				X		1	1	PF04612700
	X				X			2	PF04612800
		X			X	2			PF04613100
		X			X	4			PF04613200
		X			X		2		PF04613300
		X			X			2	PF04613400
		X			X			4	PF04613500
	X		X	X					PF04814100
	X		X		X				PF04814600
Aluminum	X			X		1			**PF04615100 (stock)**
	X			X		2			**PF04615200 (stock)**
	X			X		3			PF04615300
	X			X			1		PF04615500
	X			X				1	PF04615600
	X			X			1	1	PF04615700
	X			X				2	PF04615800
		X		X		2			PF04616100
		X		X		4			PF04616200
		X		X			2		PF04616300
		X		X				2	PF04616400
		X		X				4	PF04616500
	X				X	1			**PF04617100 (stock)**
	X				X	2			**PF04617200 (stock)**
	X				X	3			PF04617300
	X				X		1		PF04617500
	X				X			1	PF04617600
	X				X		1	1	PF04617700
	X				X			2	PF04617800
		X			X	2			PF04618100
		X			X	4			PF04618200
		X			X		2		PF04618300
		X			X			2	PF04618400
		X			X			4	PF04618500

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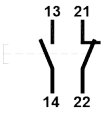
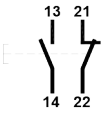
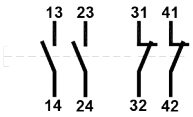
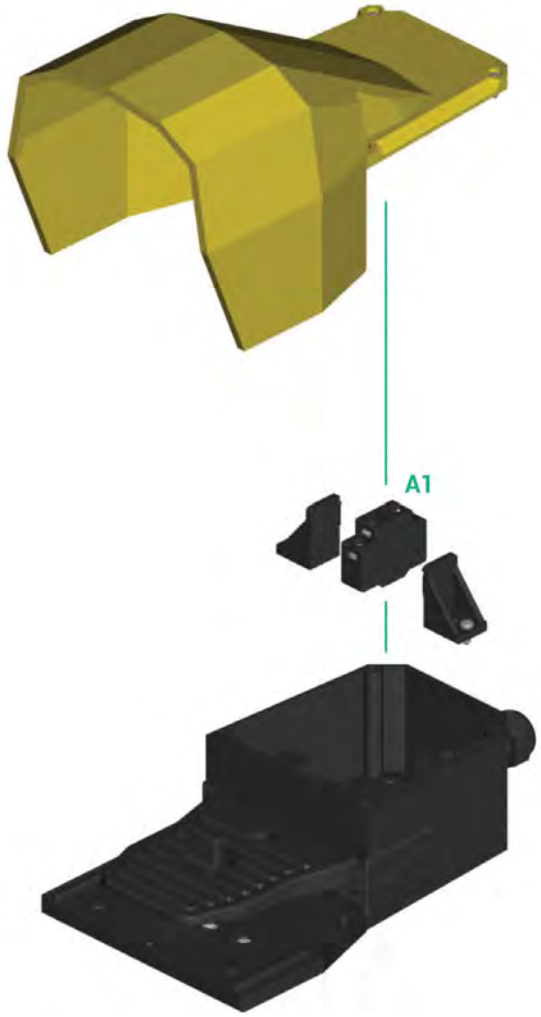
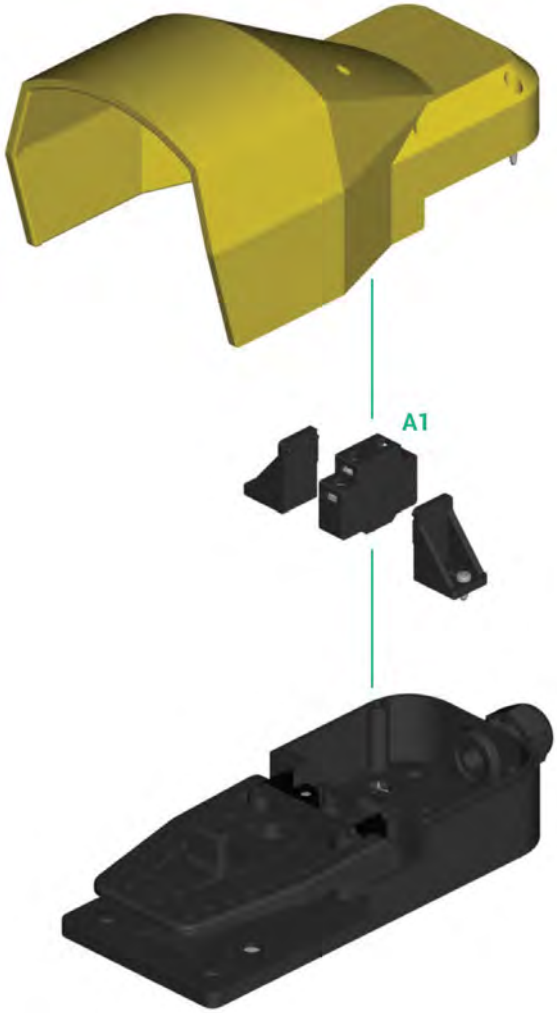
6200 FOOTSWITCHES

Footswitch Type		Number of Switches			SCC Part No.
Single	Double	PRSL0036XX 1NO+1NC snap action 	PRSL0045PI 1NO+1NC slow action 	PRSL0047PI 2NO+2NC slow action 	
XX		1			**PF18620010 (stock)**
X		2			**PF18620025 (stock)**
X			1		PF18620037
X				1	PF18620050
	X	2			PF18620053
	X	4			PF18620054
	X		2		PF18620055
	X			2	PF18620056

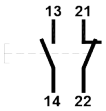
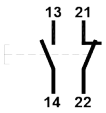
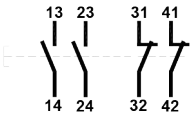
6100 FOOTSWITCH - ASSEMBLY DRAWING



6200 FOOTSWITCH - ASSEMBLY DRAWING



Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A1		1NO+1NC snap action switch		PRSL0036XX
		1NO+1NC slow action switch		PRSL0045PI
		2NO+2NC slow action switch		PRSL0047PI

6100/6200 - REQUEST FORM FOR NON STANDARD FOOTSWITCH

Footswitch Type

- ☐ 6100 Single
- ☐ 6100 Double
- ☐ 6200 Single
- ☐ 6200 Double

Switches

- ☐ 1NO+1NC snap action
- ☐ 1NO+1NC slow action
- ☐ 2NO+2NC slow action

Protection for 6100 Footswitch*

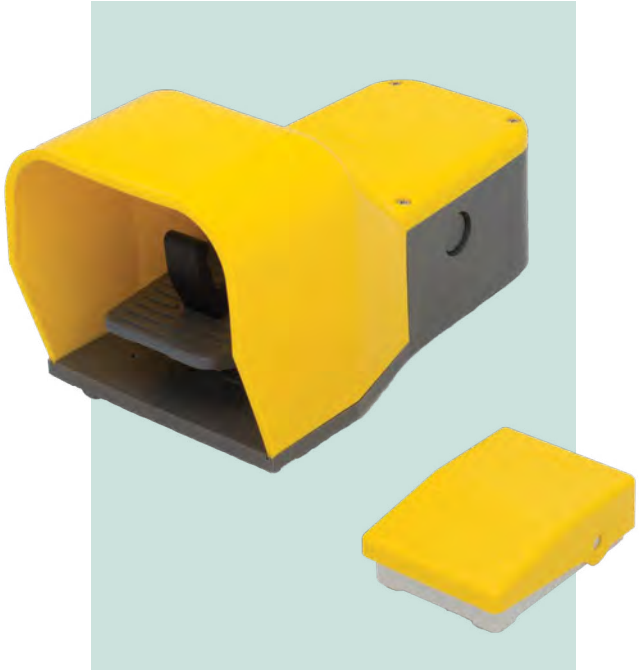
- ☐ Standard Aluminum
- ☐ Large Aluminum
- ☐ Large Poly Carbonate

Pedal

- ☐ With Safety Device
- ☐ Without Safety Device
- ☐ Wth Lock-release Device

Instructions:

- Check the box corresponding to the type of footswitch required
- Check the boxes corresponding to the type of protection required (only for 6100 footswitch)
- Write the number and type of switches required (max. 3 snap action switches and max. 2 slow action switches). It is not possible to assemble both snap and slow action switches on the same footswitch
- Check the box corresponding to the type of pedal required.



OMICRON

FOOTSWITCH

Footswitch for auxiliary control of machinery such as shearing, bending, wrapping machines, lathes, riveters and machine tools.

Features

- Positive opening NC contacts for safety functions (not available for mini-footswitch configurations).
- Mechanical life of switches: up to max. 30 million operations.
- IP protection degree: footswitch Omicron is classified IP40 (mini-footswitch configuration) and IP65.
- Extreme temperature resistance: from -13°F to 158°F (-25°C to +70°C).
- Salt mist resistant.
- Base, cover and pedal made of shock resistant ABS material or of self-extinguishing polycarbonate/ABS-V0, or cover made of die-cast aluminium and base and pedal made of self-extinguishing polycarbonate/ABS-V0.
- Materials and components are shock and wear resistant.

Options

- Available in different configurations featuring various operation modes, cover color (grey, yellow or red) and switches.
- Available with mushroom pushbutton (on request).
- Available in five different lever operation modes: with free movement, with lever locked in neutral position or latched in low position, with free movement featuring two-stage actuating force, and with lever locked in neutral position with two-stage actuating force.
- Single or double footswitches and mini-footswitches available.
- 1 or 2 switches with 1NO+1NC slow or snap action contacts.

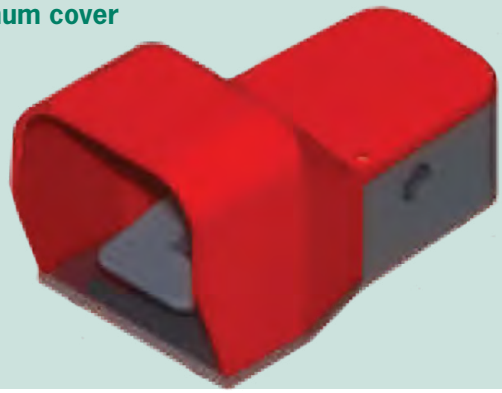
Certifications

- CE and UL marking (pending).

Fill-in the "request form" for a custom product configuration

POSSIBLE ASSEMBLIES

Omicron footswitch with red aluminum cover



Omicron mini-footswitch with gray cover

Certifications

Conformity to CE Standards	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
	EN 61058-1 Switches for appliances - Part 1: General requirements (for mini-footswitch)
	EN 60068-2-78 Environmental Testing - Part 2-78: Tests Cab: Damp heat, steady state (for footswitch with cover)
	IEC 60068-2-11 Environmental Testing - Part 2: Tests - Test Ka: Salt Mist (for footswitch with cover)
	IEC 60068-2-27 Environmental Testing- Part 2: Tests - Test EA & guidance: Shock (for footswitch with cover)
Markings and Homologations	Mini-footswitch CE
	Footswitch with cover CE UL (pending)

General Technical Specifications

Footswitch Type	**Mini-footswitch**	**Footswitch with cover**
Ambient temperature	Storage: -22°F / +176°F (-30°C / +80°C)	
	Operational: -13°F / +158°F (-25°C / +70°C)	
Climatic resistance	-	Saline fog
Shock resistance	-	50g (1/2 sinusoidal shock for 11 ms) no charge in contact position
IP protection degree	IP 40	IP 65
Operation torque	1.2 Nm	0.25 Nm
Operating angle	from 2° to 4°	15°
Cable entry	Cable clamp Ø 6, 8.5 max.	Cable clamp M20

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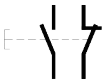
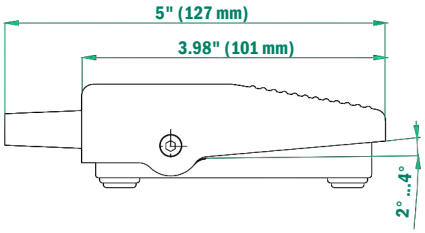
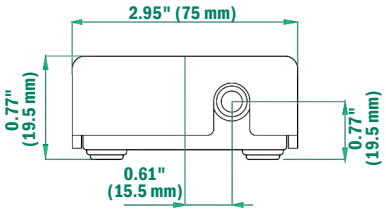
ELECTRICAL SPECIFICATIONS and OVERALL DIMENSIONS

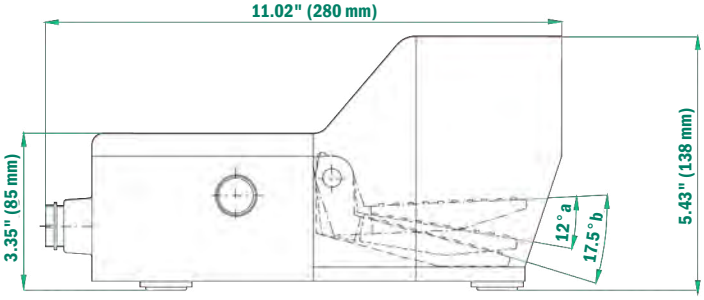
Footswitch type	Mini-footswitch	Footswitch with cover
Utilisation category	-	AC15 - DC13
Rated operational current	3 A / 250 Vac	A600 (according to UL508 and CSA C22-2 n. 14)
	0.06 A / 230 Vdc	Q600 (according to UL508 and CSA C22-2 n. 14)
	-	10 A / 24 Vac / AC15
	-	6 A / 240 Vac / AC15
	-	4 A / 400 Vac / AC15
	-	6 A 24 Vdc / DC13
	-	0.55 A / 125 Vdc / DC13
	-	0.4 A / 250 Vdc / DC13
Rated insulation voltage	250 V	690 V degree of pollution 3
Rated voltage impulse	1 kV	6 kV
Conventional free air thermal current θ < 104°F (40°C)	15 A	10 A
Short-circuit protection U_e < 500 Vac - fuse type gG (gl)	10 A	10 A
Contact resistance	30 mΩ	25 mΩ
Mechanical life	$10x10^6$ operations	$30x10^6$ operations
Connections	Screw M3 x 0.5 (Philips head no. 1 and washer)	Screws with cable clamp M3.5 (+,-) pozidriv 2
Wires	-	1 o 2 x 0.75 ... 2.5 mm^2
Switch type	Change-over	Snap action
	-	Slow action
Contacts	1NO / 1NC	1NO + 1NC (all NC contacts are of the positie opening operation type ⊖)
Scheme		

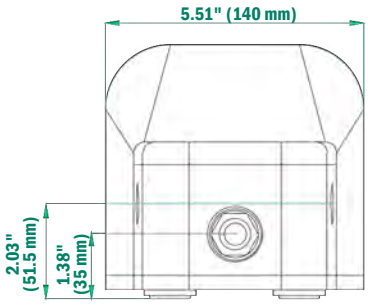
DIMENSIONS - Omicron mini-footswitch



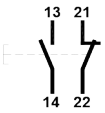
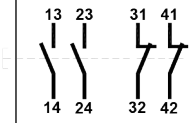


DIMENSIONS - Omicron footswitch with cover





PART NUMBERS

Material	Footswitch Type		Devices			Cover Color			Number of Switches		SCC Part No.
	Single	Double	Safety DEvice (Std)[2]	Maintained Pedal[3]	2 Stage[5]	Yellow	Gray	Red	PRSL0036XX 1NO+1NC snap action 	2NO+2NC snap action 	
Shock Resistant ABS (Poly Carbonate)	X		X					X	X		**D12241** (stock)
	X		X					X		X	D12243
	X			X				X	X		D12341
	X			X				X		X	D12343
	X				X			X		X	**D12543** (stock)
	X		X			X			X		D12211
	X		X			X				X	D12213
	X			X		X			X		D12311
	X			X		X				X	D12313
	X				X	X				X	**D12513** (stock)
Aluminum	X		X					X	X		D12241VOM
	X		X					X		X	D122443VOM
	X			X				X	X		D12341VOM
	X			X				X		X	D12343VOM
	X				X			X		X	D12543VOM
	X		X			X			X		D12211VOM
	X		X			X				X	D12213VOM
	X			X		X			X		D12311VOM
	X			X		X				X	D12313VOM
	X				X	X				X	D12513VOM

[2] Safety Device (Standard) = Pedal can only be actuated after disactivating the mechanical safety device by fully inserting foot (prevents accidental actuation).

[3] Maintained Pedal = By lowering the pedal, the contacts are switched on, lever remains locked and contacts activated.

[5] 2 Stage = By applying light pressure on pedal, the first contact will be activated while second remains disactivated, greater pressure on pedal will activate second contact (2-speed application).

Type	Base Color		Cover Color				SCC Part No.
	Gray	Black	Yellow	Gray	Black	Red	
Mini-footswitch	X		X				D311 (stock)
	X			X			D312
	X				X		D313
	X					X	D314
		X	X				D321 (stock)
		X		X			D322
		X			X		D323 (stock)
		X				X	D324

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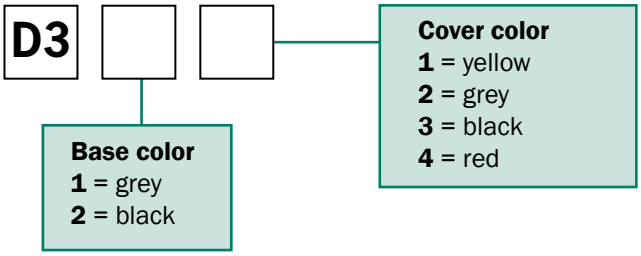
OMICRON - REQUEST FORM FOR FOOTSWITCH

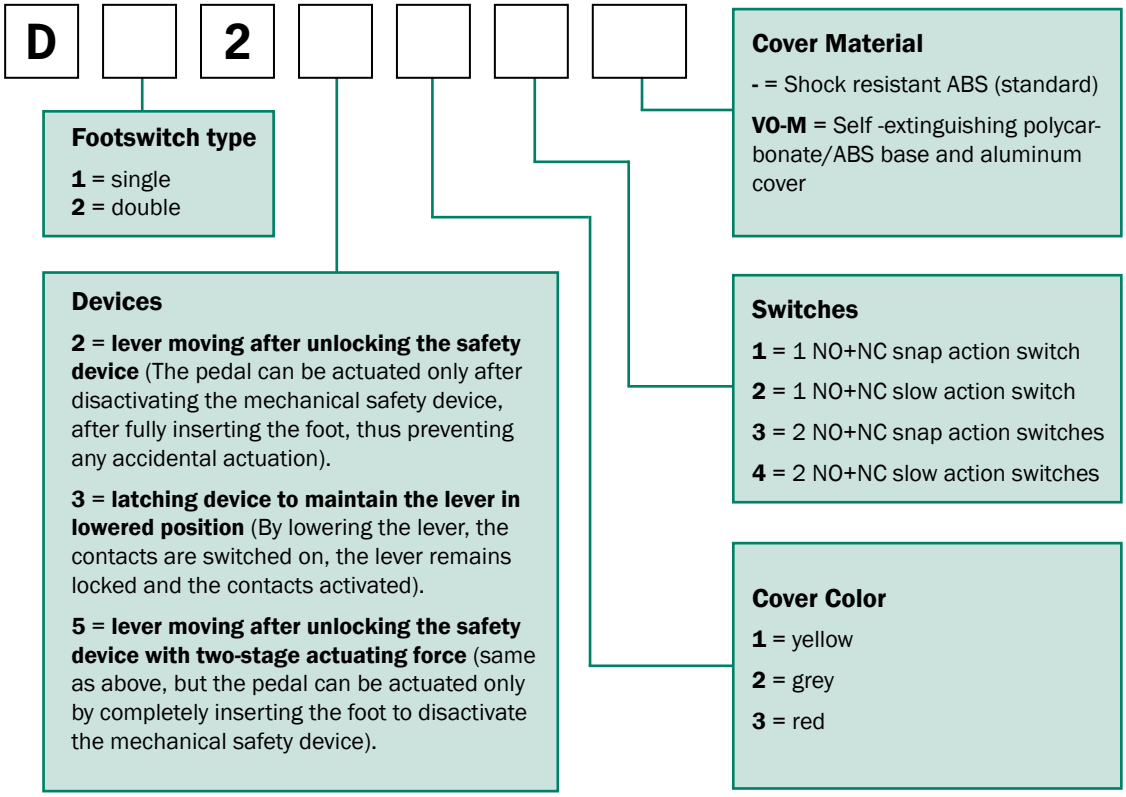
Omicron mini-footswitch



Instructions:
Write into the boxes the numbers corresponding to the characteristics required and obtain the footswitch code (see example)

= Omicron mini-footswitch; Black Base, Yellow Cover

Omicron footswitch with cover



Instructions:
Write into the boxes the numbers corresponding to the characteristics required and obtain the footswitch code (see example)

Industrial Electrical Controls

SPRINGER® controls company

Crane & Hoist Control

POSITION LIMIT SWITCHES

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POSITION LIMIT SWITCHES

Springer Controls is the North American distributor for **Tecno Elettrica Ravasi (TER)** of Italy. **TER** is a world leader in the manufacturing of crane and hoist controls. Springer/TER offers multiple options of Position Limit Switches. These are designed to control the movement of overhead traveling cranes, hoists and complex machine tools. **TER** has decades of experience in designing and manufacturing position limit switches, although mostly used in the controlling of the movement of overhead crane & hoists, they also apply to applications in the automation industry, staging technology, and construction lifting facilities.

Many of these machines operate in difficult thermal conditions (low or high operating temperatures) with great thermal shifts between night and day, and are subject to a variety of weather conditions (water, dust, UV rays, and salt). Therefore, they need components with a high degree of protection against weather effects, resistance to extreme temperatures, high mechanical and electrical durability and resistance, accuracy & control. All components must be precise, reliable and safe to ensure good handling control, guarantee maximum operating safety, prevent personal injury and damage to objects.

TER range of position limit switches includes aluminum or thermoplastic material limit switches, with single rod or rod with roller, cross rods, "T" rods or with various types of heads and actuators allowing for diversified switch activation modes.

The LIMITEX AP hazardous area position limit switch is now available.

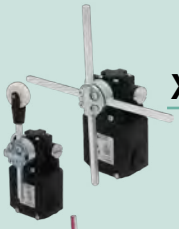
INDEX

7551-7552

- Designed for the control of complex operating machinery
- Equipped with 4 snap action switches with 1NO+1NC change-over contacts or slow action switches with 1NC contact
- Cross position limit switches in die cast aluminum ideal for aggressive environments **4**

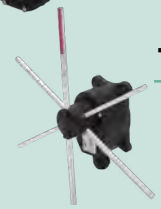
ARKE

- Newest limit switch featuring "T" or cross rods with 3 or 4 maintained positions, single rod with or without roller and spring-return option
- Equipped with 2 slow action switches with 1NC-1NC (staggered) contacts or 2 slow action switches with 1NO+1NC contacts
- High performing thermoplastic material with great chemical resistance **10**



X-FSC / X-FRZ

- Features cross or "T" rods; X-FSC units have 3 or 4 maintained positions, the X-FRZ units are spring-return with either rod or rod & roller
- Equipped with 2 snap switches with 1NO+1NC contacts or slow action switch with 1NC contact **16**



TANGO

- Available with 2,3 or 4 switches and equipped with cross rods that can move to 4 maintained positions.
- Switches are slow action with 1 NC or 1 NO contacts..... **24**

LIMITEX AP

- Explosion proof cross position limit switch
- 3 or 4 maintained positions, 1NO+1NC snap action switches..... **30**

7551-7552

Position Limit Switch

Cross position limit switches designed to control the movement of overhead travelling cranes, hoists and complex machine tools. The choice of materials and technical solutions adopted enable use in harsh operating conditions.

Features

- Designed to guarantee excellent performance in the most challenging operating conditions.
- Rods with 4 maintained positions every 90°.
- 4 fixing holes.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- Operation frequency: 3600 operations/hour max.
- IP protection degree: 7551-7552 is classified IP66 with specific cable clamp M20.
- Extreme temperature resistance: -13°F to 158°F (-25°C to +70°C).
- It features die-cast aluminum alloy enclosure, with bushings made of sinterized material and head made of zama to resist any violent impact, chemical aggression and rust and reduce the need for routine maintenance operation on the head.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- 4 snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- 3 outputs for cable clamps to reduce installation time and make wiring easier

Certifications

- CE marking and EAC certification

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SPECIFICATIONS 7551-7552

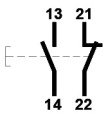
Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +70°C)
	Operational: -40°F / +158°F (-40°C / +70°C)
IP protection degree	IP 66 max. with specific cable clamp M20 (not supplied)
Insulation category	Class I
Operation frequency	3600 operations/hour max
Cable entry	M20

Technical Specifications of the Switches

SCC Part No. →	**PRSL0036XX**	**PRSL0037XX**
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Microswitch type	Double break, snap action	Double break, slow action
Contact	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

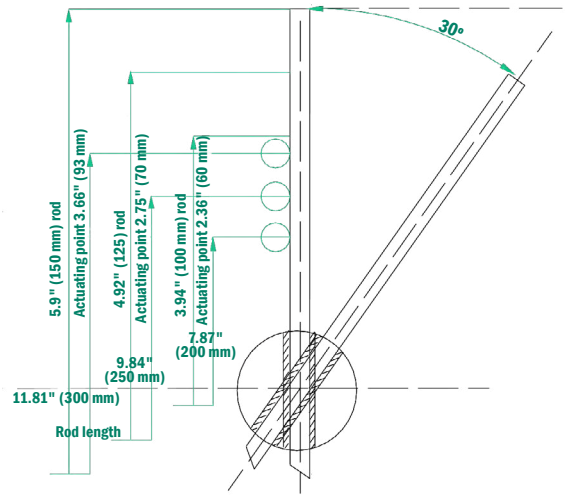
MAXIMUM ACTUATING DIMENSIONS

Rods with 4 maintained positions

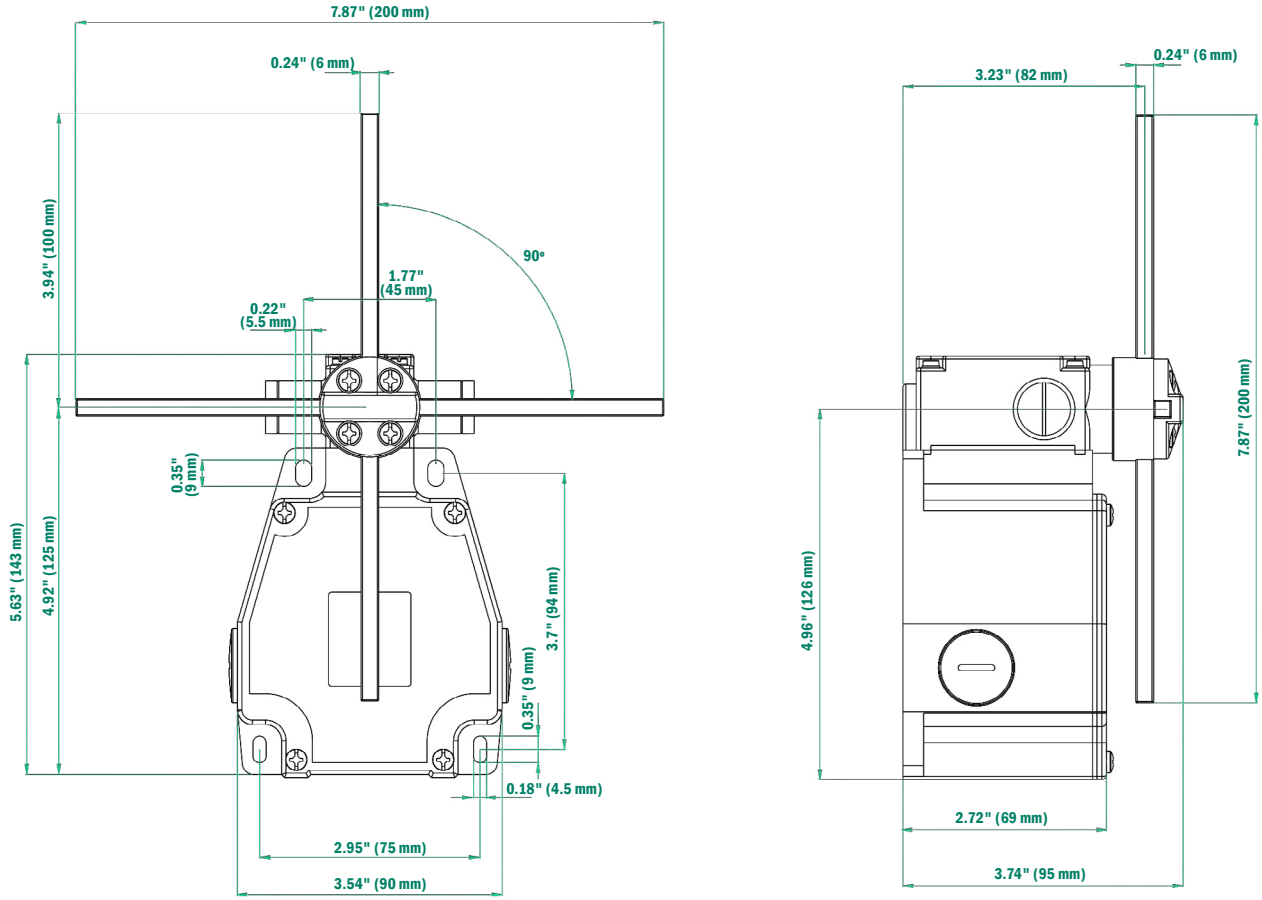
- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°
- Maintained positions each: 90°

In order to ensure proper operations, the dimensions shall not be increased; anyhow, they can be decreased, taking into account that the closer the impact point is to the center of the head, the higher the impact and the mechanical wear of rod and shaft are.

IMPORTANT: the maximum impact speed is 1.35 m/s, referring to the ideal impact points showed in the drawing.



OVERALL DIMENSIONS



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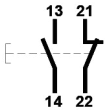
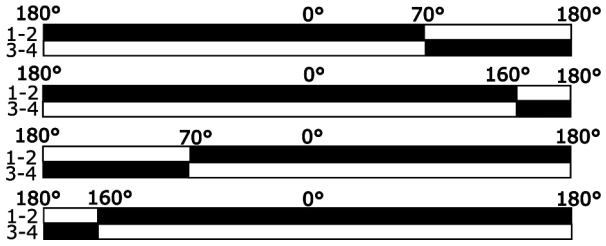
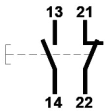
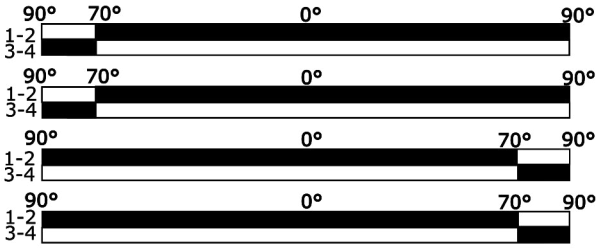
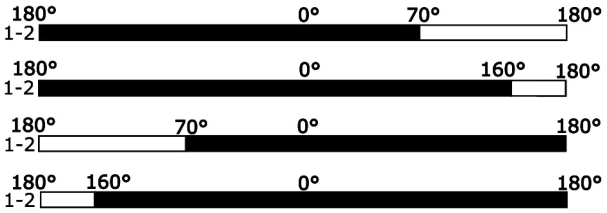
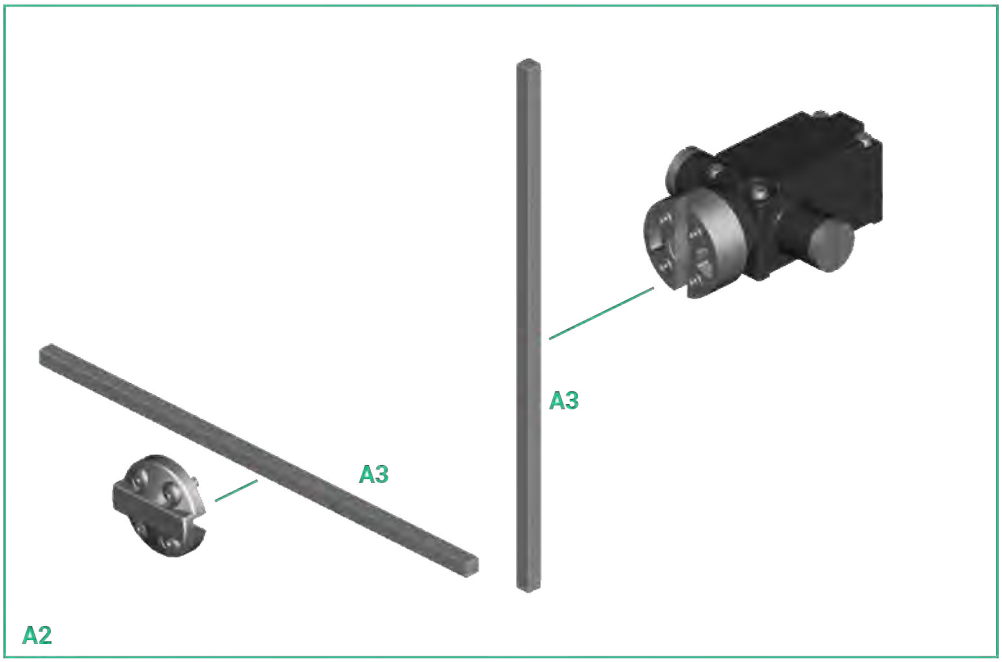
LIMIT SWITCHES

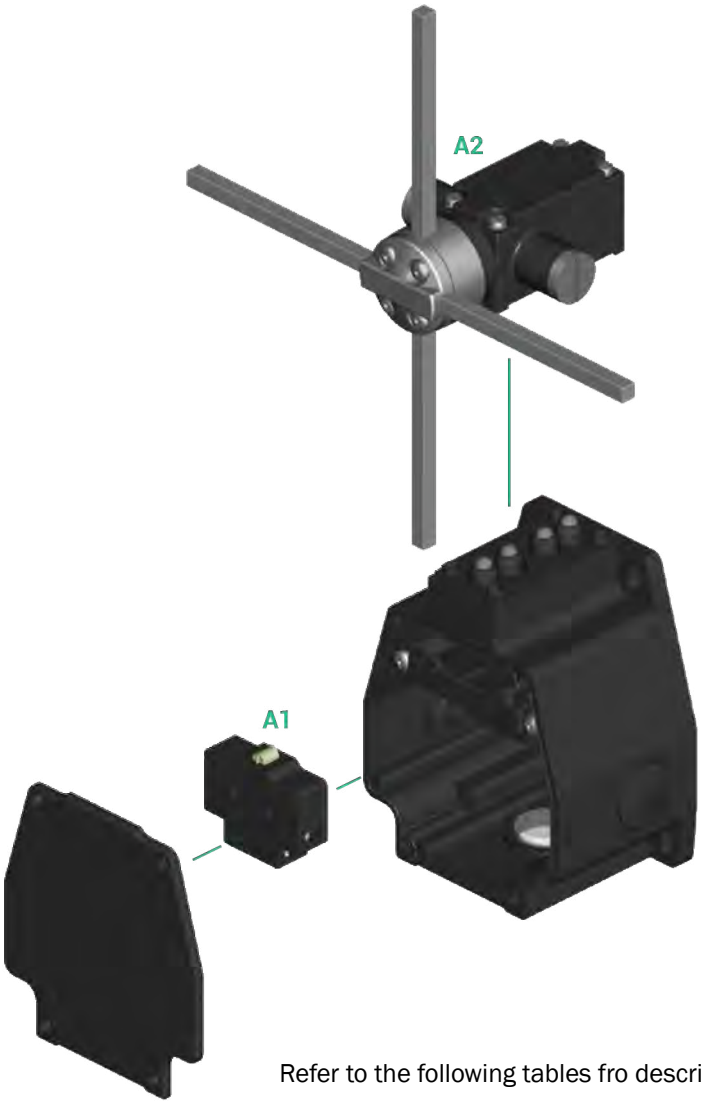
No. and Type of Switches	Actuating Travel	Rod Length	SCC Part No.
4 switches PRSL0036XX  	 	7.87" (200 mm)	PF26755100
4 switches PRSL0036XX  	 	7.87" (200 mm)	PF26755200
4 switches PRSL0037XX 	 	7.87" (200 mm)	PF26755124

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

ASSEMBLY DRAWING





Refer to the following tables fro descriptions of "Switches" and "Accessories".

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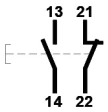
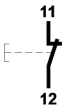
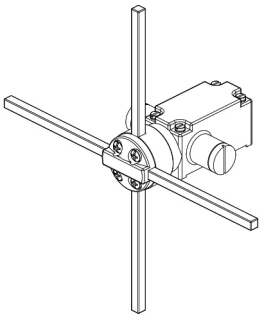
COMPONENTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A1		1NO+1NC snap action switch		PRSL0036XX
		1NC slow action switch		PRSL0037XX

Accessories

Ref.	Drawing	Description	SCC Part No.
A2		Head for PF26755100	PF267551TE
		Head for PF26755200	PF267552TE
A3		Rod 0.24" x 0.24" x 7.87" (6 x 6 x 200 mm)	PRT03006PE

ARKE

POSITION LIMIT SWITCH

New position limit switch designed for controlling the movement of overhead travelling cranes, hoists and complex machine tools. Sturdy and reliable, Arke is particularly suitable for use in harsh operating conditions.

Features

- Designed to guarantee excellent performance in the most challenging operating conditions.
- 2 fixing holes.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 2 million operations.
- IP protection degree: Arke is classified IP65, IP66, IP67 with dedicated cable clamp M20.
- NEMA protection degree: Arke is classified Type 1
- Extreme temperature resistance: -63°F to +176°F (-53°C to +80°C).
- Aluminium rods with 0.24" x 0.31" (6 x 8 mm) section and enclosure and head in thermoplastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Cross rods with 4 maintained positions every 90°, cross or T rods with 3 maintained position every 90°, single rod or rod with roller with 65° movements and spring return.
- 2 slow action switches with 1NC+1NC staggered contacts or 2 slow action switches with 1NO+1NC contacts.
- 3 outputs for cable clamps to reduce installation time and make wiring easier.

Certifications

- CE marking, cULus marking and EAC certification.

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SPECIFICATIONS ARKE

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to cULus Standards	CSA-C22.2 No 14-18 Industrial Control Equipment
	UL 508 Industrial Control Equipment
Markings and Homologations	CE cULus EAC

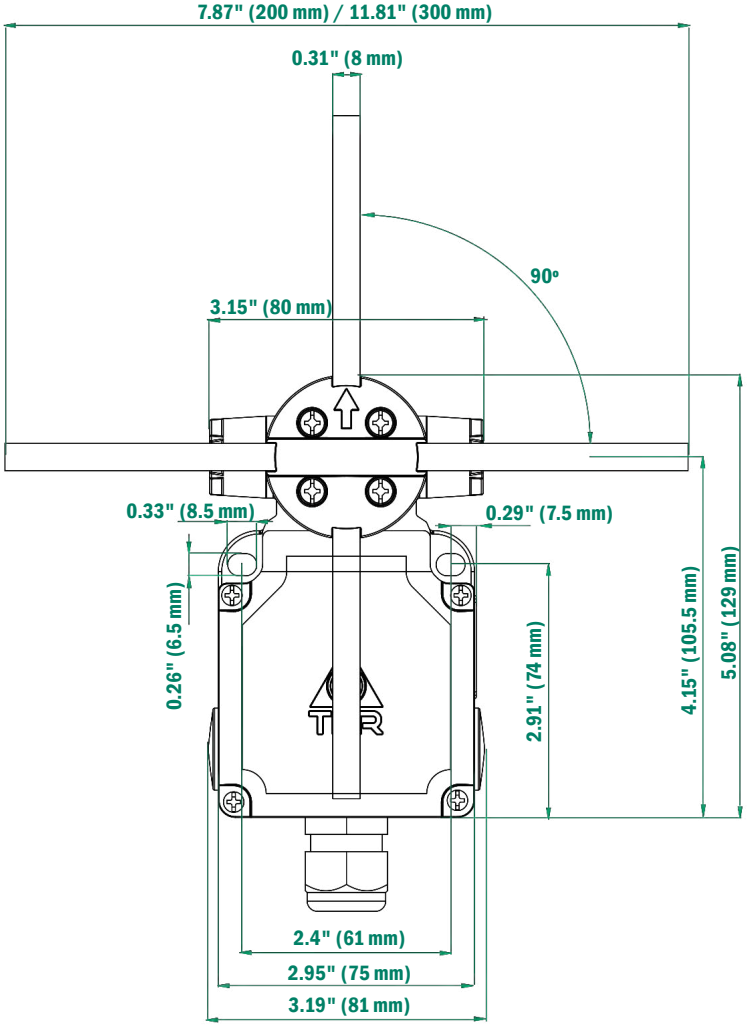
General Technical Specifications

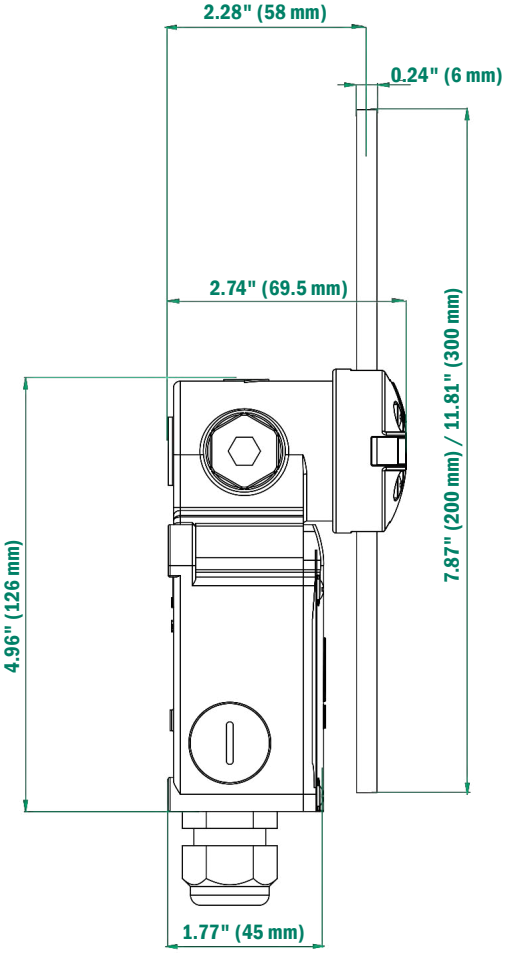
Ambient temperature	Storage: -63.4°F / +176°F (-53°C / +80°C)
	Operational: -63.4°F / +176°F (-53°C / +80°C)
IP protection degree	IP 65, IP66, IP67 with dedicated cable clamp M20
NEMA protection degree	Type 1
Insulation category	Class II
Maximum operation speed	3 m/s
Mechanical life	1.5 x 10^6 operations
Cable entry	Cable clamp M20

Technical Specifications of the Switches

SCC Part No. →	**PRSL1650XX**	**PRSL1652XX**
Utilisation category	AC 15	
Rated operational current	6 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	2 x 10^6 operations @ 2A / 240 Vac	
Connections	Screw-type terminals	
Wires	1 x 1.5 mm^2, 2 x 2.5 mm^2	
Tightening torque	0.8 Nm	
Switch type	Double break, slow action	
Contact	1NC+1NC staggered (All NC contacts are of the positive opening operation type ⊖)	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus	

With Cross Rods





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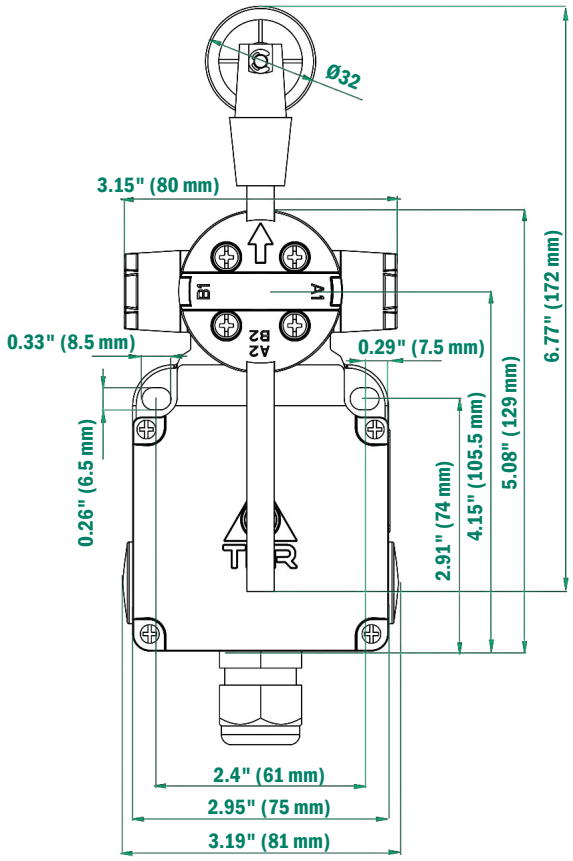
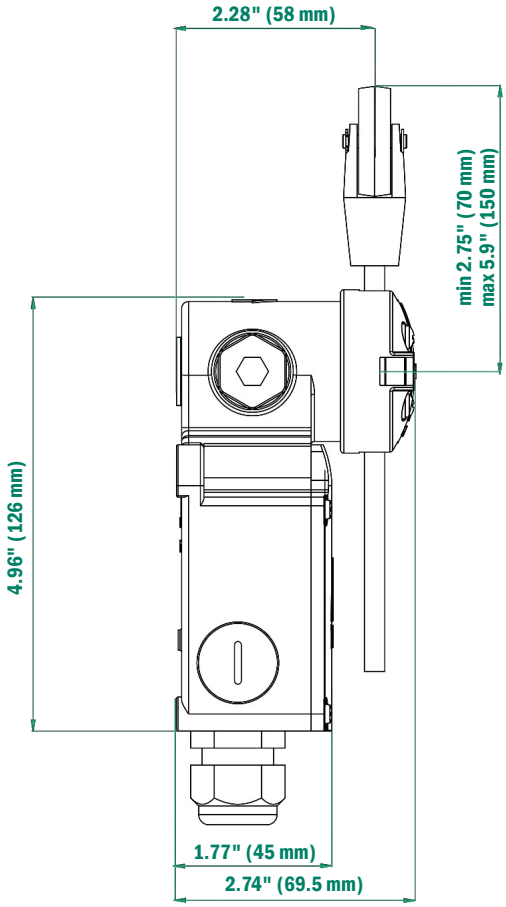
OVERALL DIMENSIONS

With Rod and Roller





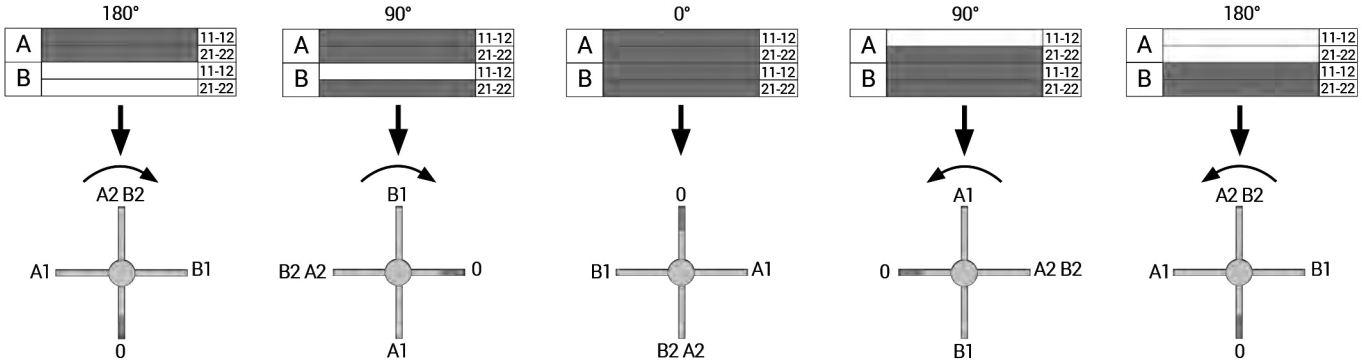
1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

4 maintained positions

Description	Rods	SCC Part No.
4 maintained positions - stop at 180° in each direction	Cross Rods 2 x 7.87" (2 x 200 mm)	F201110001
4 maintained positions - free rotation	Cross Rods 2 x 7.87" (2 x 200 mm)	F201120001

Actuating travel

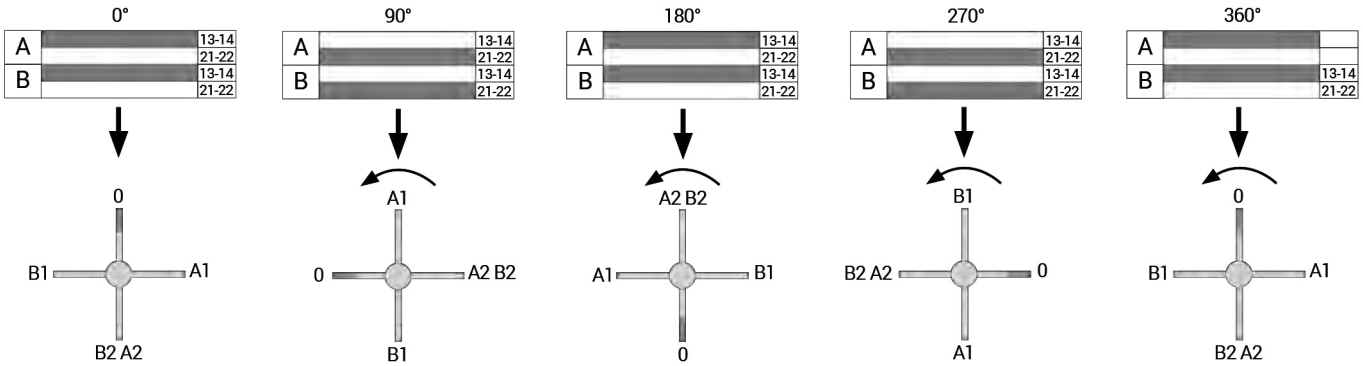


The limit switches are equipped with switches PRSL1650XX with 1NC+1NC staggered contacts

.
Other configurations are available on request.

Description	Rods	SCC Part No.
4 maintained positions - free rotation	Cross Rods 2 x 7.87" (2 x 200 mm)	F201110016

Actuating travel



The limit switches are equipped with switches PRSL1652XX with 1NO+1NC staggered contacts

.
Other configurations are available on request.

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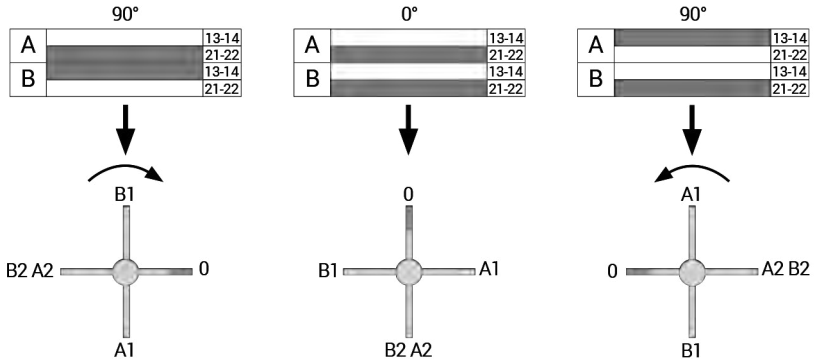
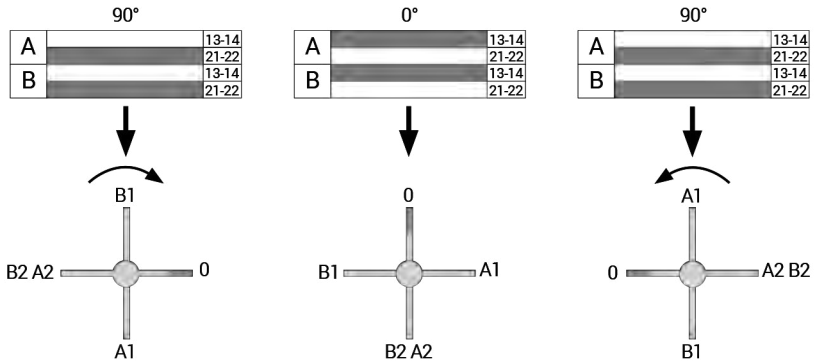
STANDARD LIMIT SWITCHES

3 maintained positions

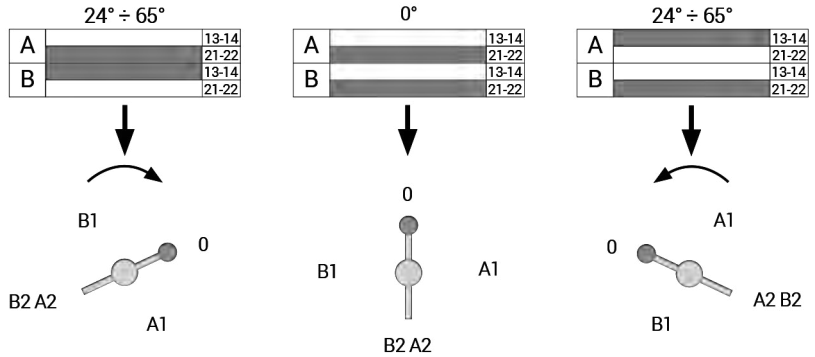
Actuating Travel	Rods	SCC Part No.
	Cross Rods 2 x 7.87" (2 x 200 mm)	F201110002
	T Rods 1 x 7.87" (1 x 200 mm) 1 x 11.81" (1 x 300 mm)	F201110006

The limit switches are equipped with switches PRSL1652XX with 1NO+1NC staggered contacts .
Other configurations are available on request.

Actuating Travel	Rods	SCC Part No.
	Cross Rods 2 x 7.87" (2 x 200 mm)	F201110005

The limit switches are equipped with switches PRSL1652XX with 1NO+1NC staggered contacts .
Other configurations are available on request.

Spring return

Actuating Travel	Rods	SCC Part No.
	Rod with roller	F202210001

The limit switches are equipped with switches PRSL1652XX with 1NO+1NC staggered contacts .
Other configurations are available on request.

X-FSC/X-FRZ

POSITION LIMIT SWITCH

Position limit switches designed to control the movement of overhead travelling cranes, hoists and complex machine tools. Heads with different types of rods and movements for specific applications.

Features

- 2 fixing holes.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- Operation frequency: 3600 operations/hour max.
- IP protection degree: X-FSC and X-FRZ are classiied IP65 with speciic cable clamp M20.
- Extreme temperature resistance: -13°F to +158°C (-25°C to +70°C).
- Enclosure and head in thermoplastic material.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- 2 snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- X-FCS features cross rods in 3 or 4 maintained positions or T rods in 3 maintained positions, movement every 90°.
- X-FRZ has a single rod or a rod with roller with spring return movement every 65°.

Certifications

- CE marking and EAC certification.

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SPECIFICATIONS X-FSC/X-FRZ

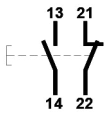
Certifications

Conformity to Community Directives	2006/95/CE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage: -40°F / +158°F (-40°C / +70°C)
	Operational: -13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65 max. with specific cable clamp M20
Insulation category	Class II
Operation frequency	3600 operations/hour max
Cable entry	Cable clamp M20

Technical Specifications of the Switches

SCC Part No. →	**PRSL0036XX**	**PRSL0037XX**
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.8 Nm	
Microswitch type	Double break, snap action	Double break, slow action
Contact	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and Homologations	CE cULus EAC	

MAXIMUM ACTUATING DIMENSIONS

T-type rod - Cross rod with 3 maintained positions

- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°

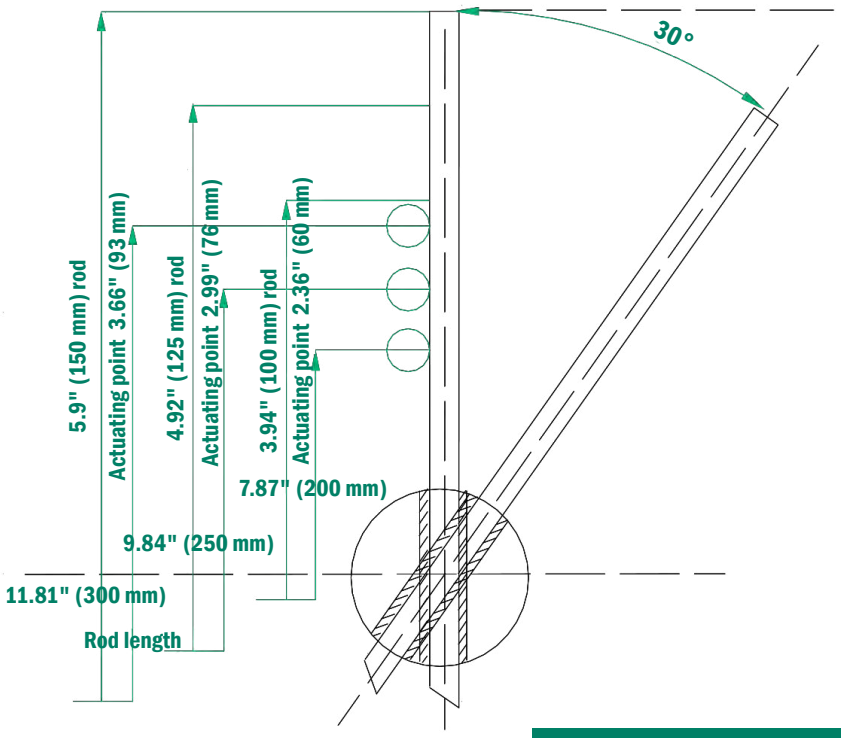
Rod - Rod and Roller

- Pre-travel angle for rotation contact operation: 24°
- Maximum rotation angle: 65°

Cross rod with 4 maintained positions

- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°
- Maintained positions each: 90°

In order to ensure proper operations, the dimensions shall not be increased; anyhow, they can be decreased, taking into account that the closer the impact point is to the center of the head, the higher the impact and the mechanical wear of rod and shaft are.
IMPORTANT: the maximum impact speed is 1.35 m/s, referring to the ideal impact points showed in the drawing.



1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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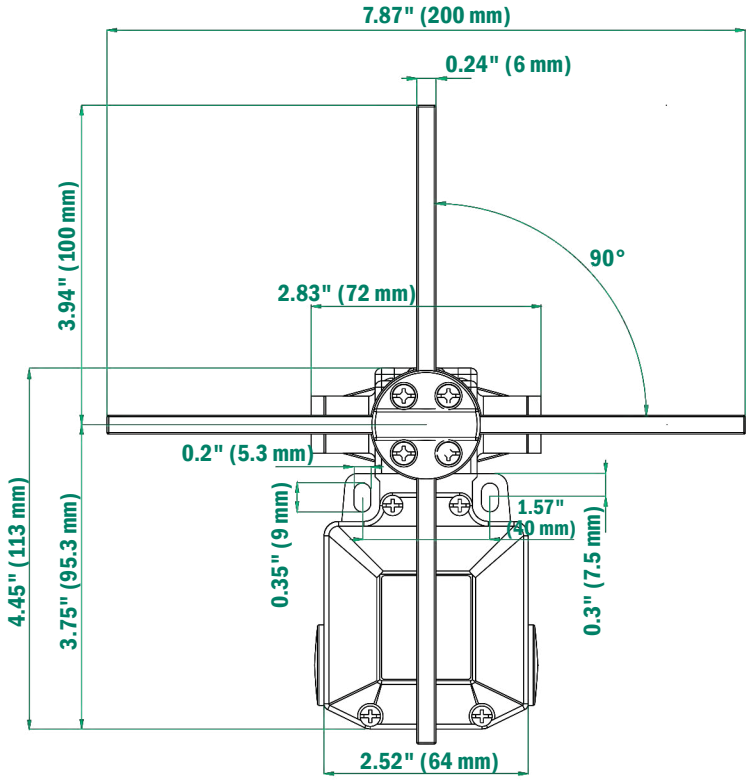
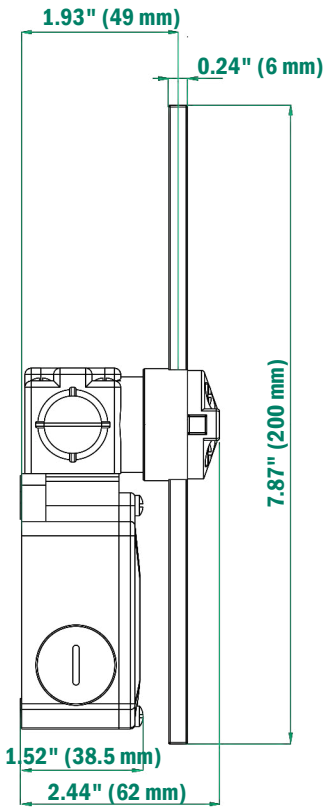
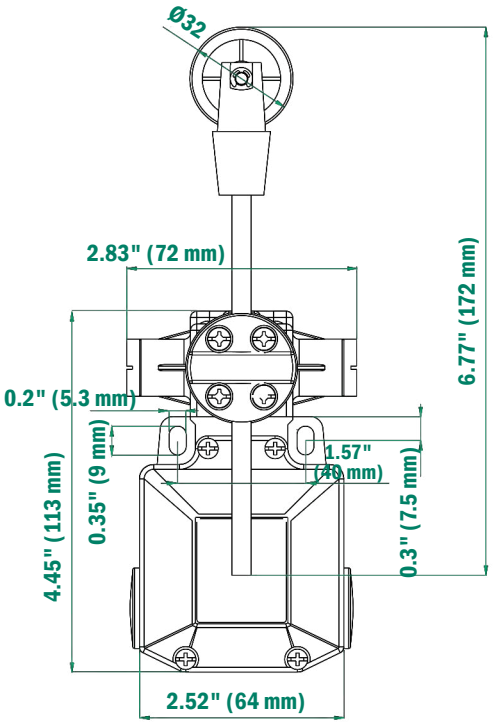
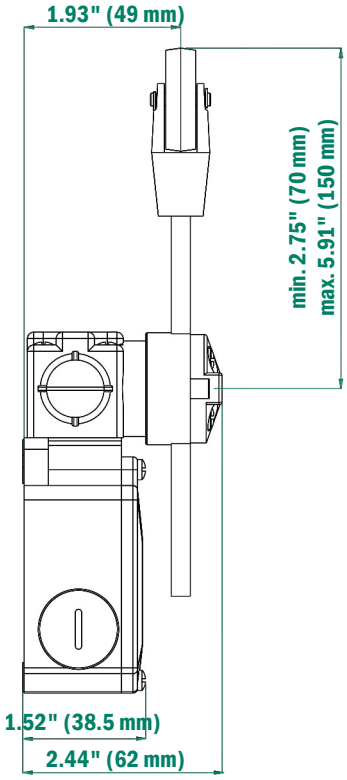
OVERALL DIMENSIONS









LIMIT SWITCHES X-FSC

The limit switches X-FSC are equipped with 1NO+1NC snap action switches PRSL0036XX

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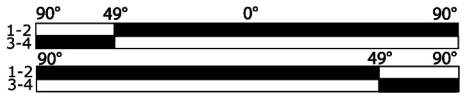
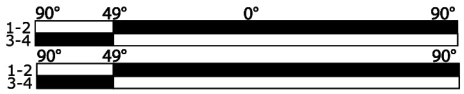
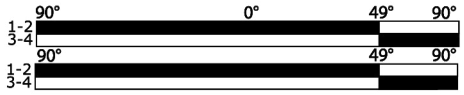
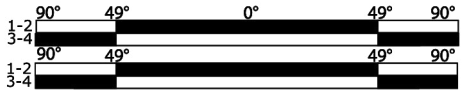
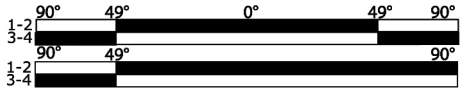
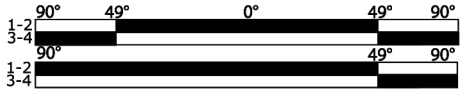
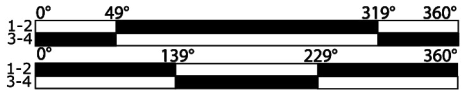
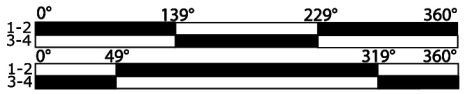
Actuating Travel	Position	Rod	SCC Part No.
	3 maintained	"T" Type	PF33710100
		Cross	PF33710200
	3 maintained	"T" Type	PF33711100
		Cross	PF33711200
	3 maintained	"T" Type	PF33712100
		Cross	PF33712200
	3 maintained	"T" Type	PF33713100
		Cross	PF33713200
	3 maintained	"T" Type	PF33714100
		Cross	PF33714200
	3 maintained	"T" Type	PF33715100
		Cross	PF33715200
	4 maintained	Cross	PF33750100
	4 maintained	Cross	PF33751100
	4 maintained	Cross	PF33752100

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LIMIT SWITCHES X-FRZ

The limit switches X-FRZ are equipped with 1NO+1NC snap action switches PRSL0036XX

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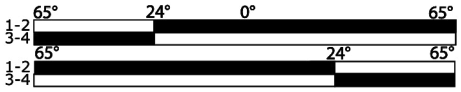
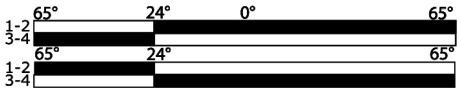
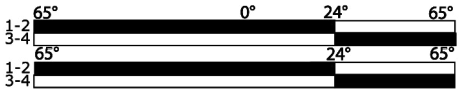
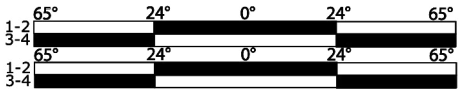
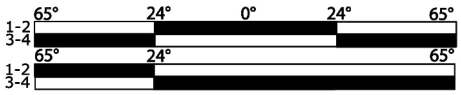
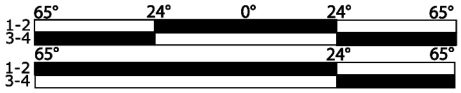
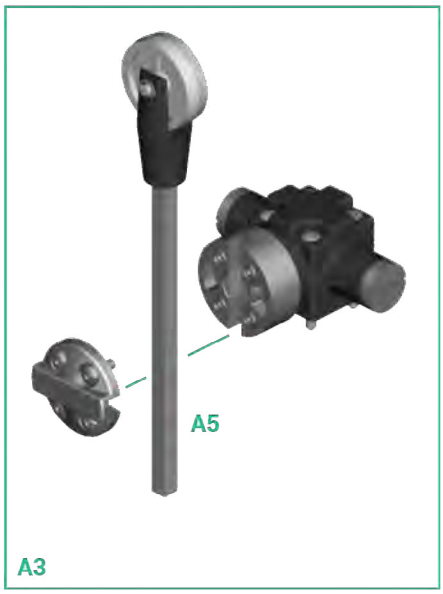
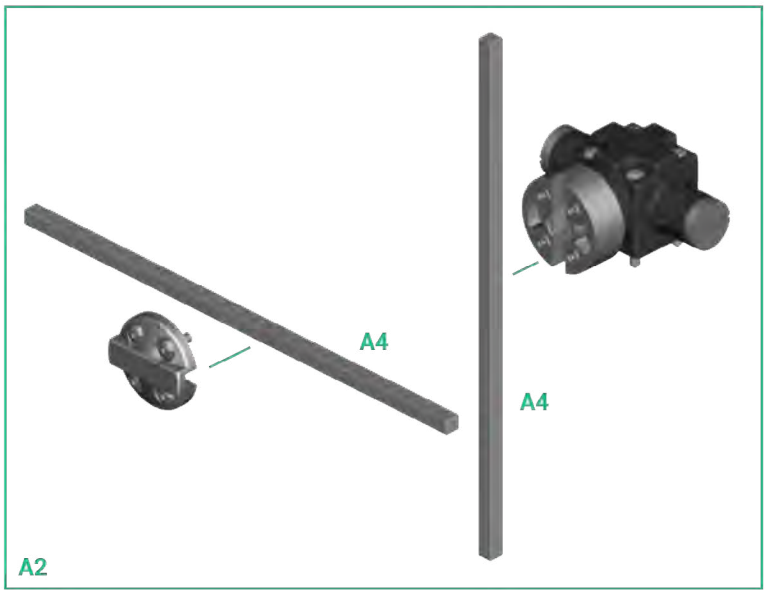
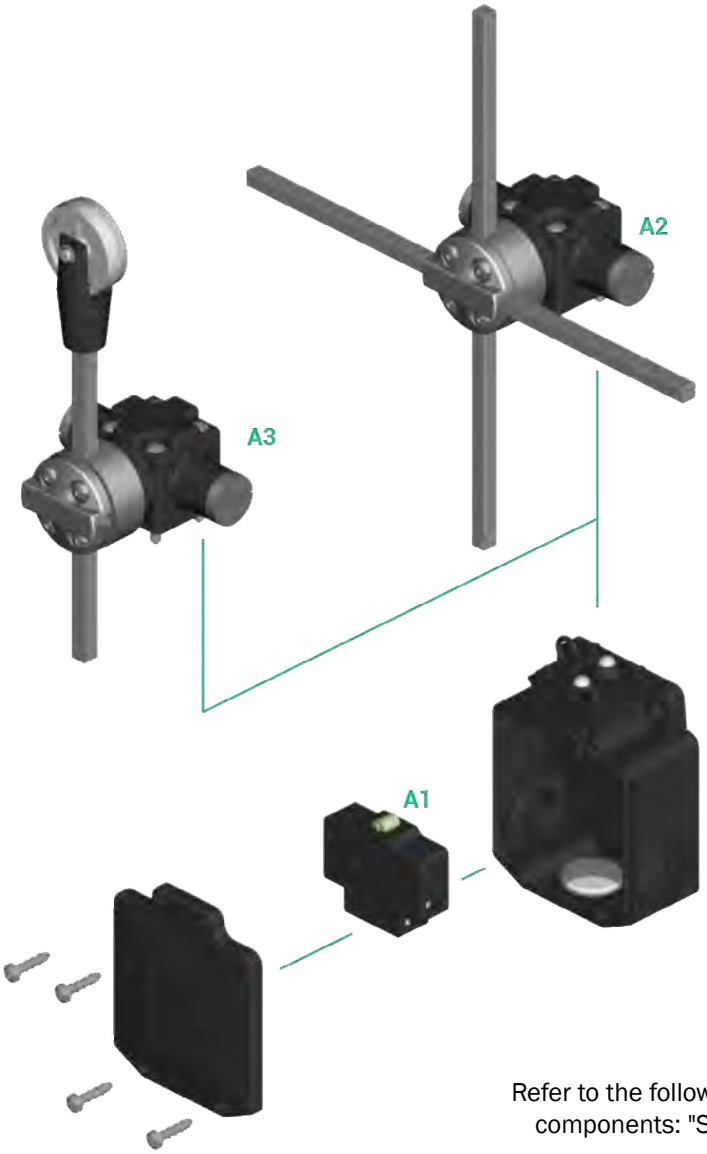
Actuating Travel	Position	Rod	SCC Part No.
	Spring Return	Rod	PF33700100
		Rod and Roller	PF33700200
	Spring Return	Rod	PF33701100
		Rod and Roller	PF33701200
	Spring Return	Rod	PF33702100
		Rod and Roller	PF33702200
	Spring Return	Rod	PF33703100
		Rod and Roller	PF33703200
	Spring Return	Rod	PF33704100
		Rod and Roller	PF33704200
	Spring Return	Rod	PF33705100
		Rod and Roller	PF33705200

ASSEMBLY DRAWING







Refer to the following tables for descriptions of components: "Switches" and Accessories".

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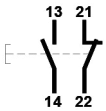
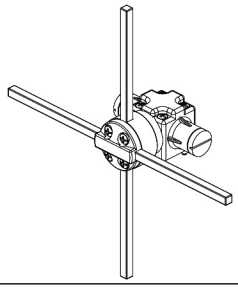
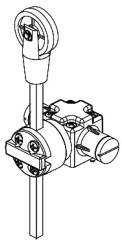
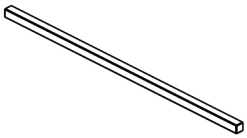
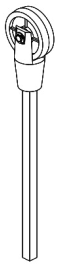
COMPONENTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A1		1NO+1NC snap action switch		PRSL0036XX
		1NC slow action switch		PRSL0037XX

Accessories

Ref.	Drawing	Description	SCC Part No.
A2		Head with cross rods	PF33____TE Codes on request
A3		Head with rod and roller	PF33____TE Codes on request
A4		Rod 0.24" x 0.24" x 7.87" (6 x 6 x 200 mm)	PRT03006PE
		Red Rod 0.24" x 0.24" x 7.87" (6 x 6 x 200 mm)	PRT03007PE
		Rod 0.24" x 0.24" x 11.81" (6 x 6 x 300 mm)	PRT03012PE
A5		Rod 0.24" x 0.24" x 5.12" (6 x 6 x 130 mm) with roller	PRSL0850PI

TANGO

POSITION LIMIT SWITCH

Cross position limit switches designed to control the movement of overhead travelling cranes, hoists and complex machine tools. Tango has rods with maintained positions every 60°.

Features

- Modern design and overall dimensions studied to facilitate installation and maintenance operations.
- 4 fixing holes.
- Rods with 4 maintained positions every 60°.
- Mechanical life of switches: 1 million operations.
- Operation frequency: 3600 operations / hour max.
- IP protection degree: Tango is classified IP65.
- Extreme temperature resistance: -13°F to +158°C (-25°C to +70°C.).
- Enclosure and head in thermoplastic material (nylon reinforced with fiberglass) and internal components in technopolymers to guarantee long life-cycle and constant performance.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- Slow action switches with 1NC or 1NO contacts.
- Available with 2, 3 or 4 switches and different rod lengths.

Certifications

- CE marking and EAC certification.

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SPECIFICATIONS TANGO

Certifications

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low-voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE EAC

General Technical Specifications

Ambient temperature	Storage:	-40°F / +158°F (-40°C / +70°C)
	Operational:	-13°F / +158°F (-25°C / +70°C)
IP protection degree	IP 65	
Insulation category	Class II	
Operation frequency	3600 operations/hour max	
Cable entry	Cable clamp M20	

Technical Specifications of the Switches

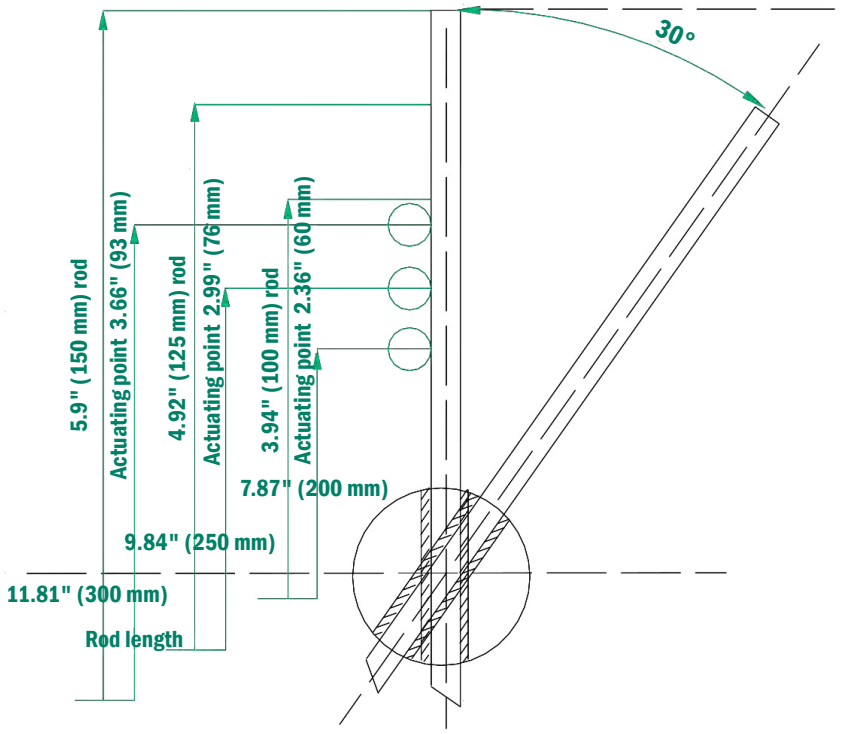
SCC Part No. →	**PRSL1000PI**	**PRSL1001PI**
Utilisation category	AC 15	
Rated operational current	3 A	
Rated operational voltage	250 Vac	
Rated thermal current	10 A	
Rated insulation voltage	500 Vac	
Mechanical life	1 x 10^6 operations	
Connections	Screw-type terminals	
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use 140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)	
Tightening torque	0.6 Nm	
Microswitch type	Double break, slow action	Double break, slow action
Contact	1NO	1NC
Scheme		
Markings and Homologations	CE cULus EAC	

MAXIMUM ACTUATING DIMENSIONS

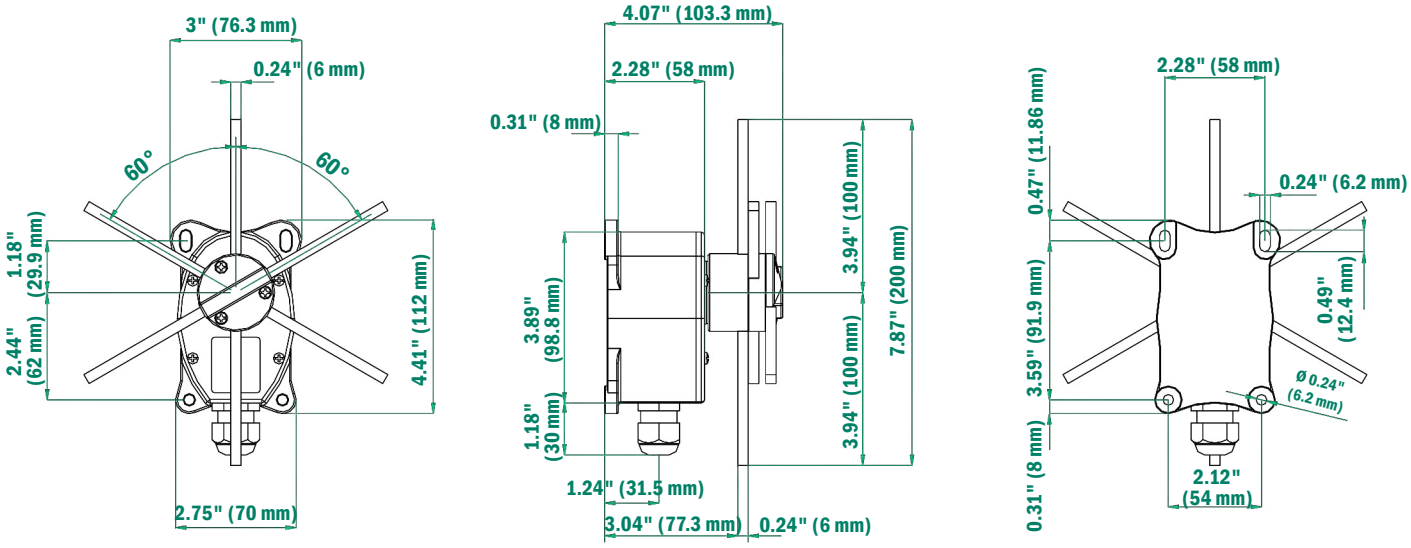
Rods with 4 maintained positions

- Pre-travel angle for rotation contact operation: 34°
- Maximum rotation angle for each maintained position: 60°
- Average angle for the mechanical tripping: 30°
- Maintained positions each: 60°

In order to ensure proper operations, the dimensions shall not be increased; anyhow, they can be decreased, taking into account that the closer the impact point is to the center of the head, the higher the impact and the mechanical wear of rod and shaft are.



OVERALL DIMENSIONS



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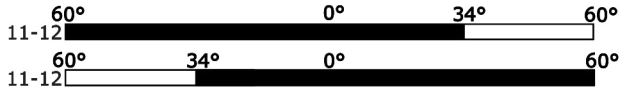
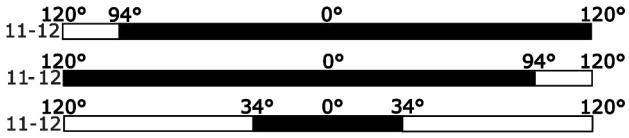
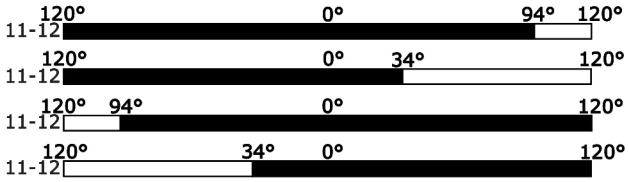
LIMIT SWITCHES

The limit switches are equipped with 1NC slow action switches PRSL1001PI

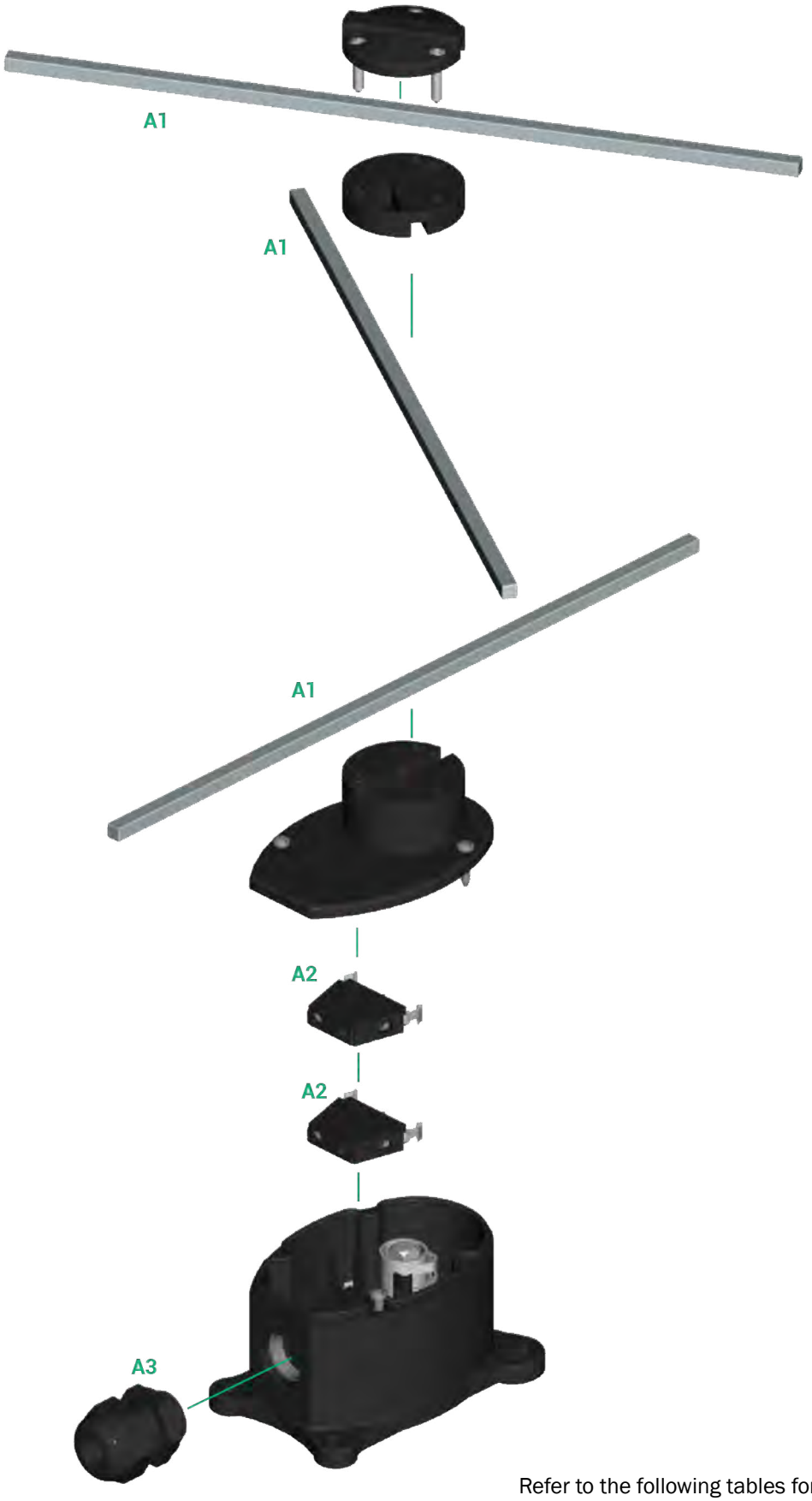
.

No. of Switches PRSL1001PI	Actuating Travel	Rod Length	SCC Part No.
2		11.81" (300 mm)	PF48020001
		9.84" (250 mm)	PF48020005
		7.87" (200 mm)	PF48020006
3		11.81" (300 mm)	PF48030001
4		11.81" (300 mm)	PF48040001
		9.84" (250 mm)	PF48040006
		7.87" (200 mm)	PF48040007

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: "Switches" and Accessories".

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COMPONENTS

Switches

Ref.	Drawing	Description	Scheme	SCC Part No.
A2		1NO switch		PRSL1000PI
		1NC switch		PRSL1001PI

Accessories

Ref.	Drawing	Description	SCC Part No.
A4		Rod 0.24" x 0.24" x 7.87" (6 x 6 x 200 mm)	PRT03006PE
		Rod 0.24" x 0.24" x 9.84" (6 x 6 x 250 mm)	PRT03011PE
		Rod 0.24" x 0.24" x 11.81" (6 x 6 x 300 mm)	PRT03012PE
A5		Cable Clamp M20	PRPS0064PE

LIMITEX AP

HAZARDOUS AREAS
POSITION LIMIT SWITCH

Explosion proof cross position limit switch. Rugged and reliable, Limitex AP is designed to control the movement of overhead travelling cranes, hoists and complex machine tools operating in potentially explosive areas.

Features

- Positive opening NC contacts for safety functions.
- Mechanical life of switches: 1 million operations.
- Operation frequency: 3600 operations/hour max.
- IP protection degree: Limitex AP is classified IP66.
- Extreme temperature resistance: -58°F to +140°F (-50°C to +60°C).
- It features rugged external enclosure made of G20 cast iron and cross rod support made of zinc alloy. Internal components are made of materials which guarantee long mechanical life and continuous performance.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

Options

- 2 or 4 snap action switches with 1NO+1NC contacts.
- Cross rods with 3 or 4 maintained positions every 90°.
- Modular adapter with fixing points.

Certifications

- CE marking and EAC* certification.
- Atex certification EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009.
- Conformity to Standards IECEx IEC 60079-0:2011, IEC 60079-1:2007-04 and IEC 60079-31:2008.

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SPECIFICATIONS FOR LIMITEX AP

Certifications

Conformity to Atex Standards	EN 60079-0:2009 Explosive atmospheres – Equipment – General requirements
	EN 60079-1:2007 Explosive atmospheres – Equipment protection by flameproof enclosures “d”
	EN 60079-31:2009 Explosive atmospheres – Equipment dust ignition protection by enclosures “t”
Conformity to IECEx Standards	IEC 60079-0:2011 Explosive atmospheres – Equipment – General requirements
	IEC 60079-1:2007-04 Explosive atmospheres – Equipment protection by flameproof enclosures “d”
	IEC 60079-31:2008 Explosive atmospheres – Equipment dust ignition protection by enclosures “t”
Atex Certification	INERIS 13ATEX0020X
IECEx Certification	IECExINE13.0051X
Certification for group I, IIA, IIB and IIC with the marks*	MINING: I M2Ex d I Mb (ATEX) EX d I Mb (IECEx)
	GAS Zone 1 and 2: II2G Ex d IIB T6 Gb or Ex d LLC T6 Gb (ATEX) Ex d IIB T6 or Ex d IIC T6 Gb (IECEx)
	DUST ZONE 21 AND 22: II2D Ex tb IIIC T85ºC Db IP66 (ATEX) Ex tb IIC T85ºC Db IP66 (IECEx)
	GAS & DUST: II2GD Ex d IIB or IIC T6 Gb Ex tb IIC T85ºC Db IP66
Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switch-gear and control-gear
	EN 60947-5-1 Low -voltage switch-gear and control-gear | Control circuit devices and switching elements | Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Markings and Homologations	CE Ex IEC IECEx

General Safety Specifications

Maximum supply voltage	250 Vac
Maximum current intensity	3 A
Maximum dissipated power	2 Watt
Rated frequency	50 / 60 Hz

General Technical Specifications

Operational ambient temperature	-58°F / +140°F (-50°C / +60°C)
IP protection degree	IP 66
Operation frequency	3600 operations/hour max
Cable entry	No. 2 M20 x 1.5 (standard)
	No. 2 M25 x 1.5 (available on request)
	No. 2 ½ NPT (available on request)

LIMITEX AP with 2 switches | Technical specifications of the switches

Utilisation category	AC 15
Rated operational current	3 A
Rated operational voltage	250 Vac
Rated thermal current	10 A
Rated insulation voltage	300 Vac
Mechanical life	1 x 10^6 operations
Connections	Screw-type terminals
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2 (UL - (c)UL: use -140°F (60°C) or 167°F (75°C) copper (CU) conductor and wire 16-18 AWG)
Tightening torque	0.8 Nm
Microswitch type	Double break, snap action
Contacts	1 NO+1NC (all NC contacts are of the positive opening operation type ⊖)
Scheme	

LIMITEX AP with 2 switches | Maximum actuating dimensions

T-type rod - Cross rod with 3 maintained positions

- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°

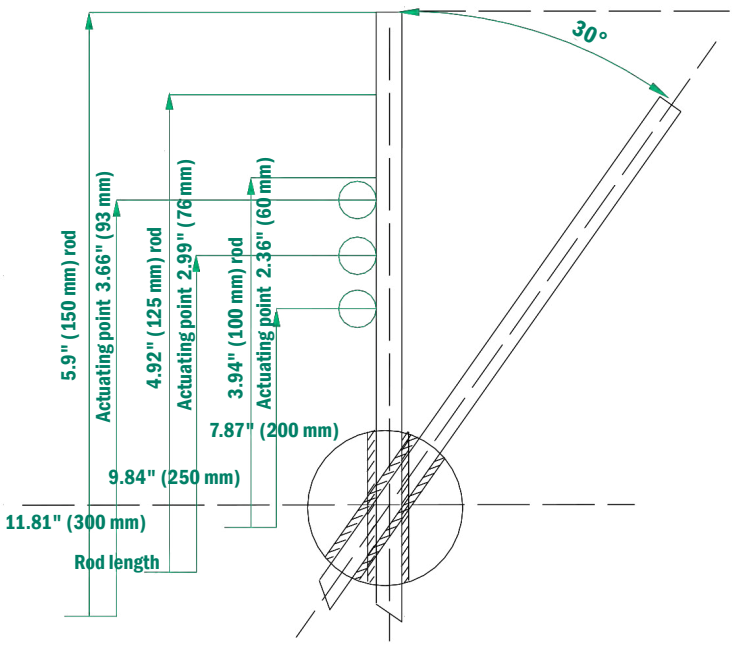
Rod - Rod and Roller

- Pre-travel angle for rotation contact operation: 24°
- Maximum rotation angle: 65°

Cross rod with 4 maintained positions

- Pre-travel angle for rotation contact operation: 49°
- Maximum rotation angle for each maintained position: 90°
- Average angle for the mechanical tripping: 48°
- Maintained positions each: 90°

In order to ensure proper operations, the dimensions shall not be increased; anyhow, they can be decreased, taking into account that the closer the impact point is to the center of the head, the higher the impact and the mechanical wear of rod and shaft are.
IMPORTANT: the maximum impact speed is 1.35 m/s, referring to the ideal impact points showed in the drawing.



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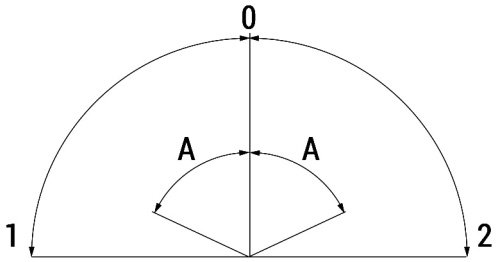
TECH SPECIFICATIONS

LIMITEX AP with 4 switches | Technical specifications of the switches

Rated operational current	16 A AT 250 Vac
Rated operational voltage	500 Vac
Rated thermal current	10 A
Rated insulation voltage	300 Vac
Mechanical life	1 x 10^6 operations
Connections	Screw-type terminals
Wires	1 x 2.5 mm^2, 2 x 1.5 mm^2
Microswitch type	Snap action
Contacts	1 NO+1NC
Scheme	

LIMITEX AP with 4 switches | Operation Angles



0 - Reset position

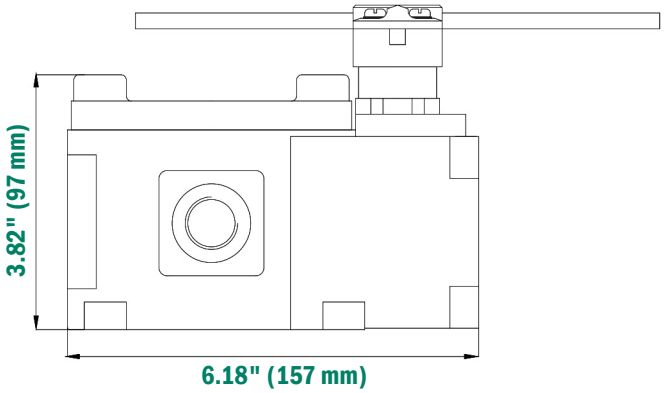
A - Angle for switch operation: 65°

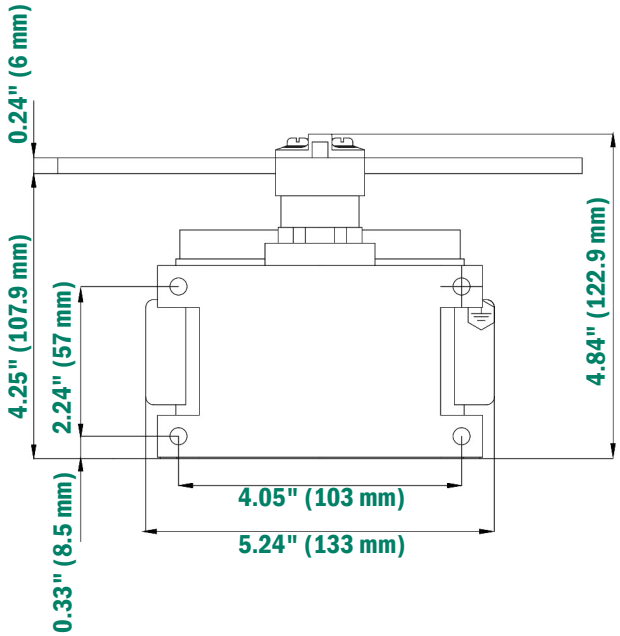
1 - Maximum operation angle to the left: 90°

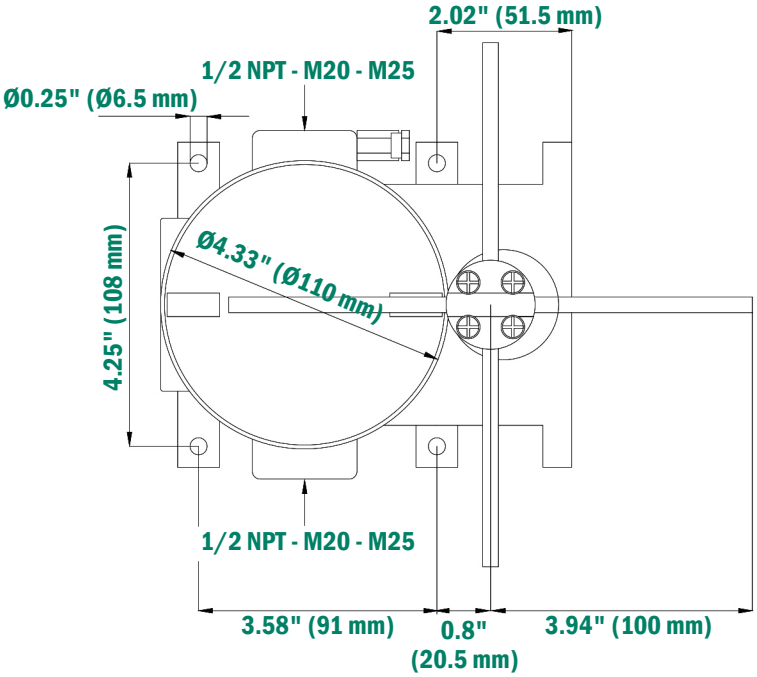
2 - Maximum operation angle to the right: 90°

The limit switch rods have no rotation limit stop (they can rotate free around 360°).

OVERALL DIMENSIONS







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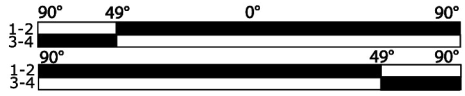
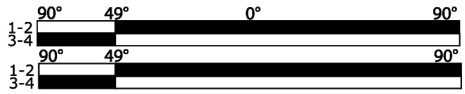
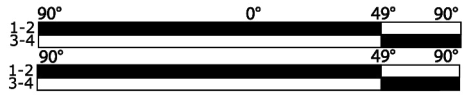
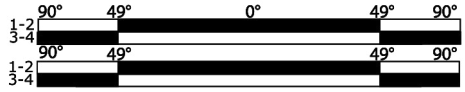
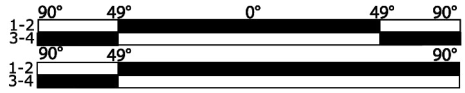
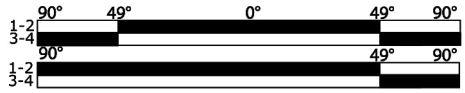
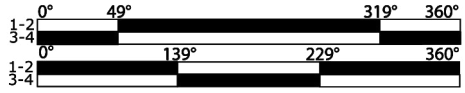
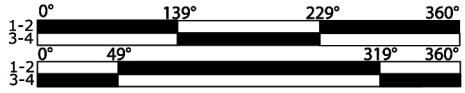
LIMIT SWITCHES

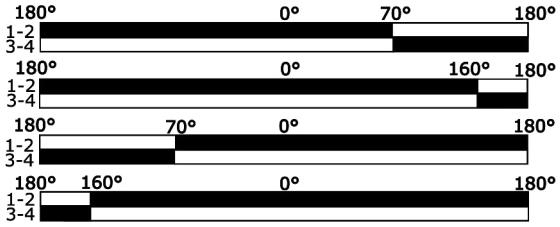
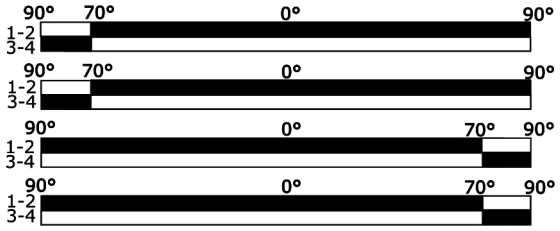
Standard limit switches are equipped with 7.87" (200 mm) rods and 1NO+1NC snap action switches

.

LIMITEX AP WITH 2 SWITCHES

Actuating Travel	Position	Rod	SCC Part No.
	3 maintained	"T" Type	EX33710100
		Cross	EX33710200
	3 maintained	"T" Type	EX33711100
		Cross	EX33711200
	3 maintained	"T" Type	EX33712100
		Cross	EX33712200
	3 maintained	"T" Type	EX33713100
		Cross	EX33713200
	3 maintained	"T" Type	EX33714100
		Cross	EX33714200
	3 maintained	"T" Type	EX33715100
		Cross	EX33715200
	4 maintained	Cross	EX33750100
	4 maintained	Cross	EX33751100
	4 maintained	Cross	EX33752100

LIMITEX AP WITH 4 SWITCHES

Actuating Travel	SCC Part No.
	EX26755100
	EX26755200

Industrial Electrical Controls

SPRINGER® controls company

Signaling Devices

MULTICOLOR SINGLE LENS - MODULAR & PRE-ASSEMBLED STACK LIGHTS - SIGNALING LAMPS - OPTICAL & AUDIBLE UNITS - LED BULBS

springercontrols.com

VISUAL & AUDIBLE SIGNAL DEVICES

INDEX

MULTICOLOR (Single Lens)

S300 (30mm) 5

S370 (70mm) 6

S180 (60mm)..... 7

MODULAR Stack Lights

S370 (70mm)..... 9

PRE-ASSEMBLED Stack Lights

S470 (70mm).....21

S450 (45mm)..... 22

S300 (30mm)..... 23

SIGNALING Lamps

S180 (80mm).....25

S180 Pre-assembled enclosures 31

S183 (60mm)..... 32

S185 (60mm) 34

S600 (150mm).....36

OPTICAL & AUDIBLE Combined

MULTICOLOR (60 & 70mm) 5

S370 (70mm)..... 5

S180 (60mm)..... 7

S230.....38

AUDIBLE Units

S230.....38

S187.....40

S710.....41

S750.....42

LED Bulbs

.....43

MECHANICAL Drawings

..... 45

MULTICOLOR (Single Lens)

S300 Ø30mm

- The future of simple light panel indicators
- Small size, great brightness
- Perfect for small machinery
- Different color combinations
- Easy to install, connect and flexible

←Unit shown with base and extension pole accessory (sold separately)

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068-2-6 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
24V DC (+/- 10%)
Current
90 mA
Protection Degree
IP 64 (if correctly mounted) according to EN 60529
Protection against Electric Shock
Class II, safety insulation (IEC 536)
Resistance to Vibrations
2 g min. (10 - 150 Hz) according to EN 60068-2-6 and 27
Operating Temperature
-4˚F + 122˚F (-20˚C +50˚C)
Connections
with screw cable clamp (maximum cable size 1.5mm^2), seated at the bottom. Screw clamps with binding post gauge max. 1,5 mm^2

Part Number

Type	Description	SCC Part No.
TRICOLOR lamp, green, amber & red	22 mm hole for direct mounting or with base and pole	LA-LMY532B
TRICOLOR lamp, blue, amber & red		LA-LMY632B
TRICOLOR lamp, white, amber & red		LA-LMY932B
TRICOLOR lamp, blue, white & red		LA-LMY692B

MULTI COLOR

MECHANICAL DRAWINGS see page ... 45
MOUNTING ACCESSORIES see page ... 23

S370 Ø70mm

This signal lamp design is state-of-the-art technology and meets the most complex requests of the industry.

←Unit shown with accessories

←Standard unit

- 1 lamp, 6 simultaneous messages
- 2 or more alarms that light up alternatively following the main event
- 3 type of sequence; steady, flashing or rotating
- Interchangeable
- Available in combination with other light units in the 370 series

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068-2-6 EN 60204.1 - EN ISO 7731 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
24V DC (+/- 10%)
Current
90 mA
Protection Degree
IP64 (if correctly assembled with cap and gasket), with audible IP54
Protection against Electric Shock
Class II, safety insulation according to IEC 536
Resistance to Vibrations
2 g min. (10 - 150 Hz)
Operating Temperature
-4˚F + 122˚F (-20˚C +50˚C)
Number of Units that can be combined
Max 2, except in QUADRICOLOR unit; Max 3, except in TRICOLOR unit
Connections
w. screw cable clamp (maximum cable size 1.5mm^2), placed inside the terminal unit
Sound
Pulse and continuous
Sound Frequency
2900/3700 Hz
Effective dB, determined at a distance of 1 meter from sound module
90 dB

Part Number

Type	Description	SCC Part No.
QUADRICOLOR lamp, green, blue, amber & red	Terminal unit gray	LA-04Q1B
	Terminal unit black	LA-94Q1B
	With integrated audible unit, terminal unit gray	LA-04Q7B
	With integrated audible unit, terminal unit black	LA-94Q7B
TRICOLOR lamp, green, amber & red	Gray Terminal	LA-04T1B532
	Black Terminal	LA-04T1B632
TRICOLOR lamp, blue, amber & red	Gray Terminal	LA-94T1B532
	Black Terminal	LA-94T1B632
TRICOLOR lamp, green, amber and red	Possible to add other units below tricolor; terminal unit gray. (8 location changes)	LA-04T5B532
		LA-94T5B532
TRICOLOR lamp, blue, white and red		LA-04T5B632
TRICOLOR lamp, blue, amber and red		LA-94T5B632
TRICOLOR lamp, green, amber and red	With integrated audible unit, terminal unit gray	LA-04T7B532
	With integrated audible unit, terminal unit black	LA-94T7B532
TRICOLOR lamp, blue, amber and red	With integrated audible unit, terminal unit gray	LA-04T7B632
	With integrated audible unit, terminal unit black	LA-94T7B632

***CLICK CLACK* see page ... 20 | MECHANICAL DRAWINGS see page ... 45 | MOUNTING ACCESSORIES see page ... 18/19**

MULTICOLOR (Dome Lighting)

S180 Ø60mm

←Units shown with added accessories

- With 2 alarms on, the lamp lights up alternatively following the event
- Bicolor lamp light, 1 lamp - 2 signaling lights
- Flashing light - different color combinations
- Bright, compact, flexible, unique
- Easy to install

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Voltage
24V DC
Current
45 mA
Sound Frequency
4000 Hz
Effective dB, determined at a distance of 1 meter from sound module
80 dB
Protection Degree
IP 54, clamps, IP 20 according to EN 60529 (with base 85-AS, CS, DS, IP30)
Protection against Electric Shock
Class II, safety insulation (IEC 536)
Resistance to Vibrations
2 g min. (10 - 150 Hz) according to EN 60068.2.6
Operating Temperature
-4˚F + 104˚F (-20˚C +40˚C)
Connections
with screw cable clamp (maximum cable size 1.5mm^2), seated at the bottom

Part Number

Type	Description	SCC Part No.
BICOLOR lamp, amber & red	Dome height 65mm 22mm hole for direct mounting or with base and pole	LA-AA4B32B
	Dome height 60mm 22mm hole for direct mounting or with base and pole	LA-AF4B32B
BICOLOR lamp, green & red	Dome height 65mm 22mm hole for direct mounting or with base and pole	LA-AA4B52B
	Dome height 60mm 22mm hole for direct mounting or with base and pole	LA-AF4B52B
BICOLOR lamp, amber, red with integrated sound	Dome height 65mm 22mm hole for direct mounting or with base and pole	LA-AA4B732B
	Dome height 60mm 22mm hole for direct mounting or with base and pole	LA-AF4B732B
BICOLOR lamp, green, red with integrated sound	Dome height 65mm 22mm hole for direct mounting or with base and pole	LA-AA4B752B
	Dome height 60mm 22mm hole for direct mounting or with base and pole	LA-AF4B752B

MECHANICAL DRAWINGS see page ... 48
MOUNTING ACCESSORIES see page ... 29

MODULAR STACK LIGHTS

S370

FEATURES

ClickClack

- An easy and functional accessory.
- Simplifies the un-mounting of the stack light
- Remount fast and flawlessly

Custom Colors

- Special customized colors available upon request.

Anti-Tampering Feature

- This important feature assures that no one can dissemble the lamp without the proper tool.

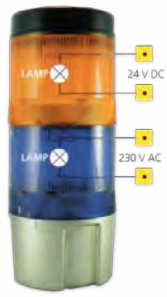
Ultra Bright LED Lamps

- Brighter than traditional lights, ultra-bright LED guarantee to be seen even in direct sunlight.
- Saving energy and vibration resistance are some of our LED characteristics.

Multifunctional Lamp

- 1 lamp, 3 different kinds of lights.
- Steady, flashing and rotating.
- Light lamp customization upon request.

Light lamp



- An amazingly versatile lamp.
- 1 lamp, 1 terminal unit but 3 different kind of power supplies.
- Every unit can be supplied in a different way without problems.

Assembled and Wired

- Lamps can be furnished assembled or pre-wired.
- 2 kinds of wiring, cable length 300 mm with connector M12
- 5 indicators output.

Assembled and Wired

- A gentle pressure and a simple rotating movement allow the unit to be mounted or unmounted.
- A bayonet insert enables to join up to 7 units together electrically and mechanically.

MODULAR STACK LIGHTS - S370

Technical Specifications

Compliance

Directive 2006/95/EC Low Voltage
Directive 2004/108/EC Electromagnetic Compatibility
Directive 2011/65/EC RhOS
Directive 2006/42/EC Machinery

Conformity to Standards

EN 60204.1 - EN 60947.5.1 - EN 60073 - EN60529
EN 60068.2.6 - EN 60068-2-7 - EN ISO 7731 - EN 981 - IEC 536

Homologations

c UL US LISTED

Material

Visual and audio module, cable unit, cap and base: ploycarbonate.
Tube: anodised aluminum or policarbonate (PC)

Operating Voltage

250 V max

Protection Degree

IP64 (if correctly assembled with cap and gasket), according to EN60529.

Protection against electric shock:

Class II, double safety insulation with polycarbonate poles, class I with metal poles according to IEC 536

Operating Temperature:

-4˚F + 122˚F (-20˚C +50˚C) (12V 104°F / 40°C)

Resistance to Vibrations:

2 g min (10-150 Hz) according to EN 60068.2.6

Lens Color:

Amber - Blue - Yellow - Neutral - Green according to EN 60073

Bulb:

Bayonet connection type: BA 15d - 5W max.
With flash circuits: Xenon bulbs

Number of combinable units:

For all indicators: each cable unit can be combined with up to seven modular units (except for the single beacon type, which can be combined with a maximum of two units)

Connections:

With screw cable clamp (maximum cable size 1.5 mm²)

Connection Id. Code:

C - common to all signal units.
Numbers from 1 to 7 refer to each single module from the base to the top

Modular Configuration

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MODULAR STACK LIGHTS - S370

Terminal Unit with Cap

Connections by means of clamps or prewired.

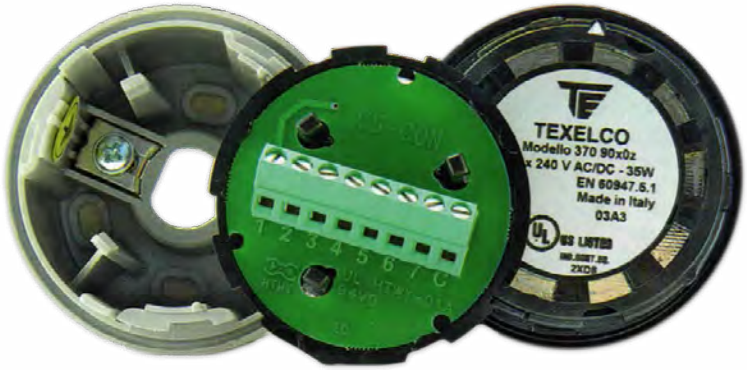
Clamps
Screw clamp with binding post

Maximum gauge

1.5 mm²

Connection id. Code

C - common to all units. Numbers from 1 to 7 refer to the colors from the base to the top



Description	Color	SCC Part No.
Direct Mounting or Base and Pole	Gray	LA-9001
	Black	LA-9002
	Gray	LA-90M01
	Black	LA-90M02
With Cable Gland	Gray	LA-9001PC
	Black	LA-9002PC
	Gray	LA-90M01PC
	Black	LA-90M02PC
with Magnet	Gray	LA-90R01
	Black	LA-90R02
With Cable 300mm length and Connector M12 with 5 indicators output	Gray	LA-9001CC
	Black	LA-9002CC
	Gray	LA-90M01CC
	Black	LA-90M02CC
With Cable 500mm length, 5 wires output	Gray	LA-9001CF
	Black	LA-9002CF
	Gray	LA-90M01CF
	Black	LA-90M02CF

Steady Light Unit

Light output
LED or filament bulb

Bulb Type
with bayonet connection BA 15d

Operating Voltage
from 12V up to 240V DC/AC

Current Consumption
with 5 W filament bulbs:
24V, 210 mA / 115V, 43 mA / 240V, 22 mA

with LED bulbs:
24V, <50 mA / 115V, <18 mA / 240V, <17 mA

Bulbs not Included (multi -voltage)

Color	SCC Part No. for 12-240V AC-DC	Color	SCC Part No. for 12-240V AC-DC
Red	LA-1200	Green	LA-1500
Amber	LA-1300	Blue	LA-1600
Yellow	LA-1400	White	LA-1900

Filament Bulb Included

	SCC Part No.				SCC Part No.		
Color	24V DC-AC	115V AC	240V AC	Color	24V DC-AC	115V AC	240V AC
Red	LA-1224	LA-1215	LA-1230	Green	LA-1524	LA-1515	LA-1530
Amber	LA-1324	LA-1315	LA-1330	Blue	LA-1624	LA-1615	LA-1630
Yellow	LA-1424	LA-1415	LA-1430	White	LA-1924	LA-1915	LA-1930

LED Bulbs Included

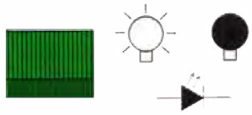
	SCC Part No.				SCC Part No.		
Color	24V DC-AC	115V AC	240V AC	Color	24V DC-AC	115V AC	240V AC
Red	LA-124B	LA-124F	LA-124G	Green	LA-154B	LA-154F	LA-154G
Amber	LA-134B	LA-134F	LA-134G	Blue	LA-164B	LA-164F	LA-164G
Yellow	LA-144B	LA-134F	LA-144G	White	LA-194B	LA-194F	LA-194G

Ultra Bright LED Included

	SCC Part No.				SCC Part No.		
Color	24V DC-AC	115V AC	240V AC	Color	24V DC-AC	115V AC	240V AC
Red	LA-12H4B	LA-12H4F	LA-12H4G	Green	LA-15H4B	LA-15H4F	LA-15H4G
Amber	LA-13H4B	LA-13H4F	LA-13H4G	Blue	LA-16H4B	LA-16H4F	LA-16H4G
Yellow	LA-14H4B	LA-13H4F	LA-14H4G	White	LA-19H4B	LA-19H4F	LA-19H4G

MECHANICAL DRAWINGS see page ... 45

Flashing Light Unit



Light output
LED or filament bulb

Bulb Type
with bayonet connection BA 15d

Operating Voltage
24V - 115 V - 240V DC/AC

Current Consumption
with 5 W filament bulbs:
24V DC - 130 mA / 24V AC - 145 mA /
115V AC/DC - 25 mA / 240V AC/DC - 15 mA

with LED bulbs:
24V, <50 mA - 115V, <18 mA - 240V, <17 mA

Flash Frequency:
1.4 Hz approx. (84 flashes per min) according to EN60073

Filament Bulb Included

	SCC Part No.				SCC Part No.		
Color	**24V DC-AC**	**115V AC**	**240V AC**	**Color**	**24V DC-AC**	**115V AC**	**240V AC**
Red	LA-2224	LA-2215	LA-2230	Green	LA-2524	LA-2515	LA-2530
Amber	LA-2324	LA-2315	LA-2330	Blue	LA-2624	LA-2615	LA-2630
Yellow	LA-2424	LA-2415	LA-2430	White	LA-2924	LA-2915	LA-2930

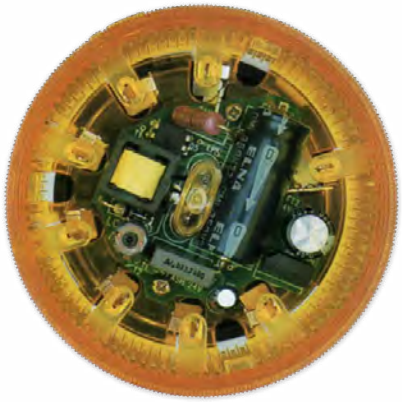
LED Bulbs Included

	SCC Part No.				SCC Part No.		
Color	**24V DC-AC**	**115V AC**	**240V AC**	**Color**	**24V DC-AC**	**115V AC**	**240V AC**
Red	LA-224B	LA-224F	LA-224G	Green	LA-254B	LA-254F	LA-254G
Amber	LA-234B	LA-234F	LA-234G	Blue	LA-264B	LA-264F	LA-264G
Yellow	LA-244B	LA-244F	LA-244G	White	LA-294B	LA-294F	LA-294G

Ultra Bright LED Included

	SCC Part No.				SCC Part No.		
Color	**24V DC-AC**	**115V AC**	**240V AC**	**Color**	**24V DC-AC**	**115V AC**	**240V AC**
Red	LA-22H4B	LA-22H4F	LA-22H4G	Green	LA-25H4B	LA-25H4F	LA-25H4G
Amber	LA-23H4B	LA-23H4F	LA-23H4G	Blue	LA-26H4B	LA-26H4F	LA-26H4G
Yellow	LA-24H4B	LA-24H4F	LA-24H4G	White	LA-29H4B	LA-29H4F	LA-29H4G

Strobe Light Unit



Light output
4-Joule xenon bulb

Operating Voltage
24V DC/AC - 115 V AC - 240V AC

Current Consumption
24V DC - 75 mA / 24V AC - 135 mA /
115V, 20 mA / 240V, 15 mA

Flash Frequency:
1.4 Hz approx. (84 flashes per min) according to EN60073

	SCC Part No.				SCC Part No.		
Color	**24V DC-AC**	**115V AC**	**240V AC**	**Color**	**24V DC-AC**	**115V AC**	**240V AC**
Red	LA-3224	LA-3215	LA-3230	Green	LA-3524	LA-3515	LA-3530
Amber	LA-3324	LA-3315	LA-3330	Blue	LA-3624	LA-3615	LA-3660
Yellow	LA-3424	LA-3415	LA-3430	White	LA-3924	LA-3915	LA-3930

MECHANICAL DRAWINGS see page ... 45

MODULAR STACK LIGHTS - S370

Multi functional Ultra Bright LED Light Unit

Light output
36 ultra bright LED integrated

Lasting
more than 50,000 working hours

Operating Modes
Steady, Flashing, or Rotating Light
(to change the function shift the jumper inside)

Operating Voltage
24V DC/AC

Current Consumption
24V DC - 55 mA / 24V AC - 85 mA (the same for all the illumination functions)

Flash Frequency:
1.4 Hz approx. (84 flashes per min) according to EN60073

Rotating Frequency
1 revolution per second (approx.)

	SCC Part No. for 24V DC-AC			SCC Part No. for 24V DC-AC	
Color	**Colored Light Units**	**Neutral Light Units**	**Color**	**Colored Light Units**	**Neutral Light Units**
Red	LA-4224	LA-42624	Green	LA-45H4	LA-456H4
Amber	LA-4324	LA-43624	Blue	LA-46H4	LA-466H4
Yellow	LA-4424	LA-44624	White	LA-49H4	LA-496H4

Steady or Flashing LED Light Units

Light output
6 ultra bright LED integrated

Lasting
more than 50,000 working hours

Operating Modes
Steady, Flashing, or Rotating Light
(to change the function shift the jumper inside)

Operating Voltage
24V DC/AC

Current Consumption
30 mA (the same for all the illumination modes)

Flash Frequency:
1.4 Hz approx. (84 flashes per min) according to EN60073

	SCC Part No. 24V DC-AC			SCC Part No. 24V DC-AC	
Color	**Colored Light Units**	**Neutral Light Units**	**Color**	**Colored Light Units**	**Neutral Light Units**
Red	LA-42KB	LA-426KB	Green	LA-45KB	LA-456KB
Amber	LA-43KB	LA-436KB	Blue	LA-46KB	LA-466KB
Yellow	LA-44KB	LA-446KB	White	LA-49KB	LA-496KB

MECHANICAL DRAWINGS see page ... 45

MODULAR STACK LIGHTS - S370

Steady Unit and Integrated Pulse Sound

Combined beacon (steady) and sounder with pulse or continuous audio signal. The sounder can be fixed only as last sector.

Operating Voltage
24V DC (ac)

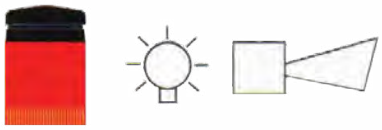
Current Consumption
with 5 W filament bulbs, continuous sound
24V , 230 mA

with LED bulbs, continuous sound
24V, 75 mA

Light Output
LED or filament bulb

Bulb Type
with bayonet connection BA 15d

Sound Frequency
600 - 3000 Hz



Type 127NB

Type 127CB

Bulbs not included		Red	Amber	Yellow	Green	Blue	White
Continuous Sound	85dB/IP54 **Separated** Control (24V)	LA-127IB	LA-137IB	LA-147IB	LA-157IB	LA-167IB	LA-197IB
	100dB/IP54 **Common** Control (24V)	LA-127NB	LA-137NB	LA-147NB	LA-157NB	LA-167NB	LA-197NB
Pulse Sound	85dB/IP64 **Separated** control (24V)	LA-127EB	LA-137EB	LA-147EB	LA-157EB	LA-167EB	LA-197EB
Pulse or Continuous Sound	85 dB/IP54 **Separated** Power Supply (24V)	LA-127CB	LA-137CB	LA-147CB	LA-157CB	LA-167CB	LA-197CB

Flashing Unit and Integrated Pulse Sound

Combined beacon (steady) and sounder with pulse or continuous audio signal. The sounder can be fixed only as last sector.

Operating Voltage
24V AC/DC - 115V - 240V AC

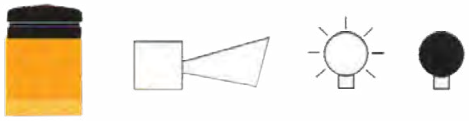
Current Consumption
with 5 W filament bulbs:
24V, <50mA / 115V, <18mA / 240V, <17mA

Light Output
LED or filament bulb

Bulb Type
with bayonet connection BA 15d

Flash Frequency
1.4 Hz approx. (84 flashes per min.)
according to EN 60073)

Sound Frequency
600 - 3000 Hz



Type 227NB

Type 227CB

Filament bulbs included		Red	Amber	Yellow	Green	Blue	White
Pulse Sound	100dB/IP54 **Separated** Control 24V DC	LA-227NB	LA-237NB	LA-247NB	LA-257NB	LA-267NB	LA-297NB
	85dB/IP54 **Common** Control 24V DC/AC	LA-22B73	LA-23B73	LA-24B73	LA-25B73	LA-26B73	LA-29B73
	85dB/IP54 **Common** Control 115V AC	LA-22F73	LA-23F73	LA-24F73	LA-25F73	LA-26F73	LA-29F73
	85dB/IP54 **Common** Control 230V AC	LA-22G73	LA-23G73	LA-24G73	LA-25G73	LA-26G73	LA-29G73
Pulse or Continuous Sound	85 dB/IP54 **Separated** Power Supply 24V DC	LA-227CB	LA-237CB	LA-247CB	LA-257CB	LA-267CB	LA-297CB

MECHANICAL DRAWINGS see page ... 45

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MODULAR STACK LIGHTS - S370

Combined Multifunctional Light LED and Audible Unit

Combined beacon (multifunction) and sounder with pulse or continuous audio signal. The sounder can be fixed only as last sector.

Operating Voltage
24V DC (ac)

Current Consumption
24V DC, 75/130 mA

Light Output
36 ultra bright LED integrated

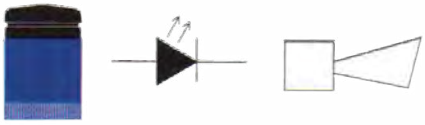
Lasting
more than 50,000 working hours

Operating Modes
Steady light, flashing or rotating light (to change the function shift the jumper inside)

Flash Frequency
1.4 Hz approx. (84 flashes per min.) according to EN 60073

Rotation Frequency
1 revolution per second approx.

Sound Frequency
600 - 3000 Hz



Type 46R7TB

Type 46R7NB

		SCC Part No.					
		Red	**Amber**	**Yellow**	**Green**	**Blue**	**White**
Continuous Sound	100dB/IP 64 **Separated** Control (24V)	LA-42R7TB	LA-43R7TB	LA-44R7TB	LA-45R7TB	LA-46R7TB	LA-49R7TB
Pulse Sound	100dB/IP64 **Separated** Control (24V)	LA-42R7NB	LA-43R7NB	LA-44R7NB	LA-45R7NB	LA-46R7NB	LA-49R7NB
Pulse or Continuous Sound	85dB/IP54 **Separated** Power Supply (24V)	LA-42R7CB	LA-43R7CB	LA-44R7CB	LA-45R7CB	LA-46R7CB	LA-49R7CB

Combined Light and Audible Unit (steady or flashing light)

Combined beacon (multifunction) and sounder with pulse or continuous audio signal. The sounder can be fixed only as last sector.

Operating Voltage
24V DC (ac)

Current Consumption
24V DC, 75/130 mA

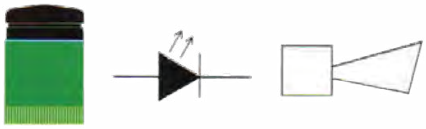
Light Output
36 ultra bright LED integrated

Lasting
more than 50,000 working hours

Operating Modes
Steady or flashing light (to change the function shift the jumper inside)

Flash Frequency
1.4 Hz approx. (84 flashes per min.) according to EN 60073

Sound Frequency
600 - 3000 Hz



Type 45K7TB

Type 45K7NB

		SCC Part No.					
		Red	**Amber**	**Yellow**	**Green**	**Blue**	**White**
Pulse Sound	100dB/IP 64 **Separated** Control (24V)	LA-42K7TB	LA-43K7TB	LA-44K7TB	LA-45K7TB	LA-46K7TB	LA-49K7TB
	100dB/IP64 **Separated** Control (24V)	LA-42K7NB	LA-43K7NB	LA-44K7NB	LA-45K7NB	LA-46K7NB	LA-49K7NB
Pulse or Continuous Sound	85dB/IP54 **Separated** Power Supply (24V)	LA-42K7CB	LA-43K7CB	LA-44K7CB	LA-45K7CB	LA-46K7CB	LA-49K7CB

MECHANICAL DRAWINGS see page ... 45

Audio Signal Device Type 77 IP64

Already equipped with a cap, the audible unit can only be fitted to the top of tower light.

Sound
pulse or continuous (to change it just remove or insert the relevant jumper in the printed circuit)

Sound Frequency
2600 Hz according to EN 457

Signal Repetition Rate
1 Hz according to EN 457
effective dB, determined at a distance of 1 meter from sound module
Type 77-24: pulse signal 84.5 dB - Continuous signal 82.6 dB
Type 77-15: pulse signal 78 dB - Continuous signal 75 dB
Type 77-30: pulse signal 78 dB - Continuous signal 75 dB

Operating Voltage
Type 77-24: 24V DC/AC
Type 77-15: 115V AC
Type 77-30: 240V AC

Current Consumption
Type 77-24: DC/AC, 200 mA
Type 77-15: AC, 40 mA
Type 77-30: AC, 30 mA

Protection Degree
IP64

Description	dB Rating	SCC Part No.
24V DC/AC	84.5	LA-7724
115V AC	78	LA-7715
240V AC	78	LA-7730

Audio Signal Device Type 71 and 72

Already equipped with a cap, the audible unit can only be fitted to the top of tower light except **71-NB and 71-PB mounted in every position of tower light.**

Sound
pulse or continuous

Sound Frequency
3300 Hz - 3700 Hz

Signal Repetition Rate
0.5 Hz

Effective dB, determined at a distance of 1 meter from sound module
Type 71: 85dB / Type 72 : 75 dB

Operating Voltage
24V DC/AC - 115/230V AC

Current Consumption
24V DC/AC, 32mA / 24V AC, 35mA / 230V, 20mA

Protection Degree
Type 71: IP30 - Type 72: IP64

Tones	Type	Loudness	Notes	Power Supply	SCC Part No.
2 Tones	71	max dB85		24V AC/DC	LA-7124
				115/230V AC	LA-71W0
	72	max dB75		24V AC/DC	LA-7224
				115/230V AC	LA-72W0
	71	max dB71	Positive Logic (C+)	24V DC (ac)	LA-71PB
			Negative Logic (C-)		LA-71NB

MECHANICAL DRAWINGS see page ... 45

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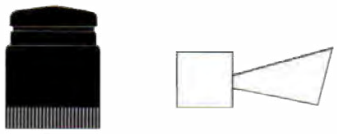
MODULAR STACK LIGHTS - S370

Audio Signal Device Type 75 IP54



Already equipped with a cap, the audible unit can only be fitted to the top of tower light.

Data							SCC Part No.
max 90 dB	2900 Hz	16 Tones	24 V AC/DC	40 mA	IP 54	Module Black	LA-75MB
		2 Tones		200 mA			LA-7524
max dB 100	600 Hz	Pulse	24 V AC/DC	60 mA	IP 64	Module Black	LA-75RB
		Continuous					LA-75CB
		Pulse	24V dc				LA-751B
			115/240V				LA-75W0
		Continuous	115/240V				LA-75WC

Audio Signal Device Type 73 IP54

Already equipped with a cap, the audible unit can only be fitted to the top of tower light.

Sound
pulse or continuous

Sound Frequency
2900 Hz

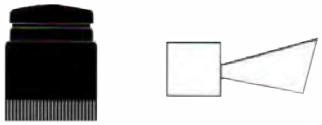
Signal Repetition Rate
0.5 Hz

Effective dB determined at a distance of 1 meter from sound module
90 dB

Operating Voltage
24V DC/AC, 115/230V AC

Current Consumption
24V DC/AC. 30 mA, 230V AC, 20 mA

Protection Degree
IP54



Data							SCC Part No.
max 90 dB	2900 Hz	2 Tones	24 V ac/dc	30 mA	IP 54	Module Black	LA-7324
			115/240V ac	20 mA			LA-73W0

MECHANICAL DRAWINGS see page ... 45

LED AND FILAMENT BULBS

Standard LED
10 LED; 9 lateral, 1 frontal
←

Ultra Bright LED
45 LED; 36 lateral, 9 frontal
→

LED Bulb BA15d

- Lasting more than 25,000 working hours
- No maintenance or service costs
- Functioning through strong vibrations or hits

Low current consumption
24V DC/AC, <50 mA / 115V AC, <18 mA / 240V, <17 mA
use together with signaling domes that have the same LED colors

		SCC Part No.				
	LED	Red	Amber Yellow	Green	Blue	White
Standard	24V DC-AC	LA-11EB2	LA-11EB4	LA-11EB5	LA-11EB6	LA-11EB9
	115V AC	LA-11EF2	LA-11EF4	LA-11EF5	LA-11EF6	LA-11EF9
	240V AC	LA-11EG2	LA-11EG4	LA-11EG5	LA-11EG6	LA-11EG9
Ultra Bright	24V DC-AC	LA-11KB2	LA-11KB4	LA-11KB5	LA-11KB6	LA-11KB9
	115V AC	LA-11KF2	LA-11KF4	LA-11KF5	LA-11KF6	LA-11KF9
	240V AC	LA-11KG2	LA-11KG4	LA-11KG5	LA-11KG6	LA-11KG9

FILAMENT BA15d Bulbs

Filament, shock-proof
Lasting
2,000 working hours

← **Filament**

	12V/5W	24V/5W	30V/5W	115V/5W	240V/5W
SCC Part No.	LA-1112	LA-11S24	LA-1130V	LA-11E15	LA-11E30

ACCESSORIES

Base with Polycarbonate Extension Pole	Height	Gray ø70	Black ø70
	h 100 mm	LA-5401	LA-5410
	h 200 mm	LA-5402	LA-5420
	h 300 mm	LA-5403	LA-5430
	h 400 mm	LA-5404	LA-5440
	h 500 mm	LA-5405	LA-5450

Base with Aluminum Extension Poles	Height	Gray ø70	Black ø70
	h 50 mm	LA-54M0X	
	h 100 mm	LA-54M01	LA-54M10
	h 200 mm	LA-54M02	LA-54M20
	h 300 mm	LA-54M03	LA-54M30
	h 400 mm	LA-54M04	LA-54M40
	h 500 mm	LA-54M05	LA-54M50

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ACCESSORIES - S370

Base with Polycarbonate Extension Poles For 90° Fixing		SCC Part No.
	Gray ø70	LA-5409
	Black ø70	LA-5490

Polycarbonate Extension Poles - h 100mm		SCC Part No.
	Gray	LA-8801
	Black	LA-8810

Nylon-Glass Bracket F For 90° Fixing	SCC Part No.
	LA-55P62

Example of mounting

Aluminum Poles	Height	SCC Part No.
	h 100 mm	LA-88M10
	h 200 mm	LA-88M20
	h 300 mm	LA-88M30
	h 400 mm	LA-88M40
	h 500 mm	LA-88M50
	h 1000 mm	LA-88M80

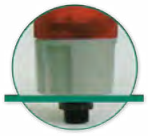
Pole For Outdoor Mounting	Description	SCC Part No.
	250 mm pole for outdoor mounting	LA-88N25

Pole For 22 mm Hole Mounting	Description	SCC Part No.
	100 mm pole for 22 mm hole mounting	LA-88F10
	300 mm pole for 22 mm hole mounting	LA-88F30

Base with Metal Extension Poles For 90° Fixing		SCC Part No.
	Gray ø70	LA-54M09
	Black ø70	LA-54M90

Metal Base (70mm) With Extension Poles For 90° Fixing		SCC Part No.
	Gray (Metal)	54MM9
	Black (Plastic)	54MP9

Adapter for 22-mm Hole	SCC Part No.
	LA-88A22


Example of mounting

Black Metal Base	ø70	SCC Part No.
	h 20mm	LA-54M65

Adapter	Description	SCC Part No.
	Adapter for 25mm pole mounting	LA-88A25

MECHANICAL DRAWINGS see page ... 47

OPTIONS - S370 Ø70mm

Anti-Tampering Lock

- A screw blocks the unauthorized access or removal of lamp
- Un-mounting only possible with tools
- This type of stack light is sold assembled

Description	SCC Part No.
Add the catalog no. code to the product when ordering	-0Q

Custom Colors

- To fulfill the huge customer request (available for small quantities, 24 pcs. orders) a wide range of colors are available.
- Only cap, terminal unit, base and poles are painted

Description	SCC Part No.
Custom color Add RAL color (ex 1018) to the product, when ordering	-RAL

ClickClack

Stack Lights and Accessories

- An easy rotation allow a quick installation without tool
- Quick stack light un-mount after assembly
- Reduce machinery obstruction (important for shipment)
- Lesser packaging and cheaper delivery cost
- Flawless and quick installation matched with connector version

Description	SCC Part No.
Add the catalog no. code to the product when ordering	-80-KK
Order individually	LA-80KK

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PRE-ASSEMBLED STACK LIGHTS

S470 Ø70 mm

- 70mm diameter stack lights that are compact and pre-assembled
- Units come standard with "steady"light
- Available pre-assembled with wires or connector M12, a great advantage for workers
- Ultra-bright LED for long-life and energy savings
- Available in different colors

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068-2-6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
24V DC (+/- 10%)
Current
40 mA per unit
Protection Degree
IP 64 (if correctly assembled with cap and gasket), with audible IP 54
Protection against Electric Shock
Class II, safety insulation according to IEC 536
Resistance to Vibrations
2 g min. (10 - 150 Hz)
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Lens Color
Amber, Blue, Yellow, White, Red, Green
Number of Combinable Units
max 6
Sound
type 1: 85dB, pulse or continuous type 2: 100dB, pulse type 3: 100dB, continuous
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)

***CLICK CLACK* see page ... 29**
MECHANICAL DRAWINGS see page ... 45
MOUNTING ACCESSORIES see page ... 18/19

Part Numbers

Description	SCC Part No.
Black terminal unit, red and amber light units	LA-TCL92SB32
Black terminal unit, red and green light units	LA-TCL92SB52
Black terminal unit, red, amber and green light units	LA-TCL93SB532
Black terminal unit, red, amber and green light unit, with integrated sound	LA-TCL93AB532
Black terminal unit, red, amber, blue and green light units	LA-TCL94SB5632
Black terminal unit, red, amber, blue and green lights units with audio integrated	LA-TCL94AB5632
Black terminal unit, red, amber, blue, white and green light units	LA-TCL95SB95632
Black terminal unit, red, amber, blue, white and green light units with audio integrated	LA-TCL95AB95632
Gray terminal unit, red and amber light units	LA-TCL02SB32
Gray terminal unit, red and green light units	LA-TCL02SB52
Gray terminal unit, red, green and amber light units	LA-TCL03SB532
Gray terminal unit, red, green and amber light unit, with integrated sound	LA-TCL03AB532
Gray terminal unit, red, green, blue and amber light units	LA-TCL04SB5632
Gray terminal unit, red, green, blue and amber light units with audio integrated	LA-TCL04AB5632
Gray terminal unit, red, green, white, blue and amber light units	LA-TCL05SB95632
Gray terminal unit, red, green, white, blue and amber light units with integrated audio	LA-TCL05AB95632

Add the partial suffix code to the product when ordering:	Code
For version with **audible unit 1** (85 dB pulse and continuous sound)	-AU
For version with **audible unit 2** (100 dB pulse sound)	-AD
For version with **audible unit 3** (100 dB continuous sound)	-AT
For pre-assembled cable 400 mm length and **connector M12** with 5 indicators output	-CC

Example: TCL3SB532/-AD/-CC... (= black terminal unit green, amber and red lights, integrated audible unit, pulse 85dB and per-assembled cable with M12 connector)

S450 Ø45 mm

- 45 mm diameter stack light that are compact and pre-assembled.
- Units come standard with "steady" light
- Available per-assembled with wires or connector M12, a great advantage for workers
- Available in different colors, max 6 units
- Ultra-bright LED for long life and energy savings

Technical Specifications

Compliance:
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
24V DC (+/- 10%)
Current
40 mA per unit
Protection Degree
IP 64 (if correctly assembled with cap and gasket), with audible IP 54
Protection against Electric Shock
Class II, safety insulation (IEC 536)
Resistance to Vibrations
2 g min. (10 - 150 Hz)
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Lens Color
Amber, Blue, Yellow, White, Red, Green
Number of Combinable Units
max 6
Sound
80 dB, pulse or continuous
Connections
screw cable clamp with binding post gauge max. 1.5 mm^2

Part Numbers

Description	SCC Part No.
1 color lamp unit (replace X with color number you need)	LA-FAL1YB X
2 color lamp unit, green and red	LA-FAL2YB 52
2 color lamp unit, green and red with audible unit	LA-FAL2AB 52
3 color lamp unit, green, amber and red	LA-FAL3YB 532
3 color lamp unit, green, amber with audible unit	LA-FAL3AB 532
4 color lamp unit, green, amber, blue and red	LA-FAL4YB 5632
4 color lamp unit, green amber, blue and red with audible unit	LA-FAL4AB 5632
5 color lamp unit, green amber, blue, white and red	LA-FAL5YB 95632
5 color lamp unit, green, amber, blue, white and red with audible unit	LA-FAL5AB 95632

Add the partial suffix code to the product when ordering:	Code
For version with gray terminal unit and direct mounting	-“01”
For version with gray terminal unit, base and pole height 100 mm	-“T1”
For version with black terminal unit and direct mounting	-“02”
For version with black terminal unit with base and pole 100 mm height	-“T2”
For version with neutral light lamps (colored LED)	-“06”
For version with pre-assembled cable 400 mm length and connector M12 with 5 indicators output	-“CC”
For version with pre-assembled cable 400 mm length and 5 wire output	-“CF

When ordering replace x with 2=red, 3=amber, 4=yellow, 5=green, 6=blue, 9=white

Example: 3 colors lamp unit, green amber and red, gray terminal unit and pre-assembled cable with connector ***M12 = FAL3YB532-01-CC***

MECHANICAL DRAWINGS see page ... 46
MOUNTING ACCESSORIES see page ... 18/19

SMALL SIZE PRE-ASSEMBLED STACK LIGHTS

S300 Ø30 mm

(shown with accessories)

- 30 mm diameter reduced dimensions, great brightness
- Ease of wiring and flexibility of assembling distinguish this series
- Numerous color combinations

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
24V DC (+/- 10%)
Current
20 mA per unit
Protection Degree
IP 54 (if correctly assembled with cap and gasket), according to EN60529
Protection against Electric Shock
Class II, safety insulation (IEC 536)
Resistance to Vibrations
2 g min. (10 - 150 Hz) according to EN60068-2-6
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Lens Color
Amber, Blue, Yellow, White, Red, Green
Number of Combinable Units
max 5
Sound
75 dB, continuous
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)

Part Numbers

Description	SCC Part No.
Red light lamp	LA-TWR30 L1Y2B
Amber light lamp	LA-TWR30 L1Y3B
Yellow light lamp	LA-TWR30 L1Y4B
Green light lamp	LA-TWR30 L1Y5B
Blue light lamp	LA-TWR30 L1Y6B
White light lamp	LA-TWR30 L1Y9B
Green and red light lamp	LA-TWR30 L2Y52B
Green, amber and red light lamp	LA-TWR30 L3Y532B
Green, amber and red light lamp with audible unit	LA-TWR30 L3A532B
Green, amber, blue and red light lamp	LA-TWR30 L4Y5632B
Green, amber, blue and red light lamp with audible unit	LA-TWR30 L4A5632B
Green, amber, blue, white and red light lamp with audible unit	LA-TWR30 L5Y95632B

Accessories (sold separately)

	Description	SCC Part No.
	black 45 mm polycarbonate base	LA-5020
	black Extension pole 90 mm height	LA-8825
	black Polycarbonate base and pole	LA-5410
	black Polycarbonate extension pole	LA-8810
	black Polycarbonate base and pole for 90° fixing	LA-5490
	black Metal Base with polycarbonate pole for 90° fixing	LA-54MP9

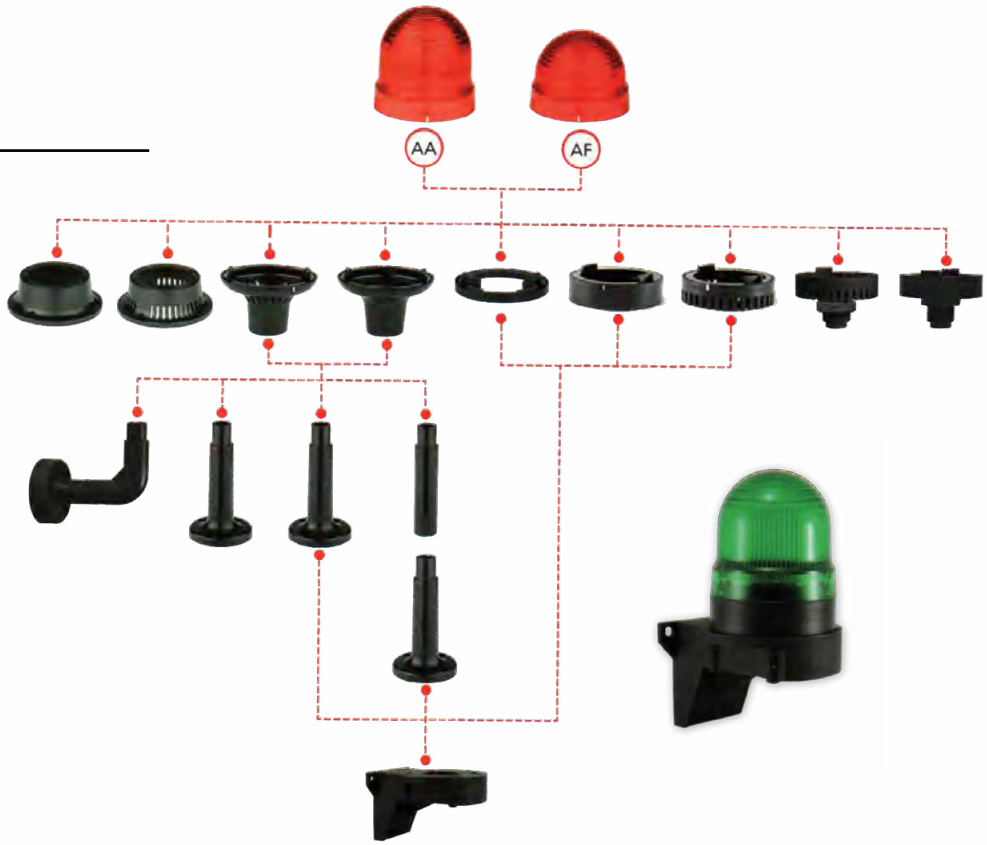
MECHANICAL DRAWINGS see page ... 46/47

SIGNALING MODULAR DOME LAMPS

S180

- Custom solutions keeping minimized cost and stock
- 10 different types of configurations for each lamp
- 8 different mounting, 4 kinds of lights, 2 different domes
- Screw clamp terminal accessible and easy to extract
- Base part # must be added to all selected dome lights (see page 29)

Modular Configuration



Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
max 250V
Protection Degree
IP 54 - clamps IP 20 (with bases 85-AS, CS, DS and ES, IP 30) According to EN 60529

Protection against Electric Shock
Class II, double insulation according to IEC 536
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Resistance to Vibrations
2 g min. (10 - 150 Hz) according to EN 60068.2.6
Lens Color
Amber - Blue - Yellow - Neutral - Red - Green according to EN 60073
Connections
with screw cable clamps (maximum cable size 1.5 mm^2)

MECHANICAL DRAWINGS see page ... 48

Steady or Flashing LED Light Lamp

AA

AF

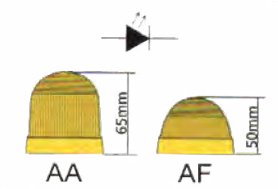
To change the function, shift the jumper inside.

Light Output
by means of ultra bright LEDs

Lasting
> 50,000 working hours

Operating Voltage
24V AC/DC - 40 mA

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073



			SCC Part No.					
			Red	Amber	Yellow	Green	Blue	White
AA	Flashing Light	Color Dome - 24V DC-AC	LA-AA42BL	LA-AA43BL	LA-AA44BL	LA-AA45BL	LA-AA46BL	LA-AA49BL
		Neutral Dome - 24V DC-AC	LA-AA642BL	LA-AA643BL	LA-AA644BL	LA-AA645BL	LA-AA646BL	LA-AA649BL
	Steady Light	Color Dome - 24V DC-AC	LA-AA42BF	LA-AA43BF	LA-AA44BF	LA-AA45BF	LA-AA46BF	LA-AA49BF
		Neutral Dome - 24V DC-AC	LA-AA642BF	LA-AA643BF	LA-AA644BF	LA-AA645BF	LA-AA646BF	LA-AA649BF
AF	Flashing Light	Color Dome - 24V DC-AC	LA-AF42BL	LA-AF43BL	LA-AF44BL	LA-AF45BL	LA-AF46BL	LA-AF49BL
		Neutral Dome - 24V DC-AC	LA-AF642BL	LA-AF643BL	LA-AF644BL	LA-AF645BL	LA-AF646BL	LA-AF649BL
	Steady Light	Color Dome - 24V DC-AC	LA-AF42BF	LA-AF43BF	LA-AF44BF	LA-AF45BF	LA-AF46BF	LA-AF49BF
		Neutral Dome - 24V DC-AC	LA-AF642BF	LA-AF643BF	LA-AF644BF	LA-AF645BF	LA-AF646BF	LA-AF649BF

***Must add base - page 29**

Steady Light Unit

Bulb with bayonet connection type BA 15d 5W max.

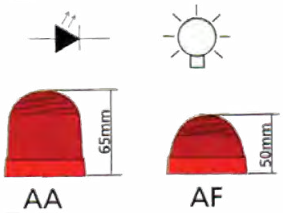
Operation Voltage
24V DC/AC / 115V AC / 240V AC

Current Consumption

With 5W Filament bulbs: 24V, 210 mA / 115V, 42 mA / 240V, 22mA
With LED bulbs: 24V, >50 mA / 115V, >8 mA / 240V, < 17 mA

Light Output
by means of 6 ultra bright LEDs

Lasting
> 50,000 working hours



AA

AF

			SCC Part No.					
			Red	Amber	Yellow	Green	Blue	White
AA	No bulb		LA-AA1200	LA-AA1300	LA-AA1400	LA-AA1500	LA-AA1600	LA-AA1900
	Filament bulb	24V DC-AC	LA-AA1224	LA-AA1324	LA-AA1424	LA-AA1524	LA-AA1624	LA-AA1924
		115 V AC	LA-AA1215	LA-AA1315	LA-AA1415	LA-AA1515	LA-AA1615	LA-AA1915
		240 V AC	LA-AA1230	LA-AA1330	LA-AA1430	LA-AA1530	LA-AA1630	LA-AA1930
	LED bulb	24V DC-AC	LA-AA12424	LA-AA13424	LA-AA14424	LA-AA15424	LA-AA16424	LA-AA19424
		115 V AC	LA-AA12415	LA-AA13415	LA-AA14415	LA-AA15415	LA-AA16415	LA-AA19415
		240 V AC	LA-AA12430	LA-AA13430	LA-AA14430	LA-AA15430	LA-AA16430	LA-AA19430
AF	No bulb		LA-AF1200	LA-AF1300	LA-AF1400	LA-AF1500	LA-AF1600	LA-AF19-0
	Filament bulb	24V DC-AC	LA-AF1224	LA-AF1324	LA-AF1424	LA-AF1524	LA-AF1624	LA-AF1924
		115V AC	LA-AF1215	LA-AF1315	LA-AF1415	LA-AF1515	LA-AF1615	LA-AF1915
		240V AC	LA-AF1230	LA-AF1330	LA-AF1430	LA-AF1530	LA-AF16-30	LA-AF1930
	LED bulb	24V DC-AC	LA-AF12424	LA-AF13424	LA-AF14424	LA-AF15424	LA-AF16424	LA-AF19424
		115V AC	LA-AF12415	LA-AF13415	LA-AF14415	LA-AF15415	LA-AF16415	LA-AF19415
		240V AC	LA-AF12430	LA-AF13430	LA-AF14430	LA-AF15430	LA-AF16430	LA-AF19430

***Must add base - page 29**

MECHANICAL DRAWINGS see page ... 48

SIGNALING DOME MODULAR LAMPS

Steady or Flashing Light Unit

To change the function, shift the jumper inside. Bulb with bayonet connection type BA 15d - 5W max.

Operating Voltage
12 - 48V AC/DC / 115 V AC / 240 V AC

Current Consumption

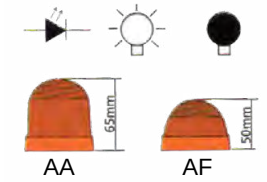
Flashing Light...
with incandescent 5W bulbs:
24V, 145 mA / 115V, 25 mA / 240V, 15 mA

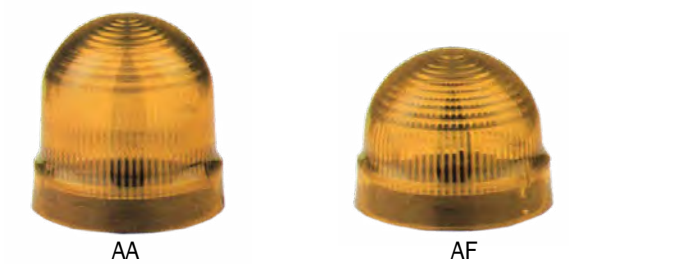
with LED bulbs:
24V, <a 50 mA / 115V, <a 18 mA / 230V, <a 17mA

Steady Light...
with incandescent 5W bulbs:
24V, 210 mA / 115V, 43 mA / 240V, 20 mA

with LED bulbs:
24V, <a 50 mA / 115V, <a 18 mA / 240V, <a 17mA

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

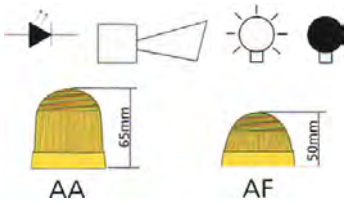




			SCC Part No.					
			Red	Amber	Yellow	Green	Blue	White
AA	No bulb	12-48V AC/DC	LA-AA22K0	LA-AA23K0	LA-AA24K0	LA-AA25K0	LA-AA26K0	LA-AA29K0
		24-230V AC	LA-AA22W0	LA-AA23W0	LA-AA24W0	LA-AA25W0	LA-AA26W0	LA-AA29W0
	Filament bulb	24V DC-AC	LA-AA2224	LA-AA2324	LA-AA2424	LA-AA2524	LA-AA2624	LA-AA2924
		115V AC	LA-AA2215	LA-AA2315	LA-AA2415	LA-AA2515	LA-AA2615	LA-AA2915
		240V AC	LA-AA2230	LA-AA2330	LA-AA2430	LA-AA2530	LA-AA2630	LA-AA2930
	LED bulb	24V DC-AC	LA-AA22424	LA-AA23424	LA-AA24424	LA-AA25424	LA-AA26424	LA-AA29424
		115 V AC	LA-AA22415	LA-AA23415	LA-AA24415	LA-AA25415	LA-AA26415	LA-AA29415
		240 V AC	LA-AA22430	LA-AA23430	LA-AA24430	LA-AA25430	LA-AA26430	LA-AA29430
AF	No bulb	12-48V AC/DC	LA-AF22K0	LA-AF23K0	LA-AF24K0	LA-AF25K0	LA-AF26K0	LA-AF29K0
		24-230V AC	LA-AF22W0	LA-AF23W0	LA-AF24W0	LA-AF25W0	LA-AF26W0	LA-AF29W0
	Filament bulb	24V DC-AC	LA-AF2224	LA-AF2324	LA-AF2424	LA-AF2524	LA-AF2624	LA-AF2924
		115V AC	LA-AF2215	LA-AF2315	LA-AF2415	LA-AF2515	LA-AF2615	LA-AF2915
		240 V AC	LA-AF2230	LA-AF2330	LA-AF2430	LA-AF2530	LA-AF26-30	LA-AF2930
	LED bulb	24V DC-AC	LA-AF22424	LA-AF23424	LA-AF24424	LA-AF25424	LA-AF26424	LA-AF29424
		115V AC	LA-AF22415	LA-AF23415	LA-AF24415	LA-AF25415	LA-AF26415	LA-AF29415
		240V AC	LA-AF22430	LA-AF23430	LA-AF24430	LA-AF25430	LA-AF26430	LA-AF29430

***Must add base - page 29**

Steady or Flashing Light Unit With Integrated Sound



Flashing light unit with integrated pulse sound, **common power supply**.

Operating Voltage
24V AC/DC

Current Consumption
Flashing Light...
with incandescent 5W bulbs:
24V, 145 mA / 115V, 25 mA/ 240V, 15 mA

with LED bulbs:
24V, <a 50 mA / 115V, <a 18 mA / 240V, <a 17mA

Steady Light...
with incandescent 5W bulbs:
24V, 210 mA / 115V, 43 mA / 240V, 20 mA

with LED bulbs:
24V, <a 50 mA / 115V, <a 18 mA / 240V, <a 17mA

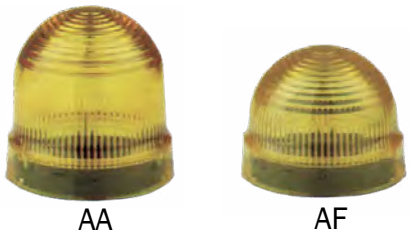
Light Output
by means of LED or filament bulbs

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

Sound
pulse or continuous

Sound Frequency
4,000 Hz

Effective dB determined at a distance of 1 meter from sound module
pulse signal 80 dB



			SCC Part No.					
			Red	Amber	Yellow	Green	Blue	White
AA	24V AC/DC	Filament bulb	LA-AA22B7	LA-AA23B7	LA-AA24B7	LA-AA25B7	LA-AA26B7	LA-AA29B7
		LED bulb	LA-AA224B7	LA-AA234B7	LA-AA244B7	LA-AA254B7	LA-AA264B7	LA-AA294B7
AF	24V AC/DC	Filament bulb	LA-AF22B7	LA-AF23B7	LA-AF24B7	LA-AF25B7	LA-AF26B7	LA-AF29B7
		LED bulb	LA-AF224B7	LA-AF234B7	LA-AF244B7	LA-AF254B7	LA-AF264B7	LA-AF294B7

***Must add base - page 29**

SIGNALING MODULAR DOME LAMPS

LED Light Unit with Integrated Sound

Flashing light unit with pulse sound, steady light unit with continuous sound, **common power supply**. To change the function, shift the jumper inside.

Light Output
by means of 6 ultra bright LED

Lasting
> 50,000 hours

Operating Voltage
24V AC/DC

Current Consumption
24V AC/DC. 55 mA

Flash Frequency
approx. 1.4 Hz (84 flashes per min.) according to EN 60073

Sound Frequency
3,500 Hz

Repetition Signal Frequency
1 Hz according to EN 457

Effective dB determined at a distance of 1 meter from sound module
pulse signal 80 dB - continuous signal 77 dB (24V DC)

AA

AF

			Red	Amber	Yellow	Green	Blue	White
AA	24V AC/DC	Filament bulb	LA-AA22B7	LA-AA23B7	LA-AA24B7	LA-AA25B7	LA-AA26B7	LA-AA29B7
		LED bulb	LA-AA224B7	LA-AA234B7	LA-AA244B7	LA-AA254B7	LA-AA264B7	LA-AA294B7
AF	24V AC/DC	Filament bulb	LA-AF22B7	LA-AF23B7	LA-AF24B7	LA-AF25B7	LA-AF26B7	LA-AF29B7
		LED bulb	LA-AF224B7	LA-AF234B7	LA-AF244B7	LA-AF254B7	LA-AF264B7	LA-AF294B7

***Must add base - page 29**

LED Light Lamp with Integrated Sound, Separated Control

Separated Control
pre-set with flashing light and pulse sound (to change the function shift the jumper inside)

Light Output
by means of ultra bright LEDs

Lasting
>50,000 working hours

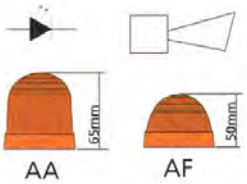
Operating Voltage
12 or 24V AC/DC

Current Consumption
24V, 60 mA

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

Sound Frequency
2,900 Hz

Effective dB determined at a distance of 1 meter from sound module
pulse signal 85 dB - continuous signal 82 dB (24V DC)



		Red	Amber	Yellow	Green	Blue	White
AA	12V DC-AC	LA-AA427AL	LA-AA437AL	LA-AA447AL	LA-AA457AL	LA-AA467AL	LA-AA497AL
	24V DC-AC	LA-AA427BL	LA-AA437BL	LA-AA447BL	LA-AA457BL	LA-AA467BL	LA-AA497BL
AF	12V DC-AC	LA-AF427AL	LA-AF437AL	LA-AF447AL	LA-AF457AL	LA-AF467AL	LA-AF497AL
	24V DC-AC	LA-AF427BL	LA-AF437BL	LA-AF447BL	LA-AF457BL	LA-AF467BL	LA-AF497BL

***Must add base - page 29**

LED Bulbs BA 15d

	LED	Red	Amber Yellow	Green	Blue	White
Standard	24V DC-AC	LA-11EB2	LA-11EB4	LA-11EB5	LA-11EB6	LA-11EB9
	115V AC	LA-11EF2	LA-11EF4	LA-11EF5	LA-11EF6	LA-11EF9
	240V AC	LA-11EG2	LA-11EG4	LA-11EG5	LA-11EG6	LA-11EG9
Ultra Bright (Bulb "K" only for AA)	24V DC-AC	LA-11KB2	LA-11KB4	LA-11KB5	LA-11KB6	LA-11KB9
	115V AC	LA-11KF2	LA-11KF4	LA-11KF5	LA-11KF6	LA-11KF9
	240V AC	LA-11KG2	LA-11KG4	LA-11KG5	LA-11KG6	LA-11KG9

Filament Bulbs BA 15d

	SCC Part No.
12V / 5W	LA-1112
24V / 5W	LA-11S24
30V / 5W	LA-1130V
130V / 5W	LA-11E15
260V / 5W	LA-11E30

MECHANICAL DRAWINGS see page ... 48

Springer Controls Company • 96074 Chester Road, Yulee, FL 32097 • (904) 225-0575 • springercontrols.com

SIGNALING MODULAR DOME LAMPS ACCESSORIES & BASES

Anti-Tampering Lock

- A screw blocks the unauthorized access or removal of lamp
- Un-mounting only possible with tools
- This type of stack light is sold assembled

Description	SCC Part No.
Add the catalog no. code to the product when ordering	-0Q

ClickClack

Accessories

- An easy rotation allow a quick installation without tool
- Quick stack light un-mount after assembly
- Reduce machinery obstruction (important for shipment)
- Lesser packaging and cheaper delivery cost, flawless and quick installation matched with connector version

Description	SCC Part No.
Add the catalog no. code to the product when ordering	-80-KK

Bases

Base diam. 85mm	Base diam. 85mm for acoustic	Shallow base diam. 60mm	Base diam. 60mm	Base diam. 60mm for acoustic
SCC Part No. → LA-85A0	**SCC Part No. → LA-85AS**	**SCC Part No. → LA-85B0**	**SCC Part No. → LA-85E0**	**SCC Part No. → LA-85ES**
Base for 22mm hole mounting	- Base for acoustic, 22mm hole mounting	Adapter element	Adapter for acoustic element	Base diam. 70mm w. 100mm pol
SCC Part No. → LA-85D0	**SCC Part No. → LA-85DS**	**SCC Part No. → LA-85C0**	**SCC Part No. → LA-85CS**	**SCC Part No. → LA-5410**
Bracket for 90° fixing	Extension pole, height 100mm	Base with polycarbonate poles for 90° fixing	Metal base with 90° polycarbonate extension pole	Metal base and 90° extension pole
SCC Part No. → LA-8810	**SCC Part No. → LA-55P62**	**SCC Part No. → LA-5490**	**SCC Part No. → LA-54MP9**	**SCC Part No. → LA-54MM9**

MECHANICAL DRAWINGS see page ... 47/48

PRE-ASSEMBLED JUNCTION BOXES
WITH OPTICAL AND AUDIO DEVICES

- Varied applications and configurations can be created with this system

- Arranged for mounting bases **85-D0** and **85-DS**

- The junction boxes have drills and cable glands included

Technical Specifications

Dimensions
For one indicator: 70 x 70 x051 For two indicators: 70 x 140 x 51
Protection Degree
IP 65
Pre-set
85-D0 or 85-D5, cable gland (un-mounted) are included
Material
ABS (RAL 7035)
Operating Temperature
-13°F +158°F (-25° +70°C)

Description	SCC Part No.
pre-assembled for 1 lamp	LA-CS 1001
pre-assembled for 2 lamps	LA-CS 1002
standard junction box for 1 lamp	LA-CS 1101
standard junction box for 2 lamps	LA-CS 1102

MECHANICAL DRAWINGS see page ... 49

S183 Ø60 mm

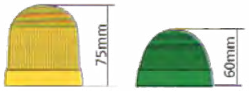
- Panel Mount Style (22 mm hole diameter)
- Compact and easy to install
- Standard or ultra-bright LED
- Elegant line and great brightness
- Resistant to vibration and bad weather
- Sold with anti-tampering block

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate
Operating Voltage
max 250V
Protection Degree
IP 65 according to EN60529

Protection against Electric Shock
Class II, double insulation. According to IEC 536
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Resistance to Vibration
2g min (10 - 150 Hz) according to EN 60068.2.6
Lens Color
Amber - Blue - Yellow - Neutral - Red - Green according to EN 60073
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)
Dimension
type A, 62 mm x 75 mm / type F, 62 mm x 60 mm

Flashing or Steady LED Light Unit



Pre-set with flashing light (to change the function shift the jumper inside).

Light Output
by means of ultra bright LEDs

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

Operating Voltage
24V AC/DC

Current Consumption
24V dc/ac - 40 mA

Lasting
> 50,000 working hours

		SCC Part No.					
		Red	**Amber**	**Yellow**	**Green**	**Blue**	**White**
BA	Color Dome - 24V DC-AC	LA-BA42BL	LA-BA43BL	LA-BA44BL	LA-BA45BL	LA-BA46BL	LA-BA49BL
	Neutral Dome - 24V DC-AC	LA-BA642BL	LA-BA643BL	LA-BA644BL	LA-BA645BL	LA-BA646BL	LA-BA649BL
BF	Color Dome - 24V DC-AC	LA-BF42BL	LA-BF43BL	LA-BF44BL	LA-BF45BL	LA-BF46BL	LA-BF49BL
	Neutral Dome - 24V DC-AC	LA-BF642BL	LA-BF643BL	LA-BF644BL	LA-BF645BL	LA-BF646BL	LA-BF649BL

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OPTICAL SIGNALING LAMPS

Steady Light LED

Light Output
with ba15d ultra bright LED or filament bulb

Operating Voltage
240V AC/DC / 115V AC / 230V AC

Current Consumption
with incandescent 5W bulbs:
24V, 210 mA / 115V, 43 mA / 230V, 22 mA

with LED bulbs:
24V, 35 mA / 115V, 20 mA / 230V, 22 mA

			Red	Amber	Yellow	Green	Blue	White
BA	No bulb	12 - 230V	LA-BA1200	LA-BA1300	LA-BA1400	LA-BA1500	LA-BA1600	LA-BA1900
	LED bulb included	24V DC-AC	LA-BA12424	LA-BA13424	LA-BA14424	LA-BA15424	LA-BA16424	LA-BA19424
		115V AC	LA-BA12415	LA-BA13415	LA-BA14415	LA-BA15415	LA-BA16415	LA-BA19415
		230V AC	LA-BA12430	LA-BA13430	LA-BA14430	LA-BA15430	LA-BA16430	LA-BA19430
	Filament bulb included	24V DC-AC	LA-BA1224	LA-BA1324	LA-BA1424	LA-BA1524	LA-BA1624	LA-BA1924
		115 V AC	LA-BA1215	LA-BA1315	LA-BA1415	LA-BA1515	LA-BA1615	LA-BA1915
		230 V AC	LA-BA1230	LA-BA1330	LA-BA1430	LA-BA1530	LA-BA1630	LA-BA1930
BF	No bulb	12 - 230V	LA-BF1200	LA-BF1300	LA-BF1400	LA-BF1500	LA-BF1600	LA-BF1900
	LED bulb included	24V DC-AC	LA-BF12424	LA-BF13424	LA-BF14424	LA-BF15424	LA-BF16424	LA-BF19424
		115V AC	LA-BF12415	LA-BF13415	LA-BF14415	LA-BF15415	LA-BF16415	LA-BF19415
		230 V AC	LA-BF12430	LA-BF13430	LA-BF14430	LA-BF15430	LA-BF16430	LA-BF19430
	Filament bulb included	24V DC-AC	LA-BF1224	LA-BF1324	LA-BF1424	LA-BF1524	LA-BF1624	LA-BF1924
		115V AC	LA-BF1215	LA-BF1315	LA-BF1415	LA-BF1515	LA-BF1615	LA-BF1915
		230 V AC	LA-BF1230	LA-BF1330	LA-BF1430	LA-BF1530	LA-BF1630	LA-BF1930

Flashing or Steady Light Unit

Light Output
with ba15d ultra bright LED or filament bulb

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

Operating Voltage
24V AC/DC, 115V AC, 230V AC

Current Consumption
with incandescent 5W bulbs:
24V, 220 mA / 115V, 45 mA / 230V, 25 mA

with LED bulbs:
24V, 35 mA / 115V, 20 mA / 230V, 20 mA

			Red	Amber	Yellow	Green	Blue	White
BA	No bulb	12 - 24V AC-DC	LA-BA22K0	LA-BA23K0	LA-BA24K0	LA-BA25K0	LA-BA26K0	LA-BA29K0
		24 - 230V AC	LA-BA22W0	LA-BA23W0	LA-BA24W0	LA-BA25W0	LA-BA26W0	LA-BA29W0
	LED bulb included	24V DC-AC	LA-BA22424	LA-BA23424	LA-BA24424	LA-BA25424	LA-BA26424	LA-BA29424
		115V AC	LA-BA22415	LA-BA23415	LA-BA24415	LA-BA25415	LA-BA26415	LA-BA29415
		230V AC	LA-BA22430	LA-BA23430	LA-BA24430	LA-BA25430	LA-BA26430	LA-BA29430
	Filament bulb included	24V DC-AC	LA-BA2224	LA-BA2324	LA-BA2424	LA-BA2524	LA-BA2624	LA-BA2924
		115 V AC	LA-BA2215	LA-BA2315	LA-BA2415	LA-BA2515	LA-BA2615	LA-BA2915
		230 V AC	LA-BA2230	LA-BA2330	LA-BA2430	LA-BA2530	LA-BA2630	LA-BA2930
BF	No bulb	12 - 24V AC-DC	LA-BF22K0	LA-BF23K0	LA-BF24K0	LA-BF25K0	LA-BF26K0	LA-BF29K0
		24 - 230V AC	LA-BF22W0	LA-BF23W0	LA-BF23W0	LA-BF25W0	LA-BF26W0	LA-BF29W0
	LED bulb included	24V DC-AC	LA-BF22424	LA-BF13424	LA-BF14424	LA-BF15424	LA-BF16424	LA-BF19424
		115V AC	LA-BF22415	LA-BF13415	LA-BF14415	LA-BF15415	LA-BF16415	LA-BF19415
		230 V AC	LA-BF22430	LA-BF13430	LA-BF14430	LA-BF15430	LA-BF16430	LA-BF19430
	Filament bulb included	24V DC-AC	LA-BF2224	LA-BF1324	LA-BF1424	LA-BF1524	LA-BF1624	LA-BF1924
		115V AC	LA-BF2215	LA-BF1315	LA-BF1415	LA-BF1515	LA-BF1615	LA-BF1915
		230 V AC	LA-BF2230	LA-BF1330	LA-BF1430	LA-BF1530	LA-BF1630	LA-BF1930

MECHANICAL DRAWINGS see page ... 48 | FOR BULBS see page ... 43

S185 Ø60 mm

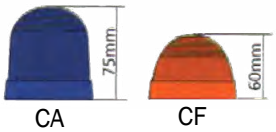
- Equipped with ultra bright LED
- Elegant line and great brightness
- Compact and easy to install
- 2 different domes in different colors
- Sold with anti-tampering block

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Material
Polycarbonate (PC)
Operating Voltage
max 250V
Protection Degree
IP 65 according to EN60529

Protection against Electric Shock
Class II, double insulation. According to IEC 536
Operating Temperature
-4˚F +122˚F (-20˚C +50˚C)
Resistance to Vibration
2g min (10 - 150 Hz) according to EN 60068.2.6
Lens Color
Amber - Blue - Yellow - Neutral - Red - Green
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)
Dimension
type A, 62 mm x 75 mm / type F, 62 mm x 60 mm

Flashing or Steady LED Light Unit



Light Output
with ultra bright integrated LEDs

Flash Frequency
approx. 1.4 Hz (84 flashes per minute) according to EN 60073

Operating Voltage
24V AC/DC

Current Consumption
24V AC/DC - 40 mA

Lasting
more than 50,000 working hours

		SCC Part No.					
		Red	**Amber**	**Yellow**	**Green**	**Blue**	**White**
CA	Color Dome - 24V DC-AC	LA-CA42BL	LA-CA43BL	LA-CA44BL	LA-CA45BL	LA-CA46BL	LA-CA49BL
	Neutral Dome - 24V DC-AC	LA-CA642BL	LA-CA643BL	LA-CA644BL	LA-CA645BL	LA-CA646BL	LA-CA649BL
CF	Color Dome - 24V DC-AC	LA-CF42BL	LA-CF43BL	LA-CF44BL	LA-CF45BL	LA-CF46BL	LA-CF49BL
	Neutral Dome - 24V DC-AC	LA-CF642BL	LA-CF643BL	LA-CF644BL	LA-CF645BL	LA-CF646BL	LA-CF649BL

OPTICAL SIGNALING LAMPS

Steady Light LED

Light Output
with ba15d ultra bright LED or filament bulb

Operating Voltage
24V AC/DC / 115V AC / 230V AC

Current Consumption
with incandescent 5W bulbs:
24V, 210 mA / 115V, 43 mA / 230V, 22 mA

with LED bulbs:
24V, 35 mA / 115V, 20 mA / 230V, 22 mA

			Red	Amber	Yellow	Green	Blue	White
CA	No bulb	12 - 230V	LA-CA1200	LA-CA1300	LA-CA1400	LA-CA1500	LA-CA1600	LA-CA1900
	LED bulb included	24V DC-AC	LA-CA12424	LA-CA13424	LA-CA14424	LA-CA15424	LA-CA16424	LA-CA19424
		115V AC	LA-CA12415	LA-CA13415	LA-CA14415	LA-CA15415	LA-CA16415	LA-CA19415
		230V AC	LA-CA12430	LA-CA13430	LA-CA14430	LA-CA15430	LA-CA16430	LA-CA19430
	Filament bulb included	24V DC-AC	LA-CA1224	LA-CA1324	LA-CA1424	LA-CA1524	LA-CA1624	LA-CA1924
		115 V AC	LA-CA1215	LA-CA1315	LA-CA1415	LA-CA1515	LA-CA1615	LA-CA1915
		230 V AC	LA-CA1230	LA-CA1330	LA-CA1430	LA-CA1530	LA-CA1630	LA-CA1930
CF	No bulb	12 - 230V	LA-CF1200	LA-CF1300	LA-CF1400	LA-CF1500	LA-CF1600	LA-CF1900
	LED bulb included	24V DC-AC	LA-CF12424	LA-CF13424	LA-CF14424	LA-CF15424	LA-CF16424	LA-CF19424
		115V AC	LA-CF12415	LA-CF13415	LA-CF14415	LA-CF15415	LA-CF16415	LA-CF19415
		230 V AC	LA-CF12430	LA-CF13430	LA-CF14430	LA-CF15430	LA-CF16430	LA-CF19430
	Filament bulb included	24V DC-AC	LA-CF1224	LA-CF1324	LA-CF1424	LA-CF1524	LA-CF1624	LA-CF1924
		115V AC	LA-CF1215	LA-CF1315	LA-CF1415	LA-CF1515	LA-CF1615	LA-CF1915
		230 V AC	LA-CF1230	LA-CF1330	LA-CF1430	LA-CF1530	LA-CF1630	LA-CF1930

Flashing or Steady Light Unit

Pre-set with flashing light, to change the function shift the jumper inside).

Light Output
with ba15d ultra bright LED or filament bulb

Operating Voltage
24V AC/DC, 115V AC, 230V AC

Current Consumption
with incandescent 5W bulbs:
24V, 220 mA / 115V, 45 mA / 230V, 25 mA

with LED bulbs:
24V, 35 mA / 115V, 20 mA / 230V, 20 mA

			Red	Amber	Yellow	Green	Blue	White
CA	No bulb	12 - 24V AC-DC	LA-CA22K0	LA-CA23K0	LA-CA24K0	LA-CA25K0	LA-CA26K0	LA-CA29K0
		24 - 230V AC	LA-CA22W0	LA-CA23W0	LA-CA24W0	LA-CA25W0	LA-CA26W0	LA-CA29W0
	LED bulb included	24V DC-AC	LA-CA22424	LA-CA23424	LA-CA24424	LA-CA25424	LA-CA26424	LA-CA29424
		115V AC	LA-CA22415	LA-CA23415	LA-CA24415	LA-CA25415	LA-CA26415	LA-CA29415
		230V AC	LA-CA22430	LA-CA23430	LA-CA24430	LA-CA25430	LA-CA26430	LA-CA29430
	Filament bulb included	24V DC-AC	LA-CA2224	LA-CA2324	LA-CA2424	LA-CA2524	LA-CA2624	LA-CA2924
		115 V AC	LA-CA2215	LA-CA2315	LA-CA2415	LA-CA2515	LA-CA2615	LA-CA2915
		230 V AC	LA-CA2230	LA-CA2330	LA-CA2430	LA-CA2530	LA-CA2630	LA-CA2930
CF	No bulb	12 - 24V AC-DC	LA-CF22K0	LA-CF23K0	LA-CF24K0	LA-CF25K0	LA-CF26K0	LA-CF29K0
		24 - 230V AC	LA-CF22W0	LA-CF23W0	LA-CF23W0	LA-CF25W0	LA-CF26W0	LA-CF29W0
	LED bulb included	24V DC-AC	LA-CF22424	LA-CF13424	LA-CF14424	LA-CF15424	LA-CF16424	LA-CF19424
		115V AC	LA-CF22415	LA-CF13415	LA-CF14415	LA-CF15415	LA-CF16415	LA-CF19415
		230 V AC	LA-CF22430	LA-CF13430	LA-CF14430	LA-CF15430	LA-CF16430	LA-CF19430
	Filament bulb included	24V DC-AC	LA-CF2224	LA-CF1324	LA-CF1424	LA-CF1524	LA-CF1624	LA-CF1924
		115V AC	LA-CF2215	LA-CF1315	LA-CF1415	LA-CF1515	LA-CF1615	LA-CF1915
		230 V AC	LA-CF2230	LA-CF1330	LA-CF1430	LA-CF1530	LA-CF1630	LA-CF1930

MECHANICAL DRAWINGS see page ... 48 | FOR BULBS see page ... 43

S600

- Ultra bright LED lamp
- Equipped with Fresnel lens top to improve brightness
- Low consumption, controlled via remote source (PLC, control panel, etc.)

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Light Output
with ba 15d ultra bright LED
Operating Voltage
max 24V AC/DC, 115V AC, 230V AC
Current Consumption
24V, 35 mA - 115V, 20 mA - 230V, 20mA
Protection Degree
IP 65 - According to EN 60529

Protection against Electrical Shock
Class II, double insulation (IEC 536)
Resistance to Vibration
2 g min (10 - 150 Hz) according to EN 60068.2.6
Operating Voltage
-13°F +131°F (-25°C +55°C)
Material
Dome polycarbonate (PC), Base ABS (UV)
Lens Color
Amber - Blue - Yellow - Neutral - Red - Green
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)
Dimension
Static Beacon: 4.53" x 8.07" (115 mm x 205 mm) Flashing Beacon: 5.9" x 8.07" (150 mm x 205 mm)

Big Size Static Beacons (205mm height, 115mm diameter)

	SCC Part No.				
	Red	Amber	Green	Blue	White
24V DC-AC	LA-LF124B	LA-LF134B	LA-LF154B	LA-LF164B	LA-LF194B
115V AC	LA-LF124F	LA-LF134F	LA-LF154F	LA-LF164F	LA-LF194F
230V AC	LA-LF124G	LA-LF134G	LA-LF154G	LA-LF164G	LA-LF194G

Big Size Flashing Beacons (205mm height, 150mm diameter)

	SCC Part No.				
	Red	Amber	Green	Blue	White
24V DC-AC	LA-LL224B	LA-LL234B	LA-LL254B	LA-LL264B	LA-LL294B
115V AC	LA-LL224F	LA-LL234F	LA-LL254F	LA-LL264F	LA-LL294F
230V AC	LA-LL224G	LA-LL234G	LA-LL254G	LA-LL264G	LA-LL294G

MECHANICAL DRAWINGS see page ... 45

BIG SIZE BEACONS

Big Size Rotating Beacons (205mm height, 150mm diameter)

- Long-lasting, low consumption and continuous operation
- Vibration and hit resistant
- Equipped with LED bulbs and reflector

Technical Specifications

Compliance
Directive 2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 2011/65/EC RhOS Directive 2006/42/EC Machinery
Conformity to Standards
EN 60947.5.1 - EN 60073 - EN 60529 - EN 60068.2.6 and 27 EN 60204.1 - EN ISO 7731 - EN 981 - IEC 536
Light Output
with ba 15d ultra bright LED
Operating Voltage
24V DC polarized diode
Current Consumption
24V - 230 mA
Rotation Frequency
160 RPM

Protection Degree
IP 65 - According to EN 60529
Protection against Electrical Shock
Class II, double insulation (IEC 536)
Resistance to Vibration
2 g min (10 - 150 Hz) according to EN 60068.2.6
Operating Voltage
-13°F +131°F (-25°C +55°C)
Material
Dome polycarbonate (PC), Base ABS (UV)
Lens Color
Amber - Blue - Yellow - Neutral - Red - Green
Connections
with screw cable clamp (maximum cable size 1.5 mm^2)
Dimension
5.9" x 8.07" (150 mm x 205 mm)

	SCC Part No.				
	Red	**Amber**	**Green**	**Blue**	**White**
Color dome	LA-LA524B	LA-LA534B	LA-LA554B	LA-LA564B	LA-LA594B
Neutral dome	LA-LA5264B	LA-LA5364B	LA-LA5564B	LA-LA5664B	LA-LA5964B

NOTES

S230

- Wide range of audio buzzers for panel mounting applications
- Low current consumption and continuous operation
- Plug with screw connection for easy installation

ECX71 Features

Audio signal device for panel mounting (ø 22) pulse audio and visual signaling

Sound Frequency
+/- 3,500 Hz

Signal Repetition Frequency
+/- 1 Hz

Effective dB determined at a distance of 1 meter from sound module
78 dB

Protection Degree
IP 20

Operating Voltage
24V DC/AC or 115V AC, 230V AC

Current Consumption
24V / 25 mA - 115V / 15 mA - 230V, 10 mA

Dimension
30 mm x 15 mm

	SCC Part No.
24V DC-AC	LA-ECX207124R
115V AC	LA-ECX2071127R
230V AC	LA-ECX207130R

ECX70 Features

Audio signal device for panel mounting (ø 22) pulse audio signaling

Sound Frequency
+/- 3,500 Hz

Signal Repetition Frequency
+/- 1 Hz

Effective dB determined at a distance of 1 meter from sound module
78 dB

Protection Degree
IP 20

Operating Voltage
24V DC/AC, 48V AC/DC OR 115V AC, 230V AC

Current Consumption
24V / 20 mA - 48 V / 25 MA - 115V / 15 mA - 230V, 10 mA

Operating Temperature
-4°F +122°F (-20°C +50°C)

Lasting
5,000 hours

Connections
by means of screw clamps

Maximum Cable Size
1.5 mm

Housing
ABS

Dimension
30 mm x 60 mm

	SCC Part No.
24V DC/AC	LA-ECX2070-24
48V AC/DC	LA-ECS2070-48
115V AC	LA-ECX2070-127
230V AC	LA-ECX2070-230

MECHANICAL DRAWINGS see page ... 50

BUZZERS FOR PANEL MOUNTING

ECX28 Features

Audio signal device for panel mounting (ø 28) pulse or continuous audio signal

Sound Frequency
+/- 2,900 Hz

Signal Repetition Frequency
+/- 1 Hz

Effective dB determined at a distance of 1 meter from sound module
95 dB

Protection Degree
IP 20

Operating Voltage
12V DC (ac), 24V DC (ac), 48V AC/DC

Current Consumption
12V, 15 mA / 24V, 20 mA / 48 V, 25 mA

Operating Temperature
-20°C +50°C

Lasting
5,000 hours

Connections
by means of screw clamps

Maximum Cable Size
1.5 mm

Housing
ABS

	SCC Part No.
12V DC (AC)	LA-ECX28100A
24V DC (AC)	LA-ECX28100B
48V DC (AC)	LA-ECX28100D

ECX32 Features

Audio signal device for panel mounting (ø 28) pulse or continuous audio signal

Sound Frequency
+/- 2,900 Hz

Signal Repetition Frequency
+/- 1 Hz

Effective dB determined at a distance of 1 meter from sound module
95 dB

Protection Degree
IP 20

Operating Voltage
12 (10-28)V DC / (ac)

Current Consumption
12V / 15 mA

Operating Temperature
-20°C +50°C

Lasting
5,000 hours

Connections
by means of screw clamps

Maximum Cable Size
1.5 mm

Housing
ABS

	SCC Part No.
12V DC (AC)	LA-ECX32100A

ECX55 Features

Sound Frequency
+/- 600 Hz

Effective dB determined at a distance of 1 meter from sound module
100 dB (24V DC)

Protection Degree
IP 65

Operating Voltage
24 (18-30)V DC / (ac)

Current Consumption
60 mA

Operating Temperature
-20°C +50°C

Connections
with wires 250mm length

Housing
ABS

Dimension
55 mm x 13 mm

	SCC Part No.
Pulse Sound	LA-ECX55P100B
Continuous Sound	LA-ECX55C100B

MECHANICAL DRAWINGS see page ... 50

S187

- 2 tones with remote control
- Different types of installation
- Powerful sound

Technical Features

Sound Frequency
+/- 3,700 Hz

Signal Repetition Frequency
+/- 1 Hz

Effective dB determined at a distance of 1 meter from sound module
pulse sound 85 dB-continuous sound 82 dB (24V DC)

Protection Degree
IP 54 according to EN 60529

Operating Voltage
24 (18-30)V DC

Current Consumption
20 mA

Operating Temperature
-4°F +122°F (-20°C +50°C)

Connections
with screw clamps, max. cable size 1.5 mm

Housing
Polycarbonate (PC)

Dimension
62 mm x 60 mm

	Description	SCC Part No.
	Audible unit for panel mounting (ø 22 mm)	LA-AF700CB
	Audible unit with base for standard mounting	LA-AF70FCB
	Audible unit with base and pole	LA-AF70HCB

MECHANICAL DRAWINGS see page ... 51

NOTES

COMPACT ELECTRONIC SOUNDERS

S710

- Higher sound output, 100 dB with tone variation (20 dB)
- 28 tones with frequency between 500 and 2,900 Hz
- Remote control of a second tone
- IP65 and easy installation

Technical Features

Sound Frequency
500 TO 2,900 Hz

Effective dB determined at a distance of 1 meter from sound module
103 dB

Protection Degree
IP 65

Operating Voltage
12/24V DC - 100-260V AC

Operating Temperature
-4°F +122°F (-20°C +50°C)

Connections
with screw clamps, max. cable size 1.5 mm

Housing
ABS

Dimension
101 mm x 100 mm

Description	Catalog No.
Electronic sounder 100 dB, 28 tones, IP 65m 12/24V DC, max. 32 mA	LA-ECX101K
Electronic sounder 100 dB, 8 tones, IP 65m 100/260V AC, max. 32 mA	LA-ECX101W

MECHANICAL DRAWINGS see page ... 51

NOTES

S750

- Suitable for industrial environments, including hazardous areas “EX”
- Low frequency tone
- High sound output; 125 dB

Technical Features

Sound Frequency
300 to 600 Hz (+/- 10%)

Effective dB determined at a distance of 1 meter from sound module
125 dB

Protection Degree
IP 56 according to EN 60529

Air Pressure
55-140 psi

Air Consumption
50/133 L/min

Operating Temperature
-30°C +70°C

Material
Aluminum, Brass & Phosphor Bronze

	SCC Part No.
600 Hz	LA-ECX198
370 Hz	LA-ECX360
300 Hz	LA-ECX450

MECHANICAL DRAWINGS see page ... 51

NOTES

LED BULBS

Lasting
More than 50,000 working hours

No Maintenance/Service Costs
More safety for machines and their operators thanks to the great reliability of the indications.

Low Current Consumption
Simple and lasting control units that perfectly operate even in the case of strong vibrations or hits.
Note: Always use LED bulbs with the same color dome

FILAMENT BULBS
They have a light emission with continuous spectrum, e.g. the kind of light which includes the whole range of visible wavelengths. The dome indicates and filters the wavelength of its respective color.

LED BULBS
They use a monochromatic light source, e.g. the kind of light consisting of electromagnetic waves which all have the same wavelength (with exception of the white LEDs, usually dichromatic). Domes lose their function of filtering and are only used to intensify luminosity.

If you use white LED bulbs at that point the color of the domes will be filtered with a lower luminosity.

Voltage
12 - 24 - 48 - 115 - 230V (other types on demand)

Max Current Consumption
24V DC/AC, <50 mA / 115V AC, <18 mA / 230V AC, <17 mA

Standard LED Bulbs 10 LED - BA 15d

ø 23xH47

Suitable for stack light and visual signaling:
10 LED, 9 for lateral light and 1 for frontal light

	SCC Part No.				
	Red	Amber Yellow	Green	Blue	White
24V DC-AC	LA-11EB2	LA-11EB4	LA-11EB5	LA-11EB6	LA-11EB9
115V AC	LA-11EF2	LA-11EF4	LA-11EF5	LA-11EF6	LA-11EF9
230V AC	LA-11EG2	LA-11EG4	LA-11EG5	LA-11EG6	LA-11EG9

Ultra-Bright LED Bulbs 45 LED - BA 15d

ø 19xH47

Suitable for stack light and visual signaling:
36 LED for lateral light and 9 for frontal light

	SCC Part No.				
	Red	Amber Yellow	Green	Blue	White
24V DC-AC	LA-11KB2	LA-11KB4	LA-11KB5	LA-11KB6	LA-11KB9
115V AC	LA-11KF2	LA-11KF4	LA-11KF5	LA-11KF6	LA-11KF9
230V AC	LA-11KG2	LA-11KG4	LA-11KG5	LA-11KG6	LA-11KG9

Bulbs 6 LED - BA 15d

ø 20xH44

Suitable for rotating lamps:
6 LED, 5 lateral light and 1 frontal light

	SCC Part No.				
	Red	Amber Yellow	Green	Blue	White
24V DC-AC	LA-11RB2	LA-11RB4	LA-11RB5	LA-11RB6	LA-11RB7
115V AC	LA-11RF2	LA-11RF4	LA-11RF5	LA-11RF6	LA-11RF7
230V AC	LA-11RG2	LA-11RG4	LA-11RG5	LA-11RG6	LA-11RG7

Bulbs 6 LED - BA 15s

ø 20xH44

Suitable for rotating lamps:
6 LED, 5 lateral light and 1 frontal light

	SCC Part No.				
	Red	Amber Yellow	Green	Blue	White
24V DC-AC	LA-1QB2	LA-1QB4	LA-1QB5	LA-1QB6	LA-1QB9
115V AC	LA-1QF2	LA-1QF4	LA-1QF5	LA-1QF6	LA-1QF9
230V AC	LA-1QG2	LA-1QG4	LA-1QG5	LA-1QG6	LA-1QG9

Bulbs 1 LED - BA 9

ø 10xH27

Suitable for visual indicators and buttons light panels:
1 for frontal light

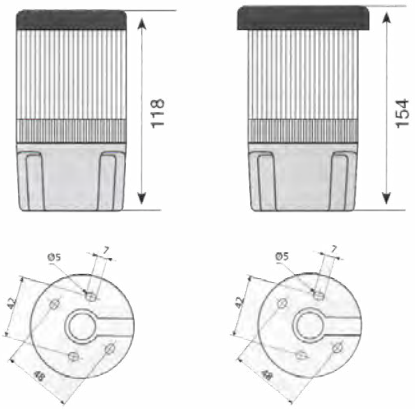
	SCC Part No.				
	Red	Amber Yellow	Green	Blue	White
24V DC-AC	LA-1Y1A2	LA-1Y1A4	LA-1Y1A5	LA-1Y1A6	LA-1Y1A9
48V AC	LA-1Y1D2	LA-1Y1D4	LA-1Y1D5	LA-1Y1D6	LA-1Y1D9
115V AC	LA-1Y1F2	LA-1Y1F4	LA-1Y1F5	LA-1Y1F6	LA-1Y1F9
230V AC	LA-1Y1G2	LA-1Y1G4	LA-1Y1G5	LA-1Y1G6	LA-1Y1G9

ø 10xH24

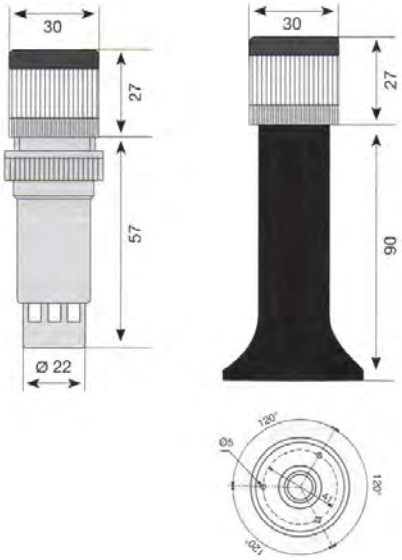
	SCC Part No.				
	Red	Yellow	Green	Blue	White
24V DC-AC	LA-1Y1B2	LA-1Y1B4	LA-1Y1B5	LA-1Y1B6	LA-1Y1B9

MECHANICAL DRAWINGS

Multicolor S370

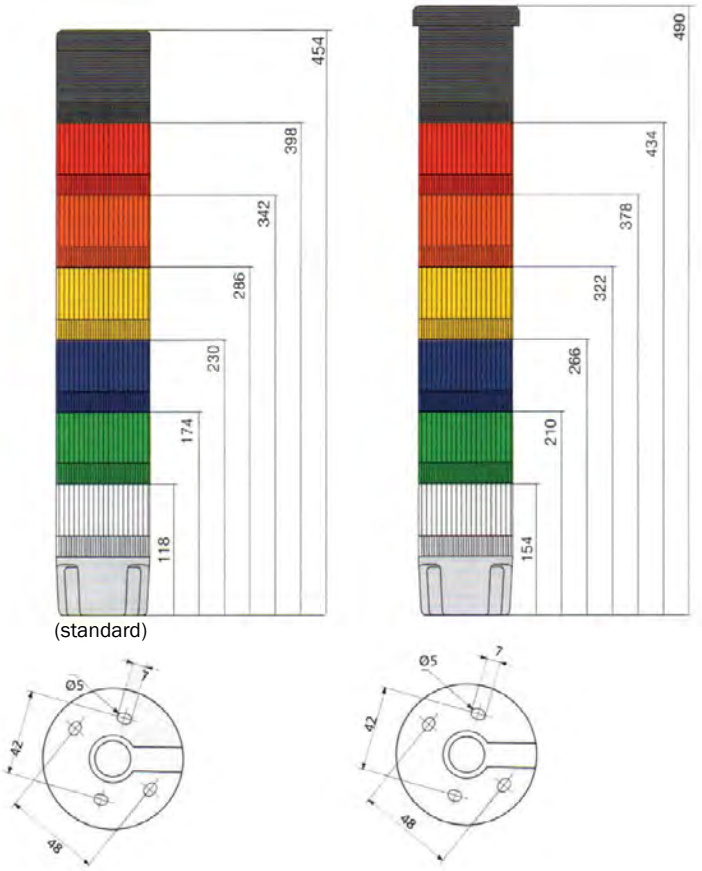


Multicolor S300



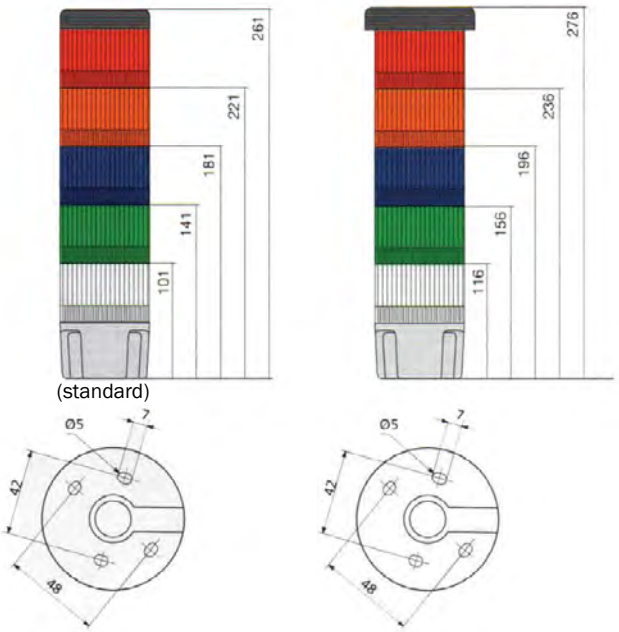
50-20

Modular Stack Lights S370



(standard)

Assembled Stack Lights S470



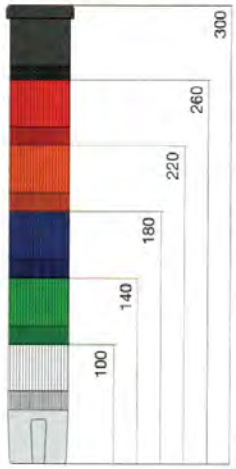
(standard)

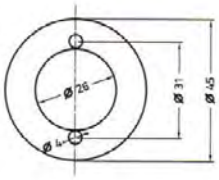
1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

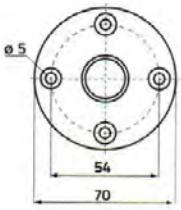
Assembled Stack Lights S450

(standard)



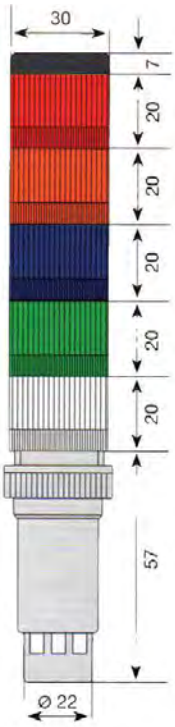


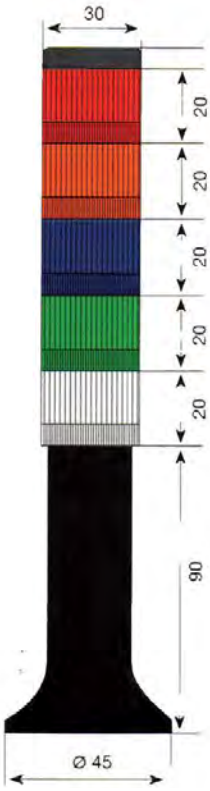
DIRECT FIXING

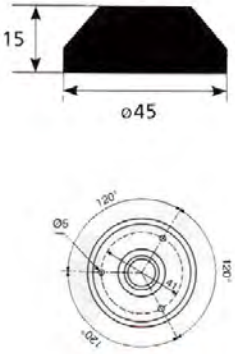


TUBE AND BASE FIXING

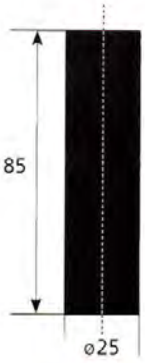
Assembled Stack Lights S300







50-20



88-25

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

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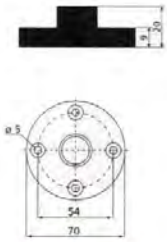
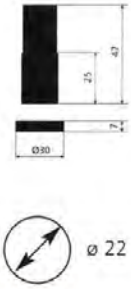
MECHANICAL DRAWINGS

Accessories

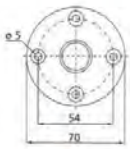


54M65

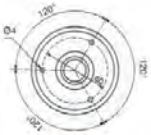


88A22

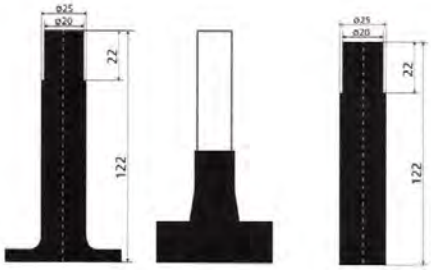
54M0X



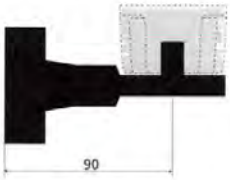
54-xx
80-xx



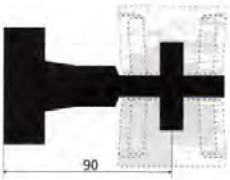
54-xx
80-xx

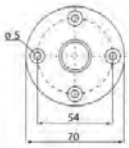


88-01
88-10

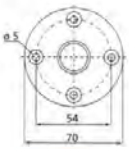


54T19
54T91

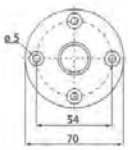




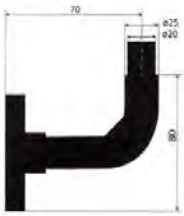
54T29
54T92

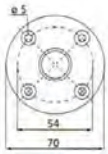


54TC1

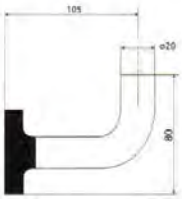


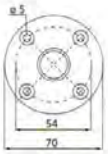
54TC2



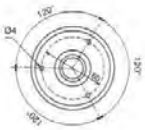


54MM9
54MP9

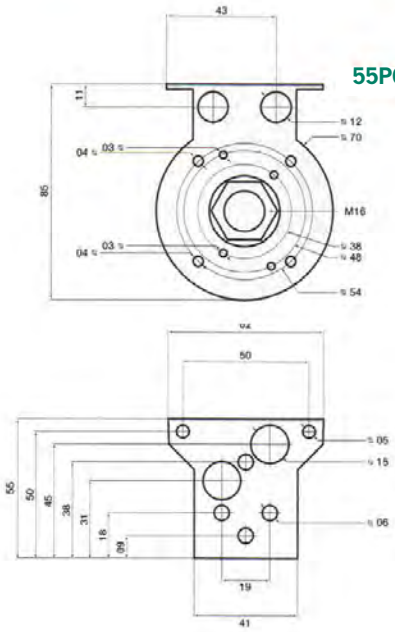




54-09
54-90
54M09
54M90

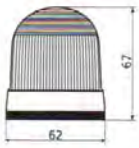


80-09
80-90
80M09
80M90



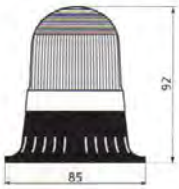
55P62

Optical and Audible Modular Devices S180

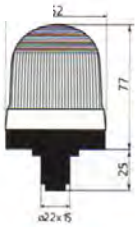


85-B0
AA

85-E0/S
AA

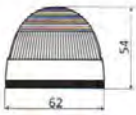


85-A0/S
AA

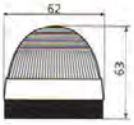


85-D0/S
AA

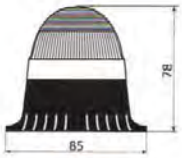
85-C0/S
AA



85-B0
AF



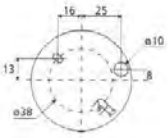
85-E0/S
AF

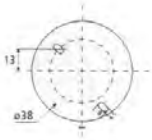


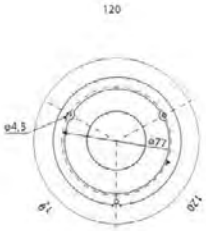
85-A0/S
AF

85-D0/S
AF

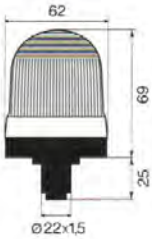
85-C0/S
AF

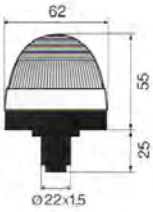




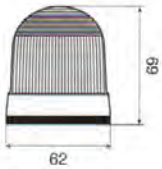


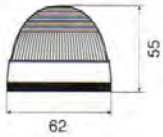
Optical Signal Devices S183

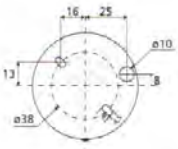




Optical Signal Devices S185

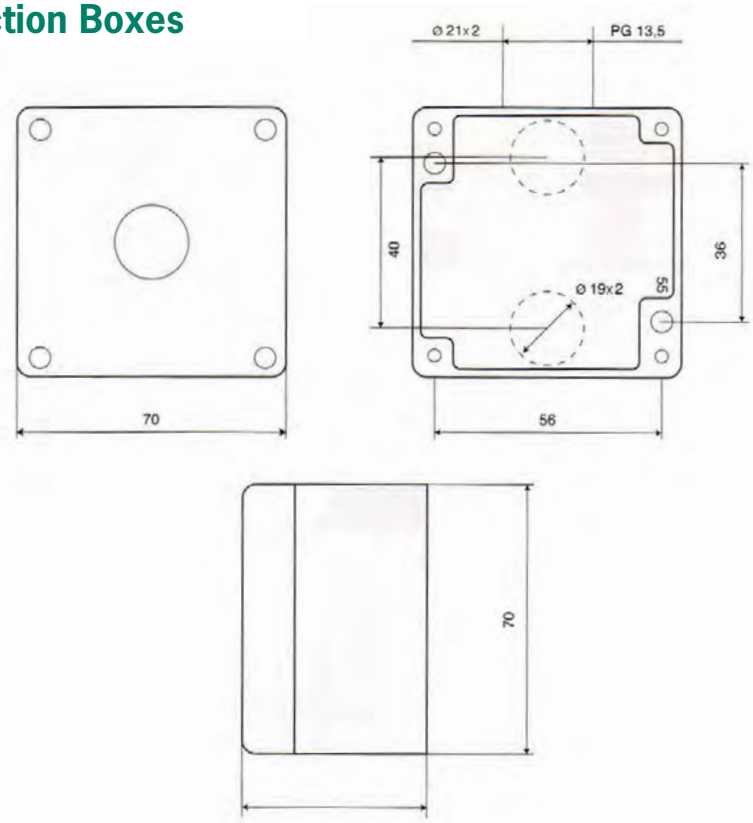


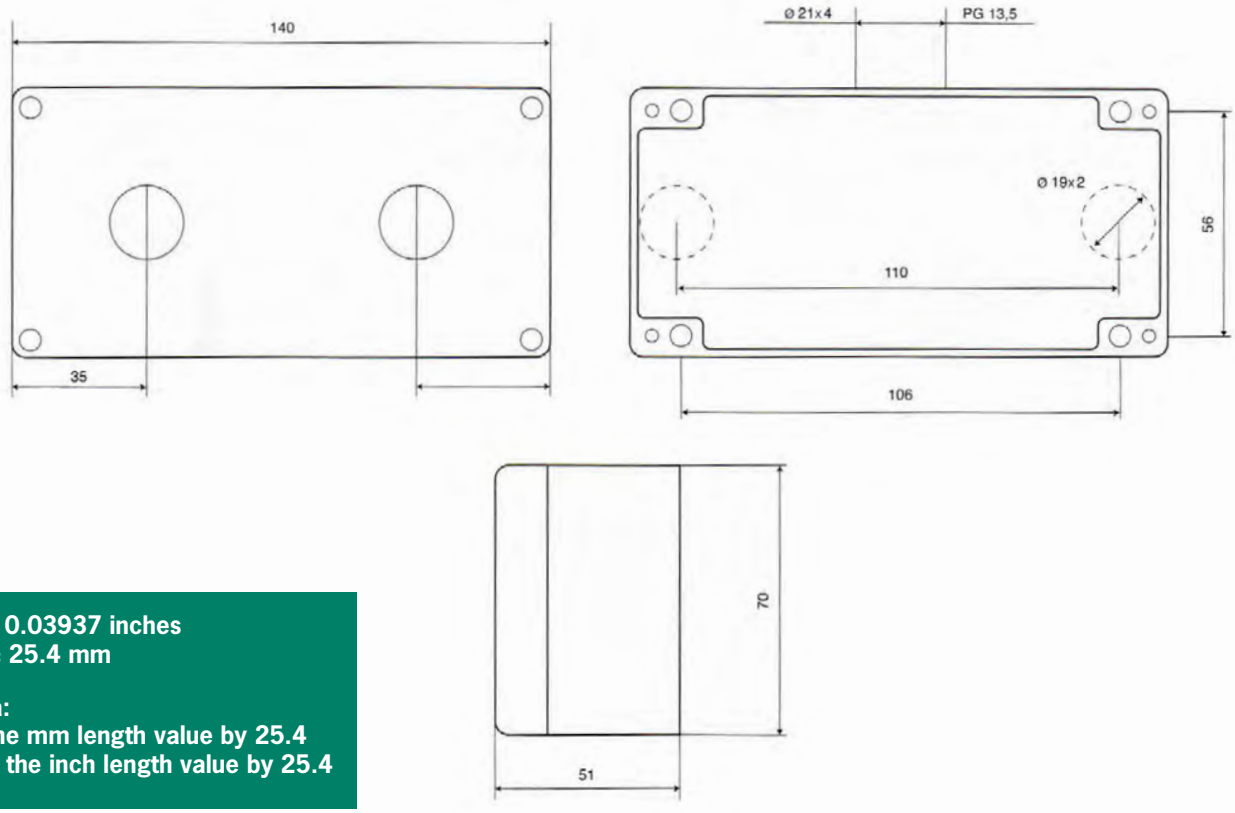




MECHANICAL DRAWINGS

Pre-Assembled Junction Boxes

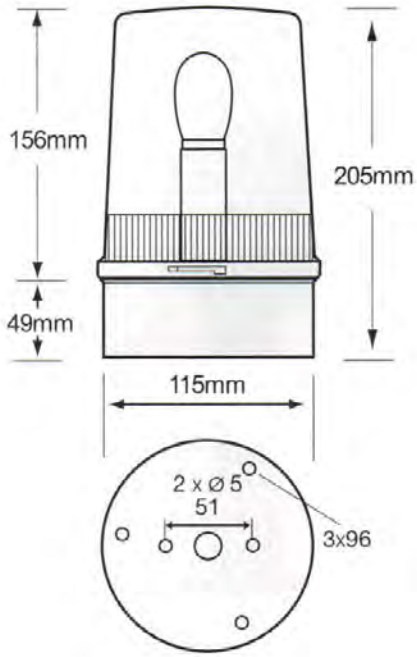




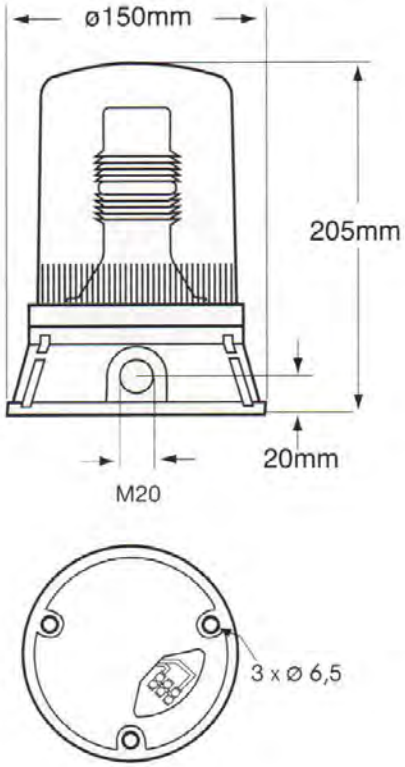
1 mm = 0.03937 inches
1 inch = 25.4 mm

Formula:
divide the mm length value by 25.4
multiply the inch length value by 25.4

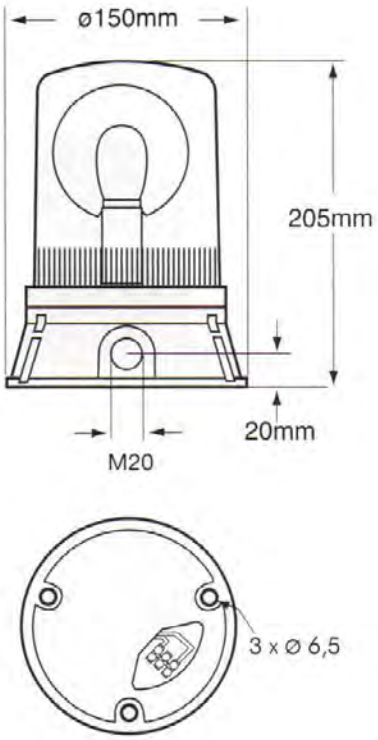
Big Size Beacons S600



Type LF

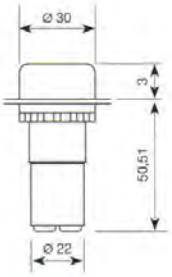


Type LL

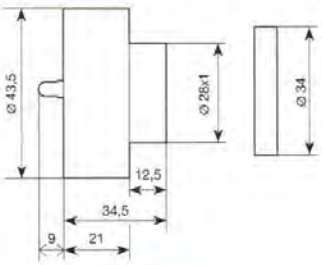


Type LA

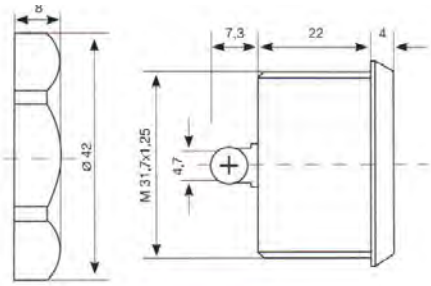
Buzzers for Panel Indicators S230



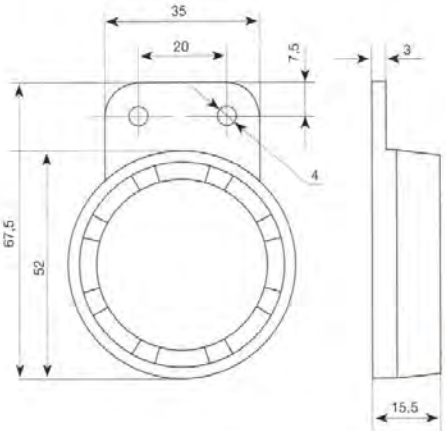
ECX 2071
ECX 2070



ECX 28100



ECX 32100



ECX 55

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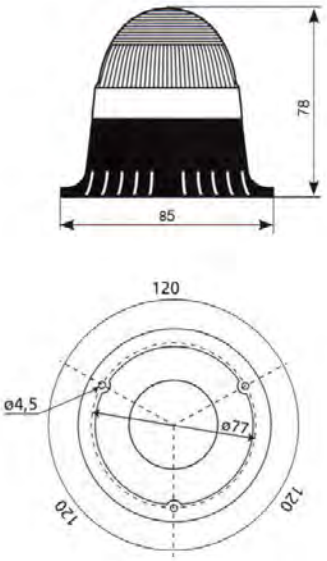
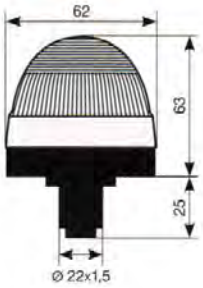
MECHANICAL DRAWINGS

Audible Compact Units S187

AF70FCB

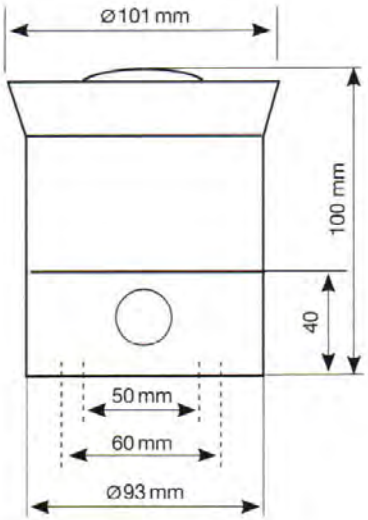


AF700CB

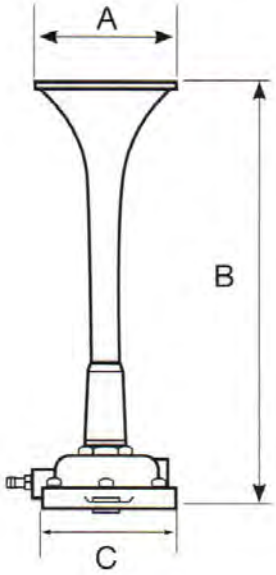


AF0HCB

Compact Electronic Sounders S710



Industrial Air Horns S750



Size	ECX198	ECX360	ECX450
A	127	127	127
B	198	360	450
C	100	100	100

1 mm = 0.03937 inches | 1 inch = 25.4 mm

Formula: divide the mm length value by 25.4
multiply the inch length value by 25.4

Industrial Electrical Controls

SPRINGER® controls company

TEMPERATURE CONTROLLERS

TEMPERATURE CONTROLLERS & ACCESSORIES

Full selection of Temperature Controllers and Accessories designed for dry applications such as transformers, motors and other industrial equipment.

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TEMPERATURE CONTROLLERS

Since 1993, **Springer Controls** Company has been partnered with **Tecsystem of Italy** to provide temperature control devices and solutions to the US marketplace. **Springer Controls** has a variety of electronic temperature controllers specifically designed for dry applications like transformers, motors, generators, drives and other industrial equipment. Selection is typically made by the number of temperature inputs required and the type of output required.

QUICK REFERENCE INDEX

Series	# Inputs	Temperature Controller - Description Summary	Page #
T154	4 Pt100 inputs	The T154 has 4 RTD inputs to monitor temperature at 4 different locations with channels 1,2, and 3 using the same alarm threshold, and channel 4 independent. An economical option for monitoring temperature in dry transformers. Outputs are: 2 alarm relay (ALARM & TRIP), 1 relay for fan control and 1 fault relay for signaling sensor faults or other self-diagnostic faults. UL approved.	4
NT935	4 Pt100 inputs	The NT935 has 4 RTD inputs to monitor temperature at 4 different locations. It is most commonly used for monitoring temperature with motors or dry/resin cast transformers. All NT935 units come with 2 alarm output relays, 2 fan control relays and 1 fault relay for signaling sensor faults or other self-diagnostic faults. The NT935 can also be configured with Ethernet or RS232/485 & 4-20mA outputs. UL approved.	6
NT538	8 Pt100 inputs	The NT538 has 8 RTD inputs to monitor temperature at 8 different locations. It is most commonly used for monitoring temperature with motors or variable frequency drives. All NT538 units come with 2 alarm output relays, 2 fan control relays and 1 fault relay for signaling sensor faults or other self-diagnostic faults. The NT538 can also be configured with Ethernet or RS232/485 & 4-20mA outputs. UL approved.	10
T1048	4 Pt100 or 4 TcK inputs	The T1048 has 4 configurable inputs for monitoring temperature in 4 different locations. By changing input cards the T1048 can be configured to accept inputs from either an RTD or a thermocouple. The T1048 comes with 2 alarm output relays and 1 fault relay for signaling sensor faults or other self-diagnostic faults. The T1048 can be fitted with Ethernet or RS232/485 & 4-20mA outputs. UL approved.	12
NT539	3-6-9 Pt100 inputs	The NT539 is designed specifically for transformers with more than 3 windings. Featuring 3, 6 or 9 RTD inputs and 3 trip, alarm and fan output relays and an additional fault relay for signaling sensor faults or other self-diagnostic faults.	14
NT511	4 Pt100 inputs	The NT511 AD temperature controller is a combination unit designed to control the temperature of a medium voltage dry transformer and control the power of the fan cooling system. It is intended for use with tangential fans, with 6 output relays rated for 1.5A at 230 VAC to provide power directly to the fans. Every fan circuit is protected by a fuse and in case of failure will provide a fault signal to alert an operator.	16
T119	3 PTC inputs	The T119 is and economical choice for simple protection of medium voltage dry transformers. It has 3 inputs suitable for use with our PTC or PTFE temperature sensors. It has 2 alarm output relays and 1 alarm relay for fan control with an adjustable time delay OFF function Panel or Din-rail Mount.	18

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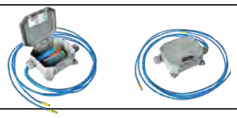
QUICK REFERENCE INDEX

Series	#Inputs	Temperature Controller - Description Summary	Page #
T30	2 PTC inputs	The T30 is an economical choice for simple protection of low and medium voltage dry transformers. The T30 comes with 2 inputs (ALARM & TRIP) suitable for use with our PTC or PTFE temperature sensors and has 2 alarm output relays (ALARM/ALL and TRIP)	20
T412	1 PT100 inputs	The T412 is a great choice when a single hot spot needs to be monitored. It has 1 input that can be used with a RTD like out PT100. It has two alarm relays for different temperature thresholds and one fault relay for signaling sensor gaults or other self-diagnostic faults.	22
T512	12 Pt100 inputs	The "intelligent multi-channel" T512 is commonly used to control motor temperature, but can be used anywhere you need to monitor up to 12 independent channels, and 3 alarm thresholds for each channel. With 5 output relays and a Modbus RS485 RTU output the T512 can handle the most comprehensive temperature control requirements.	24
MM453	1-24 configurable inputs	The MM453 temperature controller is designed for measuring the temperature of diesel generators and biogas as well as monitoring gearings, exhaust gas, lubrication oil and coolant. It is highly configurable with up to 24 temperature inputs using any of our RTD PT100, PT1000 or TCK thermocouple. 5 standard outpu relays with the option to add a 4-20mA analog and/or a RS485 output give you the felxibility you need to monitor temperature across your operation.	26

Temperature Controller Accessories	Accessory - Description Summary	Page #
Ethernet Converter	The NT-CONV-ETH allows an existing Springer Controls / Tecsystem unit, set up with Modbus RTU RS485 output, to function directly to an Ethernet network.	28
Ethernet Software Manager	The ETH-MANAGER software combined with an ETH Springer Controls / Tecsystem device allows you to monitor, set and analyze the thermal operation of the electrical machine you want to protect.	29
RTD's (Resistance Temperature Detector) **and Thermocouplers**	Full selection of RTD's and thermocouplers available based on your specification.	30
Sensor Junction Box series 	The SCS-R junction box series is designed for quick, safe and economic connection of sensors to the temperature controller.	34

Fan Cooling Systems	Fan Cooling - Description Summary	Page 35
VRT series	Springer Controls / Tecsystem offers the VRT series of controllers to control the room ventilation fan, which works in conjunction with their product line of temperature controllers.	36
TTG FAN series	THE TTG series fans are the smallest in our range of ventilation fans. Air flow from 122ft^3/min to 165ft^3/min (208m^3/hr to 280m^3). Power requirements from 43 - 51 Watts.	38
TG FAN series	The TG series fans are the next step up from the TTG series. Air flow from 271ft^3/min to 1377ft^3/min (460m^3/hr -2340m^3/hr). Powre requirements from 75 - 225 Watts.	39
BAR FAN series	The BAR/BARRA series fans are sold in banks fo 3 fans to provide even higher air flow. Airfrol from 353ft^3/min to 1765ft^3/min (600m^3/hr to 3,000m^3/hr.	42

T154 SERIES

Temperature Control of Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **T154** (Tecsystem Code → **1CN0157**)
- **T154-V** with Voting function (Tecsystem Code → **1CN0182** - Non UL)

The **T154** is an electronic microprocessor based unit for the temperature control of MV dry type and cast resin transformers as well as motors. Developed with layout and advantages of the New technology Platform (dual display, new micro controller with increased operational capacity and data management), the unit ensures high levels of protection to electromagnetic interferences and ease of use which have made it the standard for this application. The **T154** maintains the standard 4 Pt100 inputs (3 phase transformer and a fourth option for the core or the ambient temperature), and 4 dry contact relay outputs (ALARM and TRIP, FAULT signal operation and start ventilation system (FAN)).

Optional sensor inputs (Ni100 / Ni120 / CU10 / PT1000 / IR etc.) are available.

The unit is c UL us certified for the American and Canadian market, as well as for marine applications.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

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T154 SERIES TECHNICAL DATA

Power Supply

- Rated values 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- 4 inputs RTD Pt100 3 wires (max section 0.06 in^2 / 1.5 mm^2)
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length cable compensation up to 546' (500 m) 0.04 in^2 (1 mm^2)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 1 alarm relay for fan control (FAN1)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contact capacity: 10A-250 Vac-res cosΦ=1

Dimensions

- 3.9" x 3.9" (100 x 100mm) DIN 43700 depth 5.15" (131 mm) (terminals included)
- Panel cut-out 3.6" x 3.6" (92 x 92mm)

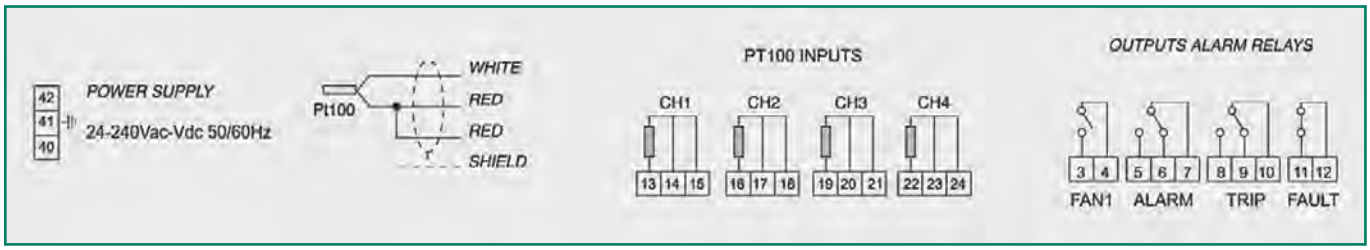
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ± 1% full scale value ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL UL94V0
- Frontal in polycarbonate IP65
- Burden: 7.5VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 2 displays 0.5" (13 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 1 led to display the state of FAN
- Temperature monitoring range: reading from 32°F to 464°F (0°C to 240°C)
- 2 ALARM thresholds for channel 1-2-3
- 2 ALARM thresholds for channel 4
- 1 TRIP thresholds for each channel
- 1 ON-OFF thresholds for FAN1
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after one (1) minute's inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button

ELECTRICAL CONNECTIONS



NT935 SERIES

Temperature Control of High Voltage (HV) and Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS/OPTIONS

- **NT935-BASIC** unit with relay outputs (Tecsystem Code → **1CN0142**)
- **NT935-AD** with relay outputs, digital RS485 and Analog 4-20mA output (Tecsystem Code → **1CN0143**)
- **NT935-ETH** with relays and Ethernet output (Tecsystem Code → **1CN0139**)
  - **Dedicated Software:** ETH-MANAGER (see Accessories)
- **NT935-IR-BASIC** for infrared input with relay outputs (Tecsystem Code → **1CN0171** - Non UL)
- **NT935-IR-AD** for infrared input with relay, digital RS485 and analog 4-20mA ouputs (Tecsystem Code → **1CN0170** - Non UL)

The **NT935** temperature monitoring series is designed for a wide range of electromechanical and electronic equipment designed to protect the temperature of electrical machines such as motors, generators, and transformers. The **NT935** is an electronic micro-controller based unit specifically designed for dry type and cast resin transformers. The **NT935** has been developed with advantages of dual display, VOTING function, and contains a new micro-controller (with increased operation capacity and data management).

The **NT935** is able to monitor the temperature of the transformer with the same standards as the T154 controller. In addition, it will transmit real-time temperatures and offers the option to vary all the settings including the relays intervention thresholds. It is equipped with 4 Pt100 inputs to monitor temperature of the windings and /or the ambient temperature. Protection relays consisting of 2 ALARM thresholds for channels 1-2-3 and 2 ALARM thresholds for channel 4, and 2 ON-OFF thresholds for FAN1 & FAN2.

The unit is c UL us certified for the American and Canadian market, as well as for marine applications.

NT935 series is ideal for up to 4 thermal input channels. A variety of outputs are available including:
-**BASIC:** Relays only - **AD:** Analog & Digital Outputs - **ETH:** Ethernet output (specs page 8)

The **NT935-IR** series is available where the use or RTD-Pt100 sensors are not recommended due to interference. (specs page 9)

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

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NT935 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- 4 inputs RTD Pt100 3 wires (max section 1.5 mm²)
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length cable compensation up to 500 m (1 mm²)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 2 alarm relays for fan control (FAN1 and FAN2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contacts capacity: 10A-250 Vac-res cosΦ=1
- Modbus RTU RS485 output
- Optically isolated 4.20mA output

Dimensions

- 3.94” x 3.94” (100 x 100 mm) DIN 43700 depth 5.2” (131 mm) (terminals included)
- Panel cut-out 3.62” x 3.62” (92 x 92 mm)

Options

- Basic version without RS485 and 4-20mA outputs:

  NT935-BASIC unit has relay outputs only.
  (Tecsystem Code → **1CN0142**)

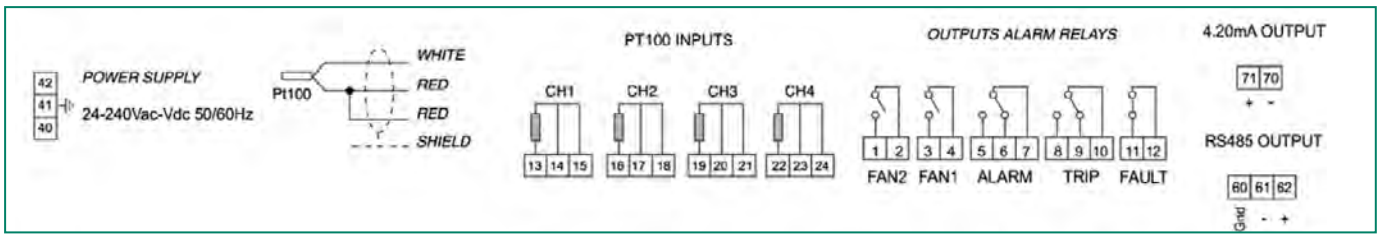
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ± 1% full scale value ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL UL 94V0
- Frontal in polycarbonate IP65
- Burden: 7,5VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 2 displays 0.5” (13 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 2 leds to display the state of FAN1 and FAN2
- Temperature monitoring from 32°F to 464°F (0°C to 240°C)
- 2 ALARM thresholds for channels 1-2-3
- 2 ALARM thresholds for channel 4
- 2 ON-OFF thresholds for FAN1 and FAN2
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after 1 minute’s inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button
- Voting function
- Intellifan function

ELECTRICAL CONNECTIONS



NT935-ETH (Tecsystem Code → **1CN0139**)

The **NT935-ETH** is an innovative electronic device microprocessor based, which is designed for dry type and cast resin transformers, with integrated ETHernet port.

Equipped with all the necessary functions needed to monitor and control the temperature of the transformer, as well as the existing product line **NT935**, it is presented , in this edition 2016, with a more functional version of both hardware and software.

Communication with the network is via ModBus TCP/IP protocol, that allows the user to display and to program all the unit functions from the comfort of the desk!

The **NT935-ETH** maintains the traditional 4 Pt100 inputs (windings + ambient) and 4 relays ALARM, TRIP, FAN and FAULT, as well as new functions and renewed display on the front and thanks to the versatility of the new edition 2016, other sensor inputs (Ni100 / Ni120 / CU10 / PT1000 / IR etc.) are available.

This unit is c UL us certified for Canadian and American market as well as for marine applications.

POWER SUPPLY: with input from 85 to 260 Vac-dc.

TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 85-260 Vac-dc
- Vdc with reversible polarities

Inputs

- 4 inputs RTD Pt100 3 wires
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length cable compensation up to 500 m (1 mm²)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 2 alarm relays for fan control (FAN1 and FAN2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contacts capacity: 10A-250 Vac-res cosΦ=1
- Ethernet output 10Base T/ 100Base-TX Modbus TCP slave

Dimensions

- 3.94” x 3.94” (100 x 100 mm) DIN 43700 depth 5.1” (130 mm) (terminals included)
- Panel cut-out 3.62” x 3.62” (92 x 92 mm)

Options

- Dedicated Software: ETH-MANAGER

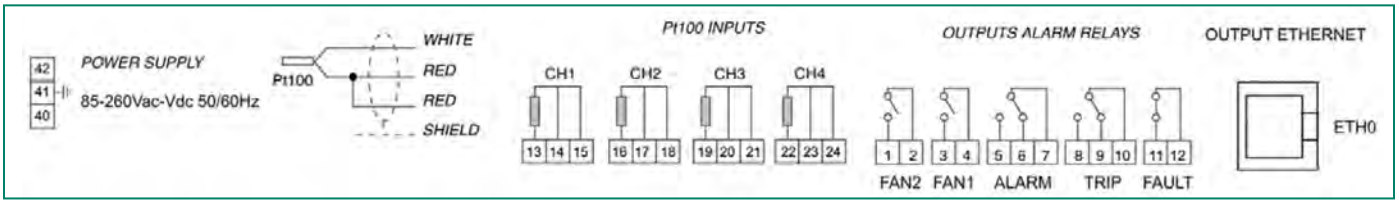
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ± 1% full scale value ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL 94_V0
- Frontal in polycarbonate IP65
- Burden: 4VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 2 displays 0.5” (13 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 2 leds to display the state of FAN1 and FAN2
- Temperature monitoring from 32°F to 464°F (0°C to 240°C)
- 2 alarm thresholds for channels 1-2-3
- 2 alarm thresholds for channel 4
- 2 ON-OFF thresholds for FAN1 and FAN2
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after 1 minute’s inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button
- Voting function
- Intellifan function

ELECTRICAL CONNECTIONS



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NT935-IR-AD (Tecsystem Code → **1CN0170**)

The control unit **NT935-IR-AD** coupled to the dedicated infrared sensors TIR409 allows the temperature control without physical contact between the sensor and the surface to be measured. This characteristic makes it useful to control the temperature of medium or high voltage windings, where the use of PT100 is not recommended for the problems of electrical insulation and the security.

Unlike general products on the market, the **NT935-IR-AD** and TIR409 were studied in order to work even in very high electromagnetic fields, thus ensuring reliability and security to the system itself. The compact size make the sensor easy to install on any flat surface, while the laser pointer helps to verify if it has been correctly positioned. The unit is equipped with 3 inputs, to control the temperature of the 3 windings and a fourth additional input.

Output relays are available for ALARM, TRIP, FAN1 / FAN2 and FAULT.

As well as have all the new features introduced in the latest ED16 generation devices, including dual display, most capacity of relays, the unit is equipped with the function Voting and Intellifan and RS485 Modbus RTU and 4-20mA Analog output for data remote management.

All our units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vac-dc
- RVdc with reversible polarities

Inputs

- 4 inputs IR 4.20mA sensor
- Removable rear terminals
- Input channels protected against electromagnetic interference

Outputs

- 2 alarm relays (ALARM-TRIP)
- 2 alarm relays for fan control (FAN1 and FAN2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contacts capacity: 10A-250 Vac-res cosΦ=1
- Modbus RTU RS485 output
- Optically isolated 4.20mA output

Dimensions

- 3.94” x 3.94” (100 x 100 mm) DIN 43700 depth 5.2” (131 mm) (terminals included)
- Panel cut-out 3.62” x 3.62” (92 x 92 mm)

Options

- Basic version without RS485 and 4-20mA outputs:

  NT935-IR-BASIC unit has relay outputs only.
  (Tecsystem Code → **1CN0171**)

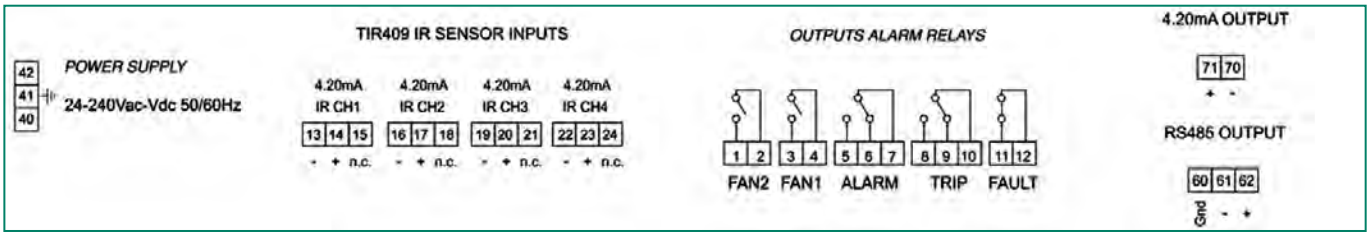
Tests and performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to 4.20mA inputs, relays to power supply, power supply to 4.20mA inputs
- Accuracy: ± 0.5% full scale value ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL 94_V0
- Frontal in polycarbonate IP65
- Burden: 7,5VA
- Data storage: 10 years minimum
- Self-diagnostic circuit
- Option: tropicalization

Display and data management

- 2 displays 0.5” (13 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 2 leds to display the state of FAN1 and FAN2
- Temperature monitoring from 32°F to 464°F (0°C to 240°C)
- 2 ALARM thresholds for channels 1-2-3
- 2 ALARM thresholds for channel 4
- 2 ON-OFF thresholds for FAN1 and FAN2
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after 1 minute’s inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button
- Voting function
- Intellifan function

ELECTRICAL CONNECTIONS



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NT538 SERIES

Temperature Control of Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **NT538-BASIC** relay outputs only (Tecsystem Code. → **1CN0160**)
- **NT538-AD** relay, digital RS485 and analog 4-20mA ouputs (Tecsystem Code → **1CN0144**)
- **NT538-ETH** relay and ethernet output (Tecsystem Code → **1CN0140**)

Option: DEDICATED SOFTWARE: ETH-MANAGER (see accessories)

The **NT538 Series** is an electronic microprocessor based unit for the temperature monitoring of electric motors and MV dry type/cast resin transformers. **The NT538 Series** has 8 input channels, allowing for monitoring temperature at up to 8 different locations. Featuring a dual display with 3 digits for displaying temperatures, messages and channels, along with 3 LED's to display the state of the alarms of the selected channels and 2 LED's to display the state of two separate fans. It is equipped with 8 inputs for Pt100 sensors and thanks to the versatility of the latest edition, other sensor inputs (Ni100 / Ni120 / CU10 / PT1000 / IR etc.) are available. It is equipped with 4 dry contact relay outputs, ALARM and TRIP, FAULT for working anomalies and drive of FAN cooling system.

The **NT538-ETH** is an innovative electronic device microprocessor based, which is designed for dry type and cast resin transformers, with integrated ETHernet port. Communication with the network is via ModBus TCP/IP protocol, that allows the user to display and to program all the unit functions from the comfort of the desk! The **NT538-ETH** maintains the traditional 8 Pt100 inputs (windings + environment) and 4 relays ALARM, TRIP, FAN and FAULT, as well as new functions and renewed display on the front and thanks to the versatility of the latest edition, other sensor inputs (Ni100 / Ni120 / CU10 / PT1000 / IR etc.) are available.

NT538 series is ideal for up to 8 thermal input channels. A variety of outputs are available including:
-**BASIC:** Relays only - **AD:** Analog & Digital Outputs - **ETH:** Ethernet output (specs page 11)

The unit is c UL us certified for the American and Canadian market, as well as for marine applications.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

NT538-AD: UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.
NT538-ETH: UNIVERSAL POWER SUPPLY: with input from 85 to 260 Vac-dc.

NT538 TECHNICAL SPECIFICATIONS

Power Supply

- ND538-AD: Rated values 24-240-260 Vac-dc
- ND538-ETH: Rated values 85-260 VAc-dc
- Vdc with reversible polarities

Inputs

- 8 inputs RTD PT100 3 wires (max section 1.5 mm2)
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length cable compensation up to 546.8' (500 m) (1 mm²)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 2 alarm relays for fan control (FAN1 and FAN2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contact capacity: 10A-250 Vac-res COSΦ=1
- NT538-AD: Modbus RTU RS485 output
- NT538-AD: Optically isolated 4-20mA output
- NT538-ETH: Ethernet output 10Base T / 100 Base-TX Modbus TCP slave

Dimensions

- 3.9" x 3.9" (100 x 100mm) DIN 43700 depth 5.15" (131 mm) (terminals included)
- Panel cut-out 3.6" x 3.6" (92 x 92mm)

Options

- Basic version without RS485 and 4-20mA outputs; NT538-BASIC (Tecsystem Code → **1CN0160**)
- Ethernet Version; NT538-ETH (Tecsystem Code → **1CN0140**)
  - Dedicated Software (ETH-Manager)

Tests and Performance

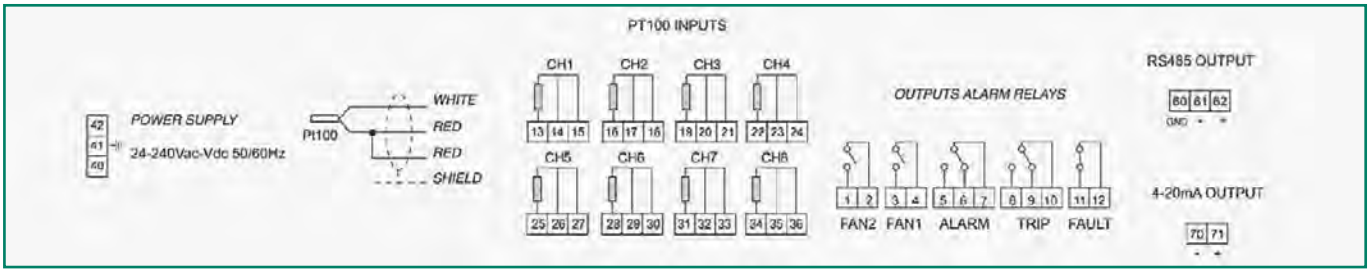
- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ±1% full scale value ±1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL UL94V0
- Frontal in polycarbonate IP65
- Burden: 7.5VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

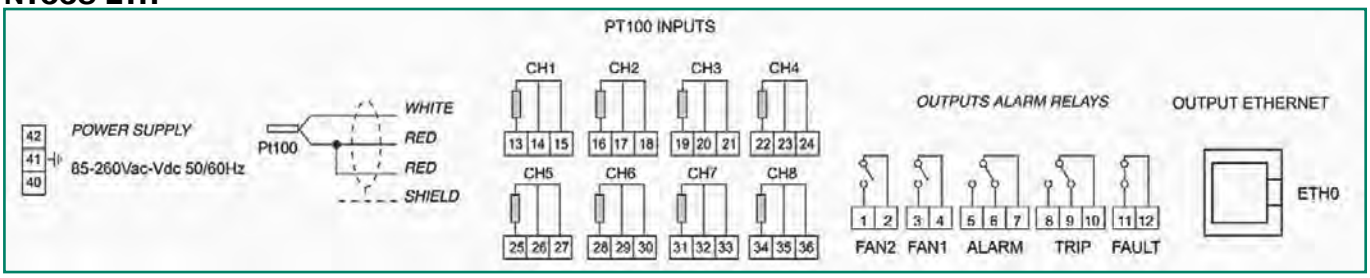
- 2 displays 0.5" (13 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 2 leds to display the state of FAN1 and FAN2
- Temperature monitoring range: reading from 32°F to 464°F (0°C to 240°C)
- 1 ALARM threshold for each channel
- 1 TRIP thresholds for each channel
- 2 ON-OFF thresholds for FAN1 and FAN2 in common for all enabled channels
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after
- 1 minute's inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button
- Audible alarm (ALARM) with silent key
- Voting function
- Fail Safe function

ELECTRICAL CONNECTIONS

NT538-AD



NT538-ETH



T1048 SERIES

Temperature Control of Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **T1048-PT100-BASIC** (Tecsystem Code → **1CN0162**)
- **T1048-PT100-RS485** unit w/PT100 inputs and RS485 Modbus RTU output (Tecsystem Code → **1CN0149**)
- **T1048-PT100-ETH** (Tecsystem Code → **1CN0148**)
- **T1048-TCK-BASIC** unit w/TCK inputs (Tecsystem Code → **1CN0161**)
- **T1048-TCK-RS485** unit w/TCK inputs and RS485 Modbus RTU output (Tecsystem Code → **1CN0151**)
- **T1048-TCK-ETH** with TCK sensors Inputs (Tecsystem Code → **1CN0150**)

T1048 was designed as a technical evolution of the **T2612** series, including all the new features presented in the latest generation devices including dual display and more powerful relays. The **T1048** series is more compact and lighter, has a power supply with extended range (85-260 Vac/dc), includes hysteresis, failsafe, intellifan functions. All input channels are protected f rom electromagnetic interference, the power supply is fuse protected making the **T1048** rugged and durable for difficult applications.

The **T1048** comes standard to accept 4 RTD inputs (Pt100 sensors), an option is available with 4 TCK (thermocouple) inputs as well. The unit can also be equipped with ETHernet output with Modbus TCP/IP protocol to display and program all the unit functions while sitting at your desk!

This unit is available with c UL us certification for Canadian and American market.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (in tropical climates).

POWER SUPPLY: with input from 85 to 260 Vac/dc.

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T1048 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 85-260 Vac-dc
- Vdc with reversible polarities
- Protection fuse 2,5A 5x20

Inputs

- 4 configurable inputs by installing one of the following different cards:
  -Card for 4 inputs RTD Pt100 sensor 3 wires
  -Card for 4 inputs TcK (thermocouple)
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length Pt100 cable compensation up to 546.8' (500 m) (1 mm²)
- Sensor length TcK cable compensation up to 109.3' (100 m) (with cable and joints compensated)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output relays with 10A-250Vac-res COSΦ=1 contacts (ALARM-TRIP-FAULT)
- 2 alarm relays for fan control (FAN1 and FAN2) with16A-250Vac-res cosΦ=1 contacts, fuse 10A for line
- Option: RS485 output Modbus RTU
- Option: Ethernet 10Base T/ 100Base-TX Modbus TCP slave

Dimensions

- 9.1" x 6.5" depth 2.4" (232 x 166 mm depth 60 mm)
- Panel cut-out 5.5" x 8.1" (140 x 205 mm)

Tests and Performance

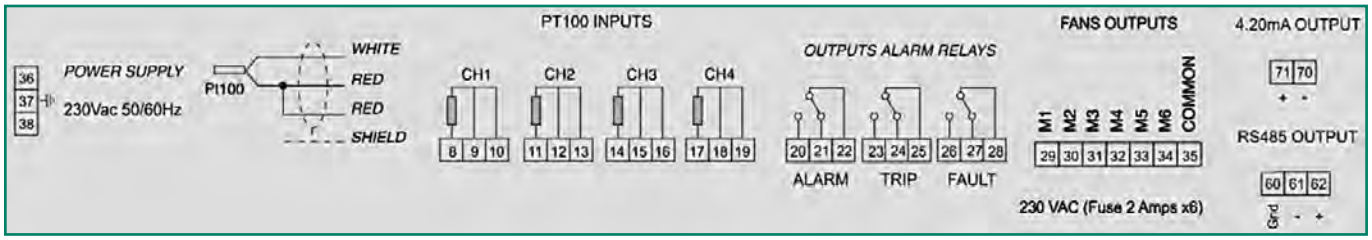
- Assembling in accordance with CE rules
- Protection against electromagnetic noises EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ±1% full scale value ±1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Housing polycarbonate
- Frontal in polycarbonate IP65
- Absorption: 8VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

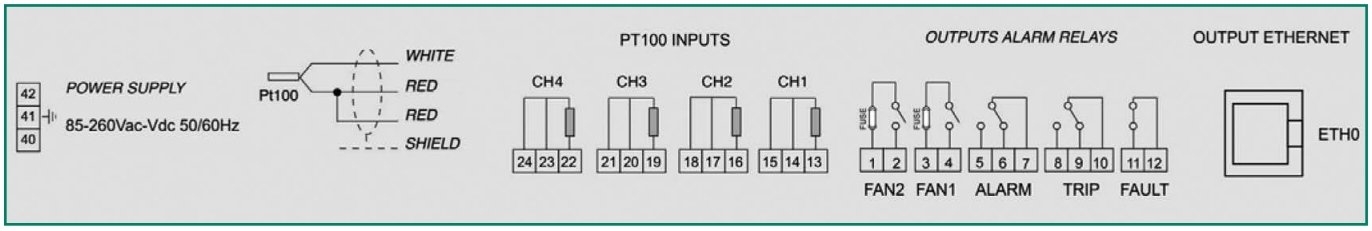
- 2 displays 0.8" (20.5 mm) with 3 digits for displaying temperatures, messages and channels
- 3 leds to display the state of the alarms of the selected channel
- 2 leds to display the state of FAN1 and FAN2
- Temperature monitoring range: reading from -68°F to 428°F (-20°C to 220°C) alarm settings 32°F to 428°F (0°C to 220°C)
- 2 ALARM thresholds for channels 1-2-3
- 2 ALARM thresholds for channel 4
- 2 ON-OFF thresholds for FAN1 and FAN2
- Key and Led enable forced ventilation FON
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after 1 minute's inactivity
- Incorrect programming warning
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage
- Frontal alarm reset push button
- Audible alarm (ALARM) with silent key
- Voting function
- Fail Safe function
- Intellifan function
- Hysteresis function ALARM and TRIP (HYS)

ELECTRICAL CONNECTIONS

T1048-Basic / T1048-RS485



T1048-ETH



NT539 SERIES

Temperature Control of Medium Voltage (MV) Dry Type & Cast Resin Transformers

VERSION

- **NT539**
  (Tecsystem Code → **1CN0023** - Non UL)

The **NT539** is an electronic microprocessor based unit, specifically designed to control transformers with more than three windings, such as those used in the conversion AC-DC plants/systems. The **NT539** can also be used to control the temperature of distribution in medium and low voltage systems with three phase transformers.

It is equipped with 9 Pt100 inputs and the following relays: 3 for the ALARM, 3 for the TRIP and 3 for the FAN cooling system. Additionally it comes wit a self monitoring circuit and output that will signal if it detects a sensor fault or other internal problem on the PC board.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

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NT539 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- 3-6-9 inputs RTD Pt100 sensors 3 wires
- Removable rear terminals
- Input channels protected against electrical and magnetic noises and spikes
- Sensor length cable compensation up to 546.8' (0.04 in2) / (500 m) (1 mm²)

Outputs

- 3 alarm relays (ALARM TR1, ALARM TR2, ALARM TR3)
- 3 trip relays (TRIP TR1, TRIP TR2, TRIP TR3)
- 3 fan relays (FAN TR1, FAN TR2, FAN TR3)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contact capacity: 6A-250 Vac-res cosΦ=1

Dimensions

- 5.6" x 2.8" (144 x 72mm) DIN 43700 depth 5.15" (131 mm) (terminals included)
- Panel cut-out 5.47" x 2.6" (139 x 67mm)

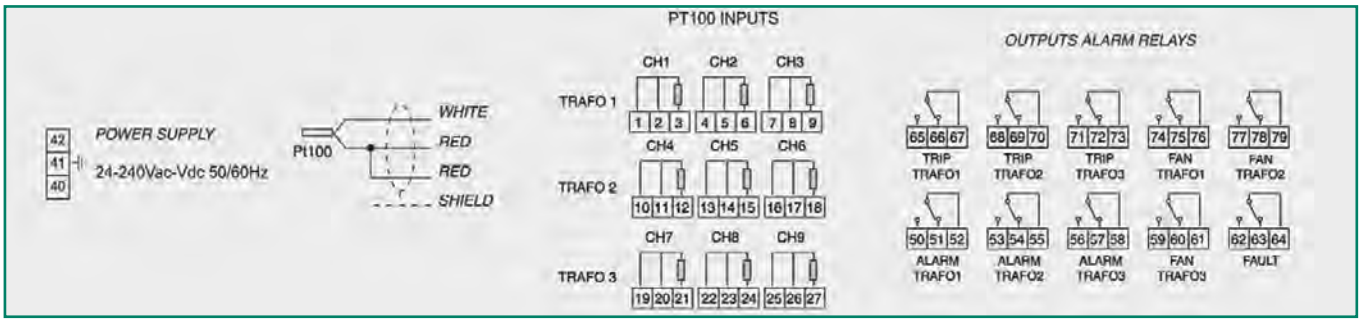
Tests and Performance

- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Assembling in accordance with CEI-EN61000-4-4
- Accuracy: ± 1% vfs, ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- PPO UL 94V0 self-extinguishing housing
- Frontal in polycarbonate IP54
- Burden: 6VA
- Data storage: 10 years minimum
- Digital linearity of sensors signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 1 display for temperature (°C TEMPERATURE)
- 1disply for reference channel and programming parameter (CHANNEL)
- 4 leds indicating display mode (SCAN, AUTO, HIGH, TMAX)
- 4 leds indicating alarm or trip channel (FAULT, FAN, ALARM, TRIP)
- 3 leds indicating reference transformer (TR1, TR2, TR3)
- Temperature monitoring from 32°F to 392°F (0°C to 200°C)
- 2 alarm thresholds for each transformer (alarm/trip)
- ON-OFF thresholds for fan control for each transformer
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Entering the programming mode by frontal push button
- Automatic stop of programming cycle after one (1) minute of no operation
- Wrong programming automatic display
- Maximum temperature and alarm storage
- Frontal alarm reset key

ELECTRICAL CONNECTIONS



NT511 SERIES

Temperature Control of Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **NT511-AD** w/RS485 and 4-20mA output (Tecsystem Code → **1CN0104** - Non UL)
- **NT511-BASIC** unit with relay outputs only (Tecsystem Code → **1CN0010** - Non UL)
- **NT511-RS485** unit with digital RS485 output (Tecsystem Code → **1CN0011** - Non UL)

The **NT511** temperature and fan control is a microprocessor based temperature controller that combines the temperature controller and the ability to power the fan cooling system directy. The **-AD** version is equipped with Analog 4-20mA and Digital RS485 Modbus RTU outputs simultaneously. It is recommended with the use of tangential fans, thanks to the presence of 6 outputs 230 Vac 1.5 A max. (each).

Every single fan is protected by a fuse and in case of failure the unit provides a FAULT signal. The metal structure is designed for installation on the box of the transformers. It has 4 inputs suitable for RTD P100 sensors which are all protected against electromagnetic interference. The unit is equipped with dry contacts to signal FAULT, ALARM and TRIP. For the fan control there are 6 active outputs which provide power directly to the fans.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

POWER SUPPLY: 230 Vac.

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NT511 TECHNICAL SPECIFICATIONS

Power Supply

- Rated voltage: 230 Vac ±10% 50/60 Hz

Inputs

- 4 inputs RTD Pt100 sensors 3 wires
- Removable rear terminals
- Input channels protected against electrical and magnetic noises and spikes
- Sensor length cables compensation up to 546.8' (500 m) (1 mm²)

Outputs

- 2 alarm relays (ALARM-TRIP)
- 6 fan outputs rated 230 Vac 50/60 Hz 1.5 Amp. Max (protected by 2 Amp. fuse)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contact capacity: 5A-250 Vac cosΦ=1
- Modbus RTU RS485 output
- Optically isolated 4.20mA output

Dimensions

- 8.27" x 10.24" x 3.35" (210 x 260 x 85mm)
- Panel cut-out 9.1" x 7.16" (232 x 182mm)
- Color: RAL 7035

Options

- Basic version without RS485 and 4.2mA outputs (relays only)
- AD Version with RS485 and 4-20mA output

Tests and Performance

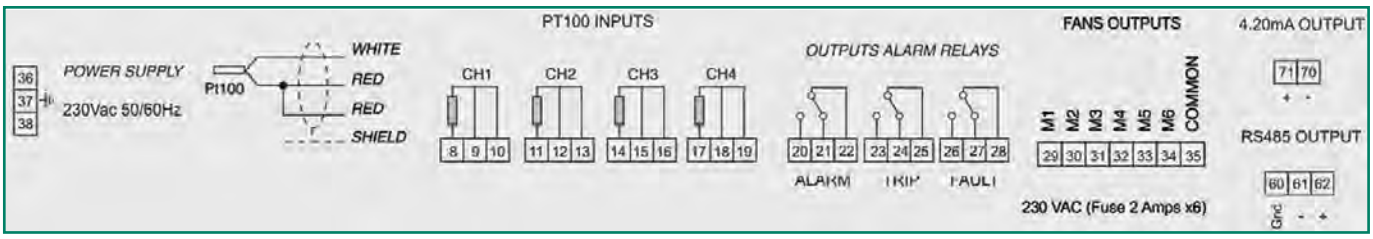
- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ± 1% vfs, ± 1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Housing: steel electrostatic painted
- Digital linearity of sensors signal
- Self-diagnostic of temperature sensor
- Program and reading resolution: 1 digit
- Burden: 6VA
- Frontal in polycarbonate IP54
- Data Storage: 10 years minimum
- Option: tropicalization

Display and Data Management

- 1 display for temperature and programming parameters (°C TEMPERATURE)
- 1 display for reference channel (CHANNEL)
- 3 leds indicating display mode (SCAN, HIGH, TMAX)
- 4 leds indicating alarm or trip channel (FAULT, FAN, ALARM, TRIP)
- 6 leds indicting motor status line (M1, M2, M3, M4, M5, M6)
- 1 led indicating program mode (PRG)
- 1 led indicating manual mode fan operating (MAN)
- Temperature monitoring from 32°F to 392°F (0°C to 200°C)
- 2 alarm threshold (alarm/trip)
- ON-OFF thresholds for fan control
- Sensors diagnostic (Fcc-Foc-Fcd)
- Data storage diagnostic (Ech)
- Entering the programming by frontal push button
- Wrong programming automatic display
- Possibility of setting automatic channels scanning or hottest channel
- Maximum temperatures and alarm storage
- Frontal alarm reset key

ELECTRICAL CONNECTIONS

NT511- AD



T119 SERIES

Temperature Control of Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **T119** (Tecsystem Code → **1CN0048** - Non UL)
- **T119-DIN** DinRail Mountable (Tecsystem Code → **1CN0092** - Non UL)

The **T119** temperature controller was developed to control the temperature of medium voltage cast resin and dry transformers. It has 3 series of Ptc inputs (ALARM, TRIP, FAN), each input can be connected from 1 to 9 Ptc's in series, making it a simple and economical choice for reliable protection. All inputs are protected against electromagnetic interference for consistent performance. The **T119** temperature controller has 2 output relays for temperature alarm/sensor or system fault, and another relay for fan control with a time delay off function. The **T119** is available in a DIN rail mount version and a front panel mount version to make installation simple and easy.

All our units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

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T119 TECHNICAL SPECIFICATIONS

Power Supply

- Rated voltage: 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- 3 series of Ptc inputs:
  - 1 series for ALL1
  - 1 series for ALL2
  - 1 series for FAN
- Removable rear terminals
- Input channels protected against electromagnetic noises and spikes

Outputs

- 2 alarm relays (ALL1/fault - ALL2)
- 1 alarm relay for fan control (FAN) with time delay OFF (5-10-20-40 min.)
- Output contact capacity: 5A-250 Vac cosΦ=1

Dimensions T119

- 1.9” x 3.8” (48 x 96mm)din 43700 depth 5.9” (150 mm) (terminals included)
- Panel cut-out 1.7” x 3.6” (44 x 92mm)

Dimensions T119 DIN

- 4.17” X 2.28” (106 X 58mm) DIN 43880 depth 3.54” (90mm)

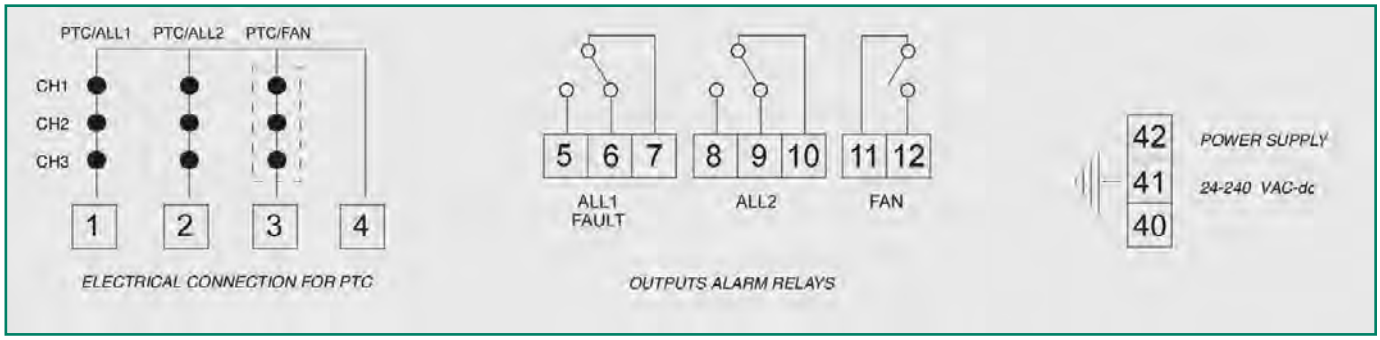
Tests and performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- PPO UL 94V0 self-extinguishing housing
- Option: tropicalization
- Frontal in polycarbonate IP54
- Burden: 2VA
- Data storage: 10 years minimum
- Self-diagnostic circuit

Display and data management

- Led indicating alarm, trip, fan
- Led indicating FAULT
- 2 alarm threshold
- 1 ON thresholds for fan control
- Entering the programming by frontal push button

ELECTRICAL CONNECTIONS



NOTES

T30 SERIES

Thermal Control of Low Voltage (LV) and Medium Voltage (MV) Dry Type/Cast Resin Transformers

VERSIONS

- **T30** (Tecsystem Code → **1CN0071** - Non UL)
- Available with **Power Supply** at 120 Vac (Tecsystem Code → **1CN0072**)

The **T30** temperature controller is a simple, cost effective solution to control temperature of low voltage and medium voltage dry and cast resin transformers. The **T30** comes with 2 inputs suitable for Ptc thermistors for alarm and trip. The input channels are protected from electromagnetic interference for consistent, reliable operation. 2 output relays (ALL/FAULT and TRIP) are available and the 4 front panel LEDs display the status of the system. The fault circuit trips in case of sensor failure or if the board self diagnostics detects a problem so it may be quickly remedied.

All our units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

POWER SUPPLY: 230 Vac.

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T30 TECHNICAL SPECIFICATIONS

Power Supply

- Rated voltage: 230 Vc ±10% 50/60 Hz

Inputs

- 2 series of Ptc inputs:
  - 1 series for L1 (ALARM)
  - 1 series for L2 (TRIP)
- Input channels protected against electromagnetic noises and spikes

Outputs

- 2 alarm relays (ALL/FAULT, TRIP)
- Output contact capacity: 5A-250 Vac cosΦ=1

Dimensions

- 2.8” x 3.54” (71 x 90mm) depth 2.28” (58mm) (DIN rail mounting)

Options

- Available 120Vac power supply version

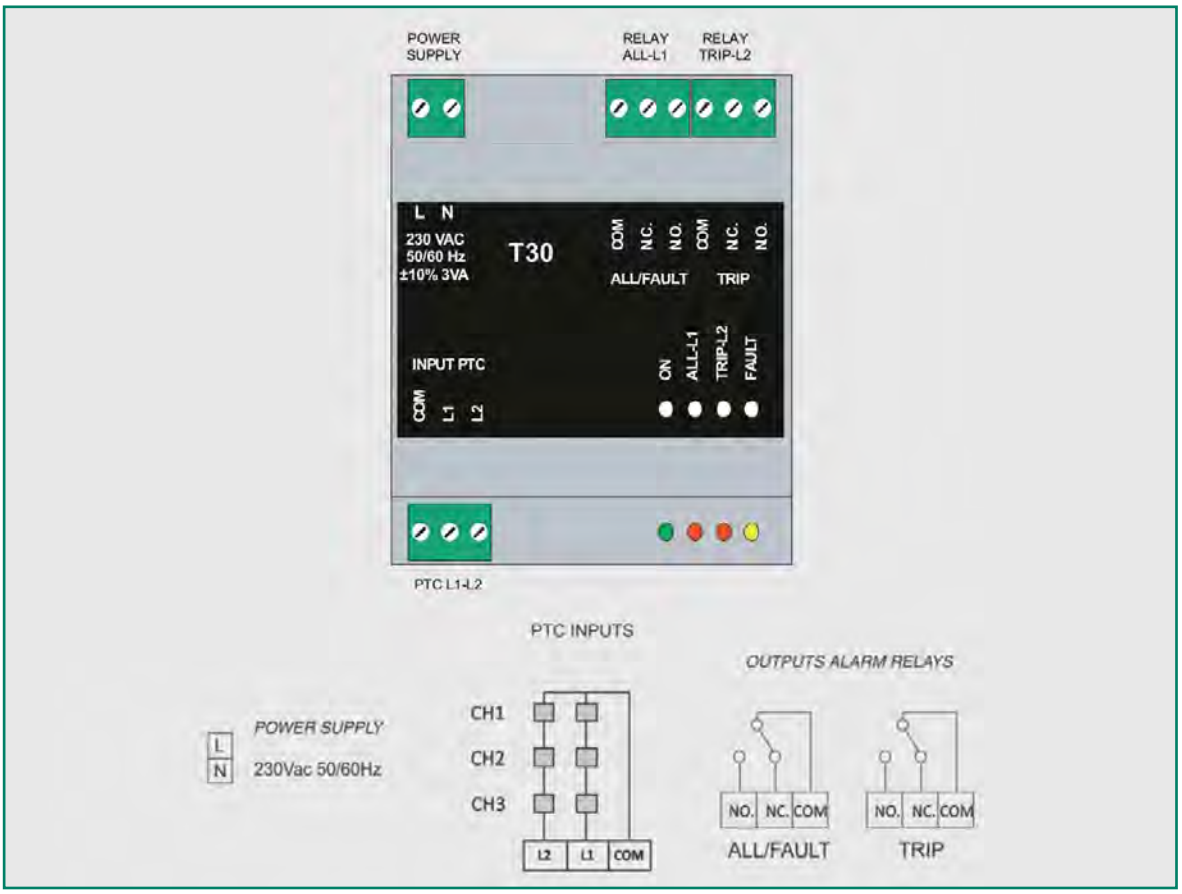
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- PPO UL 94V0 self-extinguishing housing
- Option: tropicalization
- Burden: 2VA
- Self-diagnostic circuit

Display and Data Management

- Led indicating alarm and trip
- Led indicating FAULT
- Led indicating ON

ELECTRICAL CONNECTIONS



T412 SERIES

Temperature Control System for Electrical Machines

VERSIONS

- **T412**
  (Tecsystem Code → **1CN0074** - Non UL)
- **T412-TcK** TcK sensor input unit
  (Tecsystem Code → **1CN0075** - Non UL)

The **T412** temperature controller is a single input temperature controller that provides plenty of features for monitoring a single hot spot. The input can interface with a RTD Pt100 sensor as a standard but has the option for using a TcK thermocouple depending on your sensor preference. The input is protected from electromagnetic interference for consistent, reliable performance. The outputs consist of 3 relays; 2 alarm relays for different trip thresholds and another fault relay for signaling a sensor fault of a self diagnostic fault on the PC board.

All our units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

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T412 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- 1 RTD input Pt100 sensor 3 wires
- Removable rear terminals
- Input channels protected against electromagnetic noises and spikes
- Sensor length cable compensation up to 547 yds. (500 m) (1 mm2)
- Sensor length TcK cable compensation up to 109 yds. (100 m) (with cable and joints compensated)

Outputs

- 2 alarm relays (L1-L2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contacts capacity 5A-250 Vac cosΦ=1

Dimensions

- 1.89” x 3.78” (48 x 96 mm) DIN 43700 prof. 6.3” (160 mm)
- Panel cut-out 1.7” x 3.6” (44 x 92 mm)

Options

- 1 TcK input

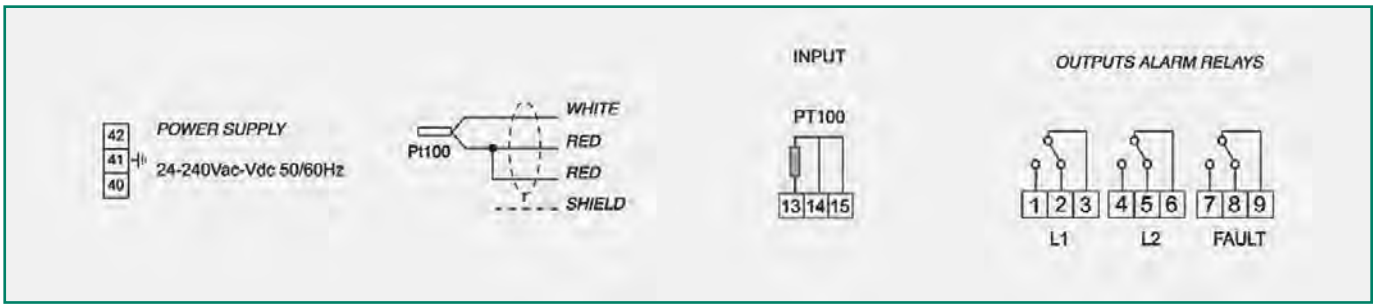
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ±1% full scale value ±1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- PPO UL 94V0 self-extinguishing housing
- Frontal in polycarbonate IP54
- Burden: 3VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Option: tropicalization

Display and Data Management

- 1 display 0.3” (7 mm) high with 3 digits for displaying temperatures
- Led indicating alarm (L1) or trip (L2)
- Led indicating fault
- Temperature monitoring:
  - 32°F to 392°F (0°C to 200°C) for Pt100
  - 32°F to 1830°F (0°C to 999°C) for TcK
- 2 alarm thresholds
- Pt100 sensors diagnostic (Fcc-Foc-Fcd)
- TcK sensors diagnostic (Foc)
- Wrong programming automatic display
- Programmed data call out
- Maximum and minimum temperatures reached storage
- Frontal alarm reset push button
- Possibility of setting HOLD function for output relays

ELECTRICAL CONNECTIONS



T512 SERIES

Temperature Control System for Electrical Machines

VERSIONS

- **T512-Basic** unit with relay outputs (Tecsystem Code → **1CN0118**)
- **T512-RS485** with RS485 and relay outputs (Tecsystem Code → **1CN0168**)

The NEW "intelligent multi-channel" UNIT **T512**, mainly oriented to the control of motor temperature, can also be used wherever you need to monitor a maximum number of 12 independent channels (reading range -40°F to 464°F (-40°C to 240°C)).

It is equipped with 12 Pt100 inputs and 5 output relays with contacts 5A-250V (AL0-AL1-AL2-AUX1-AUX2 – clean contacts), and it allows you to set up to three alarm thresholds for each channel.

The unique 20-character LCD display allows easy programming parameters and alarm management and also to view immediately the operating data.

This unit is available with c UL us certification for Canadian and American market.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

Springer Controls Company • 96074 Chester Road, Yulee, FL 32097 • (904) 225-0575 • springercontrols.com

SPRINGER controls company

T512 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vc-dc
- Vdc with reversible polarities

Inputs

- 12 inputs RTD Pt100 3 wires (max section 0.1in2 (2.5 mm2)
- Removable rear terminals
- Input channels protected against electromagnetic interference
- Sensor length cable compensation up to 547yds. (500 m) (1 mm2)

Outputs

- 5 alarm relays (ALO-AL1-AL2-AUX1-AUX2)
- 1 alarm relay for sensor fault or working anomaly (FAULT)
- Output contact capacity: 5A-250 Vac cosΦ=1
- Modbus RTU RS485 output

Dimensions

- 7.56” x 3.78” (192 x 96 mm) depth 8.66” (220 mm) (terminals included)
- Panel cut-out 7.4” x 3.6” (188 x 92 mm)

Options

- Basic Version - relay outputs only

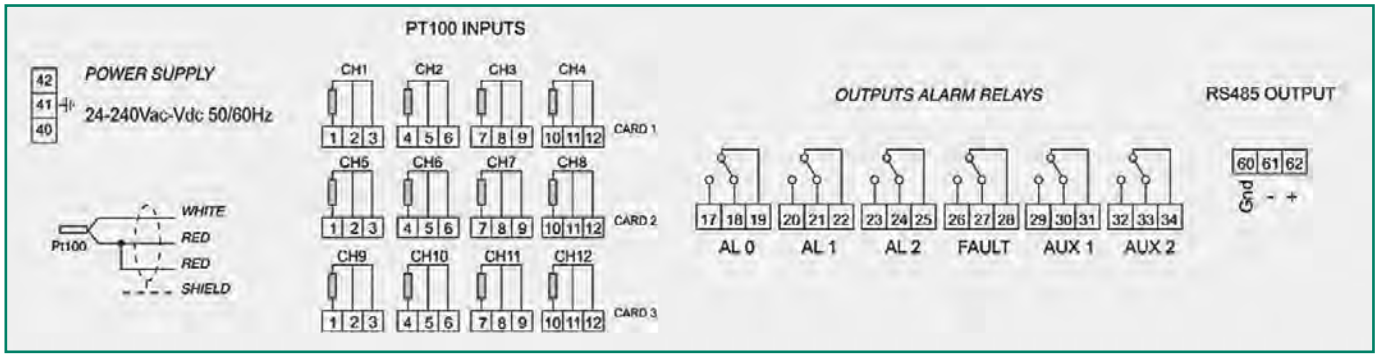
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ±1% full scale value ±1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Black anodized aluminium case
- Burden: 10VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 1 LCD display with 4 lines of 20 characters to show the working data and program parameters
- 6 led indicating the status of the relays (ALO, AL1, AL2, AUX1, AUX2, FLT)
- Reading temperature from -40°F to 464°F (-40°C to 240°C)
- Alarm management from 32°F to +464°F (-0°C to 240°C)
- 3 ALARM thresholds for each input
- Sensor diagnostic (Fcc-Foc)
- Access to programming through front keyboard
- Automatic exit from relay programming, display and test after 1 minute inactivity
- Possibility of setting automatic channels scanning, hottest channel, manual scanning
- Maximum reached temperatures and alarm storage

ELECTRICAL CONNECTIONS



MM453 SERIES

Temperature Control System for Electrical Machines

VERSIONS

- **MM453-Basic unit** with relay outputs only (call factory for Tecsystem Code)
- **MM453-AD** with relay digital RS485 and analog 4-20mA outputs (call factory for Tecsystem Code)

The **MM453** temperature controller is designed primarily for controlling the temperature of diesel generators and biogas, but it is also commonly used for monitoring bearings, exhaust gas, lubricant and coolant. The 20-character, 4-line, wide alphanumeric LCD allows the operator to easily read the operating parameters and make adjustments. The highly configurable **MM543** can be fitted with a maximum of 24 inputs for 24 different temperature measuring locations. Cards with 4 inputs can be added individually for the RTD Pt100 sensors, Pt1000 sensors and the TcK thermocouple depending on your sensor preference. You can also mix and match input cards to achieve your desired input sensor arrangement. All the input channels are protected from electromagnetic interference for consistent, reliable performance. The alarm and fault signals can be routed to two separate relay banks allowing for a variety of output configurations. The **MM453** can also be fitted with a 4-20 mA output and a RS485 Modbus RTU output.

All units can also be supplied with a special coating on the electronic cards, resistant to difficult weather conditions, particularly characterized by high temperature and humidity (which are in tropical climates).

UNIVERSAL POWER SUPPLY: with input from 24 to 240 Vac-dc.

Springer Controls Company • 96074 Chester Road, Yulee, FL 32097 • (904) 225-0575 • springercontrols.com

MM453 TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 24-240 Vac-dc
- Vdc with reversible polarities

Inputs

- From 1 - 24 configurable inputs by different cards:
  - Card for 4 inputs RTD Pt100 sensor three wires
  - Card for 4 inputs RTD Pt1000 sensor three wires
  - Card for 4 inputs TcK (thermocouple)
- Possibility to mount in the same monitoring unit different cards (RTD or TcK)
- Removable rear terminals
- Input channels protected against electromagnetic noises and spikes
- Sensor length cable compensation for TTD Pt100-Pt1000 up to 547yds. (500 m) (1 mm2)
- Sensor length TcK cable compensation up to 109yds. (100 m) (with cable and joints compensated)

Outputs

- 5 alarm relays (AL0, AL1, AL2, AUX1, AUX2)
- 1 relay for sensor fault or working anomaly (FAULT)
- Output relay with : 5A-250 Vac cosΦ=1
- 4-20 MA output (with synchronizing signal) and RS485 ModBus RTU output

Dimensions

- 7.56” x 3.78” (192 x 96 mm) depth 8.66” (220 mm) (terminals included)
- Panel cut-out 7.4” x 3.6” (188 x 92 mm)

Options

- Basic Version without RS485 and 4.20mA output (relays only)
- Version with RS485 output and 4-20 mA (MM453 AD)

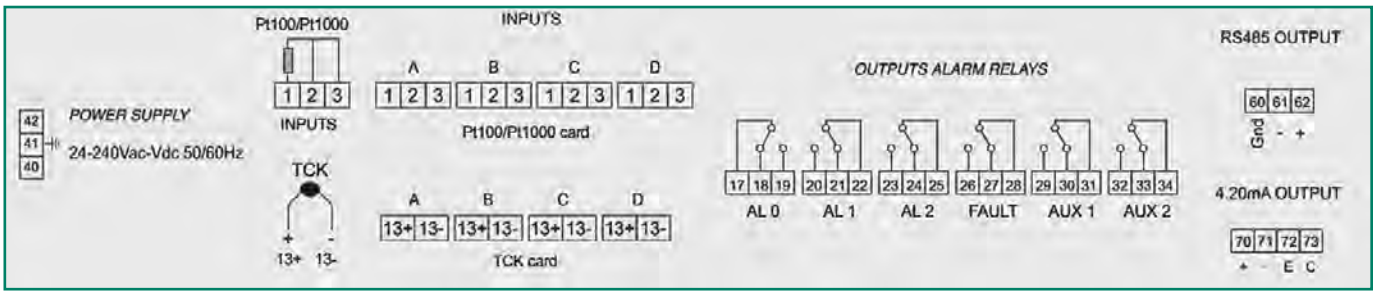
Tests and Performance

- Assembling in accordance with CE rules
- Protection against electromagnetic noises CEI-EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute from relays to sensors, relays to power supply, power supply to sensors
- Accuracy: ±1% full scale value ±1 digit
- Ambient operating temperature: from -4°F to +140°F (-20°C to +60°C)
- Humidity: 90% non-condensing
- Black anodized aluminium case
- Burden: 10VA
- Data storage: 10 years minimum
- Digital linearity of sensor signal
- Self-diagnostic circuit
- Option: tropicalization

Display and Data Management

- 20 characters and 4 lines LCD display to show the working data and program parameters
- 6 leds showing the status of the relays (AL0, AL1, AL2, AUX1, AUX2, FLT)
- Temperature reading range:
  - For Pt100: -40°F ÷ 464°F (-40°C ÷ 240°C)
  - For Pt1000: 32°F ÷ 572°F (0°C to 300°C)
  - For TcK: -40°F ÷ 1832°F (-40°C to 1000°C)
- 3 ALARM thresholds for each input
- Sensor diagnostic (Fcc-Foc)
- Selection between channel automatic scanning, hottest channel or manual scanning, all-time alarms (memo)
- Memory of the highest and lowest temperatures reached by the channels and by the alarms

ELECTRICAL CONNECTIONS



NT-CONF-ETH

VERSION

- **NT-CONV-ETH** (Tecsystem Code → **1AC0070**)

Thanks to Ethernet connectivity, the **NT-ETH-CONV** allows operator to convert an existing Tecsystem monitor (with Modbus RTU RS485 output), directly to an Ethernet network.

The **NT-CONV-ETH** is equipped with all the essential network features, including an Ethernet 10BaseT / 100Base-TX, full TCP / IP stack, suitable for working as Modbus TCP slave.

The Web feature can be used for remote configuration of protection limits, real-time monitoring or troubleshooting.

POWER SUPPLY: with input from 85 to 260 Vac-dc.

TECHNICAL SPECIFICATIONS

Electrical Features

- Input rated voltage: 85-260 Vac-dc 50/60 Hz, 3VA max
- Protection fuse 0,2A 5x20

Inputs

- RS485 Modbus RTU

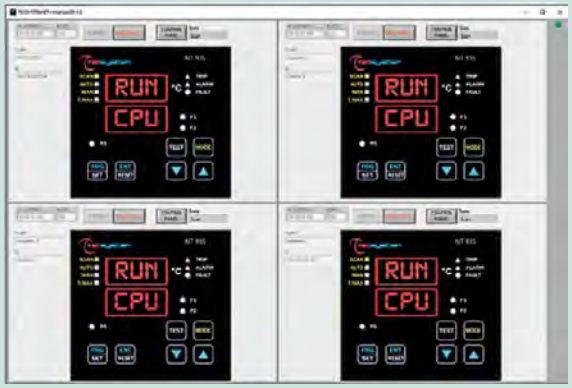
Outputs

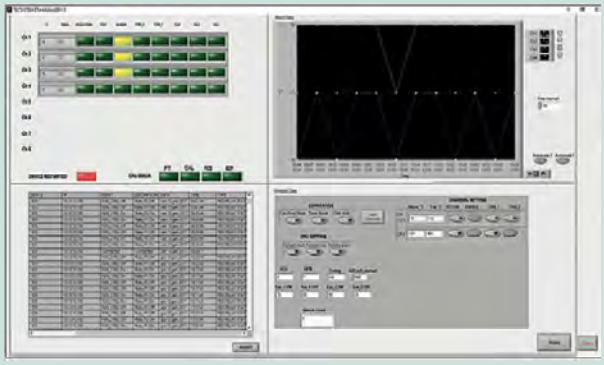
- Ethernet 10Base T / 100Base-TX Modbus TCP slave

Mechanical Features

- Dimensions: 2.1”x 3.54” (53x90 mm) - h. 2.9” (73 mm) DIN rail
- PPO UL 94V0 self-extinguishing housing
- Ambient operation temperature from -4˚F to 140˚F (-20˚C to +60˚C)
- Humidity: 90% non-condensing

ETH MANAGER SOFTWARE





VERSION

- **ETH-MANAGER-SOFTWARE** (Tecsystem Code → **1SW0001**)

The **ETH Manager Software**, combined with the ETH series Tecsystem devices, allows you to monitor, set and analyze the thermal operation of the electrical machine you want to protect: in the comfort of your office!

It has been developed to automatically recognize the input devices providing the control panel. In order to use it, you just need to connect the TECSYSTEM ETH devices directly to the Ethernet port on your PC or LAN, and once the network parameters are configured, you have a convenient, intuitive and complete software system, capable not only to monitor in a remote way the plant, but also to provide for the complete programming of the device in use!

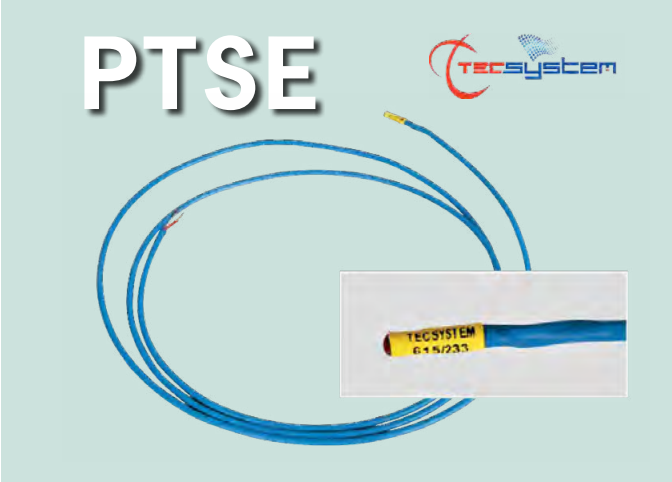
With **ETH Manager Software** you can also monitor and program independently from 1 up to 4 devices simultaneously.

The use of ETH Manager is recommended for structures such as:

- Electrical substations
- Photovoltaic systems
- Power stations
- Industrial plants

For each device you will have: temperature display, alarm activation, event recording, graphical representation (temperature pattern), programming panel and unit parameter control.

Available in High or Low resolution.



VERSIONS

- **PTSE2.5** 8.2 ft (2.5 meters)
  (Tecsystem Code → **1SN0029**)
- **PTSE5.0** 16.4 ft (5.0 meters)
  (Tecsystem Code → **1SN0034**)
- **PTSE12.0** 39.36 ft (12.0 meters)
  (Tecsystem Code → **1SN0025**)

*Custom lengths available upon request

TECHNICAL SPECIFICATIONS

PTSE Temperature Sensor

- Pt100 sensor
- Extension cable 3 wires with shield
- Standard cable length: 8.2 ft (2,5 m) (custom lengths on request)

Technical Details

- Pick-up range: from -40°F to +392°C (-40°C to +200°C)

Sensor

- Type: RTD Pt100 ohm at 32°F (0°C)
- Coefficient α=0,385 Ω / °C
- Calibration: IEC 60751
- Accuracy: Class B

Cable

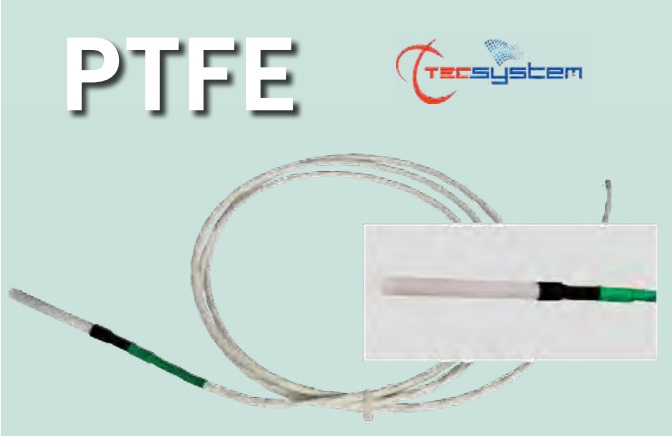
- Flexible tinned copper wires 3 x 0,35 mm²
- Primary insulation: silicon rubber
- Aluminium foil shield
- Secondary insulation: blue silicone rubber
- Color:
  - 2 red conductors - 1 white conductor

Tests

- Dielectric strength: 5 KVac for 60”

Options

- PTSE with 2 wires
- PTSE with 4 wires



VERSIONS

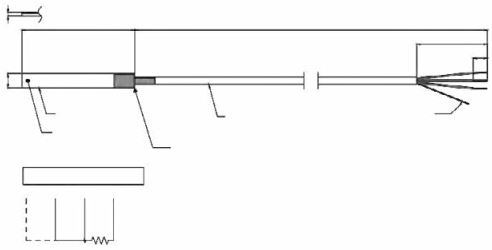
- **PTFE2.5** 8.2 ft (2.5 meters)
  (Tecsystem Code → **1SN0314**)
- **PTFE5.0** 16.4 ft (5.0 meters)
  (Tecsystem Code → **1SN0317**)
- **PTFE7.0** 22.96 ft (7.0 meters)
  (Tecsystem Code → **1SN0318**)

*Custom lengths available upon request

TECHNICAL SPECIFICATIONS

- PTFE 30 KV
- RTD Pt100 Pt100 ohm at 32°F (0°C)
- Calibration: IEC 60751
- Round Ø 0.39” x 4.72” (10 x 120 mm)
- Cable CuAg 3 x 0.015 in² (0,38 mm²) insulated
- Standard cable length: 8.2 ft (2,5 m) (different lengths on request)
- Dielectric strength: 30 KVac - 60”
- Max. operating temp.: 220°C

ACCESSORIES



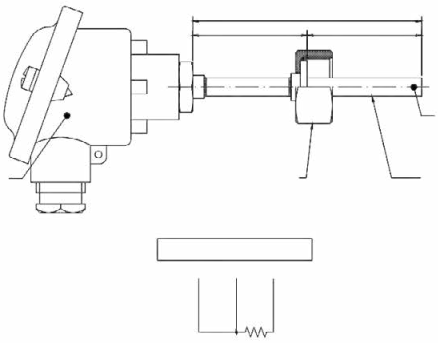
TECHNICAL SPECIFICATIONS

- Type: RTD Pt100 ohm at 32°F (0°C)
- Calibration: IEC 60751
- Flat type 0.1 x 0.4 x 2.36 inches (2,5 x 10 x 60 mm)
- Fiberglass laminated case
- Cable type CuSn 3 x 0.0086 inches² (0,22 mm²) MFA insulated
- Standard cable length: 8.2 ft (2,5 m) (different lengths on request)
- Max. operating temp.: 356°F (180°C)

VERSION

- **PTSP2.5** (Tecsystem Code → **1SN0062**)

*Custom lengths available upon request



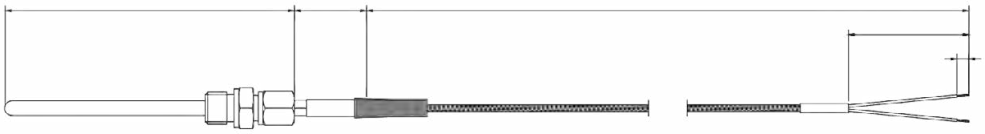
TECHNICAL SPECIFICATIONS

- Type: RTD Pt100 ohm at 32°F (0°C)
- Head DIN B, SS probe Ø 0.31" (8 mm)
- Probe length: from 3.93" to 7.87" (100 to 200 mm)
- Thread 3/4" or 1/2" gas
- Working ambient temperature: -40°F + 212°F (-40°C + 100°C) (sensor head)
- Range of temperature reading: -40°F + 482°C (-40°C + 250°C)

VERSION

- **PTO** (Tecsystem Code → **1SN0050**)

TCK



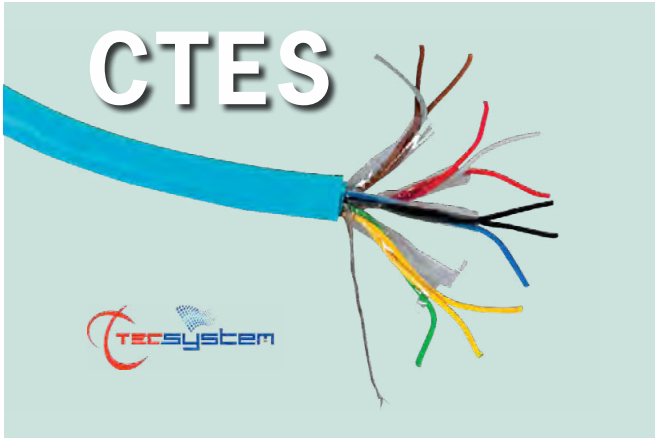
TECHNICAL SPECIFICATIONS

- Thermocouple Cr-Al
- Ø 0.24 x 5.91” (6 x 150 mm) U.T.
- Compression fitting thread 1/4” Gas
- Cable compensated type K 0.79 x 0,009 inches² (2 x 0,22 mm²) insulated TEX-TEX armored
- Max. operating temp.: 1382°F (750°C)
- Type “A” = straight type - Type “B” = 90° type

VERSION

- **TCK** (Tecsystem Code → **1SN0216**)

CTES



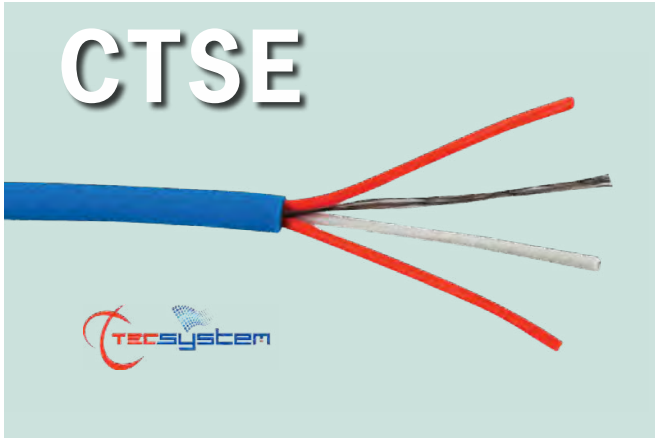
VERSION

- **CTES** (Tecsystem Code → **1CA0003**)

TECHNICAL SPECIFICATIONS

- Extension cable for Pt100 sensor
- In accordance with 20.35 CEI rules
- 4 turns 20AWG with shield
- External diameter: 0.472” (12 mm)
- Operating temp.: from -31°F to +194°F (-35°C to +90°C)
- Dielectric strength: 2000 Vac - 60”

CTSE



VERSION

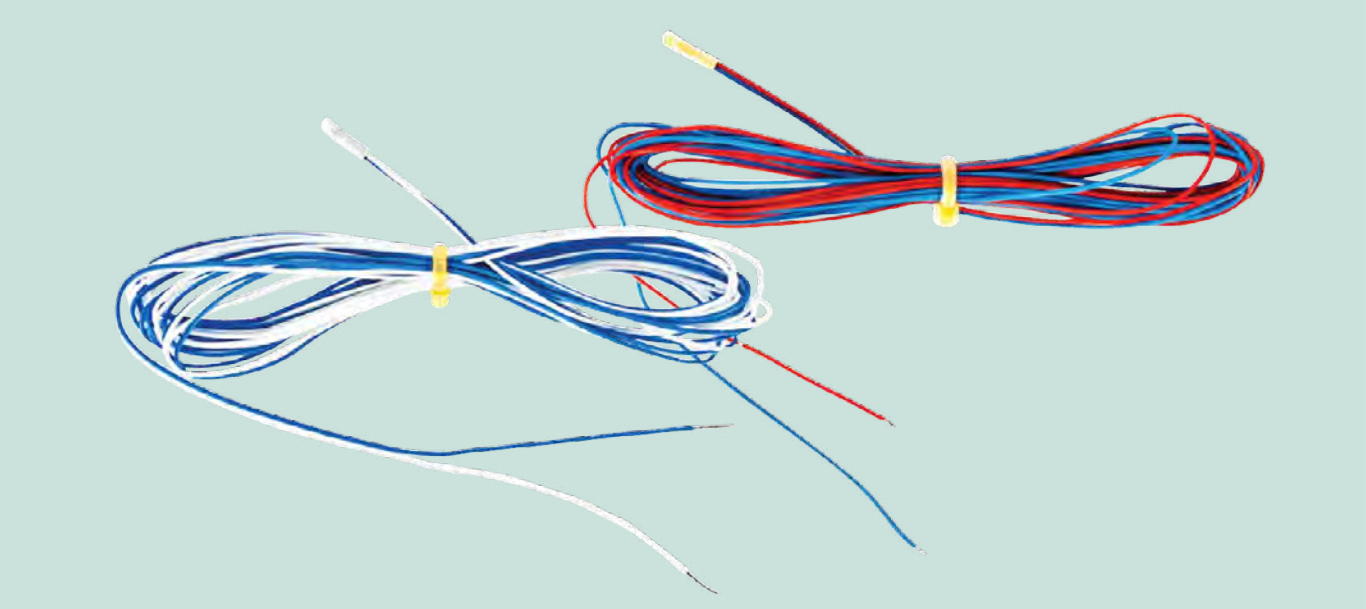
- **CTSE** (Tecsystem Code → **1CA0004**)

TECHNICAL SPECIFICATIONS

- Extension cable for Pt100 sensor
- External diameter: 0.21” (5,2 mm) ± 0,2
- Operating temp.: from -40°F to +392°C (-40°C to +200°C)
- Dielectric strength: 5000 Vac - 60”

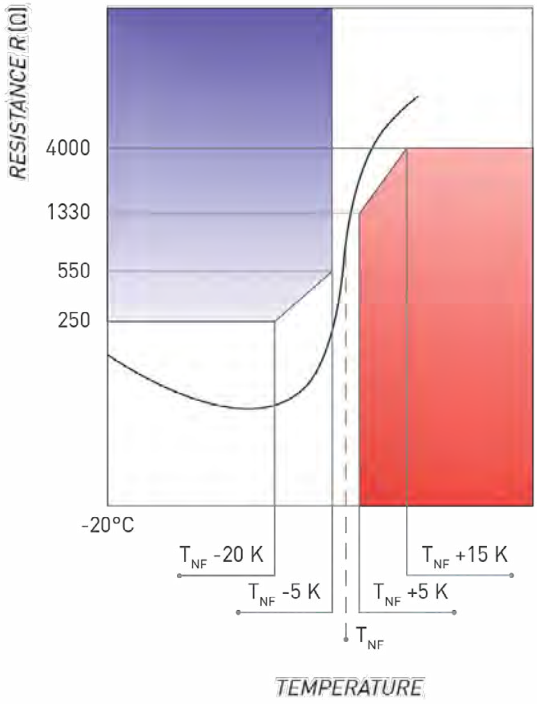
ACCESSORIES

PTC



VERSIONS

- **PTC** (Tecsystem Code → **Consult Factory**)



TECHNICAL SPECIFICATIONS

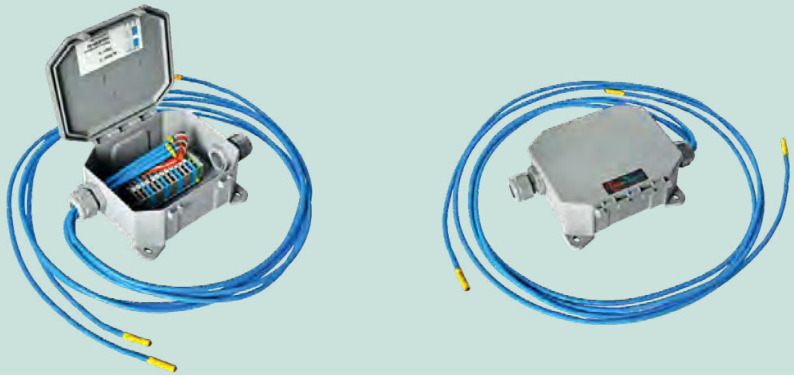
- Designed to control the temperature of the windings of transformers and motors
- In accordance with DIN 44081 and 44082 rules
- Response temperature: from 140°F to 374°F (60°C to 190°C)
- Fast response type
- Cable in PTFE (std. 118.11" (3 m)) further lengths on request
- Ø of the sensor: 0.118" (3 mm)
- Lead cross-section: 0.005 inches^2 (0,14 mm^2)
- Dielectric test Ueff 2500V

CABLES COLOR CODING

60	70	80	90	100	105	110	115	120	125	130
WHITE	WHITE	WHITE	GREEN	RED	BLUE	BROWN	BLUE	GRAY	RED	BLUE
GRAY	BROWN	WHITE	GREEN	RED	GRAY	BROWN	GREEN	GRAY	GREEN	BLUE

135	140	145	150	155	160	165	170	180	190
RED	WHITE	WHITE	BLACK	BLUE	BLUE	BLUE	WHITE	WHITE	BLACK
BROWN	BLUE	BLACK	BLACK	BLACK	RED	BROWN	GREEN	RED	BROWN

SCS-R3/4



VERSION

- **SCS-R3/4** (Tecsystem Code → **1SC0021**)

The **SCS-R** is a box designed and manufactured by TECSYSTEM for a quick, safe and economic connection of the sensors which detect the temperature of cast resin transformers.

The length of the cables, as well as the type of sensors, can be determined according to the specific needs of the customer.

The **standard version**, as shown in the photos, feature with 3 PT100 sensors type PTSE with 98.4" (2.5 m) cable each.

TECHNICAL SPECIFICATIONS

Box Features

- Dimensions: 187x128x58 mm (cable glands included)
- Protection: IP55
- Material: Polyamide UL 94V0

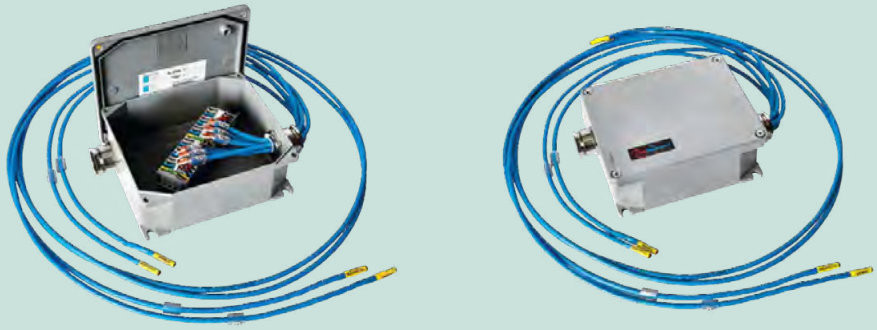
Cable Gland Features

- Dimensions: PG16
- Protection: IP54
- Material: Polyamide UL 94V0

Technical Board Features

- Wiring section: from 0,25 to 1,5 mm²
- Flame resistance: UL 94V0
- Operating Temperature: from -4°F to +248°F (-20°C to +120°C)

SCS-R6/8



VERSION

- **SCS-R6/8** (Tecsystem Code → **1SC0090**)

The **SCS-R** is a box designed and manufactured by TECSYSTEM for a quick, safe and economic connection of the sensors which detect the temperature of cast resin transformers.

The length of the cables, as well as the type of sensors, can be determined according to the specific needs of the customer.

The **aluminium version**, as shown in the photos, feature 6 PT100 sensors type PTSE with 98.4" (2.5 m) cable each..

TECHNICAL SPECIFICATIONS

Box Features

- SCS-R 6 dimensions: 197x143x67 mm (PG16 cable glands included)
- SCS-R 8 dimensions: 224x169x81 mm (PG16 cable glands included)
- Protection: IP66
- Material: die-cast aluminium

Cable Gland Features

- Dimensions: PG16 or PG21
- Protection: IP54
- Material: Polyamide nickel brass

Technical Board Features

- Wiring section: from 0,25 to 1,5 mm²
- Flame resistance: UL 94V0
- Operating Temperature: from –4°F to +248°F (-20°C to +120°C)

FAN COOLING SYSTEMS

VENTILATION & COOLING FANS

Fan cooling allows transformers to withstand higher power than the nominal rating while still maintaining optimum temperature and safety. Fans are particularly important when integrated into the entire operation. Therefore it is appropriate to consider the environment where the fan will be located and pay attention to factors that can influence the temperature of the transformer and utilize a variety of factors to help control temperature.

For example:

- North-South orientation of the largest walls of the transformer room/ location to reduce heating from the sun.
- Consider humidity inside the room
- Keep the room as dust free as possible
- Keep the area free from corrosive or flammable gasses.

In many installations the transformer fan cooling is initiated by the temperature controller, which responds to the temperature of the transformer. The ventilation of the transformer room is often controlled by a thermostat. While these two devices work toward the same goal, they are working independently. For optimum air circulation, and ultimately energy savings, the two systems should work together to cool the room/transformer.

To achieve this, Springer Controls/Tecsystem offer the VRT series of controllers to control the room ventilation fan, which works in conjunction with their product line of temperature controllers. Springer Controls/Tecsystem also offers a range of fans to provide ventilation if it is not already present.

VRT200 SERIES

VERSIONS

- **VRT200** (Tecsystem Code → **1CN0188**)
  Supply Power 85-250vAC
- **VRT200-U** (Tecsystem Code → **1CN0178**)
  Supply Power 12 v AD/DC

The **VRT200** ventilation fan controller is designed to control a ventilation fan in coordination with monitoring the transformer temperature. It contains 1 contact to enable remote control of the fans, and another 2 inputs to monitor temperature via a Ptc sensor, or auxiliary contact. The 2 output relays carry up to 5A and 230VAC to power the fans. There is also a fault/alarm relay for signaling undercurrent or overcurrent conditions with the fan motor, indicating a problem with operation. A key panel in the front allows for manual start/stop of the fan(s) and an AUTO-TUNE feature helps you set up motor protection parameters.

On request, a protective coating can be applied to the electronics board for tropical climates.

TECHNICAL SPECIFICATIONS

Power Supply

- Rated values: 230 Vac ± 10% 50/60 Hz
- Burden: 5VA (max)

Inputs

- 1 contact to enable the remote control (ENABLE)
- 2 inputs to check the temperature by Ptc or auxiliary contact.
- Removable rear terminals

Outputs

- 1 alarm and fault relay (ALARM/FAULT)
- Output relay capacity: 5A-250 Vac cosF=1
- Outputs M1-M2: 230 Vac±10%, 2x5 A max., 50-60 Hz

Dimensions

- 3.94” x 3.94” (100 x 100 mm) DIN 43700
  depth 5.16” (131 mm) (terminals included)
- Panel cut-out 3.62” x 6.62” (92 x 92 mm)

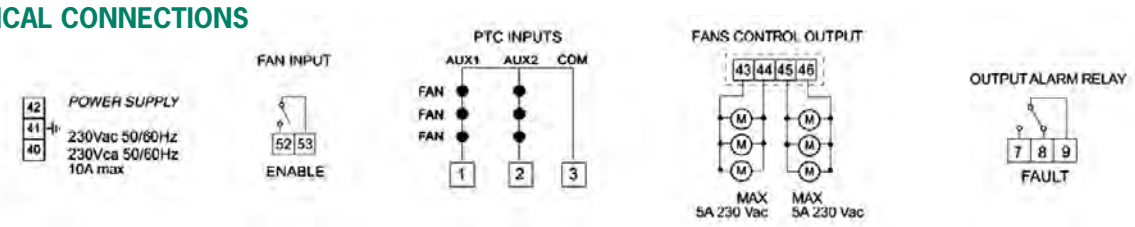
Tests and Performance

- Assembling in accordance with CEI EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute: supply-relay fault, supply-remote
- Ambient operating temperature: from -4°F to +140°F (-20°C to + 60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL UL 94V0
- Option: tropicalization
- Frontal in polycarbonate IP65

Display and Data Management

- Alarm leds: undercurrent, overcurrent, overtemp-aux stop
- Running, remote, local leds
- Prg, prg setting, cal. leds
- Starting AUTO-TUNING for motor protection set-up
- Front key for manual START/STOP of the motors
- Front alarm reset key
- Programming access through front key

ELECTRICAL CONNECTIONS



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FAN COOLING SYSTEMS

VRT600 SERIES

VERSIONS

- **VRT600** (Tecsystem Code → **1CN0201**) Supply Power 85-250vAC
- **VRT600-U** (Tecsystem Code → **1CN0096**) Supply Power 12 Vac-dc

The **VRT600** ventilation fan controller is designed to control a ventilation fan in coordination with monitoring the transformer temperature. It contains 1 contact to enable remote control of the fans, and another 2 FAN input lines @ 230VAC, 15A maximum current. 6 output relays carry up to 30 Amp and 85-250 VAC to power the fans. There is also a fault/alarm relay for signaling undercurrent or overcurrent conditions with the fan motor, indicating a problem with operation. A key panel in the front allows for manual start/stop of the fan(s) and an AUTO-TUNE feature helps you set up motor protection parameters.

On request, a protective coating can be applied to the electronics board for tropical climates.

TECHNICAL SPECIFICATIONS

Power Supply

- Rated values 230 Vac ± 10% 50/60 Hz
- Burden: 7,5 VA

Inputs

- 2 lines input FAN 230 Vac±10%, 15 A max., 50-60 Hz
- 1 contact to enable the remote control (ENABLE)
- Removable rear terminals (except FAN lines)

Outputs

- 1 alarm and fault relay (ALARM/FAULT)
- Output relay capacity: 5A-250 Vac cosF=1
- Outputs: M1-M2-M3-M4-M5-M6: 230 Vac±10%, 6x5 A max., 50-60 Hz

Dimensions

- 3.94” x 3.94” (100 x 100 mm) DIN 43700 depth 5.16” (131 mm) (terminals included)
- Panel cut-out 3.62” x 6.62” (92 x 92 mm)

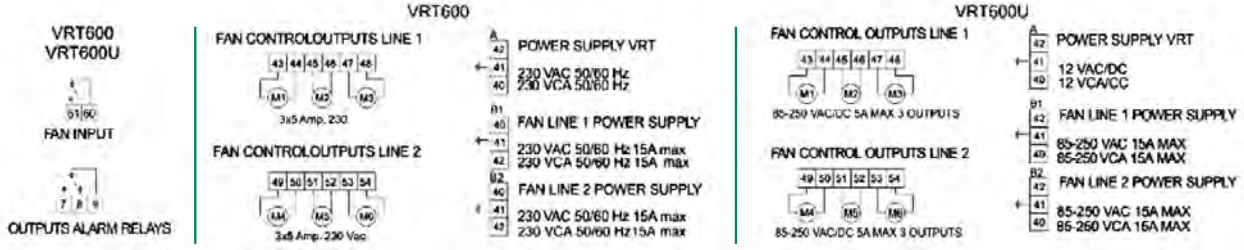
Tests and Performance

- Assembling in accordance with CEI EN61000-4-4
- Dielectric strength: 1500 Vac for 1 minute: supply-relay fault, supply-remote
- Ambient operating temperature: from -4°F to +140°F (-20°C to + 60°C)
- Humidity: 90% non-condensing
- Self-extinguishing housing NORYL UL 94V0
- Option: tropicalization
- Frontal in polycarbonate IP65

Display and Data Management

- Alarm leds: undercurrent, overcurrent, overtemp
- Running, remote, local leds
- Prg, prg setting, cal. leds
- Starting AUTO-TUNING for motor protection set-up
- Front key for manual START/STOP of the motors
- Front alarm reset key
- Programming access through front key

ELECTRICAL CONNECTIONS



TTG FAN SERIES

The **TTG fan series** are the smallest ventilation fans we offer, but don't let their small size fool you, these fans still move a lot of air. **All TTG fans require 230VAC, 1ph, 50/60Hz input power.** The TTG is available in 3 sizes: (please consult factory for pricing)

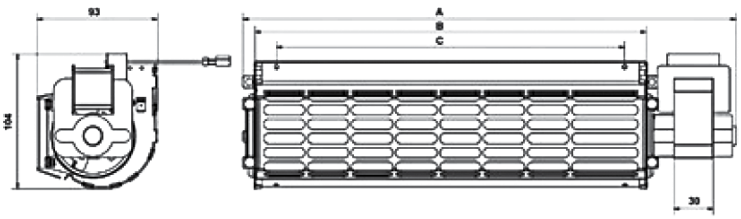
VERSIONS

- **TTG240** 122cfm & 43 Watts (Tecsystem Code → **1VN0028**)
- **TTG300** 176cfm & 48 Watts (Tecsystem Code → **1VN0031**)
- **TTG360** 212cfm & 51 Watts (Tecsystem Code → **1VN0034**)

TECHNICAL SPECIFICATIONS

Model	Ø	A	B	C	Voltage Current (V)/(A)	Input Power (W)	Frequency (Hz)	Speed (RPM)	Air Flow (M^3/H)
TTG240	2.36" (60 mm)	12.6" (321 mm)	9.45" (240 mm)	8.23" (209 mm)	230/0.34	43	50	2540	208
TTG300		15" (381 mm)	11.9" (302 mm)	10.6" (269 mm)	230/0.35	48		2350	240
TTG360		17.4" (441 mm)	14.2" (360 mm)	12.9" (329 mm)	230/0.37	51		2200	280

- Insulation class F (Units Non UL)
- Special versions available by request.



TG FAN SERIES

TG180

TG360

TG500

The **TG fan series** provides ventilation for rooms and structures to help save energy by combining the efforts of your transformer monitoring and cooling system with room ventilation. The TG fan series is offered in 4 different sizes, all suitable for 115 VAC input power: (please consult factory for pricing)

VERSIONS

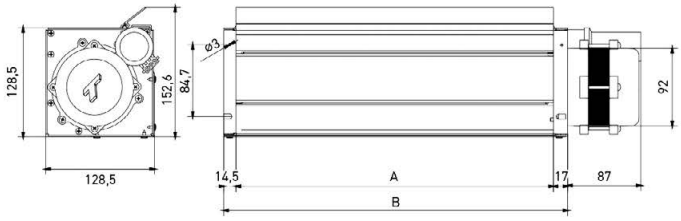
- **TG180** 271cfm & 75 Watts
  - **120v** (Tecsystem Code → **1VN0047**)
  - **240v** (Tecsystem Code → **1VN0067**)
- **TG360** 271cfm & 95 Watts
  - **120v** (Tecsystem Code → **1VN0011**)
  - **240v** (Tecsystem Code → **1VN0008**)
- **TG500** 589cfm & 120 Watts
  - **120v** (Tecsystem Code → **1VN0017**)
  - **240v** (Tecsystem Code → **1VN0013**)
- **TG1000** 1377cfm & 225 Watts
  - **240v** (Tecsystem Code → **1VN0018**)

Specifications on the following page

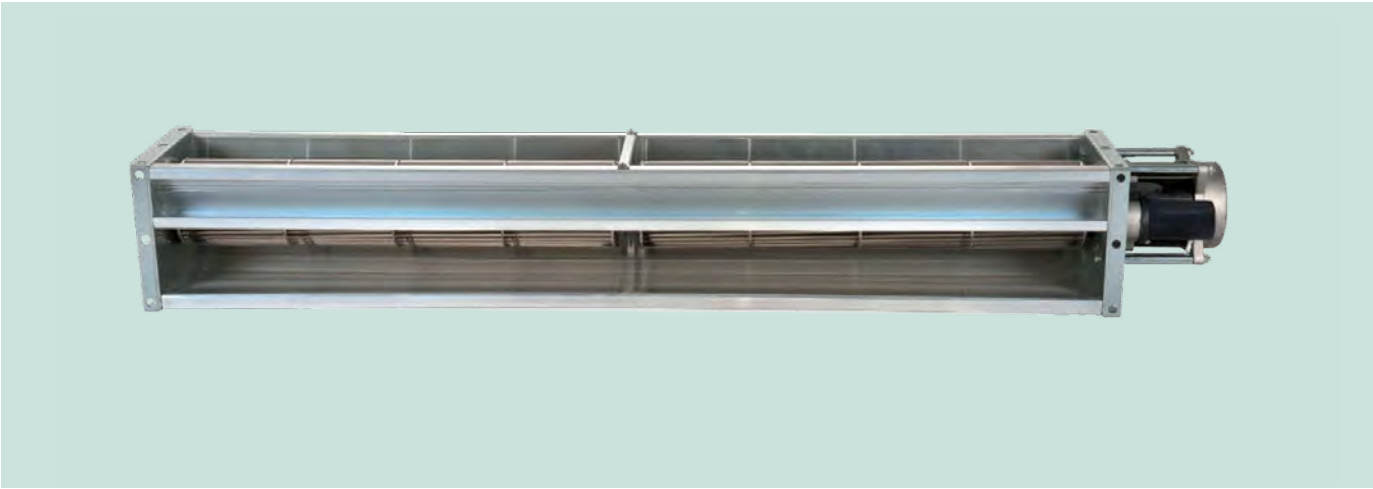
TECHNICAL SPECIFICATIONS

Model	Ø	A	B	Voltage Current (V)/(A)	Input Power (W)	Frequency (Hz)	Speed (RPM)	Air Flow (M^3/H)
TG180	3.15” (80 mm)	7.72” (196 mm)	8.98” (228 mm)	230/0.34	75	50	2840	460
TG360		14.8” (376 mm)	16.1” (408 mm)	230/0.45	95		2710	800
TG500		20.3” (516 mm)	21.6” (548 mm)	230/0.54	120		2600	1000

- Insulation class B
- Special versions available by request.
- Available in 60 Hz, IP44 and UL, --- 120v listed are UL
- Power supply cable included



TG1000 FAN



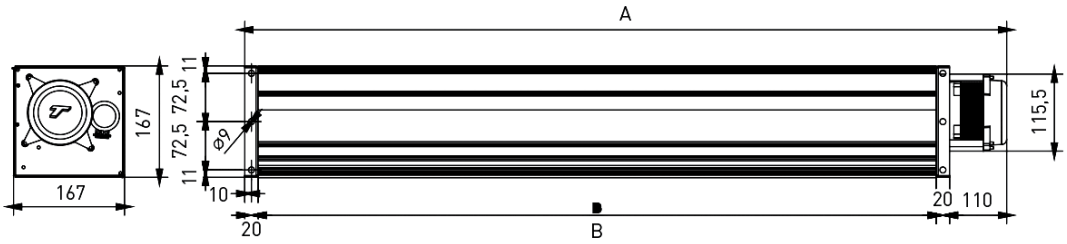
VERSIONS

- **TG1000** 1377cfm & 225 Watts
  - **240v** (Tecsystem Code → **1VN0018**)

TECHNICAL SPECIFICATIONS

Model	Ø	A	B	Voltage Current (V)/(A)	Input Power (W)	Frequency (Hz)	Speed (RPM)	Air Flow (M^3/H)
TG1000	3.94” (100 mm)	46.38” (1178 mm)	40.16” (1020 mm)	230/1	225	50	1360	2340

- Insulation class B
- Available in clockwise and counterclockwise versions



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NOTES

SPRINGER CONTROLS COMPANY

FAN COOLING SYSTEMS

BAR FAN SERIES

BAR400KIT

BAR600KIT

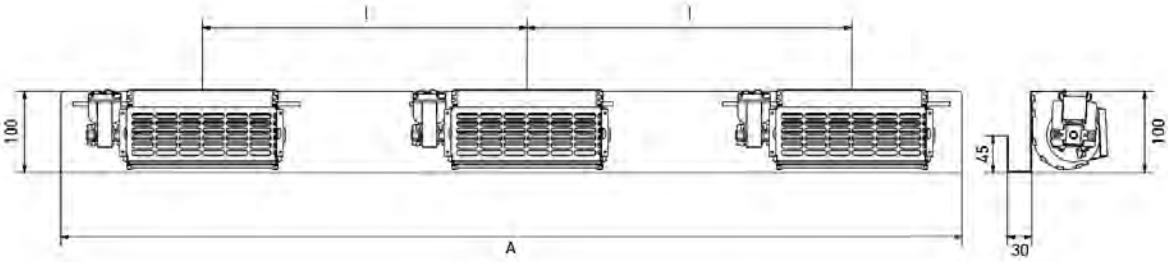
BAR800KIT

BARx00KIT includes 3 Fans + Aluminum Bar + Conduit + Wiring + Accessories

SUGGESTED APPLICATIONS

Model	A	l min/max	Hypothetical Transfo Power	Air Flow (m^3/H)	Model Fans
BAR400KIT	43.70” (1110 mm)	12.99”/16.53” (330/420 mm)	From 100 to 315 KVA	600	3 X TTG240
BAR600KIT	57.87” (1470 mm)	14.96”/22.64” (380/575 mm)	From 315 to 630 KVA	720	3 X TTG300
BAR800KIT		17.72”/21.42” (450/544 mm)	From 630 to 1250 KVA	800	3 X TTG360

- Special versions available by request.
- For BAR only, no fans, remove suffix “KIT”



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BAR FAN SERIES

BAR1200KIT-120V | BAR1200KIT-240V

BAR1800KIT-120V | BAR1800KIT-240V

BAR3600KIT-120V | BAR3600KIT-240V

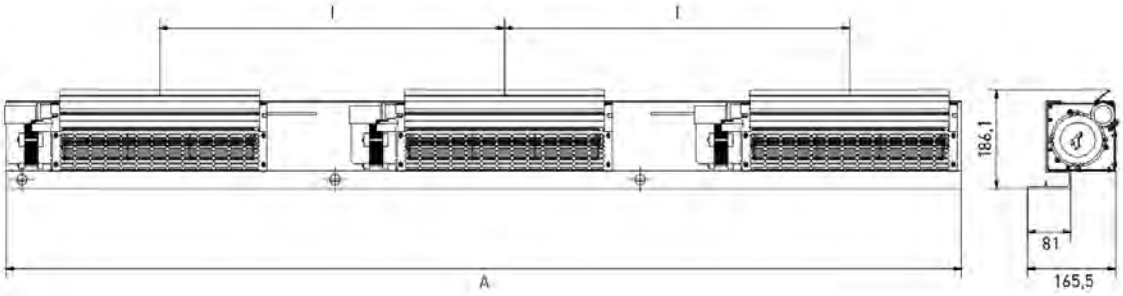
BARxx00KIT includes 3 Fans + Aluminum Bar + Conduit + Wiring + Accessories

SUGGESTED APPLICATIONS

Model	A	l min/max	Hypothetical Transfo Power	Air Flow (m^3/H)	Model Fans
BAR1200KIT-*	55.12” (1400 mm)	13.39”/22.24” (340/565 mm)	From 1250 to 1600 KVA	1380	3 X TG180
BAR1800KIT-*	70.87” (1800 mm)	20.28”/26.57” (515/675 mm)	From 1600 to 2000 KVA	2400	3 X TG360
BAR3600KIT-*	90.55” (2300 mm)	25.59”/33.86” (650/860 mm)	From 2000 KVA and higher	3000	3 X TG500

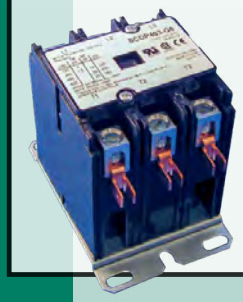
* Add suffix “120V” or “240V”

- For BAR only, no fans, remove suffix “KIT”



Welcome to the Springer Controls Company, Inc. **Product Guide to Temperature Controllers and Accessories.** This section reflects our continuing commitment to our customers to provide complete, up-to-date product information and technical data. We appreciate your choosing Springer Controls and we will continue to update this information as well as provide new products to meet today's demands for electrical control products.

Definite Purpose Contactors



Assembled Starters

Power Switching Devices

IEC Contactors

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