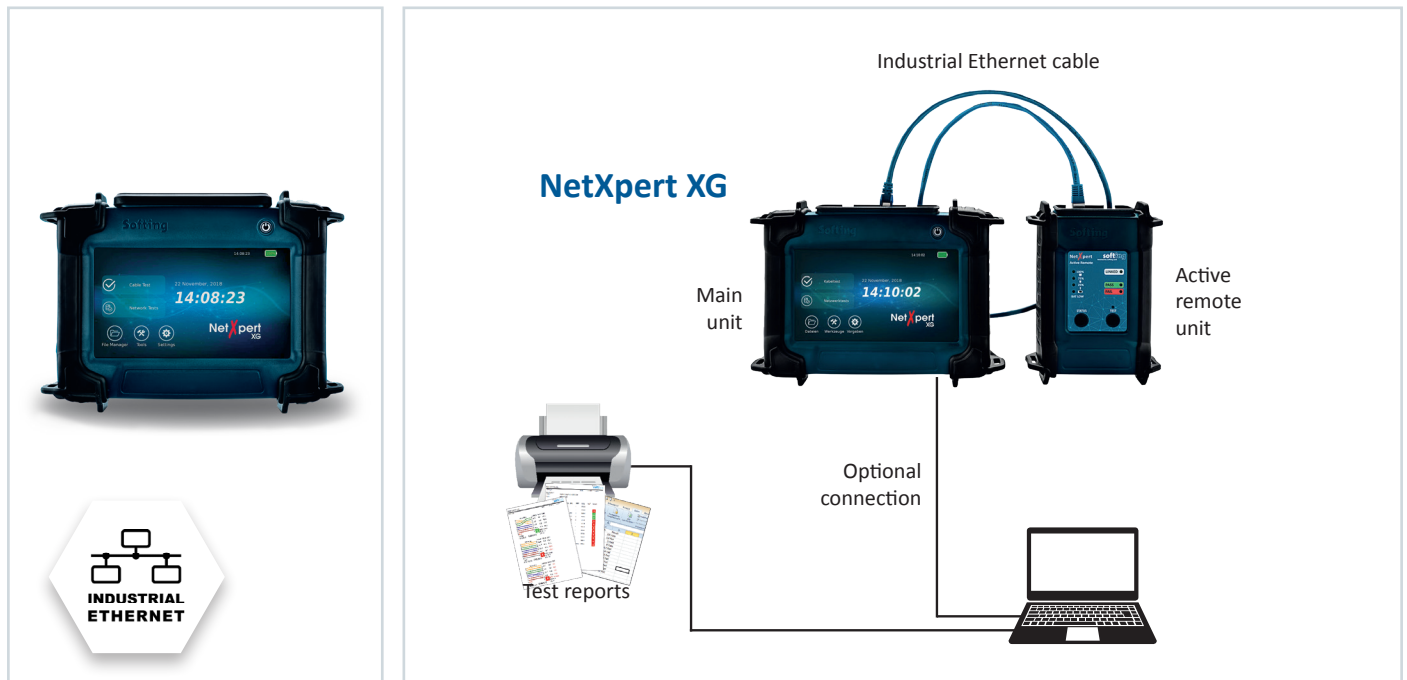


# NetXpert XG

## Industrial Ethernet Qualifier with Network Diagnostic Tool

- Complete solution for cable testing, performance analysis and troubleshooting of Industrial Ethernet networks
- Enabling rapid, simple verification and documentation of the capability of cabling links with RJ45 and M12 connectors



### Reduction of Machine Downtime

- Quick and easy detection of cable faults
- Defined and documented network status before machine startup
- Identification of logical network problems through test of active network components

### Qualification of Passive Network Components

- Support of 4 wire industrial network cables
- Full color wiremap
- Cable length and distance to cable faults including pair length
- Data transmission test with 100 Mbit/s up to 10 Gbit/s

### Test of Active Network Components

- Link test
- Ping and Traceroute
- Switch port identification
- LLDP and VLAN discovery

### Documentation and Reporting of Measurements

- 16GB of internal memory sufficient to hold tens of thousands of measurements
- USB connection for alternative transfer of measurement data to PC

# NetXpert XG

## Technical Data

Ethernet Speed Certification	100Mbit/s - 10Gbit/s via Copper Twisted Pair cabling 1 Gbit/s, 10Gbit/s via fiber SFP-ports
Length Measurement Technology	Time-Domain Reflectometry (TDR) and capacitance
Cable Measurements	Cable Testing and ID: up to 1,000ft (305m) Split Pair Detection: 3ft (1m) to 1,000ft (305m) Length Measurement: 0 to 1,500ft (457m), $\pm$ (5%+1ft (30cm)) Distance to fault: 0 to 656ft (200m) $\pm$ (5% + 3ft (1m)) Supports 8 wiremap remotes (RJ 45) and 24 RJ-45 ID only remotes
Power over Ethernet (PoE)	Test supports IEEE 802.3af PoE (Type 1, max 15.4W), IEEE 802.3at PoE+ (Type 2, 30W) and 802.3bt PoE++ (Type 3, 60W)
Active Ethernet	Network and test support by interface: Copper RJ-45 interface – 100/1,000/2,500/5,000/10,000Mb/sec link speeds Fiber SFP+ #1 interface supports 10Gb/sec link speed Fiber SFP #2 interface supports 1Gb/sec link speed WiFi 802.11 a/b/g/n/ac 2.4Ghz WiFi and Bluetooth
Maximum Voltages	Maximum voltage that can be applied to any 2 connector pins without causing damage to the tester: RJ-45: 60VDC or 50VAC
Save Test Results	16GB memory allows storing more than ten thousand cable or network tests
Tone Generation	Tone Frequencies: 730Hz and 1440Hz
Languages	English, German, French, Spanish, Italian
Battery	Li-Ion, 7.2VDC, 3.1A-hr 5 hours typical
Temperature	Operating: 14 to 140°F (-10 to 60°C); Storage: -22 to 158°F (-30 to 70°)
Humidity	10 to 90% non-condensing
Enclosure	Injection molded plastic
Display	7" Color TFT-LCD capacitive touch display, 1024x600 resolution (WSVGA)
Size	9.6x6.9x2.8 inch (245x177x73 mm) (Main Unit); 5.1x6.9x2.1 inch (130x177x55 mm) (Active Remote)
Weight with Battery	2,65lbs (1,2kg) (Main Unit); 1,33lbs (0,6kg) (Active Remote)

## Scope of Delivery

Hardware	NetXpert Main Unit, Active Remote, 2 x Power supply, 2 x Test cable, Hard case, Micro-USB adapter
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## Order Numbers

226554	NetXpert XG up to 1G
226553	NetXpert XG up to 2,5 and 5GBits/s
226552	NetXpert XG up to 10GBits/s
226555	Upgrade licence for NetXpert XG
400926	RJ45 to M12 D-coded cable, 1m

## Additional Products and Services

TRA-PN-Tech	Training "PROFINET - Technology"
TRA-PN-Cert	Training "PROFINET - Certified Engineer"

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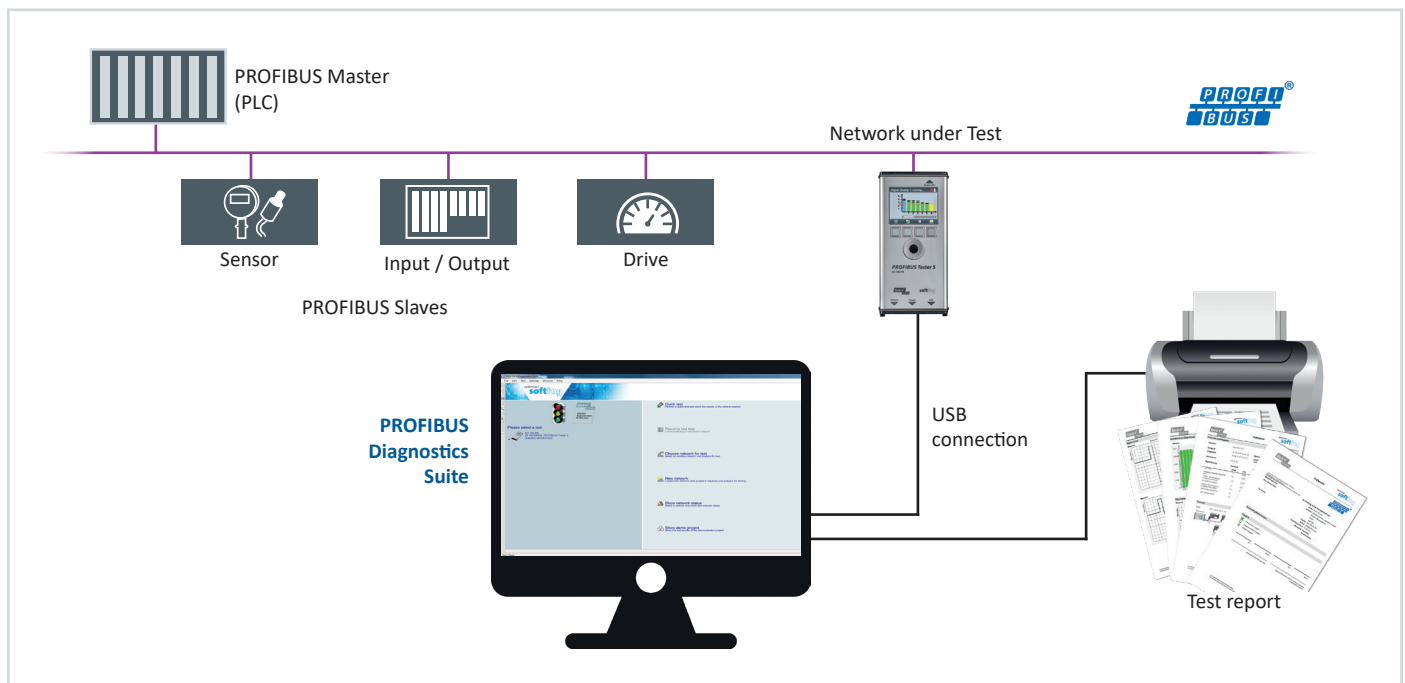
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# PROFIBUS Diagnostics Suite

Universal Software for All Diagnostic Tools of the bus check Family

- Analysis software for the PROFIBUS diagnostic hardware of the dataCHECK product family
- Easy to use performing, evaluating and managing tests of PROFIBUS networks
- Testing of Bus physics, communication and cables



## Common software for all diagnostic products

- Comprehensive analysis of PROFIBUS DP and PROFIBUS PA networks
- Diagnostic functionality available depending on connected test tool
- License-free use on any number of PCs – no activation required

## Suitable for the Fieldbus Novice

- Bus test initiated with a single mouse click
- Clear, easy-to-read display of test results
- Separate expert mode providing in-depth diagnostic features for network specialists

## Functionality for All Diagnostic Tasks

- Continuous display of current bus status in status bar
- Overall bus health indicated by traffic light symbols for bus physics and bus communication
- Detail views with additional diagnostic information, also for advanced analyses by experts
- Testing of bus and connected devices via integrated master simulator without configuration or parameterization
- Generation of test reports for acceptance testing of PROFIBUS installations

# PROFIBUS Diagnostics Suite

Functionality of the Test Tools																								
Test Functions	Tester Features						Stand-Alone Mode Without PC						Operation with PC and Profibus Diagnostics Suite											
	Battery Powered	Graphical Color Display	Galvanic Isolation	Suitable for Profibus PA Adapter (MPB)	Master Simulator	Trigger Input/Output	Test with Results					Record- ing		Network Status					Trend		Expert Mode			
							Bus Status	Signal Analysis	Station Localization (Topology)	Oscilloscope	Cable Test	Quick Test	Trend	Quick and User-Controlled Test	Overview Bus Physics and Communication	Protocol Analysis	Signal Analysis (EIA-485)	Signal Analysis (MBP)	Topology	Signal Quality	Critical Events	Frame Recording	Oscilloscope	Test Report
Profibus Tester 5 (BC-700-PB)	✓	✓	✓	✓	✓	✓	✓	✓	optional	✓	✓	✓	✓	✓	✓	optional	✓	✓	✓	✓	✓			
Profibus Tester 4 (BC-600-PB)			✓		✓	✓	✓					✓	✓	✓	✓		✓	✓	✓	✓	✓			

## Technical Data

System Requirements	PC Hardware*	RAM	> 1 GB for Windows 7, Windows 8
		Processor	> 1 GHz for recording at baud rates up to 1.5 Mbit/s
			> 2 GHz for recording at baud rates over 1.5 Mbit/s
		Screen Resolution	> 1024 x 768 pixels (XGA)
		USB Interface 2.0	

Supported Operating Systems	Windows 7, Windows 8, Windows 10
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\* The above minimum requirements are only general guidelines. Requirements may vary depending on the PC/notebook used.

## Scope of Delivery

Software	PROFIBUS Diagnostics Suite, PC software on CD-ROM for PROFIBUS Tester 5 (BC-700-PB) and PROFIBUS Tester 4 (BC-600-PB)
Documentation	Manual "Getting Started"

## Order Numbers

PB-DIAG-SUITE	PROFIBUS Diagnostics Suite
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## Additional Products and Services

TRA-PB-TECH	PROFIBUS Technology Training, 2 Days
TRA-PB-TS	PROFIBUS Troubleshooting Training, 3 Days

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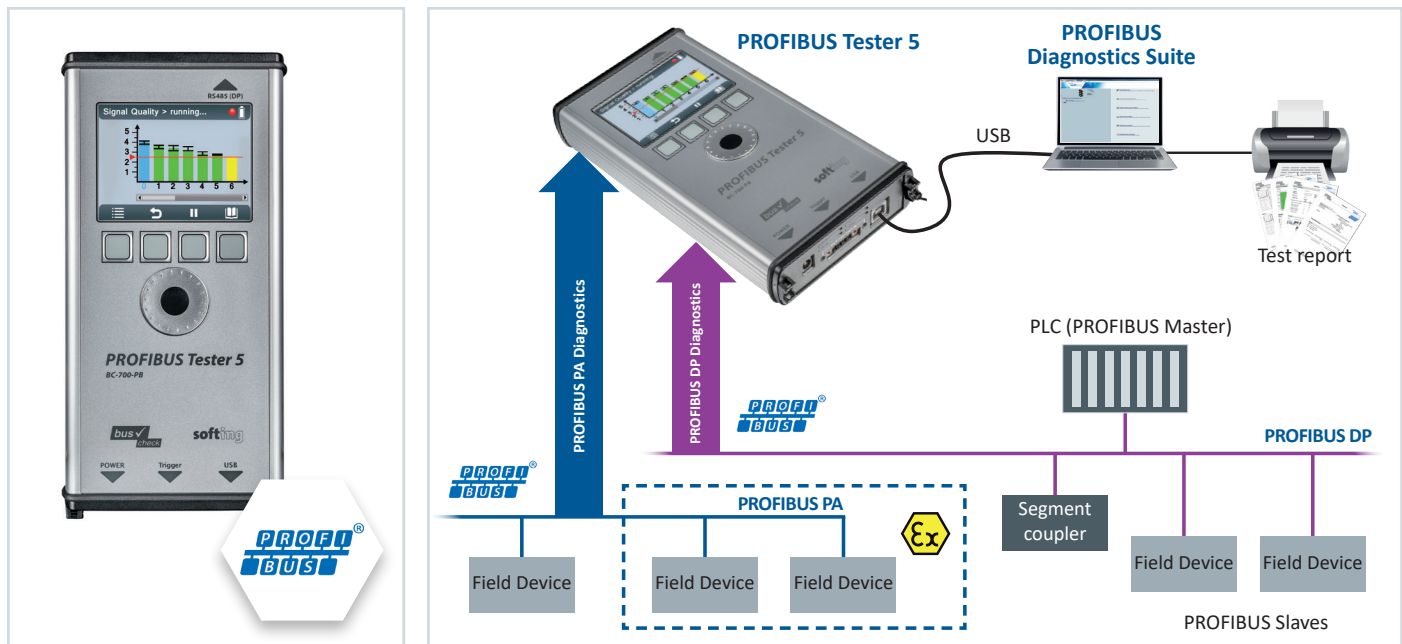
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# PROFIBUS Tester 5 (BC-700-PB)

Mobile diagnosis of bus physics, communication and cabling

- Powerful mobile tool for diagnostics and troubleshooting in PROFIBUS networks
- High flexibility through stand-alone operation (without PC)
- Enhanced diagnostic features through PC-based software (Included)
- Protocol analysis of the PROFIBUS PA segments



## Testing Bus Cabling, Bus Physics and Bus Communication "All-In-One"

- Combination of signal tester, storage oscilloscope, protocol analyzer, master simulator and cable tester functionality in a single diagnostics tool
- Stand-alone mode plus extended PC-based diagnostics
- Suited for installation, setup and commissioning, documentation, acceptance testing, network optimization, preventive maintenance, troubleshooting as well as laboratory tests

### Bus tester for mobile use, even without a notebook

- Battery-powered operation without the need for additional power supply
- Graphical display providing easy-to-understand presentation of test results
- Comprehensive network tests in stand-alone mode (no computer required): bus status, signal quality, cable test, station localization, oscilloscope

## Many additional features

- Executing, analyzing and managing tests (Trend, Topology Scan, Master Simulator, Oscilloscope, Frame Analyzer)
- Quick Test and User-Controlled Test for easy network status at the push of a button
- Generation of test reports describing status of the PROFIBUS installation
- Suitable for range of user types: novice to fieldbus specialists

## Optional Measuring Adapter for MBP (Manchester Coded Bus Powered) Physics

- Specific signal analysis supporting MBP Physics (feeding voltage, signal deviation, signal polarity, bitrate divergence)
- Complete protocol analysis directly at PROFIBUS PA segment

# PROFIBUS Diagnostic Functionality

	Stand-alone Operation	PC-based Operation
<b>Measurement Methods</b>		
Cable test	✓	
Bus status (measurement of important parameters)	✓	✓
Signal quality	✓	✓
Quick test (network status)	1	✓
User-controlled test (network status)		✓
Trend (long-term recording of quality index and errors)	1	✓
Topology (sequence of stations and distances)	✓	✓
Oszilloscope	✓	✓
Frame recording and displaying		✓
Master Simulator	✓	✓
<b>Cable Test</b>		
Cable Length	✓	
Check of bus termination	✓	
Detection wire break, shield break, short circuit	✓	
Report of cable test results		✓
<b>Bus and Network Status</b>		
Idle voltage/baudrate, plugged to staton ...	✓	✓
Number of masters/slaves/commissioned but not active	✓	✓
Network evaluation (protocol, signal quality, errors)	✓	✓
Network statistics (repetitions, diagnostic messages, TTR)	✓	✓
Station scan (Live List) including changes	✓	✓
Station evaluation (protocol, signal quality)	✓	✓
Station statistics (repetitions, diagnostic messages, quality index)	✓	✓
Comprehensive evaluation of network health		✓
Comprehensive protocol analysis including Live List and statistics		✓
GSD-based decoding of diagnostic messages		✓
<b>Signal Quality</b>		
Quality Index as bar graph	✓	✓
Signal-to-noise ratio and rise times		✓
<b>Trending</b>		
Long-term recording of quality index and errors	1	✓
<b>Topology</b>		
Active TDR measurement with graphical representation		✓
Passive station localization (non-interacting)	✓	
<b>Oszilloscope</b>		
Signal representation A-B up to 384 MHz scan rate	✓	✓
Signal representation A-GND und B-GND up to 192 MHz scan rate		✓
Zoom/shift	✓	✓
Trigger: no trigger/level/address/error frames	✓	✓
Saving oscilloscope recordings		✓
<b>Frame Recording</b>		
Instant recording (ring buffer)		✓
Long-term recording (to files)		✓
Frame-controlled recording (trigger)		✓
Recording filter and display filter		✓
Comprehensive frame decoding		✓

<sup>1</sup> Test can be conducted and stored in stand-alone operation, evaluation of test results in PC mode only

# PROFIBUS Tester 5 (BC-700-PB)

## Technical Data

### DIAGNOSTICS FUNCTIONALITY

Protocol and Frame Analysis	PROFIBUS DP-V0 and DP-V1, automatic baud rate detection in the range of 9.6 kbit/s ... 12 Mbit/s
Signal Analysis:	PROFIBUS DP-V0, DP-V1, FMS and MPI
...via EIA-485	Signal quality index: 0 ... 5.000, determined from signal level as well as signal/noise ratio and rise time; signal sampling with 8/16 samples per bit
...via MBP	Fieldbus feeding voltage: 0 V ... 35 V at 0.1 V resolution, signal level: 100 mV ... 1.200 mV at 10 mV resolution, signal polarity, bitrate divergence: $\pm 1.2\%$ at 0,01 % resolution, signal sampling with 128 samples per bit
(requires optional adapter)	Test range: $\pm 5$ V at 10 mV resolution (differential), resolution (A or B to DGND); sampling rate: up to 384 Msamples/s; sampled points: 2,400 (signal details), 8,192 (oscilloscope analysis)
Oscilloscope Display (N/A for MBP)	Active, maximum distance: 230 m, accuracy: $\pm 2$ m
Topology Scan (N/A for MBP)	Active, supported cable segment length: 5 m ... 1,500 m, accuracy: 5 %
Cable Test (N/A for MBP)	

Operation	Via graphical colour display, four function keys and scrollwheel including central push-button or via PC/notebook Display localization: EN, DE, ES, FR, IT, PL, PTT
Internal Memory Capacity	3 user-definable network directories (segment and test location) for storing quick tests, trend logs and cable test results Trend logging: max. 99 hours
Trigger	<b>IN:</b> L = 0 V ... 0.8 V; H = 2.4 V ... 24 V; pulse > 10 $\mu$ s, active high <b>OUT:</b> approximately 5 V, active low (connection to storage oscilloscope)
PC Operating Software	PROFIBUS Diagnostics Suite, see separate datasheet for details

### CONNECTORS

EIA-485 (PROFIBUS DP)	PROFIBUS D-sub connector, 9 pins, power supply for external bus termination
MBP (PROFIBUS PA)	Connector, 3 pins, for screw terminals at optimal measuring adapter, measuring cable set including 3 probes (adapter for MBP measurement is attached to D-sub connector)
USB	V 2.0, high speed 480 Mbit/s, galvanically isolated
Dimensions (H x W x D)	35 mm x 220 mm x 110 mm
Power Supply	Built-in three-cell lithium-ion battery. Used battery type: PA-L27.K02 (UN 38.3 certified). Supporting 11.1 VDC or external AC adapter 100 VAC ... 240 VAC, 50/60 Hz (galvanically isolated). The rechargeable battery has a runtime of up to 5 hours (runtime depends on the performed test functionality and rate of wear of the rechargeable battery), battery is charged via external AC adapter.
Operating/Storage Temperature	Operating temperature: 0 °C ... 50 °C, storage temperature: -20 °C ... 70 °C
Relative Humidity	Air humidity: 10 % ... 90 % without condensation
Weight	Test tool, no cable: approximately 0.75 kg; complete carrying case: approximately 4.2 kg
Conformity	CE, FCC, VCCI

## Scope of Delivery

Hardware	PROFIBUS Tester 5 (BC-700-PB), power supply unit 100 VAC ... 240 VAC, 50/60 Hz with connecting cables for Europe and USA, adaptor cables, carrying case, measuring adapter BC-700-H1, measuring cable set (for PROFIBUS PA option)
Software	PROFIBUS Diagnostics Suite (PC software for Windows on CD-ROM)
Documentation	Device manual, "Getting Started" manual

## Order Number

DDA-NN-006014	PROFIBUS Tester 5 (BC-700-PB)
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## Additional Products and Licenses

DDL-NL-006010	PA- adapter + cable set
ACA-NN-006033	D-Sub to M12 adapter set with T-piece and M12 bus termination for PROFIBUS DP
DDA-ZZ-004010	Digital Fieldbus Leakage Current Clamp for Locating EMC Problems, 40 ... 1000 Hz, MIN/MAX, Data Hold, Measuring Cables, supplied in a Handy Case (fits in Empty Compartment of Carrying Case)
ACL-NN-006037	D-Sub Service Interface with Active Bus Termination and 90° Angled Connector for PROFIBUS DP
ACA-NN-006034	M12 Service Interface for PROFIBUS DP, Comprising M12 T-Piece, End Cap and M12 Connection Cable (1 m)
ACA-NN-006031	EIA-485 D-Sub adapter cable for testing operational networks with reduced influence on segment operation
TRA-PB-TS	Training: PROFIBUS Troubleshooting with exam to Certified PROFIBUS Installer

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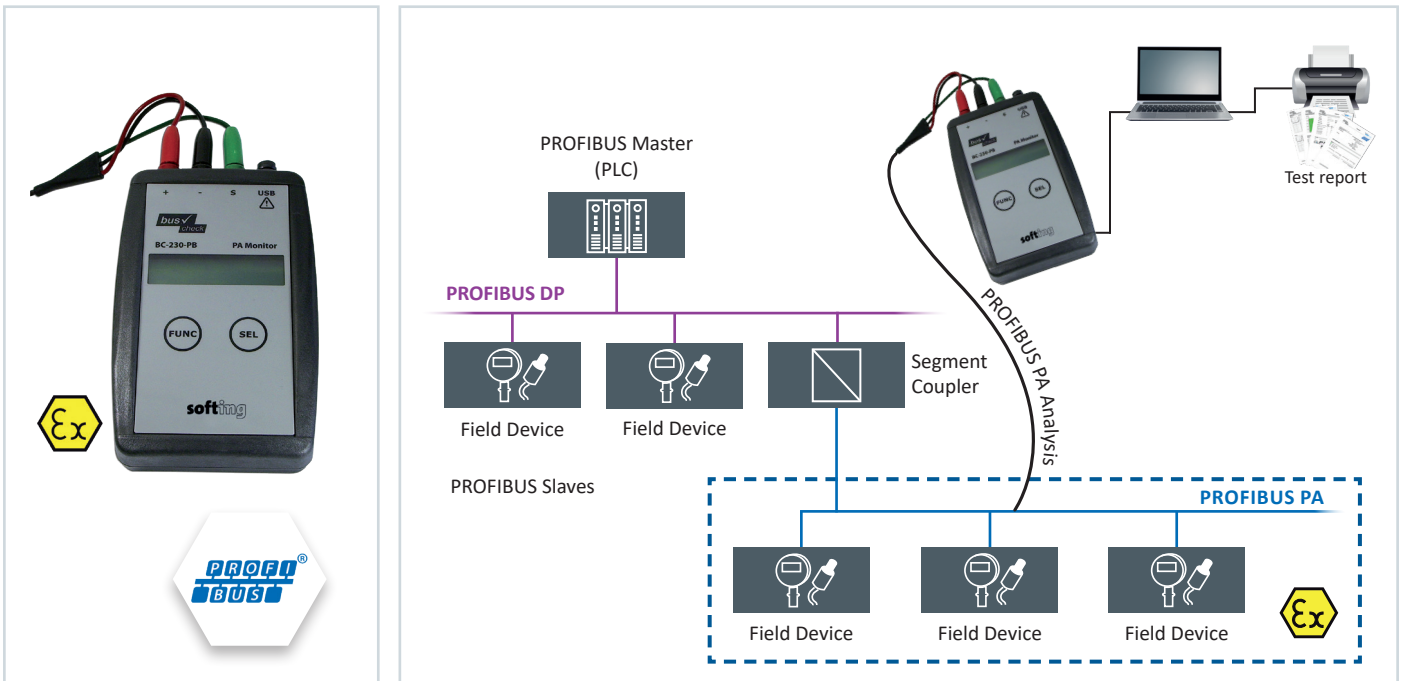
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# Diagnostic Monitor for PROFIBUS PA (BC-230-PB)

## Quick and Easy Bus Testing

- Testing PROFIBUS PA during operation, no PC or notebook required
- Comprehensive field of application, also suitable for use in hazardous areas
- Easy operation, ideal choice even for less experienced users



## Fully Automatic Bus Test

- Automatically powered by fieldbus and start of segment testing without operator intervention after attachment to PROFIBUS PA network
- Information in plain text, if measured data exceeds tolerance limits
- Measurement of segment voltage as well as average noise and peak noise for three frequency ranges
- Reliable detection of short circuits between individual signal wires and cable shield
- Detection of all frame retransmissions and all devices added or dropped during bus operation at field device level
- Determination of current and lowest signal levels of all devices
- Internal storage of test data for later transfer to PC
- Detailed test reports in Microsoft Excel or text format

## Universal Application

- Testing of the bus physics
- Verification of stable communication between the bus devices
- Universal tool for setup and commissioning, documentation, acceptance testing, predictive maintenance, and troubleshooting

## Very Simple to Use

- Outstanding ease of use based on display and two function buttons
- Clear classification of test results as either OK or BAD
- The bus test starts automatically when the tool is connected to a PROFIBUS PA network.



# Diagnose-Monitor für PROFIBUS PA (BC-230-PB)

## Technical Data

Input Voltage:	Fieldbus Mode: 8 VDC ... 32 VDC, USB Mode: 4.1 VDC ... 5.5 VDC
Maximum Input Current:	Fieldbus Mode: 10 mA*, USB Mode: 30 mA
Power Dissipation:	Fieldbus Mode: maximum 320 mW (at 32 VDC), USB Mode: maximum 165 mW (at 5.5 VDC)
DC Voltage Measurement Range:	8 VDC ... 32 VDC, $\pm 0.5$ VDC
Signal Level Measurement Range:	0.12 Vpp ... 2 Vpp, $\pm 10\%$ , $\pm 0.025$ Vpp
LF Noise Measurement Range:	50 Hz ... 4 KHz, 0 mVpp ... 1000 mVpp, $\pm 15\%$ , $\pm 25$ mVpp**
FF Noise Measurement Range:	9 KHz ... 40 KHz, 0 mVpp ... 1000 mVpp, $\pm 10\%$ , $\pm 25$ mVpp**
HF Noise Measurement Range:	90 kHz ... 350 KHz, 0 mVpp ... 250 mVpp, $\pm 20\%$ , $\pm 25$ mVpp**
Operating Temperature:	-20 °C ... +50 °C***
Dimensions:	146 mm x 88 mm x 28 mm
Weight:	378 g
Case Material:	ABS
Conformity	CE, FCC
Hazardous Area Approvals	FM USA and Canada: Class I Division 2 Groups A, B, C and D T4 Class I Zone 2 Group IIC T4 Class I Division 1 Groups A, B, C and D T4 Class I Zone 0 and 1 Ex/AEx ia IIC T4  ATEX Ex ia IIC T4 ATEX Ex nL IIC T4 ATEX Ex ic IIC T4
Data Transfer to PC	Via supplied PC software for Windows 2000, Windows XP, Windows VISTA and Windows 7 (32 Bit and 64 Bit) and USB interface, Version 1.1 or 2.0

\* In Fieldbus Mode, the Diagnostic Monitor is powered by the fieldbus and draws approximately 9.4 mA of current from the segment (depending on bus voltage and ambient temperature)

\*\* Vpp = Volts (Peak-to-Peak); excessive noise adjacent to the fieldbus frequency (FF) band will prevent the Diagnostic Monitor from reading the fieldbus data and thus reduce functionality

\*\*\* Display update speed is impaired below -10 °C

## Scope of Delivery

Hardware	Diagnostic Monitor for PROFIBUS PA (BC-230-PB), connection cables, carrying case
Software	PC software (in English) on CD-ROM
Documentation	Manual (in English), certificates (in English)

## Order Numbers

BC-230-PB	Diagnostic Monitor for PROFIBUS PA
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## Additional Products and Services

PB-LSZ-CHB3	Digital fieldbus leakage current clamp for locating EMC problems, 40 Hz ... 1,000 Hz, Min/Max, Data Hold, measuring cables, supplied in handy case
TRA-PB-TECH	Training "PROFIBUS Technology", 2 days
TRA-PB-TS	Training "PROFIBUS Troubleshooting", 3 days

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# PROFINET Diagnostics

Solutions for Installing, Commissioning  
and Maintaining PROFINET Networks

Cable  
Testing

Network  
Monitoring

Network  
Management

Trouble-  
shooting

Network  
Acceptance  
Testing

**data**  **CHECK®**

# PROFINET DIAGNOSTICS



While PROFINET has become an established communication standard in industrial automation, the diagnostics of PROFINET networks still is new territory for many users. Profound changes brought about by the shift from traditional fieldbus systems to PROFINET have led to new typical root causes for network problems and failures.

Network configuration has become more complex and changes in the network are more frequent. New tools and solutions are therefore needed which allow users to handle new network diagnostic and network management tasks across a plant's entire life cycle.



# SOFTING EXPERTISE



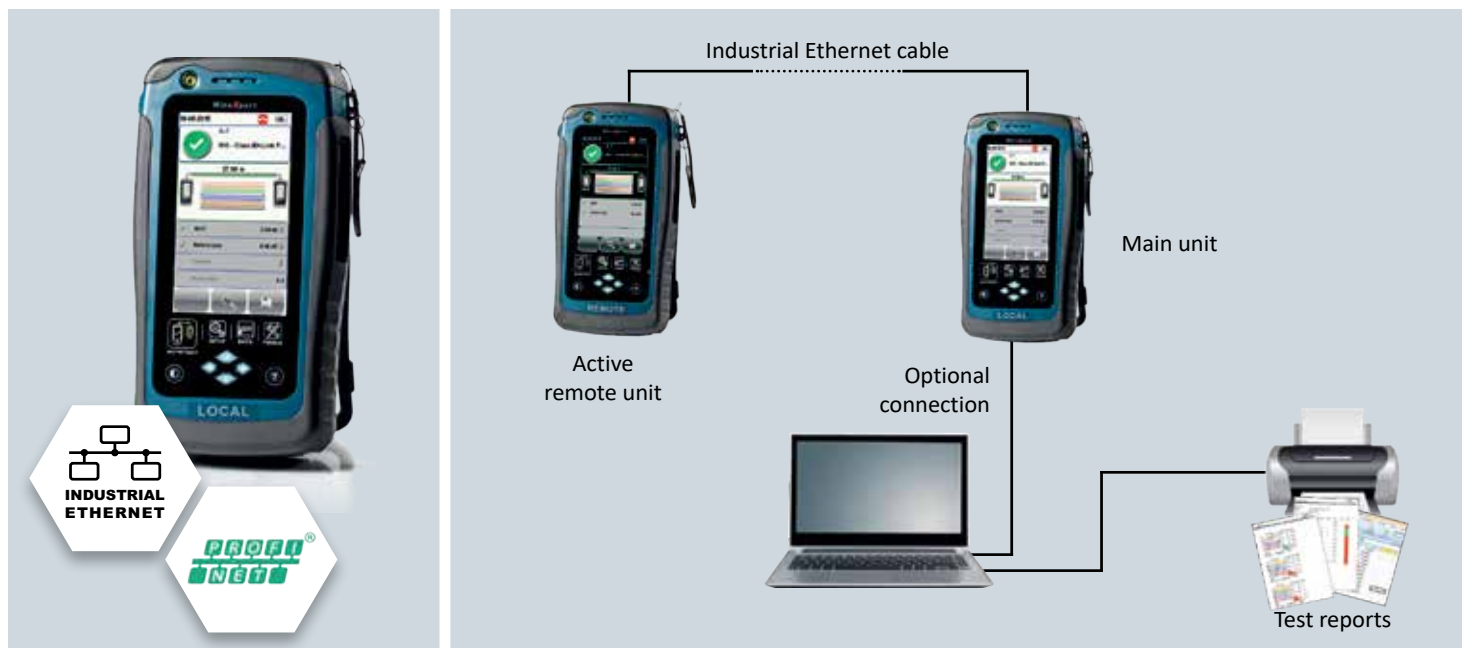
For more than 30 years, Softing Industrial has been a world leading expert for digital data exchange in industrial automation. Since the very early specification and development stages of this technology, Softing has offered PROFINET products, solutions and services.

Softing products cover diagnostic needs during the entire network lifecycle, including installation, commissioning and network operation. As a result, users can operate and maintain their PROFINET networks more efficiently, reduce the risk of network failures, and thus increase the availability of their plants as well as reduce overall downtime.

# Cable Testing

During network installation, cable tests are recommended to reduce risks of failure during network operation. In particular, this applies to custom-tailored cables or cables which are hard to replace after installation (e.g. backbone connections). Depending on individual requirements, either cable qualification or even more rigorous cable certification can be performed.

WireXpert Industrial Ethernet is Softing's offering for the certification of Industrial Ethernet network cabling in the frequency range up to 500 MHz. This product is a complete solution for cable testing, performance analysis and troubleshooting in Industrial Ethernet networks. The functional capability of industry-standard cable connections with RJ45, M8 and M12 is easily checked and documented. The large touch screen and the intuitive user interface make the device very user-friendly.



## Certification of Passive Network Components

- Support of 4-wire industrial network cables
- Certification according to industry standards –Class D / E / EA and Category 5e / 6 / 6A
- Meets precision requirements according to TIA and ISO Level IIIe
- Measurement according to end-to-end link method

## Made for Industrial Use

- Solid housing for safe use in everyday tasks
- Testing of Industrial Ethernet with RJ45 and M12 connectivity, E2E connection tests

## Easy to use

- Touch-sensitive 6-inch industrial LCD display on main unit and active remote station
- Start of measurement by tapping once
- Bypassing time-consuming distances by using the active remote station

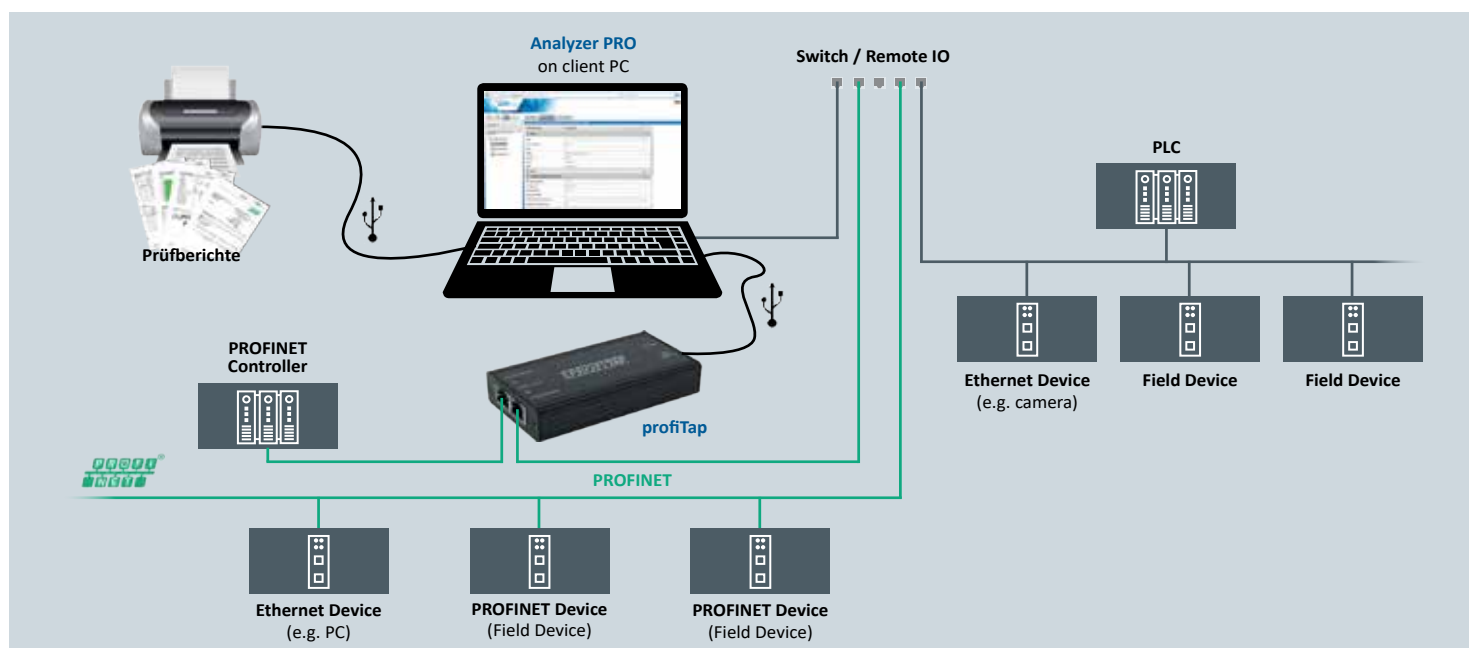
## Detailed documentation of the measurements

- Optional professional reports created by eXport PC software

## Commissioning and Troubleshooting

Network acceptance testing is a critical step during plant commissioning. At this phase, a specific network test procedure based on clear criteria is defined and executed and its results are documented. In case of unexpected network errors during the commissioning phase, root causes of network problems have to be identified and eliminated efficiently.

dataCHECK Analyzer is a software product for network acceptance testing and troubleshooting of PROFINET networks. For network acceptance testing, users can automatically execute test procedures and create test reports based on PROFIBUS & PROFINET International (PI) recommendations. The product also automatically generates further network documents such as graphical network topologies, inventory lists and reference measurements. For troubleshooting, dataCHECK Analyzer helps to detect and fix a broad range of network errors, including unavailable network devices, large amounts of error packages on a particular switch port or the use of incorrect device names.



## Comprehensive Functionality

- Diagnostics list, error statistics, network statistics
- Enhanced flexibility by supporting online as well as offline mode
- Generation, analysis and handling of diagnostic data such as graphical topology, inventory list and reference measurements, also for standard Ethernet components (eg PCs, camera systems)
- Presentation of all sizes in automated report
- Telegram analysis with measurement of the Jitter, refresh interval and load ratio

## Automated Generation of Acceptance Test Documents

- Time saving by automatically created test reports
- Flexible definition of acceptance criteria
- Transparent reporting by following PI guidelines

## Tool Addressing Complete Plant Lifecycle

- Data on network configuration, network communication and diagnostic messages
- Error identification for effective troubleshooting (e.g. based on inventory list of network devices)
- Chance to support exchange of general project information between end users, EPC contractors, system integrators and maintenance service providers
- Seamless integration with Softing diagnostics permanent monitoring solutions TH SCOPE and TH LINK

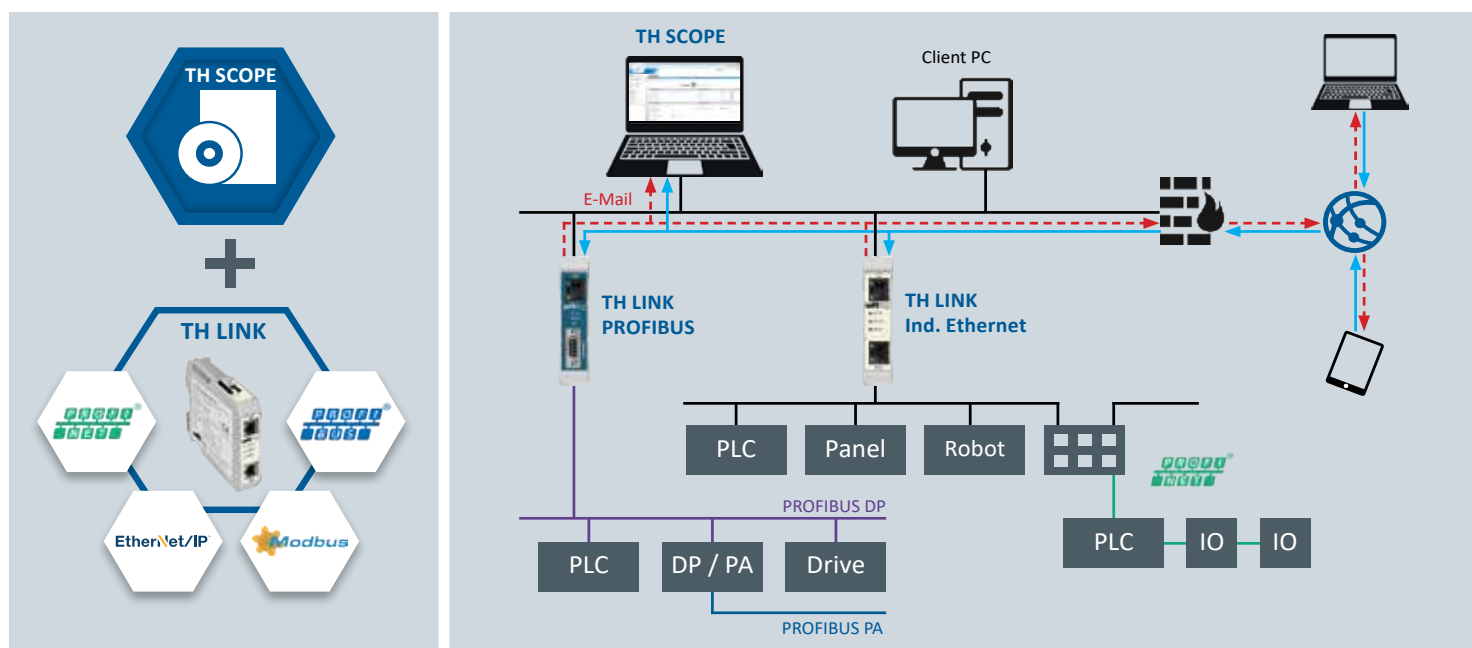
## Telegram analysis and measuring important parameters

- Measurement of the Jitter, refresh interval and load ratio
- Including network tap to carry out the analysis

# Network Monitoring and Management

During plant operation, maintenance personnel needs to know the status and health of the communication network at all times. In addition, tasks like firmware updates for network devices or the replacement of a defect device have to be performed. Also early indicators for emerging problems are of interest, allowing to address them before they lead to major failures or even plant downtime.

The TH SCOPE diagnostic and supervision software combined with network interfaces of the TH LINK family enable permanent network monitoring and management, targeted to the needs and requirements of plant operators and maintenance personnel. They automatically monitor network health and status, support typical network management tasks such as device firmware checks and they provide hints for troubleshooting in case of problems.



## Comprehensive Presentation and Evaluation of Diagnostic Data

- Provision of data on network communication, network configuration and diagnostic messages
- Preparation of standardized exports (e.g. for acceptance testing)
- Support for PROFIBUS, PROFINET, EtherNet/IP and Modbus TCP in combination with TH LINK components
- Data acquisition also from standard Ethernet devices (e.g. PCs or camera systems)

## Versatile solution for a wide range of diagnostic applications

- Permanent monitoring and alerting
- Commissioning and acceptance
- Network documentation
- Network and Plant Asset Management
- Fault localization and identification

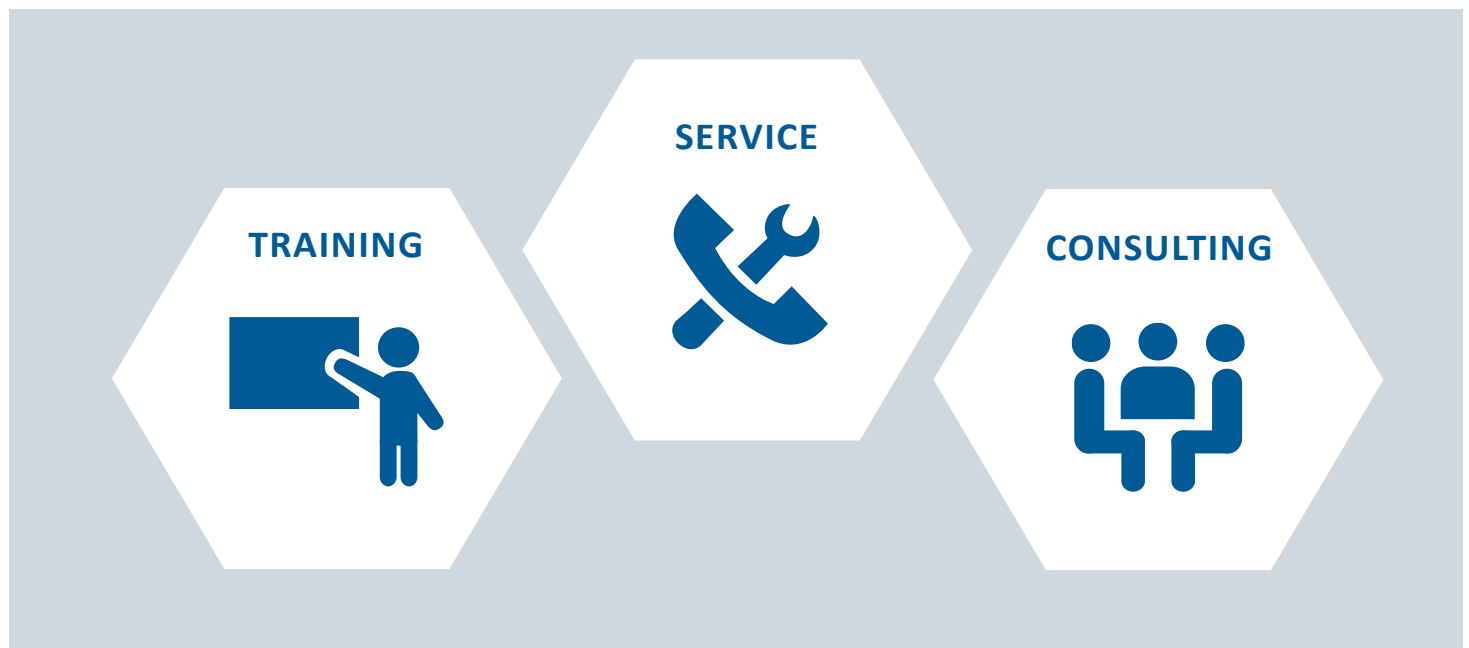
## Flexible System and Process Integration

- Web-based access, local or remote
- Integration of inventory data into monitoring tools and process control systems via OPC UA
- Export of diagnostic data for further processing in other applications (e.g. MS Excel)
- Easy data exchange with Softing's Analyzer IE software (e.g. export of reference measurement)
- Intuitive handling and operation

# Training and Services

To complement its product portfolio, Softing also offers training and services regarding PROFINET network diagnostics. As official PROFINET COMPETENCE CENTER and CERTIFIED TRAINING CENTER, Softing offers training addressing the basics of PROFINET technology and the standard-compliant installation and reliable operation of PROFINET networks.

Softing services include consultancy on network acceptance testing, e.g. how to apply the commissioning guideline of the PI organization to a specific situation. Upon request, Softing engineers can execute a network acceptance test and provide a report of the results. On-site troubleshooting complements the Softing network diagnostic services.



## Technology Training

- PROFINET overview
- Technological basics
- Details of specifications
- PROFINET implementation
- PI certificate upon successful passing of "Certified PROFINET Engineer" examination

## Troubleshooting Training

- Practice-oriented introduction to Ethernet basics and PROFINET specification
- Focus on correct network installation and structured troubleshooting approach
- PI certificate at successful pass of "Certified PROFINET Installer" examination

## On-Site Troubleshooting Services

- Determination of installation quality (e.g. for cables and connectors)
- Check of network configuration including available bandwidth and baudrates
- Network assessment regarding EMC, shield, etc.
- Report including proof of reliable communication or recommended problem solving measures

## Network Acceptance Test Services and Consulting

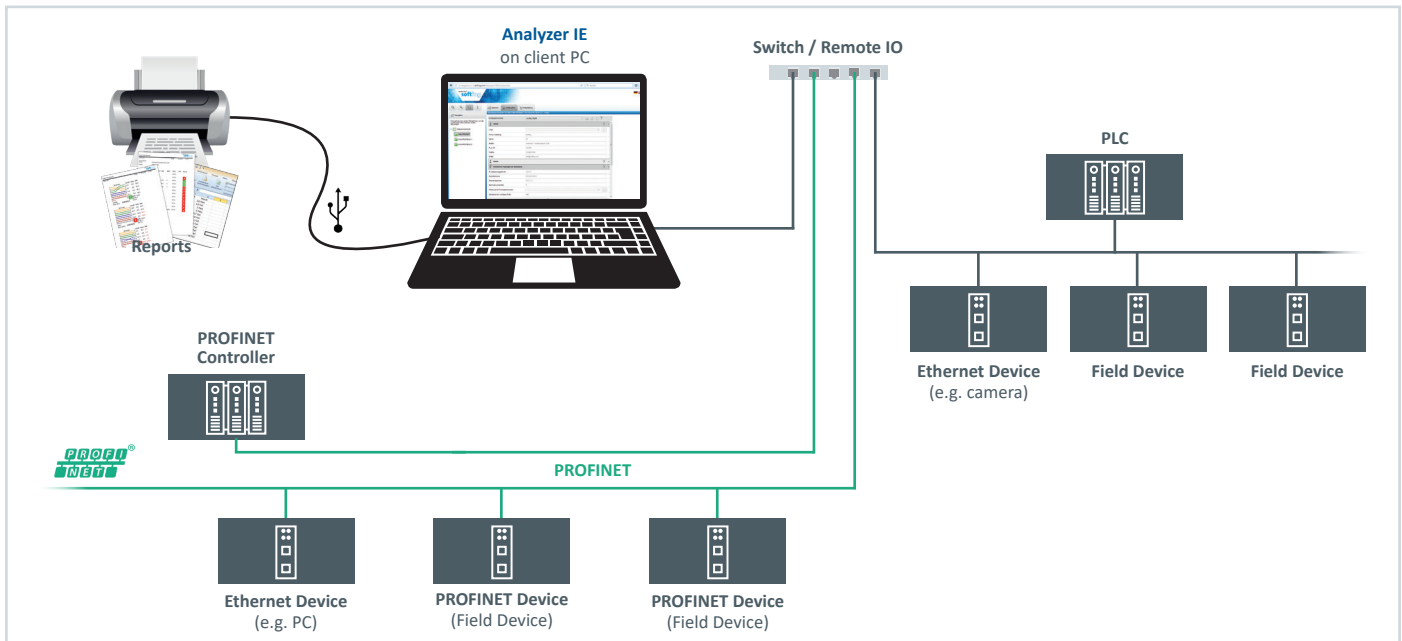
- Creation of customer-specific acceptance test guidelines based on recommendations by PI organization
- Execution of PROFINET network acceptance tests
- Creation of test reports, inventory lists, reference measurements
- Advice on how to improve network performance and robustness



# Analyzer IE

Software for Mobile Diagnostics and Acceptance Testing of Industrial Networks

- All-in-One PC Application Supporting PROFINET, EtherNet/IP, Modbus TCP
- Automated Report Generation in Line with PROFIBUS & PROFINET International (PI)
- Functionality for Commissioning, Acceptance Testing, Maintenance and Troubleshooting



## Comprehensive Functionality

- Diagnostics list, error statistics, network statistics
- Enhanced flexibility by supporting online as well as offline mode
- Generation, analysis and handling of diagnostic data such as graphical topology, inventory list and reference measurements, also for standard Ethernet components (eg PCs, camera systems)
- Presentation of all sizes in automated report

## Automated Generation of Acceptance Test Documents

- Time saving by automatically created test reports
- Flexible definition of acceptance criteria
- Transparent reporting by following PI guidelines

## Tool Addressing Complete Plant Lifecycle

- Data on network configuration, network communication and diagnostic messages
- Error identification for effective troubleshooting (e.g. based on inventory list of network devices)
- Chance to support exchange of general project information between end users, EPC contractors, system integrators and maintenance service providers
- Seamless integration with Softing diagnostics per-manent monitoring solutions TH SCOPE and TH LINK

# Analyzer IE

## Technical Data

Functionality	<ul style="list-style-type: none"><li>▪ Analysis of device logs</li><li>▪ Live list, statistics, inventory</li><li>▪ Topology and trend analysis</li><li>▪ GSDML file support, plaintext messages in diagnostic list</li><li>▪ Acceptance measurements and acceptance reports</li><li>▪ Reference comparison</li><li>▪ Configurable time intervals for automated export of inventory and topology data</li><li>▪ Data export via Excel</li><li>▪ Configurable Blacklist feature for robust operation</li></ul>
Supported Protocols	PROFINET, EtherNet/IP, Modbus TCP
Interfaces	<ul style="list-style-type: none"><li>▪ SNMP Agent</li><li>▪ OPC UA Server</li></ul>
System Requirements	Adobe Reader 8 or higher for reading the documentation and for printing the topology
Supported Operating Systems	Windows 7, Windows 8.1, Windows 10 Windows Server 2012, Windows Server 2012 R2, Windows Server 2016
Network Access	Data collection through TH LINK PC (PROFINET, EtherNet/IP, Modbus TCP)
Licensing	Software or hardware key

## Scope of Delivery

Software	Analyzer IE (Download from Softing website <a href="https://industrial.softing.com">https://industrial.softing.com</a> )
Documentation	Installation manual, user manual, release note

## Order Number

LRA-JY-003041	Analyzer IE (software key)
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## Additional Products and Services

GEA-JN-003006	TH LINK PROFIBUS
GDA-JA-003034	TH LINK PROFINET
GDA-JY-003037	TH LINK Industrial Ethernet
LRA-JY-003028	TH LINK PC Industrial Ethernet
TRA-PB-TECH	Training: PROFIBUS Technology
TRA-PB-TS	Training: PROFIBUS Troubleshooting with exam to Certified PROFIBUS Installer
TRA-PN-CERTINST	Training: PROFINET Acceptance and Commissioning
TRA-PN-CERTENG	Training: PROFINET Technology graduated as Certified PROFINET Engineer
TRA-PN-TOOLS	On-site training: PROFINET tools

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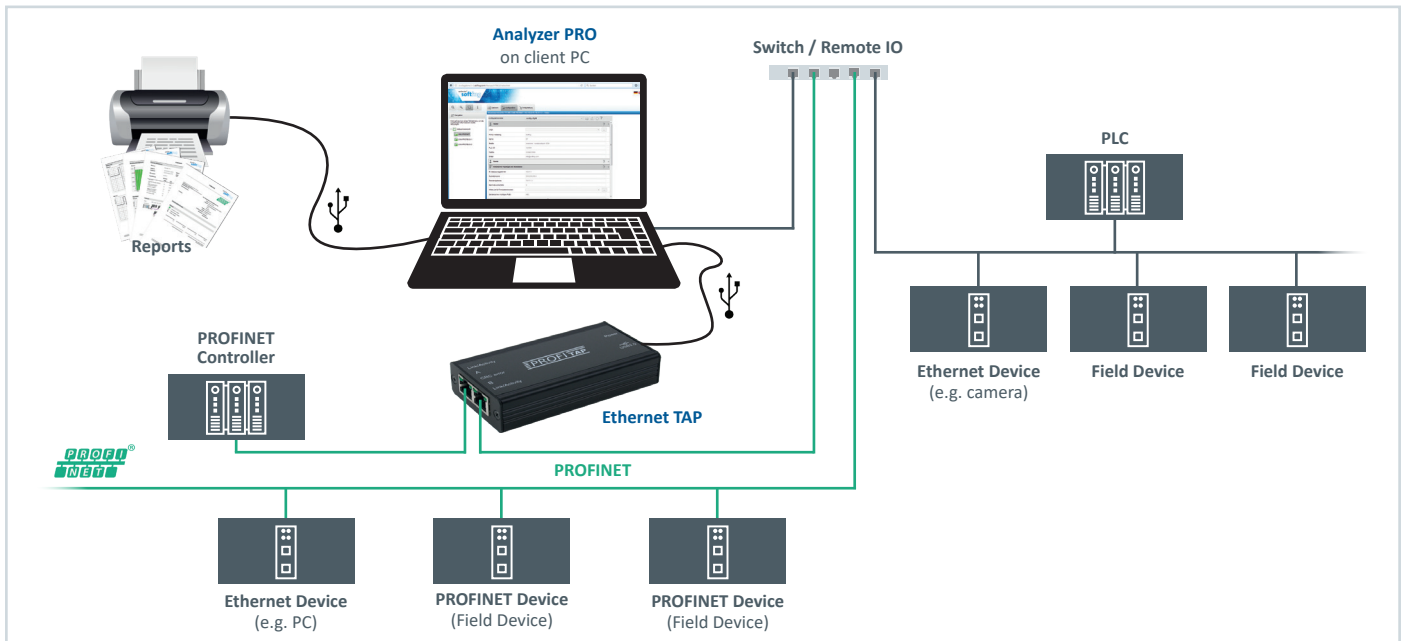
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# Analyzer PRO

Software for Mobile Diagnostics and Acceptance Testing of Industrial Networks

- All-in-One PC Application Supporting PROFINET, EtherNet/IP, Modbus TCP
- Automated Report Generation in Line with PROFIBUS & PROFINET International (PI)
- Functionality for Commissioning, Acceptance Testing, Maintenance and Troubleshooting
- Basis for a long-term trouble-free operation



## Comprehensive Functionality

- Diagnostics list, error statistics, network statistics
- Enhanced flexibility by supporting online as well as offline mode
- Generation, analysis and handling of diagnostic data such as graphical topology, inventory list and reference measurements, also for standard Ethernet components (eg PCs, camera systems)
- Presentation of all sizes in automated report
- Telegram analysis with measurement of the Jitter, refresh interval and load ratio

## Automated Generation of Acceptance Test Documents

- Time saving by automatically created test reports
- Flexible definition of acceptance criteria
- Transparent reporting by following PI guidelines

## Tool Addressing Complete Plant Lifecycle

- Data on network configuration, network communication and diagnostic messages
- Error identification for effective troubleshooting (e.g. based on inventory list of network devices)
- Chance to support exchange of general project information between end users, EPC contractors, system integrators and maintenance service providers
- Seamless integration with Softing diagnostics per-manent monitoring solutions TH SCOPE and TH LINK

## Telegram analysis and measuring important parameters

- Measurement of the Jitter, refresh interval and load ratio
- Including network tap to carry out the analysis

# Analyzer PRO

## Technical Data

Functionality	<ul style="list-style-type: none"><li>▪ Analysis of device logs</li><li>▪ Live list, statistics, inventory</li><li>▪ Topology and trend analysis</li><li>▪ GSDML file support, plaintext messages in diagnostic list</li><li>▪ Acceptance measurements and acceptance reports</li><li>▪ Reference comparison</li><li>▪ Configurable time intervals for automated export of inventory and topology data</li><li>▪ Data export via Excel</li><li>▪ Configurable Blacklist feature for robust operation</li><li>▪ Telegram analysis: jitter, refresh interval, load ratio</li></ul>
Supported Protocols	PROFINET, EtherNet/IP, Modbus TCP
Interfaces	<ul style="list-style-type: none"><li>▪ SNMP Agent</li><li>▪ OPC UA Server</li></ul>
System Requirements	Adobe Reader 8 or higher for reading the documentation and for printing the topology
Supported Operating Systems	Windows 7, Windows 8.1, Windows 10 Windows Server 2012, Windows Server 2012 R2, Windows Server 2016
Network Access	Data collection through TH LINK PC (PROFINET, EtherNet/IP, Modbus TCP)
Licensing	Hardware key

## Scope of Delivery

Software	Analyzer PRO (Download from Softing website <a href="https://industrial.softing.com">https://industrial.softing.com</a> )
License	Hardware key
Hardware	Ethernet TAP for measuring jitter, load ratio and device update interval
Documentation	Installation manual, user manual, release note

## Order Numbers

KPL-JY-003043	Analyzer PRO (hardware key)
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## Additional Products and Services

GEA-JN-003006	TH LINK PROFIBUS
GDA-JA-003034	TH LINK PROFINET
GDA-JY-003037	TH LINK Industrial Ethernet
LRA-JY-003028	TH LINK PC Industrial Ethernet
TRA-PB-TECH	Training: PROFIBUS Technology
TRA-PB-TS	Training: PROFIBUS Troubleshooting with exam to Certified PROFIBUS Installer
TRA-PN-CERTINST	Training: PROFINET Acceptance and Commissioning
TRA-PN-CERTENG	Training: PROFINET Technology graduated as Certified PROFINET Engineer
TRA-PN-TOOLS	On-site training: PROFINET tools

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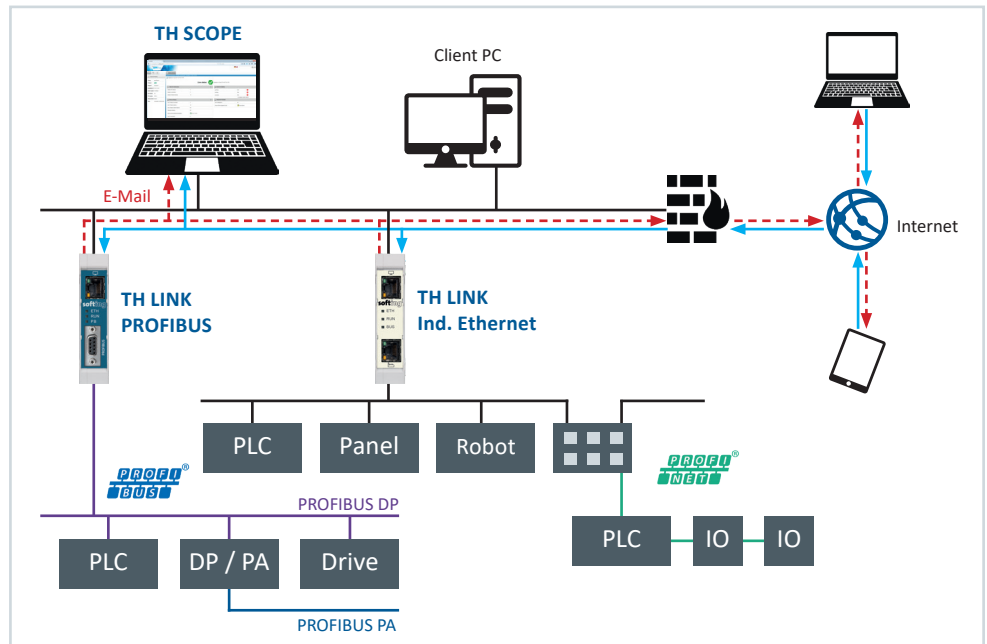
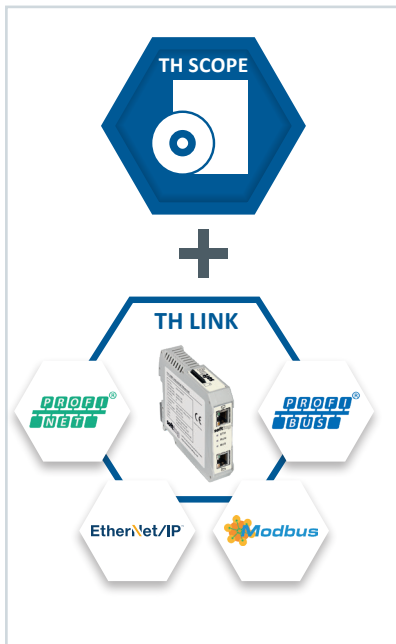
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# TH SCOPE

## Efficient Diagnostics and Management of Industrial Networks

- **Software Solution for Analysis and Visualization of Diagnostic Data**
- **Functionality Fitting for Acceptance Testing, Predictive Maintenance, Permanent Monitoring and Plant Asset Management**
- **Easy integration into processes and comprehensive systems**



### Comprehensive Presentation and Evaluation of Diagnostic Data

- Provision of data on network communication, network configuration and diagnostic messages
- Preparation of standardized exports (e.g. for acceptance testing)
- Support for PROFIBUS, PROFINET, EtherNet/IP and Modbus TCP in combination with TH LINK components
- Data acquisition also from standard Ethernet devices (e.g. PCs or camera systems)

### Versatile solution for a wide range of diagnostic applications

- Permanent monitoring and alerting
- Commissioning and acceptance
- Network documentation
- Network and Plant Asset Management
- Fault localization and identification

### Flexible System and Process Integration

- Web-based access, local or remote
- Integration of inventory data into monitoring tools and process control systems via OPC UA
- Export of diagnostic data for further processing in other applications (e.g. MS Excel)
- Easy data exchange with Softing's Analyzer IE software (e.g. export of reference measurement)
- Intuitive handling and operation

## Technical Data

Functionality	<ul style="list-style-type: none"> <li>▪ Network overview with network and device status plus diagnostic messages with troubleshooting recommendations</li> <li>▪ Analysis of device logs</li> <li>▪ Live list, statistics, inventory</li> <li>▪ GSDML file support, plaintext messages in diagnostic list</li> <li>▪ Topology and trend analysis</li> <li>▪ Automatic e-mail notification in case of fault</li> <li>▪ Reference comparison</li> <li>▪ Acceptance measurements and acceptance reports</li> <li>▪ Configurable time intervals for automated export of inventory and topology data</li> <li>▪ Data export via Excel</li> <li>▪ Output of inventory data via OPC UA</li> </ul>
Supported Protocols	PROFINET, PROFIBUS, EtherNet/IP, Modbus TCP
Interfaces	<ul style="list-style-type: none"> <li>▪ SNMP Agent</li> <li>▪ OPC UA-Server</li> </ul>
System Requirements	Adobe Reader 8 or higher for reading the documentation and for printing the topology
Supported Operating Systems	Windows 7, Windows 8.1, Windows 10 Windows Server 2012, Windows Server 2012 R2, Windows Server 2016
Network Access	Data collection through TH LINK (PROFIBUS, PROFINET, EtherNet/IP, Modbus TCP und Industrial Ethernet)
Demoversion	Full TH SCOPE functionality can be used for free for 30 days after installation
Licensing	Via software or hardware key

## Scope of Delivery

Software	TH SCOPE (by download from Softing's website <a href="http://industrial.softing.com">http://industrial.softing.com</a> )
License	Software or hardware key
Documentation	Installation Manual, User Manual, Release Note

## Order Numbers

LRA-JY-003024	TH SCOPE
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## Additional Products and Services

GEA-JN-003006	TH LINK PROFIBUS
GDA-JA-003034	TH LINK PROFINET
GDA-JY-003037	TH LINK Industrial Ethernet
LRA-JY-003028	TH LINK PC Industrial Ethernet
TRA-PB-TECH	Training: PROFIBUS Technology
TRA-PB-TS	Training: PROFIBUS Troubleshooting with exam to Certified PROFIBUS Installer
TRA-PN-CERTINST	Training: PROFINET Acceptance and Commissioning
TRA-PN-CERTENG	Training: PROFINET Technology graduated as Certified PROFINET Engineer
TRA-PN-TOOLS	On-site training: PROFINET tools

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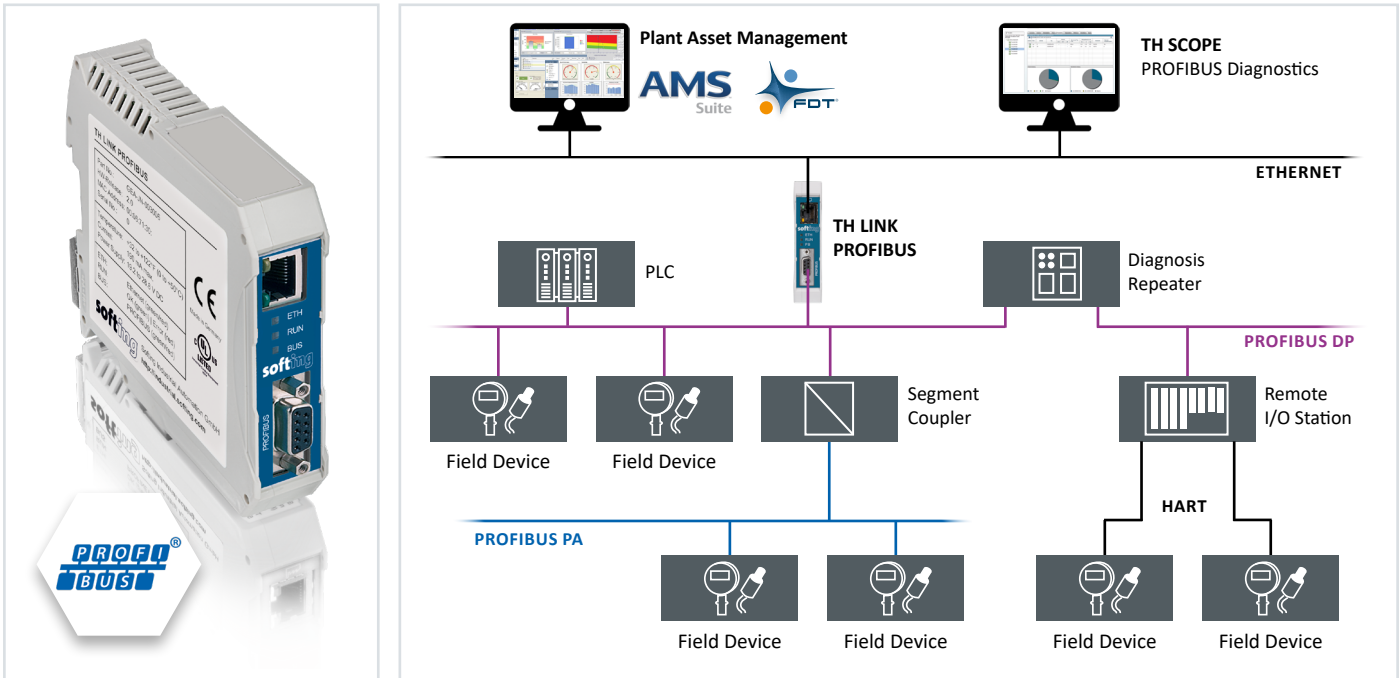
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# TH LINK PROFIBUS

PROFIBUS Diagnostics and PROFIBUS Access for Plant Asset Management applications

- **Controller-independent Access to PROFIBUS DP Networks**
- **Integration into Existing Systems without Interfering with the Operation**
- **Stationary Monitoring of PROFIBUS Networks**



## Independent Access to PROFIBUS Network

- Independent of configuration tools
- Access for plant asset management applications to configure field devices based on FDT/DTM and EDDL standards (acyclic master)
- Central and time-saving parameterization of PROFIBUS and HART field devices directly from the control room

## Designed for Installation without Interference with Plant Operation

- Connection to PROFIBUS network also possible during operation of the plant
- Easy integration into existing plants thanks to compact design
- Browser access for administration and configuration purposes

## Powerful Data Collection Capabilities Optimized for PROFIBUS

- Permanent monitoring and troubleshooting for PROFIBUS networks
- Passive listening to PROFIBUS DP protocol
- Threshold monitoring for frame retries
- Statistics for optimization of the network configuration
- Easy detection of missing terminating resistors
- Fault identification with intelligent troubleshooting assistance
- Seamless integration with TH SCOPE diagnostics software

# TH LINK PROFIBUS

## Technical Data

Functionality	<ul style="list-style-type: none"><li>• Network detection and data collection (PROFIBUS DP)</li><li>• Acyclic master (PROFIBUS DP-V1)</li><li>• Alarm notification in case of fault</li><li>• Basic monitoring, configuration</li><li>• Integrated web server</li></ul>
Supported Plant Asset Management Applications	e.g. Endress+Hauser FieldCare, Emerson AMS Suite (up to V14.1.1), Yokogawa Fieldmate, PACTware
PROFIBUS Transmission Rate	<ul style="list-style-type: none"><li>• max. 12 MBit/s (AMS Device Manager, FDT)</li><li>• max. 1.5 MBit/s (TH SCOPE)</li></ul>
Input Voltage	24 VDC (19.2 VDC ... 28.8 VDC)
Current Consumption	max. 190 mA
Operating Temperature	0 °C ... 50 °C
Ethernet Port	RJ45 (10 Base-T / 100 Base-TX)
PROFIBUS Port	EIA-485 (formerly RS-485)
Mounting	35 mm DIN rail
Dimensions (H x W x D)	22.5 mm x 99 mm x 114.5 mm
Weight	120 g
Certifications	CE

## Scope of Delivery

Hardware	TH LINK PROFIBUS
Documentation	Installation Manual, Release Notes (by download)

## Order Numbers

GEA-JN-003006	<b>TH LINK PROFIBUS</b>
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## Additional Products and Services

GEA-YN-026000	<b>smartLink HW-DP</b> , Access to PROFIBUS networks via Ethernet. Supports <b>1 PROFIBUS DP segment</b> (RS485). Supports Emerson AMS Suite V14.1.1 and higher.
LRA-JY-003024	TH SCOPE
VAA-YY-023000	PACTware
VAA-NM-023001	TACC
TRA-PB-TECH	PROFIBUS Technology Training
TRA-PB-TS	PROFIBUS Troubleshooting with Exam for Certified PROFIBUS Installer

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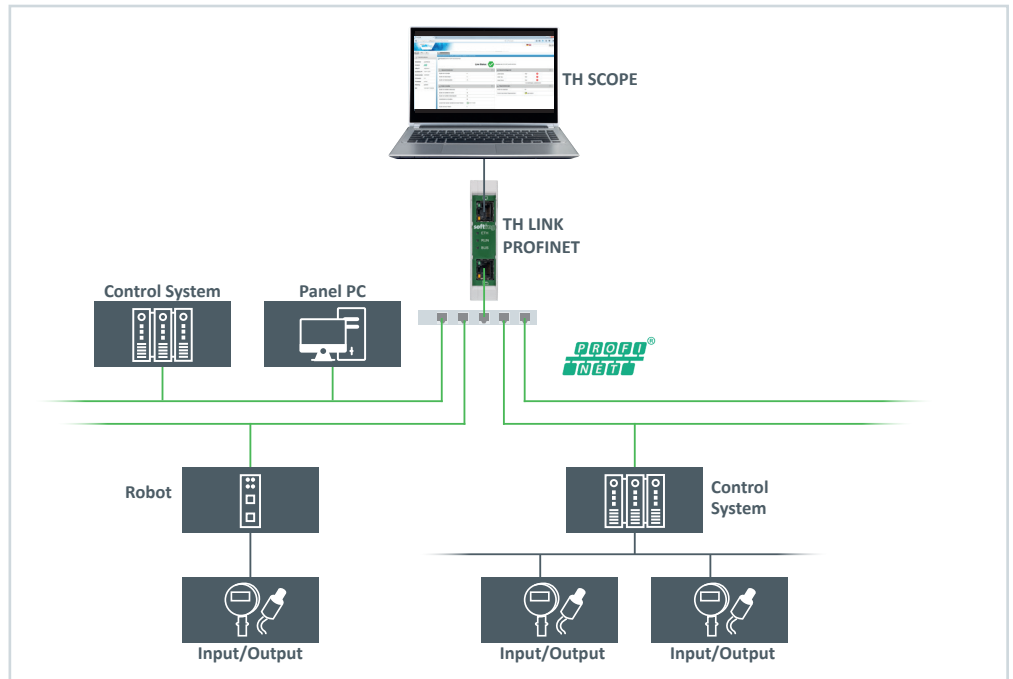
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# TH LINK PROFINET

## Efficient Maintenance and Diagnostics of PROFINET Networks

- **Controller-independent Network Access for Monitoring and Administration**
- **Provision of Diagnostic Data for Further Processing**
- **Easy to Use Hardware Interface Addressing Needs of Industrial Maintenance Personnel**



### Painless Plant Integration

- Interference-free integration into any port available in PROFINET networks (even during plant operation)
- Satisfying highest security requirements (no routing, separate access for OT and IT level networks)
- Network load limited according to PROFIBUS & PROFINET International (PI) guidelines
- Easy integration into existing cabinets thanks to compact design

### Powerful Data Collection

- Collection of diagnostic and inventory data from up to 254 nodes, including controllers, IP subnets
- Operating as Supervisor in existing PROFINET networks
- Seamless integration with TH SCOPE software for data visualization, data monitoring and plant asset management

### Easy operating concept and handling

- Suitable for network acceptance testing, monitoring, troubleshooting and plant asset management (inventory data)
- Quick and comprehensive network overview
- Intuitive handling and operation
- No engineering required
- Fault identification with intelligent troubleshooting assistance
- Easy to use web interface for configuration

# TH LINK PROFINET

## Technical Data

Functionality	<ul style="list-style-type: none"><li>• Network detection and data collection (active/passive for PROFINET networks)</li><li>• Alarm notification in case of fault</li><li>• Basic monitoring, configuration</li><li>• Integrated web server</li><li>• Configurable blacklist feature for robust operation</li><li>• Comprehensive network overview for quick and easy observation</li></ul>
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Input Voltage	24 VDC (18 VDC ... 32 VDC)
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Current Consumption	max. 180 mA
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Stromaufnahme Relaiskontakt	max. 100 mA
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Typical Power Loss	5 W
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Operating Temperature	-40 °C ... +75 °C
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Relative Air Humidity	5 % ... 95 % (non-condensing)
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Ethernet Ports	RJ45 (10Base-T / 100Base-TX)
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Supported SD Cards	See Release Notes
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Mounting	35 mm DIN rail
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Dimensions (HxWxD)	22,5 mm x 99 mm x 114,5 mm
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Weight	120 g
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Certifications	CE
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## Scope of Delivery

Hardware	TH LINK PROFINET
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Dokumentation	Installation Manual, Release Note (by download)
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## Order Numbers

GDA-JA-003034	TH LINK PROFINET
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## Additional Products and Services

LRA-JY-003024	TH SCOPE
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LRA-JY-003028	TH LINK PC Industrial Ethernet
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GDA-JY-003037	TH LINK Industrial Ethernet
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TRA-PN-CERTENG	PROFINET Technology Training with Exam for Certified PROFINET Engineer
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TRA-PN-CERTINST	Training: PROFINET – Commissioning and Troubleshooting with Exam for Certified PROFINET Installer
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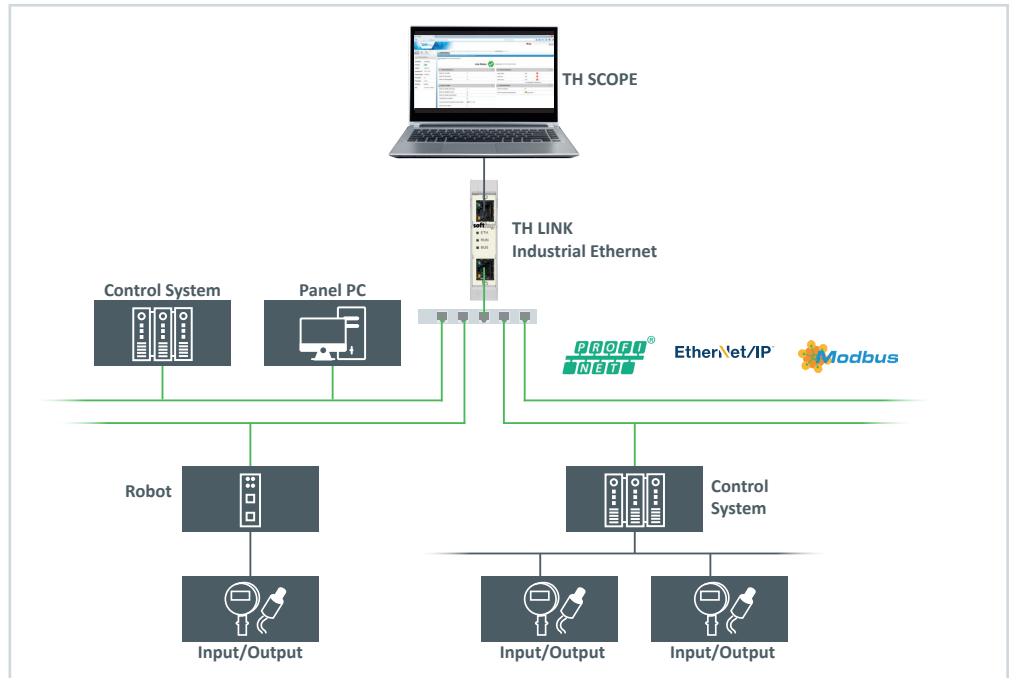
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# TH LINK Industrial Ethernet

Efficient Maintenance and Diagnostics of Industrial Ethernet Networks

- Controller-independent Network Access for Monitoring and Administration
- Provision of Diagnostic Data for Further Processing
- Easy to Use Hardware Interface Addressing Needs of Industrial Maintenance Personnel



## Painless Plant Integration

- Interference-free integration into any port available in Ethernet networks (even during plant operation)
- Satisfying highest security requirements (no routing, separate access for OT and IT level networks)
- Network load limited according to PROFIBUS & PROFINET International (PI) guidelines
- Easy integration into existing cabinets thanks to compact design

## Powerful Data Collection

- Collection of diagnostic and inventory data from up to 254 nodes, including controllers, IP subnets
- Operating as Supervisor in existing PROFINET networks
- Seamless integration with TH SCOPE software for data visualization, data monitoring and plant asset management
- Data collection also from standard Ethernet devices (e.g. PCs or camera systems)

## Easy operating concept and handling

- Suitable for network acceptance testing, monitoring, troubleshooting and plant asset management (inventory data)
- Quick and comprehensive network overview
- Intuitive handling and operation
- No engineering required
- Fault identification with intelligent troubleshooting assistance
- Easy to use web interface for configuration

# TH LINK Industrial Ethernet

## Technical Data

Functionality	<ul style="list-style-type: none"><li>• Network detection and data collection</li><li>• Alarm notification in case of fault</li><li>• Basic monitoring, configuration</li><li>• Integrated web server</li><li>• Configurable blacklist feature for robust operation</li><li>• Comprehensive network overview for quick and easy observation</li></ul>
Input Voltage	24 VDC (18 VDC ... 32 VDC)
Current Consumption	max. 180 mA
Stromaufnahme Relaiskontakt	max. 100 mA
Typical Power Loss	5 W
Operating Temperature	-40 °C ... +75 °C
Relative Air Humidity	5 % ... 95 % (non-condensing)
Ethernet Ports	RJ45 (10Base-T / 100Base-TX)
Supported SD Cards	See Release Notes
Mounting	35 mm DIN rail
Dimensions (HxWxD)	22,5 mm x 99 mm x 114,5 mm
Weight	120 g
Certifications	CE

## Scope of Delivery

Hardware	TH LINK Industrial Ethernet
Dokumentation	Installation Manual, Release Note (by download)

## Order Numbers

GDA-JY-003037	TH LINK Industrial Ethernet
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## Additional Products and Services

LRA-JY-003024	TH SCOPE
LRA-JY-003028	TH LINK PC Industrial Ethernet
GDA-JA-003034	TH LINK PROFINET
TRA-PN-CERTENG	PROFINET Technology Training with Exam for Certified PROFINET Engineer
TRA-PN-CERTINST	Training: PROFINET - Commissioning and Troubleshooting with Exam for Certified PROFINET Installer

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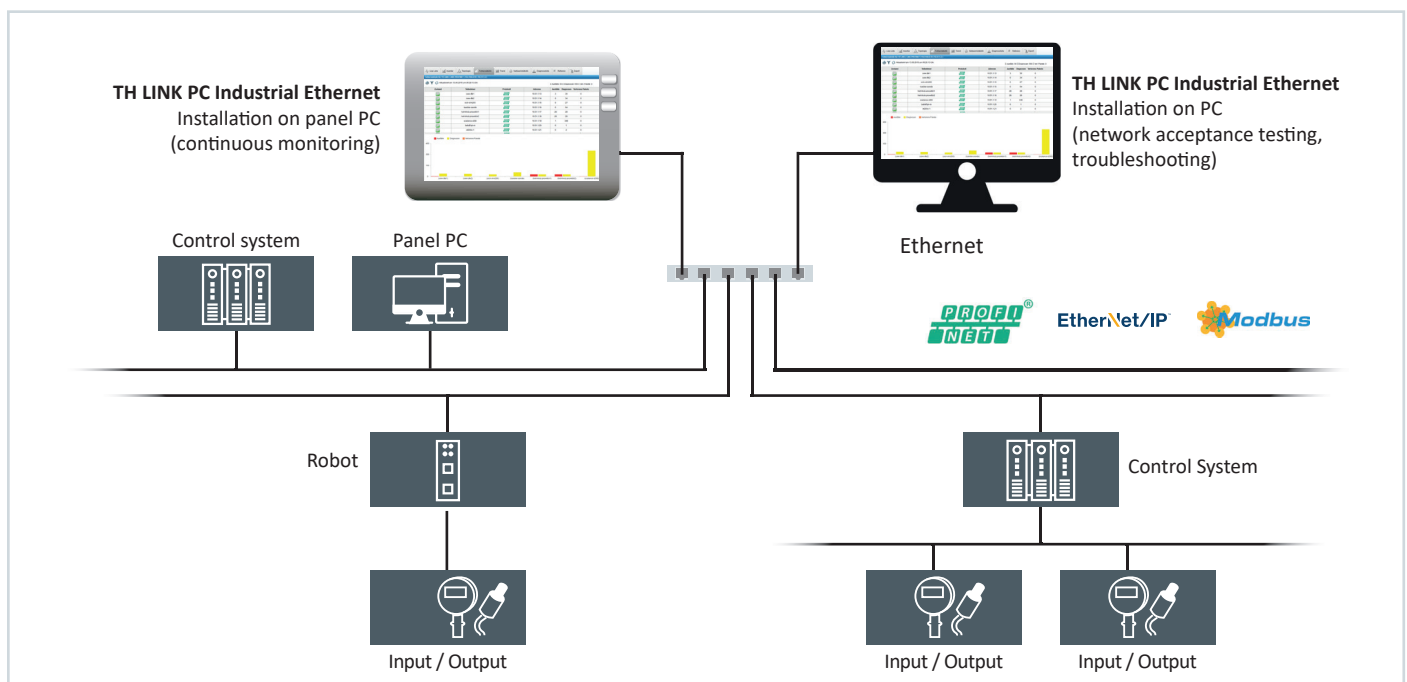
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# TH LINK PC Industrial Ethernet

Efficient Maintenance and Diagnostics of Industrial Ethernet Networks

- **Controller-independent Network Access for Monitoring and Administration**
- **Provision of Diagnostic Data for Further Processing**
- **Easy to Use Hardware Interface Addressing Needs of Industrial Maintenance Personnel**



## Painless plant integration

- Interference-free integration into any port available in Ethernet networks (even during plant operation)
- Satisfying highest security requirements (no routing, separate access for OT and IT level networks)
- Network load limited according to PROFIBUS & PROFINET International (PI) guidelines
- Operation on any PC with Windows-based operating system
- Support of PROFINET, EtherNet/IP and Modbus TCP protocols

## Powerful data collection

- Collection of diagnostic and inventory data from up to 254 nodes, including controllers, IP subnets
- Seamless integration with TH SCOPE software for data visualization, data monitoring and plant asset management
- Data collection also from standard Ethernet devices (e.g. PCs or camera systems)

## Easy operating concept and handling

- Suitable for network acceptance testing, monitoring, troubleshooting and plant asset management (inventory data)
- Quick and comprehensive network overview
- Intuitive handling and operation
- No engineering required
- Fault identification with intelligent troubleshooting assistance
- Easy to use web interface for configuration

# TH LINK PC Industrial Ethernet

## Technical Data

Functionality	<ul style="list-style-type: none"><li>• Network detection and data collection (active/passive for PROFINET networks)</li><li>• Basic monitoring</li><li>• Web-based configuration</li><li>• Alarm notification in case of fault</li><li>• Persistent data storage on hard disk</li><li>• Configurable blacklist feature for robust operation</li><li>• Comprehensive network overview for quick and easy observation</li></ul>
Supported Operating Systems	Windows 7, Windows 8.1, Windows 10, Windows Server 2012, Windows Server 2012 R2, Windows Server 2016

## Scope of Delivery

Software	TH LINK PC Industrial Ethernet
Documentation	Installation Manual, Release Note (by download)

## Order Numbers

LRA-JY-003028	TH LINK PC Industrial Ethernet
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## Additional Products and Services

LRA-JY-003024	TH SCOPE
GDA-JA-003034	TH LINK PROFINET
GDA-JY-003037	TH LINK Industrial Ethernet
TRA-PN-CERTENG	PROFINET Technology Training with Exam for Certified PROFINET Engineer
TRA-PN-CERTINST	PROFINET – Commissioning and Troubleshooting with Exam for Certified PROFINET Installer

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