PROFIBUS Tester 5 BC-700-PB

Quick and Easy Testing of Bus Physics, Bus Communication and Cabling

The PROFIBUS Tester 5 BC-700-PB is a powerful diagnostic and troubleshooting tool for testing the cables, measuring the signals and analyzing the communication of PROFIBUS networks. It is battery-powered and provides a graphical display, allowing for quick results when working in stand-alone mode. Optionally, also PROFIBUS PA network can be analyzed. In addition, the BC-700-PB supports the export of test results for advanced analysis.

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

Highly Mobile Bus Tester for Testing 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 without requiring a notebook

Enhanced Diagnostic Features Through Complementing PC-Based Software
>
> Many additional features for executing, analyzing and managing bus tests in PC mode (Trend, Topology Scan, Master Simulator, Oscilloscope, Frame Analyzer)
> Quick Test and User-Controlled Test for easy network status assessment at the push of a button
> Generation of test reports describing the actual status of the PROFIBUS installation
> Ideal for less experienced users as well as for 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
**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... 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 (requires optional adapter)**
  - 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: ±1.2 % at 0.01 % resolution, signal sampling with 128 samples per bit
  - Test range: ±5 V at 10 mV resolution (differential), 0 V ... 15 V at 15 mV resolution (A or B to DGND)
  - Sampling rate: up to 384 Msamples/s; sampled points: 2,400 (signal details), 6,192 (oscilloscope analysis)
- **Oscilloscope Display (Not Available for MBP)**
  - Active, maximum distance: 230 m, accuracy: ±2 m
- **Topology Scan (Not Available for MBP)**
  - Active, supported cable segment length: 5 m ... 1,500 m, accuracy: 5 %

**Operation**
- Via graphical colour display, four function keys and scrollwheel including central push-button or via PC/notebook

**Internal Memory Capacity**
- 3 user-definable network directories (segment and test location) for storing quick tests, trend logs and cable test results

**Trigger**
- IN: L = 0 V … 0.8 V; H = 2.4 V … 24 V; pulse > 10 μs, active high
- OUT: 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)**
  - PROFI BUS D-sub connector, 9 pins, power supply for external bus termination
- **MBP (PROFIBUS PA)**
  - Connector, 3 pins, for screw terminals at optional 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 supporting 11.1 VDC or external AC adapter 100 VAC ... 240 VAC, 50/60 Hz (galvanically isolated)

**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, adapter 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)
  - BC-700-PB upgrade license (on CD-ROM, for PROFIBUS PA option)
- **Documentation**
  - Device manual, “Getting Started” manual

**Order Numbers**
- DDA-NN-006014: PROFIBUS Tester 5 BC-700-PB
- DDL-NL-006010: PROFIBUS PA option for BC-700-PB (BC-700-PB serial number required for order placement)

**Additional Products and Services**
- **BC-600-PB-CB-M12**: D-Sub to M12 adapter set with T-piece and M12 bus termination for PROFIBUS DP
- **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 (fits into empty compartment of carrying case)
- **BC-PBMB-PB-S**: D-Sub service interface with active bus termination and 90° angled connector for PROFIBUS DP
- **BC-M12DP-PB**: M12 service interface for PROFIBUS DP, comprising M12 T-piece, end cap, M12 connection cable (1 m)
- **TRA-PA-TECH**: Training „PROFIBUS Technology“, 2 days
- **TRA-PB-TS**: Training „PROFIBUS Troubleshooting“, 3 days

**Technical changes reserved © Softing Industrial Automation GmbH, PROFIBUS_Tester_5_BC-700-PB_D_EN_1504_101, April 2015**
**PROFIBUS**

**PROFIBUS Tester 4**

Quick and Easy Testing of Bus Physics and Bus Communication

The PROFIBUS Tester 4 is a powerful tool that allows extensive testing of PROFIBUS segments during operation. It can also test the bus – or individual devices of interest – even with no PLC running.

**ALL IN ONE**

The PROFIBUS Tester 4 combines a signal tester, a storage oscilloscope, a protocol analyzer, and a master simulator into a single tool. This tool is designed for use in a wide range of applications – from setup and commissioning, documentation, acceptance testing, and optimization to preventive maintenance, troubleshootings and laboratory tests. In addition, the PROFIbus Tester 4 can be used without a notebook and is able to run comprehensive network tests in stand-alone mode.

**ALSO SUITABLE FOR LESS EXPERIENCED USERS**

With a single mouse click (PC mode) or a single push of a button (stand-alone mode) a user is able to initiate a full examination of a PROFIBUS network including automatic signal and protocol analysis. A summary of all results is displayed to the user in a very intuitive manner. In PC mode, the software package has been design to emphasize the all-important ease-of-use aspect while at the same time preserve the more in-depth diagnostic features required by networking experts. This makes the tool ideal for both less experienced users and fieldbus specialists.

**INTUITIVE USE AND CLEAR READINGS**

The PROFIBUS Tester 4 automatically detects the baud rate or open circuit voltage immediately after connection to the PROFIBUS. In stand-alone mode, the bus can be tested using the Live Status functionality. Up to ten quick tests and a trend recorded over maximum 41 days can be saved in the test tool and imported into the PC later. The PC software provides many additional features for executing, analyzing, and managing bus tests. A status bar continually shows the current bus state. Using the Network Status function, the bus can be tested with a Quick Test or a User-Controlled Test. The Topology Scan feature determines the overall cable length and the cable length between slaves. The test results can be documented in a detailed test report. The Long-Term Trend view is used for detecting sporadic faults. In the Oscilloscope and Frame Analyzer views, experts can perform in-depth, detailed analysis. For bus and device tests with the integrated master simulator, only the baud rate needs to be specified – no configuration or parameterization is required.

**CUSTOMER BENEFITS**

- Combines the diagnostic functions of previously separate tools in one product
- Full bus testing even without a notebook
- Very easy to use, delivering fast and reproducible test results
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>Via External AC Adapter 100VAC...240VAC 50/60Hz (Galvanically Isolated) or Direct Connection to 24VDC ±20%, Approximately 0.5A (Without Galvanic Isolation)</td>
</tr>
<tr>
<td>RS485 (DP)</td>
<td>PROFIBUS D-Sub Connector, 9 Pins, Power Supply for External Bus Termination Protocol and Frame Analysis: PROFIBUS DP and DPV1, Automatic Baud Rate Detection 9.6Kbit/s...12Mbit/s</td>
</tr>
<tr>
<td>Protocol and Frame Analysis:</td>
<td>PROFIBUS DP and DPV1, Automatic Baud Rate Detection 9.6Kbit/s...12Mbit/s</td>
</tr>
<tr>
<td>Signal Analysis:</td>
<td>PROFIBUS DP, DPV1, FMS, and MPI; Signal Quality Index 0...5000, Determined From Signal Waveform As Well As Signal/Noise Ratio and Rise Time; Signal Sampling With 8/16 Samples Per Bit</td>
</tr>
<tr>
<td>Oscillogram Display:</td>
<td>Test Range: ±5V at 10mV Resolution (Differential), 0V...15V at 15mV Resolution (A or B to DGN); Sampling Rate: Up to 384MSamples/s; Sampled Points: 2,400 (Signal Details), 8,192 (Oscillogram Analysis)</td>
</tr>
<tr>
<td>Topology Scan:</td>
<td>Active, Maximum Distance 230m, Accuracy ±2m</td>
</tr>
<tr>
<td>USB</td>
<td>V 2.0, High Speed 480 Mbit/s, Galvanically Isolated</td>
</tr>
<tr>
<td>Trigger</td>
<td>IN: &gt;2.4V for &gt;10µs, Active High OUT: Approximately 5V, Active Low, Connection to Storage Oscilloscope</td>
</tr>
<tr>
<td>Internal Memory Capacity</td>
<td>10 Memory Locations for Quick Tests, 1 Trend Log for 41 Days Maximum</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>35mm x 170mm x 110 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Test Tool, No Cable: Approximately 0.45kg; Complete Carrying Case: Approximately 3.9kg</td>
</tr>
<tr>
<td>Ambient Conditions</td>
<td>Operating Temperature: 0 °C...50°C, Storage Temperature: -20 °C...70°C</td>
</tr>
<tr>
<td>Conformity</td>
<td>Air Humidity: 10%...90% Without Condensation</td>
</tr>
<tr>
<td>Operation</td>
<td>CE, FCC, VCCI</td>
</tr>
<tr>
<td>PC Operating Software</td>
<td>Via Four-Line Display and Four Function Keys or Via PC/Notebook Display Localization: DE, EN, FR, IT, PL, ES (without National Language Specific Characters)</td>
</tr>
<tr>
<td></td>
<td>PROFIBUS Diagnostic Suite, See Separate Manual</td>
</tr>
</tbody>
</table>

### ADDITIONAL PRODUCTS AND SERVICES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>

### ORDER NUMBER

**BC-600-PB**

**BC-600-PB-CB-DSUB1**

**BC-600-PB-CB-M12**

**BC-MOST-PB**

**PB-LSZ-CHB3**

**BC-BPBMB-PB-S**

**BC-M12DP-PB**

**TRA-PB-TECH**

**TRA-PB-TS**

Softing Industrial Automation is a world leading provider of industrial communication products and technologies for manufacturing and process automation. Our products are tailored to the requirements of system integrators, device vendors, machine and equipment manufacturers or end users and are known for its ease of use and functional advantages.
The PROFIBUS Protocol Analyzers are efficient tools for testing the bus communication on PROFIBUS DP and PA segments during operation.

**AN EAR TO PROFIBUS**
The BC-400-PB PROFIBUS Protocol Analyzer is a tool for analyzing PROFIBUS DP communication. The BC-450-PB allows analyzing the communication on PROFIBUS DP and PA simultaneously, e.g. before and after a link or coupler. Both tools can be used for setup and commissioning, acceptance testing, optimization, troubleshooting and laboratory tests relating to fieldbus communication.

**ALL BUS DEVICE STATES AT A GLANCE**
The PC software is very simple to use. One mouse click starts the protocol analysis. The test results are clearly structured. The status of each bus device is color coded in a live list for easy readability. Classical frame analysis functions that only experts need are accessed separately from the standard functionality. This makes the tool ideal for both, users with a basic knowledge of the PROFIBUS protocol and fieldbus specialists.

**INtuitive use and clear readings**
The PC software provides many features for performing, analyzing and managing bus tests. In the Network Status view, the bus communication can be analyzed with a Quick Test or a User-Controlled Test. The test results include a live list with the color coded state of each bus device, an event log, counters for retries, restarts and diagnostics, the input/output/parameter and configuration data of the slaves, and decoded diagnostic messages in plain text based on the GSD files.
In Expert mode, the Frame view allows tracing and displaying all bus traffic according to user-defined trigger and filter settings for PROFIBUS services, addresses and data.
The baud rate is detected automatically when a test is started. As soon as the test is completed, a detailed test report can be generated. The protocol analyzer also provides a special long-term trend function that helps detecting sporadic faults.

**Customer Benefits**
- All Bus Device States at a Glance
- Complete Event Log
- Diagnostic Messages in Plain Text
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS485 Interface (PROFIBUS DP)</td>
<td>9-Pin D-Sub Connector with Power Supply for Optional BC-131-PB Active Cable, Galvanic Isolation Baud Rates: 9.6, 19.2, 45.45, 93.75, 187.5, 500, 750 Kbit/s, 1.5, 3, 6, 12Mbit/s</td>
</tr>
<tr>
<td>MBP Interface (BC-450-PB only)</td>
<td>3-Pin Screw Terminal, Galvanic Isolation, Bus Powered Medium Attachment Unit Baud Rate 31.25Kbit/s</td>
</tr>
<tr>
<td>USB Interface</td>
<td>USB Version 2.0, High Ppeed (480Mbit/s) and Full Speed (12Mbit/s) with Automatic Detection Connector: USB Type B with USB Cable A-B to PC</td>
</tr>
<tr>
<td>External Trigger Interface</td>
<td>Not Active</td>
</tr>
<tr>
<td>Status LEDs</td>
<td>RS485 Status, USB Status, MBP Bus Power (BC-450-PB only)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>5V (from USB), &lt; 300mA</td>
</tr>
<tr>
<td>Permissible Ambient Conditions</td>
<td>Operation: 0°C ... +55°C (Without Condensation) Storage: -20°C ... +70°C</td>
</tr>
<tr>
<td>Housing</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>69mm x 24mm x 124mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Approximately 200g</td>
</tr>
<tr>
<td>Conformity</td>
<td>CE, FCC, VCCI</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP20</td>
</tr>
<tr>
<td>Operation</td>
<td>Via PROFIBUS Diagnostics Suite PC Software, See Separate Data Sheet</td>
</tr>
</tbody>
</table>

## ORDER NUMBER

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC-400-PB</td>
<td>PROFIBUS DP Protocol Analyzer in Carrying Case, Including USB Power Supply, RS485 D-Sub Adapter Cable, USB Connection Cable, User Manual, and PB-DIAG-SUITE</td>
</tr>
<tr>
<td>BC-450-PB</td>
<td>PROFIBUS DP+PA Protocol Analyzer in Carrying Case, Including USB Power Supply, RS485 D-Sub Adapter Cable, MBP Terminal Block, USB Connection Cable, User Manual, and PB-DIAG-SUITE</td>
</tr>
</tbody>
</table>

## ADDITIONAL PRODUCTS AND SERVICES

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC-131-PB</td>
<td>Optional Active Connecting Cable for Remote Connection and for Analyzing Live PROFIBUS Segments With Reduced Influence on Their Operation, Spur Cable (3m), Bus-powered Internal Repeater</td>
</tr>
<tr>
<td>BC-PBMB-PB-S</td>
<td>D-Sub Service Interface with Active Bus Termination and 90° Angled Connector for PROFIBUS DP</td>
</tr>
<tr>
<td>TRA-PB-TECH</td>
<td>PROFIBUS Technology Training, 2 Days</td>
</tr>
<tr>
<td>TRA-PB-TS</td>
<td>PROFIBUS Troubleshooting Training, 3 Days</td>
</tr>
</tbody>
</table>

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Softing Industrial Automation GmbH
Richard-Reitzner-Allee 6
85540 Haar / Germany
Tel.: +49 89 4 56 56-340
Fax: +49 89 4 56 56-488
info.automation@softing.com
industrial.softing.com
PC software for performing, evaluating and managing tests of bus physics, bus communication and cabling in PROFIBUS networks. The application is extremely easy to use, with a quick test available at a click of the mouse.

**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
### Functionality of the Test Tools

<table>
<thead>
<tr>
<th>Test Functions</th>
<th>Operation</th>
<th>Standard Tests</th>
<th>Expert Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Battery Powered</td>
<td>Quick / User-controlled Test</td>
<td>Oszillogram Analysis</td>
</tr>
<tr>
<td></td>
<td>Graphical Color Display</td>
<td>Quick Overview Bus Physics and Communication</td>
<td>Topology</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>Quick Protocol Analysis</td>
<td>Master Simulator</td>
</tr>
<tr>
<td></td>
<td>Stand-alone Operation</td>
<td>Quick Signal Analysis (EIA-485)</td>
<td>Critical Events</td>
</tr>
<tr>
<td></td>
<td>Permanent Bus Status</td>
<td>Quick Signal Analysis (MBP)</td>
<td>Signal Quality</td>
</tr>
<tr>
<td>PROFIBUS Tester 5</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BC-700-PB</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PROFIBUS Tester 4</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BC-600-PB</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PROFIBUS Monitor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>BC-502-PB</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Technical Data

| System Requirements | PC Hardware*: RAM > 500 MB for Windows XP
|                     | > 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

* 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, PROFIBUS Tester 4 BC-600-PB and PROFIBUS Monitor BC-502-PB

**Documentation**
Manual “Getting Started”

### Order Numbers

**PB-DIAG-SUITE**
PROFIBUS Diagnostics Suite

### Additional Products and Services

**TRA-PB-TECH**
PROFIBUS Technology Training, 2 Days

**TRA-PB-TS**
PROFIBUS Troubleshooting Training, 3 Days
The Diagnostic Monitor is a versatile tool for testing PROFIBUS PA during operation. It is powered by the fieldbus so that no battery or external power source is required. The monitor is also suitable for use in hazardous areas.

UNIVERSAL APPLICATION
The PROFIBUS PA Diagnostic Monitor allows testing of the bus physics. In addition, it verifies that the communication between the bus devices is stable. This makes it a universal tool for setup and commissioning, documentation, acceptance testing, preventive maintenance, and troubleshooting.

VERY SIMPLE TO USE
A display and two function buttons provide outstanding ease of use. The bus test starts automatically when the tool is connected to a PROFIBUS PA network. The test results are clearly classified as either OK or BAD. This tool is an ideal choice even for less experienced users.

FULLY AUTOMATIC BUS TEST
After attaching the tool to the PROFIBUS PA network, the Diagnostic Monitor is powered by the fieldbus and automatically starts testing the segment without operator intervention. If the measured data exceeds the tolerance limits, the operator is informed in plain text.
At the segment level, the tool determines the segment voltage as well as average noise and peak noise for three frequency ranges. Short circuits between the individual signal wires and the cable shield are reliably detected.
At the field device level, the Diagnostic Monitor reports all frame retransmissions and all devices added or dropped during bus operation. The current and the lowest signal levels of all devices are also determined.
No PC or notebook is needed for testing the bus.
If required, the PROFIBUS PA Diagnostic Monitor stores the test data for later transfer to a PC via USB. The detailed test reports can be imported to Microsoft® Excel or exported as text files.

CUSTOMER BENEFITS
- No Battery or External Power Source Required
- No PC or Notebook Needed for Testing the Bus
- Clear OK/BAD Classification of Test Results
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>Fieldbus Mode: 8VDC..32VDC, USB Mode: 4.1VDC..5.5VDC</td>
</tr>
<tr>
<td>Maximum Input Current</td>
<td>Fieldbus Mode: 10mA *, USB Mode: 30mA</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>Fieldbus Mode: Maximum 320mW (at 32VDC), USB Mode: Maximum 165mW (at 5.5VDC)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20 °C..+50°C **</td>
</tr>
<tr>
<td>Dimensions</td>
<td>146mm x 88mm x 28mm</td>
</tr>
<tr>
<td>Weight</td>
<td>378g</td>
</tr>
<tr>
<td>Case Material</td>
<td>ABS</td>
</tr>
<tr>
<td>DC Voltage Measurement Range</td>
<td>8VDC..32VDC, ±0.5VDC</td>
</tr>
<tr>
<td>Signal Level Measurement Range</td>
<td>0.12Vpp..2Vpp, ±10%, ±0.025 Vpp</td>
</tr>
<tr>
<td>LF Noise Measurement Range</td>
<td>50Hz..4KHz, 0mVpp..1000mVpp, ±15%, ±25 Vpp ***</td>
</tr>
<tr>
<td>FF Noise Measurement Range</td>
<td>9KHz..40KHz, 0mVpp..1000mVpp, ±10%, ±25mVpp ***</td>
</tr>
<tr>
<td>HF Noise Measurement Range</td>
<td>90KHz..350KHz, 0mVpp..250mVpp, ±20%, ±25mVpp ***</td>
</tr>
<tr>
<td>Conformity</td>
<td>CE, FCC</td>
</tr>
<tr>
<td>Hazardous Area Approvals</td>
<td>FM USA and Canada:</td>
</tr>
<tr>
<td></td>
<td>- Class I Division 2 Groups A, B, C and D T4</td>
</tr>
<tr>
<td></td>
<td>- Class I Zone 2 Group IIC T4</td>
</tr>
<tr>
<td></td>
<td>- Class I Division 1 Groups A, B, C and D T4</td>
</tr>
<tr>
<td></td>
<td>- Class I Zone 0 and 1 Ex/AEx ia IIC T4</td>
</tr>
<tr>
<td></td>
<td>ATEX Ex ia IIC T4</td>
</tr>
<tr>
<td></td>
<td>ATEX Ex nLi IIC T4</td>
</tr>
<tr>
<td></td>
<td>ATEX Ex ic IIC T4</td>
</tr>
<tr>
<td>Data Transfer to PC</td>
<td>Via Supplied PC Software for Windows 2000, Windows XP, Windows VISTA, and Windows 7 (32Bit and 64Bit)</td>
</tr>
<tr>
<td></td>
<td>and USB Interface, Version 1.1 or 2.0</td>
</tr>
<tr>
<td></td>
<td>* In Fieldbus Mode, the BC-230-PB is Powered by the Fieldbus and Draws Approximately 9.4mA of Current from the Segment (Depending on Bus Voltage and Ambient Temperature).** Display Update Speed is Impaired Below -10°C. *** Vpp = Volts Peak-to-peak; Excessive Noise Adjacent to the Fieldbus Frequency (FF) Band Will Prevent the BC-230-PB from Reading the Fieldbus Data and Thus Reduce Functionality.</td>
</tr>
</tbody>
</table>

### ORDER NUMBER

**BC-230-PB**
PROFIBUS PA Diagnostic Monitor, Bus Powered, Ex Approvals, PC Software on CD-ROM, Manual, Certificates, Connection Cables, and Carrying Case
Note: User Manual, PC Software and Certificates in English

### ADDITIONAL PRODUCTS AND SERVICES

**PB-LSZ-CHB3**
Digital Fieldbus Leakage Current Clamp for Locating EMC Problems, 40Hz..1000Hz, MIN/MAX, Data Hold, Measuring Cables, Supplied in a Handy Case

**TRA-PB-TECH**
PROFIBUS Technology Training, 2 Days

**TRA-PB-TS**
PROFIBUS Troubleshooting Training, 3 Days

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Softing Industrial Automation is a world leading provider of industrial communication products and technologies for manufacturing and process automation. Our products are tailored to the requirements of system integrators, device vendors, machine and equipment manufacturers or end users and are known for its ease of use and functional advantages.

Softing Industrial Automation GmbH
Richard-Reitzner-Allee 6
85540 Haar / Germany
Tel.: +49 89 4 56 56-340
Fax: +49 89 4 56 56-488
info.automation@softing.com
industrial.softing.com
The PROFIBUS Monitor is a powerful tool for the continuous monitoring of the data communication on PROFIBUS DP. In case the tool detects critical changes that could result in a future network failure it automatically generates a notification that maintenance action is required.

**EARLY DETECTION OF BUS PROBLEMS**
The PROFIBUS Monitor is designed for fixed installation in control cabinets. One PROFIBUS Monitor per bus line is all that is needed - no matter how many physical segments are to be monitored. In addition, the tool’s open functionality allows use across all controller and PROFIBUS device types. The PROFIBUS Monitor reliably detects deteriorations in the bus communication and reports them to the operational staff. This allows implementing a condition-based maintenance strategy that reduces operator intervention to when it is needed. In this way, routine system downtimes can be used for planned maintenance action, making best use of the often scarce maintenance resources.

**EASY USE AND CLEAR READINGS**
No bus address or program changes to the PLC program are needed when installing the PROFIBUS Monitor. Configuration and visualization are performed over the network via an easy-to-use, integrated web interface. Setup, commissioning, and problem analysis require a basic knowledge of PROFIBUS.

**ADVANCE WARNING OF IMPENDING FAILURE**
On connection to a PROFIBUS segment, the PROFIBUS Monitor automatically detects the baud rate and immediately starts monitoring. It determines the bus cycle times and counts critical events. Critical events on the PROFIBUS are error frames, retries, restarts, and diagnostic messages. In this way, even slow deteriorations on “aging” installations can be reliably detected. When the number of error events exceeds the specified maximum limit per time unit, the PROFIBUS Monitor sends an alarm to the PLC via a signaling contact, or optionally to a server over the Ethernet network. The last 100 errors are stored in an alarm list. In the case of an alarm, the tool offers the possibility to create a frame traffic trace for the period of interest. The trace file can then be analyzed later using the PROFIBUS Diagnostics Suite.

**CUSTOMER BENEFITS**
> Prevents Production Loss from Bus Problems
> Allows Planned Maintenance of the Fieldbus
> Easy to Use via Integrated Web Interface, All Bus Device States at a Glance
## Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>24VDC +/–20%, Typically 0.3A, max. 1A</td>
</tr>
<tr>
<td>PROFIBUS</td>
<td>PROFIBUS Protocols: DP, DPV1, FMS, MPI; Connection: 9-Pin D-Sub, Baud Rates: 9.6Kbit/s .. 12Mbit/s</td>
</tr>
<tr>
<td>Ethernet</td>
<td>100BASE-TX, 10BASE-T, Connection: RJ45, IP Address: Manually or via DHCP</td>
</tr>
<tr>
<td>RS232</td>
<td>Reserved</td>
</tr>
<tr>
<td>USB</td>
<td>Only Available With BC-502-PB/CL Option</td>
</tr>
<tr>
<td>Control Signals</td>
<td>Potential-free Contact, 3 inputs 24VDC, Active High</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>131mm x 47mm x 111 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Approximately 0.4kg</td>
</tr>
<tr>
<td>Mounting</td>
<td>35mm DIN Rail</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP20</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>5°C..55°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20°C..70°C</td>
</tr>
<tr>
<td>Conformity</td>
<td>CE, FCC, VCCI</td>
</tr>
<tr>
<td>Display &amp; Parameterization</td>
<td>Via Integrated Web Interface</td>
</tr>
<tr>
<td>Snapshot Analysis</td>
<td>Via PROFIBUS Diagnostics Suite PC Software, See Separate Data Sheet</td>
</tr>
</tbody>
</table>

## Order Numbers

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC-502-PB-START</td>
<td>PROFIBUS Monitor Start Package, Consisting of BC-502-PB, BC-131-PB (See Figure on Right), AC Adapter/Cable, Patch/Crossover Cable and Carrying Case</td>
</tr>
</tbody>
</table>

## Additional Products and Services

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC-131-PB</td>
<td>Optional Active Connection Cable for Hassle-free Integration into Existing or Running Installations Without Recabling or the Disturbances Caused by a Spur Cable, 3m Length, Bus-powered Internal Repeater</td>
</tr>
<tr>
<td>BC-502-PB/SNMP</td>
<td>“Premium Line” Option, Provides SNMP Network Interface for Measurement Data, Supplied as Activation Code</td>
</tr>
<tr>
<td>TRA-PB-TECH</td>
<td>PROFIBUS Technology Training, 2-Day</td>
</tr>
<tr>
<td>TRA-PB-TS</td>
<td>PROFIBUS Troubleshooting Training, 3-Day</td>
</tr>
</tbody>
</table>

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TH LINK PROFIBUS

PROFIBUS Diagnostics and PROFIBUS Access for Plant Asset Management Applications

TH LINK PROFIBUS provides controller-independent access to PROFIBUS networks for plant operation and maintenance staff. The tool supports both network diagnostics applications and plant asset management applications. TH LINK PROFIBUS is easy to use and can be integrated without interfering with the operation of existing installations.

**Independent Access to PROFIBUS Network**

> Controller-independent
> Independent of configuration tools
> Access for plant asset management applications to configure field devices based on FDT/DTM and EDDL standards (acyclic master)

**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**

> Passive listening to PROFIBUS DP protocol
> Threshold monitoring for frame retries
> Statistics for optimization of the network configuration
> Easy detection of missing terminating resistors

**Optimized for Use by Maintenance Engineers**

> Central and time-saving parameterization of PROFIBUS and HART field devices directly from the control room
> Continuous monitoring and troubleshooting for PROFIBUS networks
> Fault identification with intelligent troubleshooting assistance
> Seamless integration with TH SCOPE diagnostics software
### Technical Data

**Functionality**
- Network detection and data collection (PROFIBUS DP)
- Acyclic master (PROFIBUS DP-V1)
- Alarm notification in case of fault
- Basic monitoring, configuration
- Integrated web server

**Supported Plant Asset Management Applications**
e.g. Endress+Hauser FieldCare, Emerson AMS Suite, Yokogawa Fieldmate, PACTware

**PROFIBUS Transmission Rate**
- max. 12 MBit/s (AMS Device Manager, FDT)
- max. 1.5 MBit/s (TH SCOPE)

**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  TH LINK PROFIBUS

### Additional Products and Services

- LRA-JY-003024  TH SCOPE (software key)
- LRL-JY-003025  TH SCOPE (hardware key)
- LRA-NN-021980  DTM Library
- VAA-YY-023000  PACTware
- VAA-NM-023001  TACC
- TRA-PB-TECH  Training “PROFIBUS Technology”
- TRA-PB-TS  Training “PROFIBUS Troubleshooting”

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Your local Softing Contact:
The TH SCOPE software product provides powerful industrial network diagnostics for plant operators and maintenance engineers. TH SCOPE is an all-in-one, easy-to-use solution for continuous monitoring, acceptance testing and troubleshooting. Designed for use with TH LINK components, the product supports the PROFIBUS, PROFINET, EtherNet/IP and Modbus TCP protocols.

**Versatile Solution for a Wide Variety of Diagnostics Applications**
- Network commissioning, acceptance testing
- Stationary operation for continuous monitoring
- Fault localization and identification in case of failure

**Comprehensive Representation and Analysis of Diagnostic Data**
- Data on network communication (e.g. load, error statistics)
- Data from network configuration (e.g. device names, firmware versions, topology)
- Diagnostic messages (network and device diagnostics)
- Data collection also from standard Ethernet devices (e.g. PCs or camera systems)

**Optimized for Maintenance Users**
- Easy and intuitive handling and operation
- No expert knowledge of IT or networks required
- Support of various network protocols (PROFIBUS, PROFINET, EtherNet/IP, Modbus TCP)

**Flexible Integration into Existing Systems and Processes**
- Integration of network data into monitoring tools and supervisory control systems via SNMP or OPC
- Export of all diagnostic data, support of further processing in applications such as Excel
- Web-based access, local or remote
Technical Data

Functionality

- Network overview with network and device status plus diagnostic messages with troubleshooting recommendations
- Analysis of device logs
- Live list, statistics, inventory
- Topology and trend analysis
- Automatic e-mail notification in case of fault
- Reference comparison
- Acceptance measurements and acceptance reports
- Data export via Excel

Supported Protocols

PROFIBUS, PROFINET, EtherNet/IP, Modbus TCP

Interfaces

- SNMP Agent
- OPC Classic DA Server

System Requirements

- Web browser with Adobe Flash Player 10.0 or higher
- Adobe Reader 8 or higher for reading the documentation and for printing the topology

Supported Operating Systems

Windows 7 (32 Bit and 64 Bit), Windows 8, Windows Server 2008, Windows Server 2012

Network Access

Data collection through TH LINK (PROFIBUS, PROFINET, EtherNet/IP, Modbus TCP and Industrial Ethernet)

Demo Version

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 http://industrial.softing.com)

License

Software or hardware key

Documentation


Order Numbers

LRA-JY-003024  TH SCOPE  (software key)
LRL-JY-003025  TH SCOPE  (hardware key)

Additional Products and Services

GEA-JN-003006  TH LINK PROFIBUS
GDA-JA-003034  TH LINK PROFINET
GDA-JC-003035  TH LINK EtherNet/IP
GDA-JE-003036  TH LINK Modbus TCP
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”
TRA-PN-TECH  Training “PROFINET Technology”
TRA-PN-CERTENG  Training “PROFINET Commissioning and Troubleshooting”