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

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<td></td>
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<td>Master Simulator</td>
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</table>

### Cable Test

- Cable Length ✓
- Check of bus termination ✓
- Detection wire break, shield break, short circuit ✓
- Report of cable test results ✓

### Bus and Network Status

- Idle voltage/baudrate, plugged to station ... ✓ ✓
- 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 ✓

### Signal Quality

- Quality Index as bar graph ✓ ✓
- Signal-to-noise ratio and rise times ✓

### Trending

- Long-term recording of quality index and errors 1 ✓

### Topology

- Active TDR measurement with graphical representation ✓
- Passive station localization (non-interacting) ✓

### Oscilloscope

- 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 ✓

### Frame Recording

- Instant recording (ring buffer) ✓
- Long-term recording (to files) ✓
- Frame-controlled recording (trigger) ✓
- Recording filter and display filter ✓
- Comprehensive frame decoding ✓

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1 Test can be conducted and stored in stand-alone operation, evaluation of test results in PC mode only
## 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
- PROFIBUS DP-V0, DP-V1, FMS and MPI

**Signal Analysis**:
- ... via EIA-485
- ... via MBP (requires optional adapter)

**Oscilloscope Display (N/A for MBP)**
- Test range: ±5 V at 10 mV resolution (differential), esolution (A or B to DGND); sampling rate: up to 384 Msamples/s; sampled points: 2,400 (signal analysis)
- 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

**Topology Scan (N/A for MBP)**
- Test: maximum active distance: 230 m, accuracy: ±2 m
- Active, supported cable segment length: 5 m … 1,500 m, accuracy: 5 %

**Cable Test (N/A for MBP)**
- Active, maximum distance: 230 m, accuracy: ±2 m
- 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)**
- 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).

### 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)

**Documentation**
- Device manual, "Getting Started" manual

### Order Number
- DDA-NN-006014 PROFIBUS Tester 5 (BC-700-PB)

### 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 (It 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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