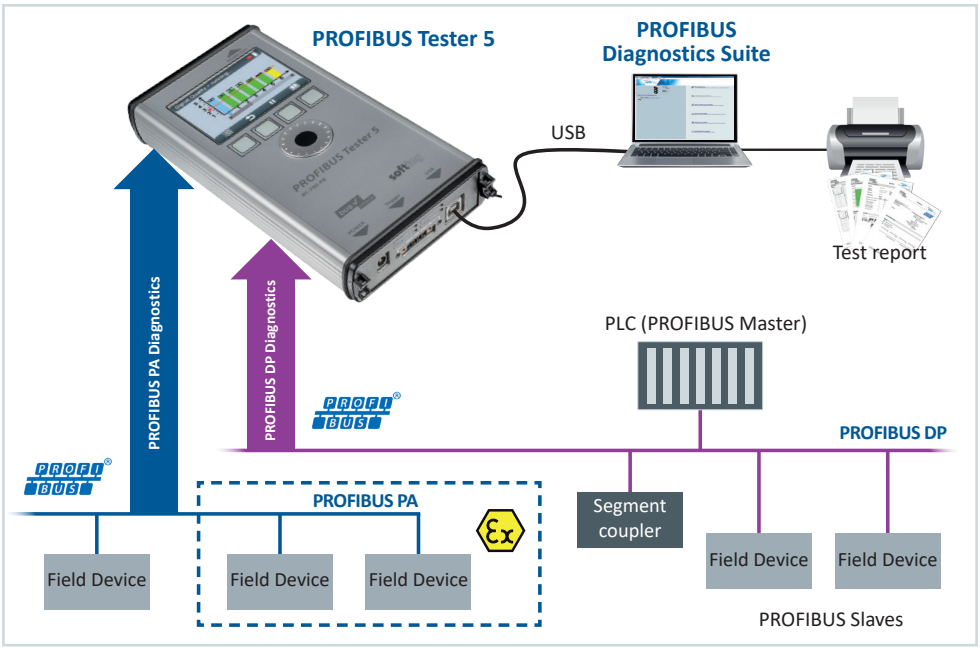
PROFIBUS Tester 5 (BC-700-PB)

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

optimize!

PROFIBUS Diagnostic Functionality

	Stand-alone Operation	PC-based Operation
Measurement Methods		
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	✓	✓
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 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		✓
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)	✓	
Oszilloscope		
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		✓

[1] Test can be conducted and stored in stand-alone operation, evaluation of test results in PC mode only

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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 (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
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 details), 8,192 (oscilloscope analysis)
Topology Scan (N/A for MBP)	Active, maximum distance: 230 m, accuracy: ±2 m
Cable Test (N/A 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 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	**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 Opreating 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 optinal 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) PROFIBUS Tester 5 (BC-700-PB) upgrade license (on CD-ROM, for PROFIBUS PA option)
Documentation	Device manual, “Getting Started“ manual

Order Number

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

Additional Products and Licenses

LRA-NN-006011	License Oscilloscope Option
DDL-NL-006010	License PA-Option (+ 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 (fi ts 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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