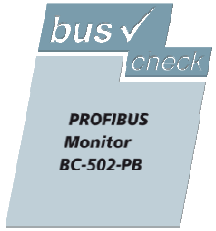
PROFIBUS Monitor
BC-502-PB

Customer Information
Version 05/02/2013



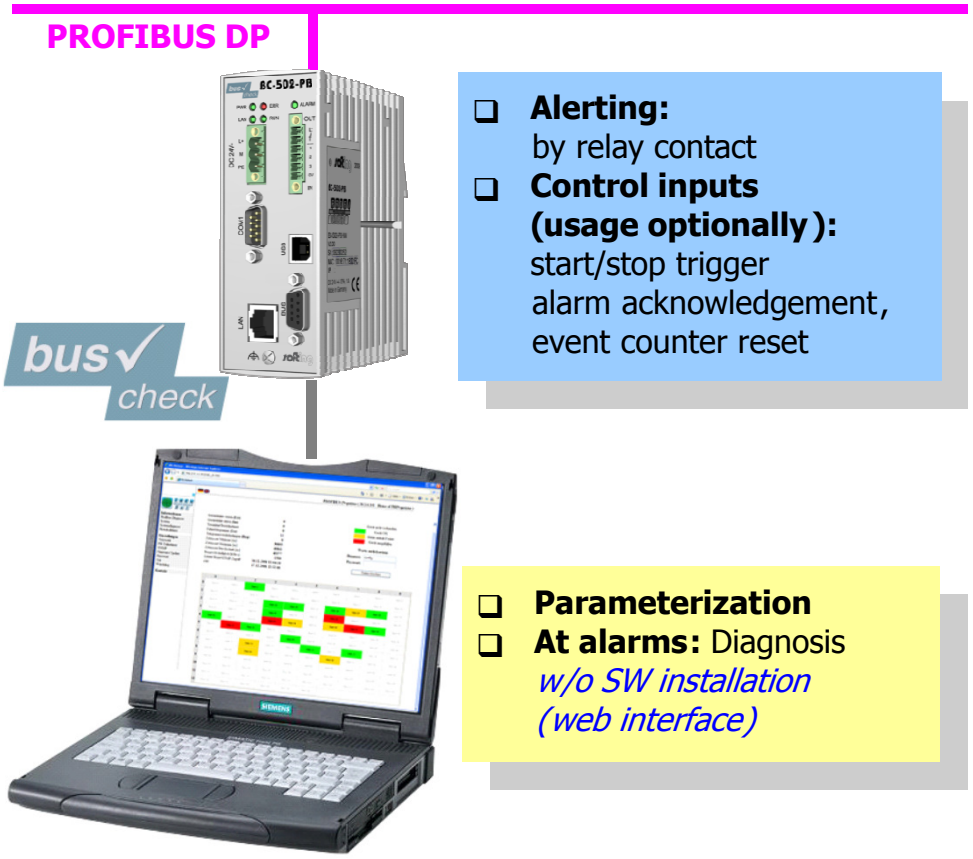
Softing Industrial Automation GmbH

softing
your connection to excellence

PROFIBUS Monitor BC-502-PB
Overview: permanent monitoring of PROFIBUS DP

- By continuously monitoring all traffic on the bus, the Monitor reliably detects (even slow, initially uncritical) deteriorations in the bus communication that could cause unplanned system downtime.
- If maintenance action is required, the tool automatically alerts the operational staff.
- Based on protocol analyses, the BC-502-PB determines the bus cycle times and monitors the following critical events (quality parameters):
  - Error frames
  - Retries
  - Drop-outs / restarts
  - Device errors (internal/external diagnostics)
- Supports PROFIBUS Protocols DP, DPV1, FMS, MPI
- Baud rates: 9,6 kBit/s – 12 MBit/s

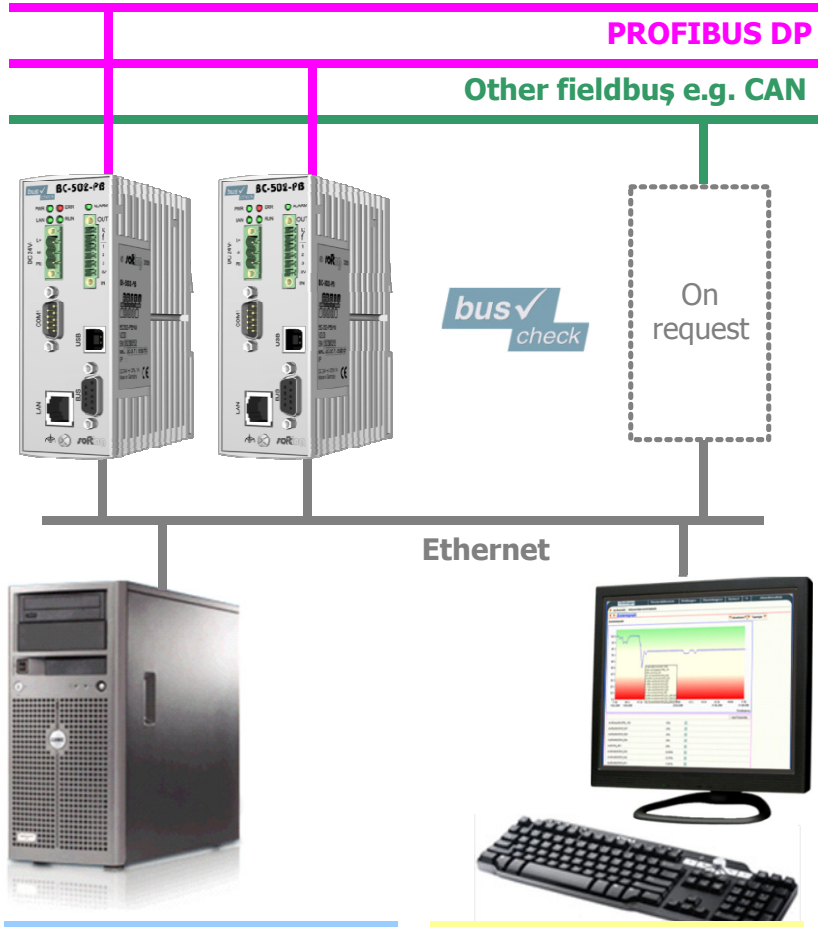
PROFIBUS Monitor BC-502-PB
Overview: alerting via PLC/process controller



- **Alerting:**
  by relay contact
- **Control inputs (usage optionally):**
  start/stop trigger
  alarm acknowledgement,
  event counter reset

- **Parameterization**
- **At alarms:** Diagnosis
  w/o SW installation
  (web interface)

PROFIBUS Monitor BC-502-PB
Overview: central data and analysis server

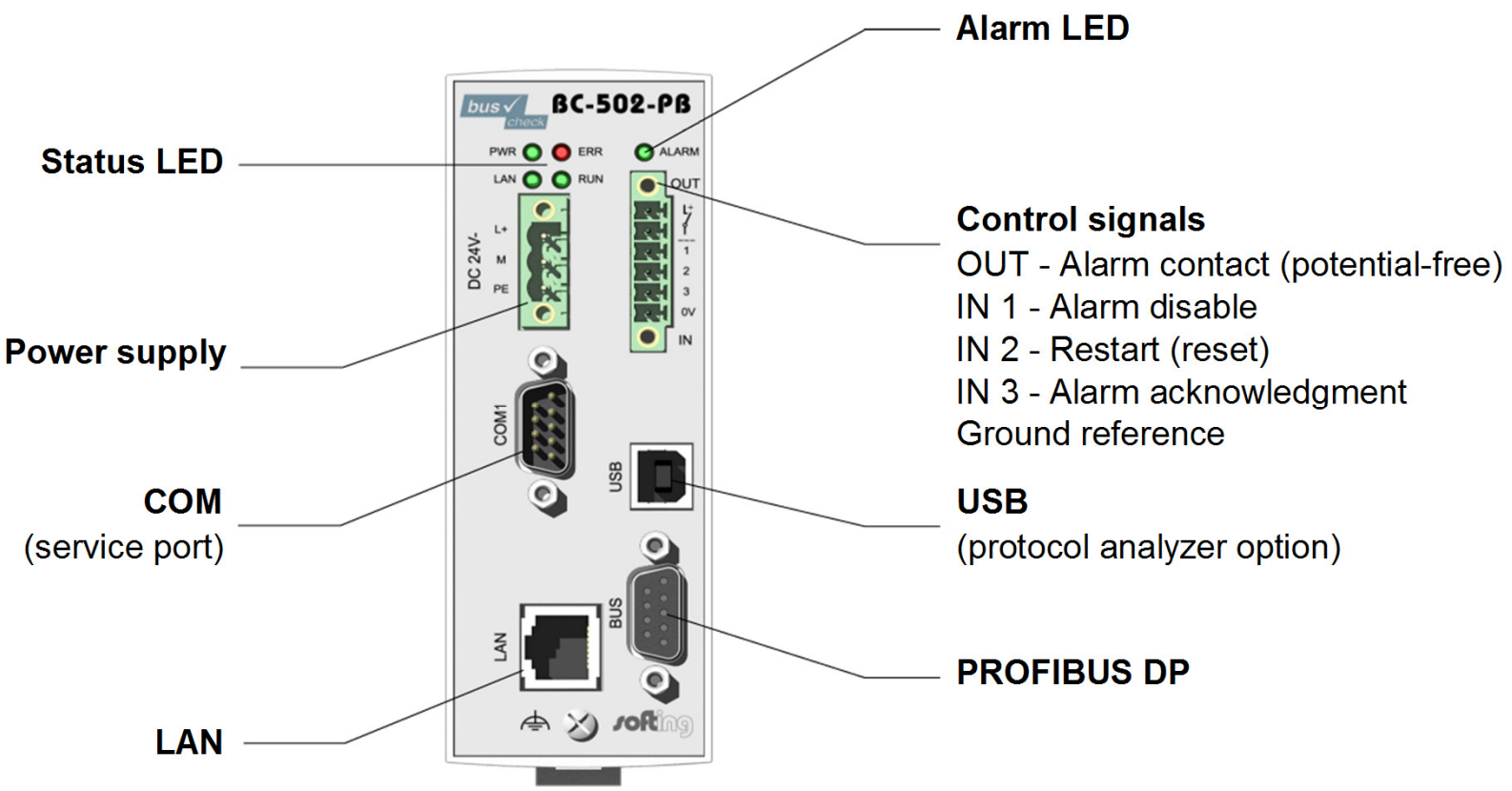


- **PROmanage Server**
  Central event and alarm database for up to 80 Monitors

- **Office PC:**
  Overall fieldbus break down warning+analysis
  w/o SW installation (web interface)

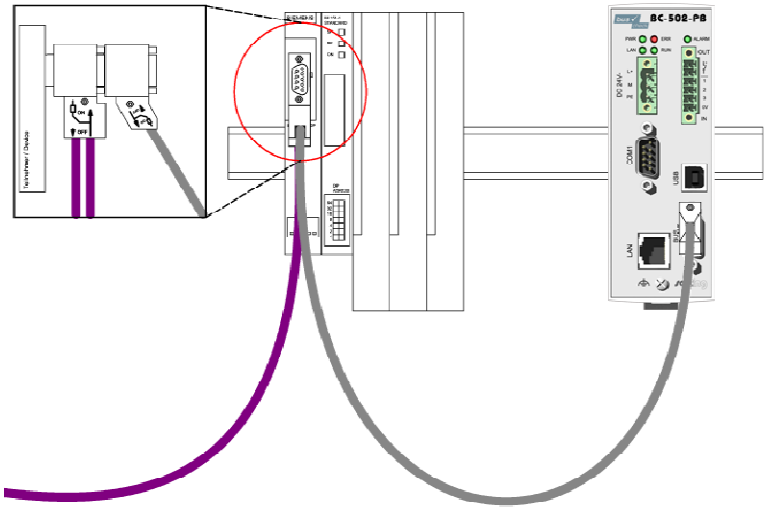
softing
your connection to excellence

PROFIBUS Monitor BC-502-PB
Connectors and status displays



PROFIBUS Monitor BC-502-PB
Connection variants to PROFIBUS DP

1. With Active Cable BC-131-PB



2. At the bus end
3. Loop-in

Measuring Location:

ⓘ The PROFIBUS Monitor can basically be connected anywhere on a PROFIBUS DP network. The ideal measuring location is directly at the master or PLC. At this location, the tool can continue to analyze the bus communication even if lines are interrupted.

PROFIBUS Monitor BC-502-PB
Commissioning

1. Hat rail mounting (U-rail)
2. Connect to PROFIBUS DP
3. Connect to external power supply 24 VDC

➔ The Monitor initializes, detects baud rate of a connected bus segment automatically and starts measuring operation mode (start-up takes approx. 1 min.)

➔ At 1st commissioning now the network (LAN) needs to be configurated at Monitor and PC - one-time only

Ready yet!

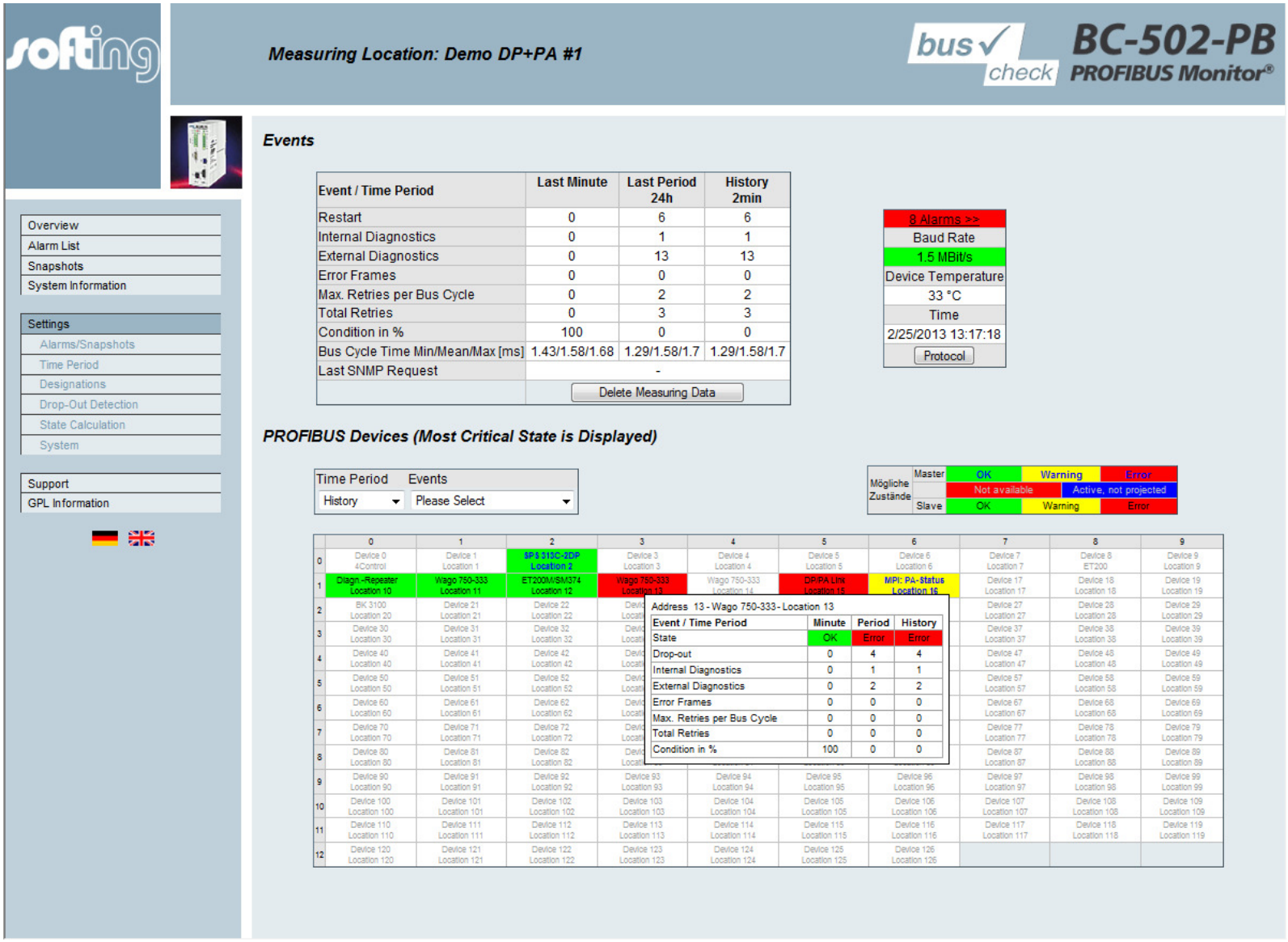
PROFIBUS Monitor BC-502-PB
Measuring procedure – first steps

- The alerting, alarm contact and snapshot functions are enabled by default, the quality parameter thresholds are set to maximum sensibility.
- If no errors are detected with these settings over a prolonged period of time, you can say with some certainty that the tested bus segment is error-free.

ⓘ However, to determine segment health with absolute certainty you need to carry out a complete baseline measurement first. You can run this measurement using the PROFIBUS Tester 3 and the BC-400-PB Protocol Analyzer, which also provide you with a comprehensive test report on bus physics and bus communication.

- At error indication:
  - The ERR LED turns red.
  - The potential-free contact closes, the relay clicks audibly.
  - Visualisation via the integrated web interface.

PROFIBUS Monitor BC-502-PB
Web interface - start-up and overview page



softing
your connection to excellence

PROFIBUS Monitor BC-502-PB
Web interface – highlights I

- Settings for thresholds, alerts and snapshots in one go or separately for each device

Thresholds, Alerts and Snapshot Settings

Alerting On/Off	Device	Threshold					Action	
		Per 5 Seconds				Per Bus Cycle	Alarm LED, Switch, SNMP Trap	Snapshot
		Drop-Out	Internal Diagnostics	External Diagnostics	Error Frames	Retries		
☑	All	1	1	1	1	1	☑	☑

Frames before event:	250
Frames after event:	250

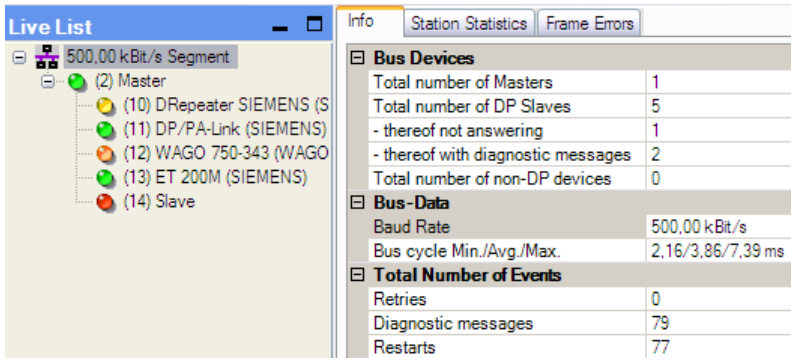
Save Thresholds Extended View

softing
your connection to excellence

PROFIBUS Monitor BC-502-PB
Web interface – highlights II

- Alarm list of the last 100 critical events
- Snapshots with 500 telegrams around the last 8 critical events
  - downloadable from web interface to PC for analysis with protocol analyzer SW (incl. in scope of supply)

No.	Time Stamp	Address	Prot	Primitive	Service	Data
2639	11:00:30.759498	2 -> 2	FDL	Request	TOKEN	
2640	11:00:30.759644	2 -> 10	DP	Request	DATA EXCHANGE	01
2641	11:00:30.759890	2 <- 10	FDL	Response	SC	
2642	11:00:30.759990	2.62 -> 11.60	DP	Request	DIAGNOSIS	
2643	11:00:30.760644	2.62 -> 12.62	DP	Request	CHECK CONFIG	20 10
2644	11:00:30.760955	2.62 <- 12.62	FDL	Response	SC	
2645	11:00:30.761056	2.62 -> 13.60	DP	Request	DIAGNOSIS	
2646	11:00:30.761710	2.62 -> 14.60	DP	Request	DIAGNOSIS	
2647	11:00:30.762366	2 -> 93	FDL	Request	FDL STATUS	
2648	11:00:30.762910	2 -> 2	FDL	Request	TOKEN	



PROFIBUS Monitor BC-502-PB
Advantages

- One Monitor per bus line is all that is needed - no matter how many physical segments are to be monitored.
- The tool can be used on the live PROFIBUS without interfering with it’s operation.
- Using the BC-131-PB active PROFIBUS connection cable (optional accessory, not included in scope of delivery), the Monitor can be integrated into the fieldbus anytime, without undesirable side effects, also temporarily
- No bus address or changes to the PLC program are required for setup and commissioning.
- In addition, the tool's open functionality allows use across all controller and bus device types.

PROFIBUS Monitor BC-502-PB
Benefits

- Permanent monitoring of the „health“ of the PROFIBUS.
- At increasing “illnesses” the operational staff will be alarmed.
- Bug fixing will be enabled IN ADVANCE of unplanned breakdowns.
- Plant availability increases.
- best use of the often scarce maintenance resources as it reduces operator intervention to when it is needed.
- It helps and minimize downtimes by permitting.
- Network shut downs can be utilized better as maintenance action can be scheduled in advance

N1

PROFIBUS Monitor BC-502-PB
BC-502-PB-START – starter package

- Complete accessories for quick commissioning.
- Everything included to start measuring at running systems immediately

softing
your connection to excellence

Diapositive 14

N1 Fotos manipulieren, sobald die neue Grafik (Frontlabel Koffer) verfügbar ist.
NH; 27/02/2013

PROFIBUS Monitor BC-502-PB
Order No.

BC-502-PB	PROFIBUS Monitor for continuous bus monitoring and condition-based maintenance of DP/DPV1/FMS/MPI, rail-mounted, ext. 24 VDC required, signaling contact, ethernet 10/100BASE-TX (RJ45) incl. internal web server and manual
BC-131-PB	Optional active connection cable fitting PROFIBUS protocol analyzers BC-4x0-PB or Monitor BC-502-PB for hassle-free integration into existing or running installations without changing cabling, spur cable length 3 m, internal repeater bus powered
BC-502-PB/CL	PROFIBUS Monitor software option „Comfort Line“, enables full featured protocol analyzer via USB, incl. additional PC SW on CD-ROM and printed manual English/German (available 07/2009)
BC-502-PB-Start	PROFIBUS Monitor start package consisting of BC-502-PB, BC-131-PB incl. power supply, patch and crossover cable, carrying case
BC-502-PB-PMxx	Central diagnosis management and data analysis for up to 80 Monitors comprising “Premium Line” and PROmanage® server license for x=5/10/20/40/80 Monitors, SW installation and commissioning at site and possibly network data server, cables, cabling etc. as to be agreed

PROFIBUS Monitor BC-502-PB
Further informationen

- Softing web page:
  - Product Information
  - Manual
  - Technical article: „Early-warning system for PROFIBUS“ (incl. fieldbus maintenance strategy approaches)

PROFIBUS Monitor® BC-502-PB
The proper decision

bus check

PROFIBUS
Monitor
BC-502-PB

Softing Industrial Automation GmbH

Richard-Reitzner-Allee 6

85540 Haar

Germany

Tel.: +49 89 456 56 - 340

Fax: +49 89 456 56 - 399

info.automation@softing.com

industrial.softing.com

softing
your connection to excellence