



BACring. The powerful control system
for smoke dampers

Technical Datasheet DPB-Buscontroller

[DUP] BACring - Control system

VERSION 1.14

April 2026

Eurocircuits Erkelenz GmbH
Brüsseler Allee 12
41812 Erkelenz

Tel.: +49 (0) 2431 955 18 01
Web: <https://www.bacring.de>
E-Mail: kontakt@bacring.de

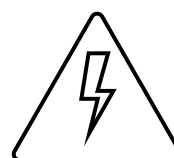


Safety Instructions and Warranty Conditions

WARNING: DANGER TO LIFE!



Before working on the device, it must be disconnected from the power supply (unplug the mains plug). Work on the device may only be carried out by a qualified electrician.

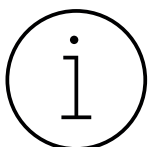


Warranty Conditions



Installation and commissioning must be performed by a qualified electrician! Please read the technical data sheet before installation

Information



The individual modules are built and tested in accordance with applicable standards and laws and left the factory in perfect condition. To maintain this condition and ensure safe operation, the instructions contained in the user manual must be observed.

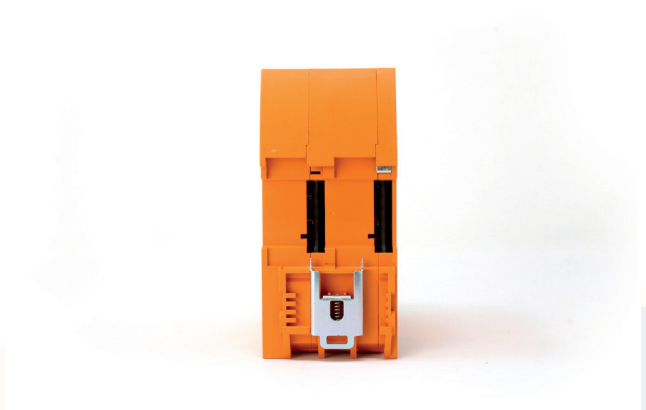


Table of contents

Safety Instructions and Warranty Conditions	2
Table of Contents	3
Views	4
Description, DPB-Standalone & DPB-Redundant	5
Communication between DPC-Controller & DPB-Buscontroller	6
Maximum System size per DPB-Buscontroller	6
Functional Features	6
Redundant Ring Bus Structure	6
Automatic Device Detection	6
Diagnostic Function	6
Event Memory	7
EMC-Optimized Design	7
Compatibility	7
DPB-Buscontroller Status / Error Messages	8-10
Technical Data	10-11
Connection Diagram	11-12



Views





Description

The DPB-Buscontroller serves as the central communication interface between the DPC-IO (DPC-Controller) and the BACring modules.

Via the two ring bus ports A and B, the DPB-Buscontroller communicates with all connected ring bus devices.

If an event occurs at a connected ring bus module, it is actively transmitted to the DPB-Buscontroller as an input change IO (Active Broadcast function).

The Active Broadcast function of the BACring protocol ensures that safety-relevant information, regardless of the number of modules or the total ring bus length, is forwarded to the DPC-Controller unit within 1.5 seconds.

This enables particularly fast processing and visualization of:

- smoke detector alarms
- end-position feedback
- fault messages

The ring-shaped bus topology provides high operational reliability and ensures continuous monitoring of all connected fire damper and smoke extraction components.

The DPB-Buscontroller operates completely maintenance-free and is equipped with two LED indicators for quick diagnostics of the bus status:

- one LED for power and polling operation
- one LED for error indication

The DPB-Buscontroller is available both as a standard version (Standalone) and as a redundant system.

DPB-Standalone

DPB-Standalone refers to a DPB-Buscontroller without redundancy. This system variant is typically used for fire protection functions without requirements for functional integrity.

DPB-Redundant

For applications with functional integrity requirements, an active redundancy is available, consisting of two DPB-Buscontrollers:

- DPB-RP (Primary)
- DPB-RS (Secondary)

The two Bus-Controllers are interconnected via a DPR-Switch.

If the Primary DPB fails, the Secondary DPB automatically takes over the monitoring and control of all connected ring bus device



Communication between DPC-Controller and DPB-Buscontroller

The connection between the DPC-Controller unit and the DPB-Buscontroller is established via the DPC-IO coupling module, which acts as the central communication and power interface.

The DPC-IO and up to four DPB-Buscontroller are directly interconnected via a common pluggable DIN-rail bus.

The DIN-rail bus provides:

- RS485 communication between the DPC-IO and up to four DPB-Buscontroller
- 24 V power supply transfer from the DPC-IO to up to four DPB-Buscontroller

Because the DPC-IO and DPB-Buscontroller must be connected via the DIN-rail bus, the DPC-Controller, DPC-IO, and all DPB-Buscontroller must be installed in the same control cabinet.

Maximum System size per DPB-Buscontroller

- 2,500 data points
- 5,000 m ring bus length

Functional Features

Redundant Ring Bus Structure

The DPB-Buscontroller continuously monitors the integrity of the ring.

In the event of a ring bus interruption, the DPB automatically switches to redundant line operation, ensuring uninterrupted communication with all modules.

Automatic Device Detection

Newly added or removed modules are automatically detected during bus initialization.

Diagnostic Function

- Detection of ring bus interruptions / short circuits
- Detection of failure of the 24 V power supply to the control cabinet modules:
 - DPM-I24C
 - DPM-O24C
 - DPM-M2A2
- Identification of faulty modules
- Live transmission of bus status to the DPC-IO



Functional Features

Event Memory

An internal event memory records status changes, fault conditions, and communication events.

EMC-Optimized Design

A robust RS485 communication interface and an EMC-optimized PCB layout ensure reliable operation even in electrically noisy environments.

Compatibility

The DPB-Buscontroller is fully compatible with:

- all BACring modules (DPM modules)
- modules from the previous product family (CPM modules)



DPB-Buscontroller Status / Error Messages

- Ring Bus - Status Messages

Ring Bus – Status Messages	Description
Status – BACring Protocol enabled	The BACring protocol is active. BACring modules are present in the ring
Status – Port A enabled	Monitoring of the ring bus modules is performed via Port A
Status – Port B enabled	Monitoring of the ring bus modules is performed via Port B
Status – Polling process active	Ring bus modules are being monitored. The polling process is active
Status – BUILD process active	The DPB-Buscontroller is building the ring bus
Status – BUILD process completed, module table stored	The DPB-Buscontroller has completed the ring setup and stored the module table
Status – New message in string queue	A message or command is pending in the queue
Status – Reset event occurred	DPB-Buscontroller reset occurred
Status - module reports change IO	One or more modules report state changes to the I/O.

- Ring Bus – Error Messages

Ring Bus – Error Messages	Description
Fault – Minus wire interrupted	Ring bus interruption
Fault – Short circuit between PLUS and GND on Port A	Ring bus interruption / short circuit between PLUS and GND on Port A
Fault – Short circuit between DATA and GND on Port A	Ring bus interruption / short circuit between DATA and GND on Port A
Fault – Short circuit between DATA and PLUS on Port A	Ring bus interruption / short circuit between DATA and PLUS on Port A



DPB-Buscontroller Status / Error Messages

Ring Bus – Error Messages	Description
Fault – Short circuit between PLUS and GND on Port B	Ring bus interruption / short circuit between PLUS and GND on Port B
Fault – Short circuit between DATA and GND on Port B	Ring bus interruption / short circuit between DATA and GND on Port B
Fault – Short circuit between DATA and PLUS on Port B	Ring bus interruption / short circuit between DATA and PLUS on Port B
Fault – System reset in progress	DPB-Buscontroller reset in progress
Fault – Ring bus fault on Port A	Ring bus interruption / short circuit on Port A
Fault – Ring bus fault on Port B	Ring bus interruption / short circuit on Port B
Fault – Short circuit between PLUS and GND between two modules on Port A	Ring bus interruption / short circuit between PLUS and GND on Port A
Fault – Short circuit between DATA and GND between two modules on Port A	Ring bus interruption / short circuit between DATA and GND on Port A
Fault – Short circuit between DATA and PLUS between two modules on Port A	Ring bus interruption / short circuit between DATA and PLUS on Port A
Fault – Interruption between two modules on Port A	Ring bus interruption / short circuit on Port A
Fault – Interruption between Port A and the first module	Ring bus interruption / short circuit between Port A and the first module
Fault – Short circuit between PLUS and GND between two modules on Port B	Ring bus interruption / short circuit between PLUS and GND on Port B
Fault – Short circuit between DATA and GND between two modules on Port B	Ring bus interruption / short circuit between DATA and GND on Port B
Fault – Short circuit between DATA and PLUS between two modules on Port B	Ring bus interruption / short circuit between DATA and PLUS on Port B
Fault – Interruption between the last module and Port B	Ring bus interruption / short circuit between the last module and Port B



DPB-Buscontroller Status / Error Messages

Ring Bus – Error Messages	Description
Fault – Short circuit on Port A	Ring bus interruption / short circuit on Port A
Fault – Short circuit on Port B	Ring bus interruption / short circuit on Port B
Fault – Interruption on Port A	Ring bus interruption on Port A
Fault – Interruption on Port B	Ring bus interruption on Port B
Fault – Ring bus error	Ring bus interruption (ring bus cable defective)
Fault – System error	At least one ring bus module is not part of the ring or the DPB-Buscontroller is defective
Ring bus is not closed	Ring bus is not closed
Fault – Power supply failure on module type DPM-I24C / DPM-O24C or DPM-M1A1 / DPM-M2A2	Power supply failure on module type DPM-I24C / DPM-O24C or DPM-M1A1 / DPM-M2A2

Technical Data

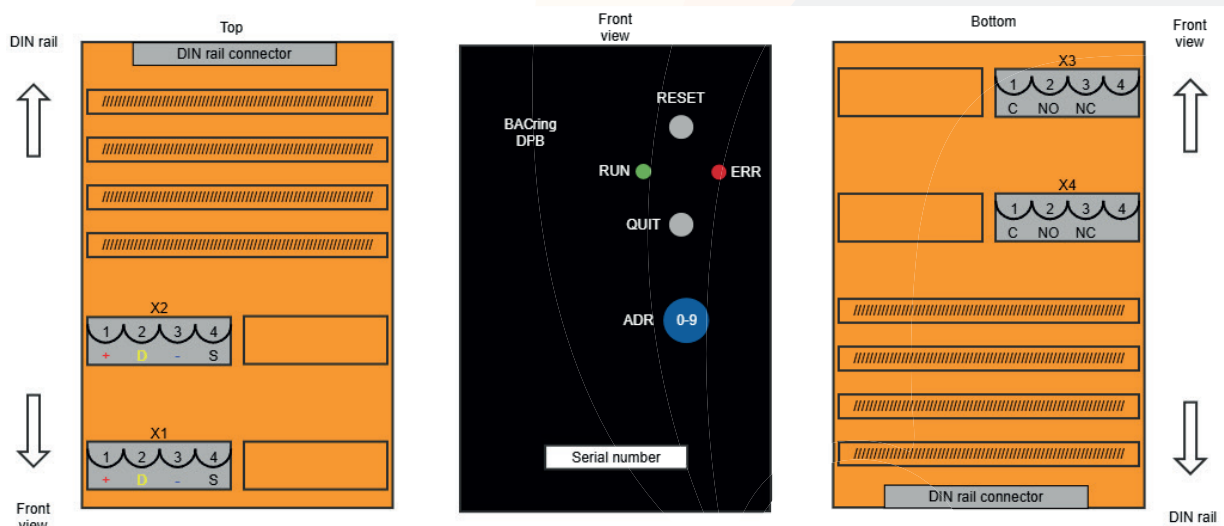
Power Supply	+18 - 26V DC, current 0,1 A - 0,4 A (via 5-pin DIN rail bus)
Indicators	Green LED for "RUN" mode, red LED for "ERROR"
Operating keys	RESET button to restart the buscontroller, QUIT button to quit an bus error and start rebuild, rotary coded switch to set the slave address "1" - "4"
Bus port A and B	4-pin BACring bus port A/B (3-wire BACring bus + shield) Max. bus length: 5,000 m @ 4 × 2 × 0.8 mm (paired cores)
Bus protocol	BACring protocol or compatible to RKS1000 for up to 1000 field bus modules, operates simultaneously on both ports
Communication interface	RS485, 230400 baud, 8-N-1, DIN-rail bus to DPC-IO 3,3V TTL debug interface using DELOCK-83785 (only for internal use)
Processor	200 MHz 32-bit microcontroller, 1024 KB FLASH, 256 KB SRAM



Technical Data

Error relays	2 error relays 5A / 250, galvanic isolated
Connectors	Bus ports : 2 x Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) Error relays : 2 x Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) DIN rail bus : 2 x Phoenix Contact ME 22,5 TBUS 1,5/5-ST-3,81 KMGY (5-pin)
EMC conformity	2014/35/EU, EN61000-6-1, EN61000-6-3, EN61000-4-2..-5
Maintenance	Maintenance-free
Mounting	DIN-rail mounting, DIN-rail bus (Phoenix Contact ME 22.5 TBUS 1.5/5-ST-3.81 KMGY, 5-pin)
Temperature	0° - +50°C
Humidity	Storage: 0% - 80%, non condensating Operation: 0% - 70%, non condensating
Safety class	IP 20
Dimensions (W x H x D)	46 mm x 114 mm x 120 mm
Housing	Phoenix ME MAX
Weight	approx. 0,4 kg

Connection Diagram





Connection Diagram

Terminal	Description
RESET	Button for restarting the DPB-Buscontroller
RUN	Green LED for “RUN” mode
ERR	Red LED for “ERROR” indication
QUIT	Button for acknowledging a fault Initiates a ring bus build process
Coding rotary switch	Rotary switch for setting the slave address (1–4)
DIN rail connector	RS485 interface for communication with DPC-IO 24 V power supply from DPC-IO
X1	Bus Port A connection: PLUS (1), DATA (2), MINUS (3), SHIELD (4)
X2	Bus Port B connection: PLUS (1), DATA (2), MINUS (3), SHIELD (4)
X3	Connection of potential-free output O1 for system error signaling Rated up to 5 A / 250 V Changeover contact: C (1) Normally Open (2) Normally Closed (3)
X4	Connection of potential-free output O2 for ring bus error signaling Rated up to 5 A / 250 V Changeover contact: C (1) Normally Open (2) Normally Closed (3)