



BACring. The powerful control system
for smoke dampers

Technical Datasheet DPC-Controller & DPC-IO

[DUP] BACring - Control system

VERSION 1.14

April 2026

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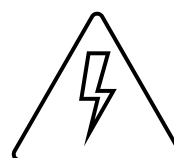


Safety Instructions and Warranty Conditions

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.

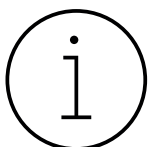


Warranty Conditions



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.

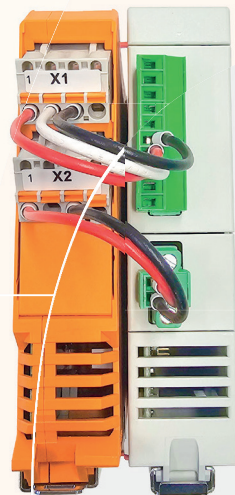


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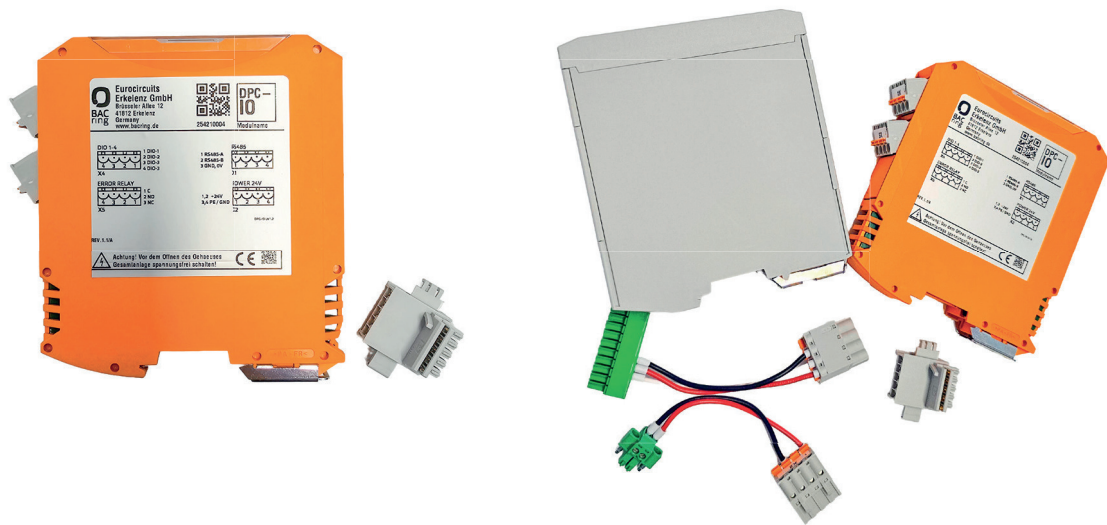


Views





Views





Description

The DPC-Controller is the central control and monitoring module of a BACring-System and forms the core of the entire installation.

It communicates via the DPC-IO coupling module with up to four DPB-Buscontroller and monitors and controls all states and functions of every connected module across up to four ring buses.

Via the I/O module, the DPC-Controller links the individual rings into a single logical overall system. The exchange of information between the ring buses is handled centrally by the DPC-Controller, ensuring coordinated and consistent system functionality.

The DPC-Controller provides a fully browser-based user interface.

Through this interface, the entire system can be configured, monitored, parameterized, and diagnosed. All commissioning, operational, and service functions are performed directly via a web browser—no additional software is required.

For integration into a Building Management System (BMS), the DPC-Controller supports communication via:

- BACnet/IP
- Modbus/TCP

DPC-IO Coupling module

Each DPC-Controller is associated with a DPC-IO coupling module, which provides the physical connection between the RS485 ring buses of the DPB-Buscontrollers and the DPC-Controller.

The DPC-IO module is connected directly to the DPC-Controller via a cable connection. Communication and connection to the DPB-Buscontrollers are established via the common DIN-rail bus.

The DPC-IO coupling module is equipped with 4 digital inputs/outputs (24 V logic). In redundant systems, these digital I/O signals are used for redundancy and coupling logic (e.g. lifebit / ON signals).

Standalone-Systems

DPC-Standalone refers to a single DPC-Controller without redundancy, communicating with up to four DPB-Buscontrollers via the DPC-IO module.

This system variant is typically used for fire protection functions without functional integrity requirements.

A standalone system consists of the following components:

- 1× DPC-Controller
- 1× DPC-IO coupling module
- up to 4× DPB-Buscontrollers
- Associated fieldbus and control cabinet modules

The DPC-Controller is connected to the DPC-IO module via:

- RS485 communication (X1)
- 24 V DC power supply (X2)

The DPC-IO module is connected to up four DPB-Buscontroller via the DIN-rail bus and provides both:

- RS485 communication
- 24 V DC power supply



Redundant-Systems

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

- DPC-RP (Primary)
- DPC-RS (Secondary)

The two DPC-Controllers form a fixed, factory-paired redundancy set with continuous synchronization and mutual health monitoring.

Exchanging the roles (Primary ↔ Secondary) is not permitted.

If one DPC-Controller of a redundant pair must be replaced, the replacement unit must be factory-configured specifically for that RP/RS pair.

This ensures that installations with multiple redundant pairs always maintain correct system associations.

In redundant systems, the DPC-IO coupling module uses the four digital I/O signals (24 V) to link redundancy and status signals (e.g. lifebit / ON) between the DPC-Controllers, DPB-Buscontroller, and the redundancy logic.

Redundant System Structure

A redundant system consists of a Primary level and a Secondary level:

Primary Level

- DPC-RP (Primary)
- DPC-IO (Primary)
- Up to 4× DPB-RP (Primary)
- Connected modules

Secondary Level

- DPC-RS (Secondary)
- DPC-IO (Secondary)
- Up to 4× DPB-RS (Secondary)

For each DPB-RP, an additional DPR-Switch is required to enable switchover between the Primary and Secondary systems.

The DPB-RS Buscontrollers automatically assume control of the connected modules on their respective ring bus as soon as a DPB-RP reports a fault or fails.

(Further details on the redundant system can be found in the DPR-Switch technical data sheet.)



System Functions

- Ring bus management for up to 4 ring buses, handling complete data exchange with all connected DPB-Buscontrollers
- Automatic bus participant detection via an integrated commissioning assistant
- Logic editor / fire mode matrix for implementing switching, operating, and maintenance logic
- Web-based user interface (browser access) including:
 - System status
 - Configuration and parameterization
 - Trend and log analysis
 - User management
 - Data backup and restore functionality
- Data exchange with the BMS via:
 - BACnet/IP
 - Modbus/TCP (LAN1)
- Redundancy synchronization for RP/RS pairs via LAN2
- Optional extension: license for operating time monitoring of motorized dampers
- API interface



DPC-Controller Status / Error Messages

BACring SLED Indication / Error Messages	Cause	Recommended Action
L1 permanently off	System cannot boot	Contact BACring Support
L1 permanently red	System startup in progress	Check whether the SD card is correctly inserted
L1 flashes once	No communication with DPB-Buscontrollers	Check the physical connections: • Between DPC-Controller and DPC-IO (cable bridge) • Buscontrollers (DIN-rail bus connector) • Between DPC-IO and DPB-Buscontroller
L1 flashes twice	Waiting for synchronization	Wait until the synchronization process is completed
L1 flashes three times	Synchronization error	Analysis of the log files is required
L2 flashes twice	Normal operation	System is ready for operation
L1 and L2 flash once simultaneously	Communication error with DPB-Buscontrollers	Check the physical connections: • Between DPC-Controller and DPC-IO (cable bridge) Buscontrollers (DIN-rail bus connector) • Between DPC-IO and DPB-Buscontroller
Network connection error: The controller is not visible in the network (no PING possible)	The system cannot be found in the network	• Check the network settings of the configuration PC connected to the correct port the network • Verify that the network cable is • Check for duplicate IP addresses in • Restart the configuration PC



DPC-Controller Status / Error Messages

BACring SLED Indication / Error Messages	Cause	Recommended Action
Error: Connection failed	The system is available in the network but does not respond	• Check whether other errors are indicated (e.g. L1 / L2 LEDs) address without port 5000 • In redundant systems, enter the IP • Delete browser cookies
Error: NGX page	The browser has stored data from other controllers	Delete browser cookies
Error: Date and time	The DPC-Controller was powered off for an extended period	Set date and time in the software



Technical Data DPC-Controller

Power Supply	24V DC, +/- 5%, I _{normal} = 0.2A, I _{startup} = 1A, I _{max} = 2.5A
Indicators	Green power LED, orange LED for "Normal operation", red LED for "ERROR"
Operation keys	RESET button S1 to restart the controller
Communication interface	RS485, 230400 baud, 8-N-1, X1 connected to DPC-IO
Processor	ARM Cortex-A53/-M4 Prozessor, 4-Cores up to 1800 MHz
Memory	8 GB eMMC flash, up to 4 GB SRAM, 4 KB EEPROM
Connectors	Ethernet : 2x 10/100/1000 Mbit/s, 1 x real time 1 x USB OTG 1 x microSD Card Slot X1: 10-pin Phoenix-Stecker MC 1,5/10-G-3,5 , "serial interfaces" X2: 2-pin Phoenix-Stecker MC 1,5/2-GF-3,5, "24V-supply" 7-pin DIN rail bus (currently unused)
EMC conformity	EMV standard (2014/30/EU) EN 55032: 2015/AC:2015, class B EN 55011: 2011-12, class B EN 61000-4-2, class A EN 61000-4-3, class A EN 61000-4-4, class A (außer DC Vers., except DC supply) EN 61000-4-5, class A (außer DC Vers., except DC supply) EN 61000-4-6, class A (außer DC Vers., except DC supply)
Maintenance	Maintenance-free
Mounting	DIN rail housing (not RS485 DIN rail-bus)
Operation temperature	0° to +50°C



Technical Data DPC-Controller

Humidity	0% - 95%, non condensating
Protection Class	IP 20
Dimensions (W × H × D)	25 mm x 110 mm x 100 mm
Housing	Phoenix Contact ICS (grey)
Weight	Approx. 0.2 kg



Technical Data DPC-IO

Power Supply	24V DC, 10 - 32V, Approx. 1 W.
Indicators	4 green LED's shows the current state of the digital I/O's
Operating keys	None
Communication interface	RS485, 230400 baud, 8-N-1, via DIN rail bus (communication with up to 4 DPB-Buscontrollers)
Processor	PIC24FJ64GP205, 32MHz
Connectors	X1: RS485 (1 = A, 2 = B, 3,4 = GND), Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) X2: 24V-Versorgung (1,2=24V, 3,4=GND), Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) X4: 4 x digital I/O's (dominant 24V-Pegel), Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) X5: 5A relay for error of the DPC, Phoenix Contact FKCT 2,5/4-STKMGY (4-pin, female) DIN rail Bus, 5-Pin PCB connector
EMC conformity	EMV standard (2014/30/EU) EN 55032: 2015/AC:2015, class B EN 55011: 2011-12, class B EN 61000-4-2, class A EN 61000-4-3, class A EN 61000-4-4, class A (außer DC Vers., except DC supply) EN 61000-4-5, class A (außer DC Vers., except DC supply) EN 61000-4-6, class A (außer DC Vers., except DC supply)
Maintenance	Maintenance-free
Mounting	DIN rail housing (Phoenix Contact ME 22,5 TBUS 1,5/5-ST-3,81 KMGY 5-pin)
Operating temperature	0° to +50°C

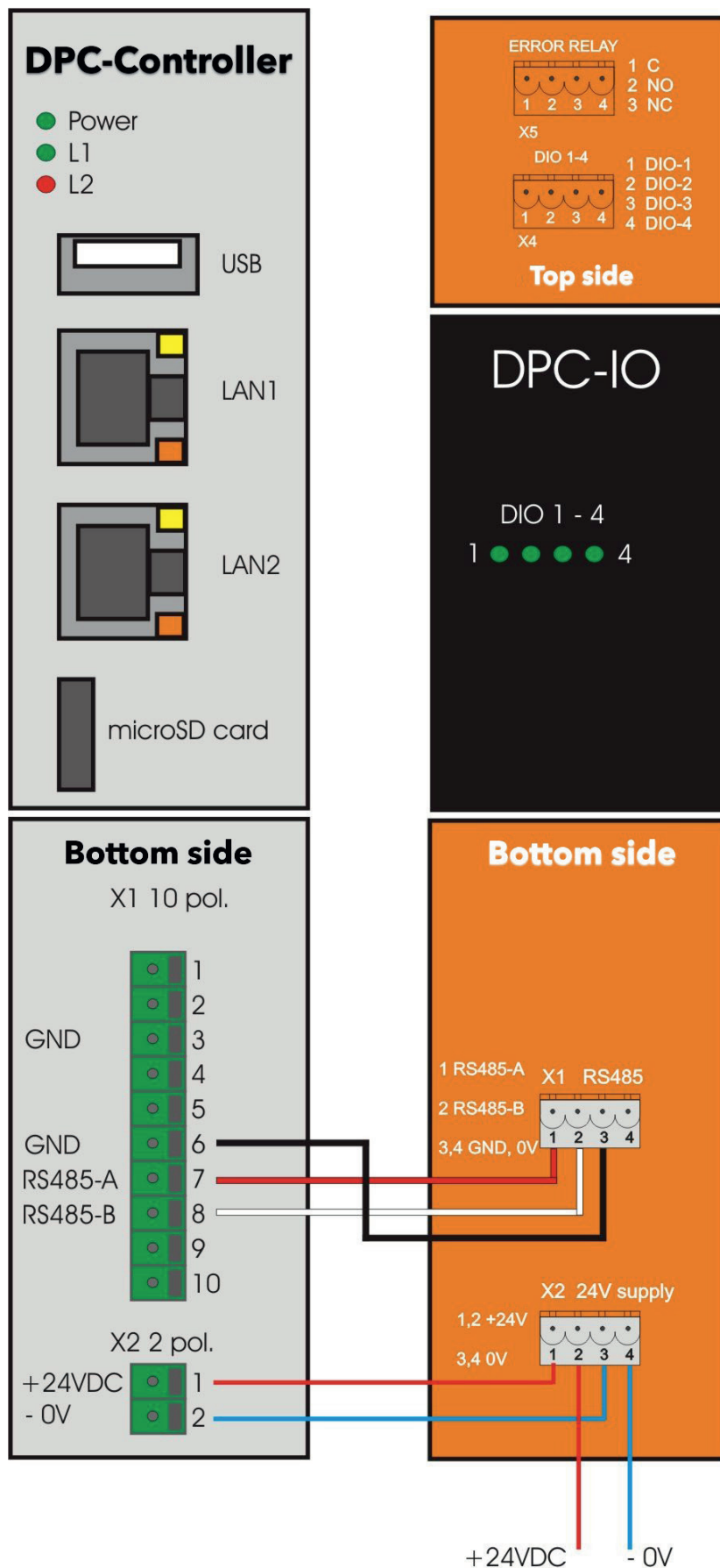


Technical Data DPC-IO

Humidity	0% - 95%, non condensating
Protection Class	IP 20
Dimensions (W × H × D)	23 mm x 114 mm x 102 mm
Housing	Phoenix Contact ME-MAX (orange)
Weight	Approx. 0.2 kg



Connection Diagram





Connection Diagram

Terminal DPC-Controller	Description
USB	USB OTG connection
SD card	microSD card slot
RESET	Not used
Power	A green LED indicates power supply
L1 LED	Red LED indicates an error
L2 LED	Orange LED indicates normal operation
LAN1	For BACy software, BACnet or Modbus/TCP connection
LAN2	For synchronization of the redundant DPC-Controller (DPC-RP & DPC-RS)
DIN rail connector	Not used
X1	Interface RS485, RS485-2A+ (7), RS485-2B- (8), ISO-GND (6)
X2	Power supply VCC 24V, positive (1), negative (2).

Terminal DPC-IO	Description
DIN rail connector	5-pin direct connector, RS485 and 24V power supply for the bus controllers.
X1	RS485 interface, RS485-A+ (1), RS485-B- (2), GND (3,4).
X2	Power supply 24V, positive (1, 2), negative (3, 4).
X4	Digital I/O signals (1 DIO-1, 2 DIO-2, 3 DIO-3, 4 DIO-4). Contacts are used for redundant control units: DPC-RP (Primary) - Up to 4 DPR "Lifebit" signals (terminal X5-4 on DPR). Lifebit DPR-1 to DIO-1; Lifebit DPR-2 to DIO-2; Lifebit DPR-3 to DIO-3; Lifebit DPR-4 to DIO-4. DPC-RS (Secondary) - From the first DPR signal ON1 (terminals X5-1 or X5-2 on DPR) to DIO-1 and ON2 (terminal X5-3 on DPR) to DIO-2.
X5	Not used