



BACring. The powerful control system
for smoke dampers

Technical Datasheet DPR-Switch

[DUP] BACring - Control system

VERSION 1.14

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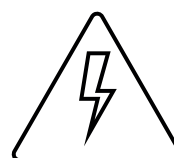


Safety Instructions and Warranty Conditions

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.

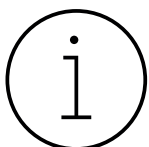


Warranty Conditions



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.

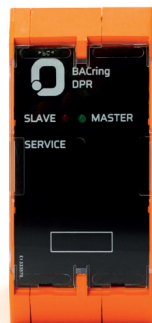


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Views





Description

The DPR-Switch connects two redundant units per ring consisting of the DPC-Controller (RP/RS), DPC-IO (RP/RS), and the DPB-Buscontroller (RP/RS) into a fully redundant control system.

It monitors the entire ring bus path, coordinates redundancy, and automatically switches to components that remain operational in the event of a fault.

Optionally, the system can be extended with a UPS to maintain system operation in the event of a power failure.

Core Functions of the DPR-Switch (Redundant BACring System)

Wiring, Power Supply, Compatibility, Scaling & Coordination

- One DPR-switch is used per ring bus.
- Monitors the primary central components.
- Enables redundant operation of a primary DPB-Buscontroller (DPB-RP) and a secondary DPB-Buscontroller (DPB-RS) on the same ring bus.
- Automatically performs failover to the secondary DPB-Buscontroller in the event of a fault to ensure uninterrupted system operation.

Bus Connections

- Lines from modules: Port A and Port B.
- Forwarding to DPB primary (RP): Port A and Port B.
- Forwarding to DPB secondary (RS): Port A and Port B.

DIN Rail Bus Connection Between DPR-Switches

- All DPR switches are interconnected via DIN rail bus connectors.
- The DIN rail bus distributes the 24 V power supply and enables internal inter-unit communication between the DPR-Units.

Cable Connections Between DPR-Switch and DPC-IO

- The 24 V power supply is routed from DPR-1 to the primary DPC-IO.
- The 24 V power supply for the secondary DPC-IO is provided directly from the power supply unit.
- ON1/ON2 switching signals and the lifebit signal are physically wired separately (between DPR ↔ DPC-IO) to clearly separate diagnostics and safety chains.

Intelligent Fault Logic & Switching Behavior

- The DPR-Switch initiates automatic switchover to the secondary central components when the following fault conditions are detected.
- Switching Times According to Logic:



Core Functions of the DPR-Switch (Redundant BACring System)

Event / Error	Switching time	Description
Failure of LAN port 1 (network)	Immediate	Primary redundancy communication (DPC-RP ↔ RS via LAN1) disrupted
Hardware failure of DPC-RP	Immediate	Failure of primary central components
Database issues	2 × 60 s = 120 s	Database unavailable or faulty
Communication issues DPC-RP, DPC-IO, DPB-RP	2 × 60 s = 120 s	Disturbances in internal system communication
Web software / user interface failure	2 × 180 s = 360 s	Web software / user interface faulty or unreachable
Problems processing the fire scenario matrix	2 × 60 s = 120 s	Errors in logic linking, processing, or communication
Web software / user interface failure	2 × 180 s = 360 s	Web software / user interface faulty or unreachable
Problems processing the fire scenario matrix	2 × 60 s = 120 s	Errors in logic linking, processing, or communication
Failure of DPB-RP	2 × 60 s = 120 s	Failure of primary DPB-Buscontroller

LED Indicators & Fault Relay

- In normal operation, the “DPC-RP” LED (green) is illuminated, indicating that the primary central components are active.
- If the “DPC-RS” LED (red) is illuminated, the secondary central components are active, indicating a failure of the primary central components.
- The messages “DPC-RP active” and “DPC-RS active” can be queried via the fault relay on the hardware side.

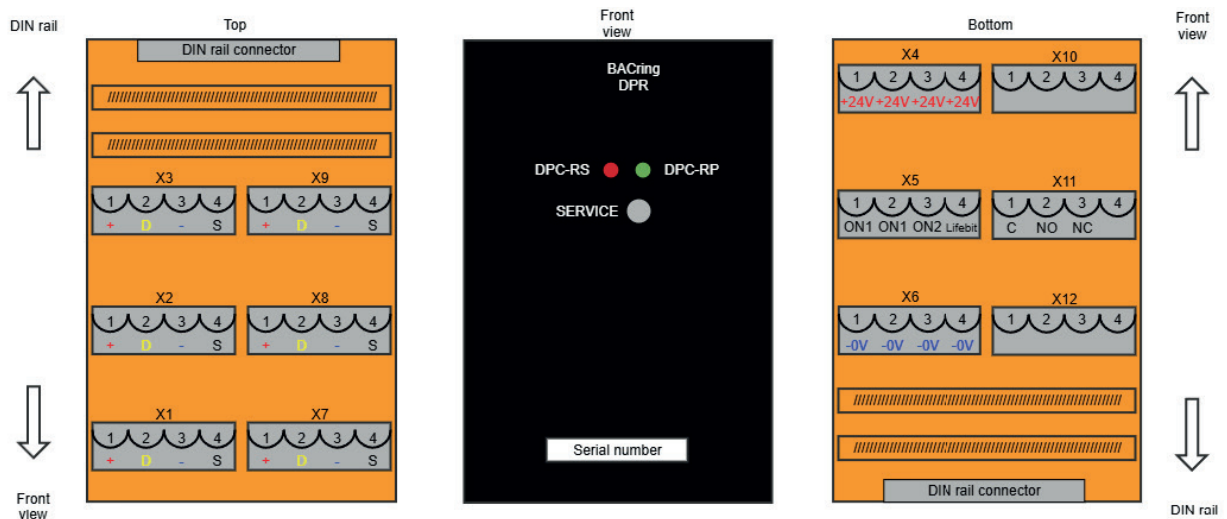


Technical Data

Power Supply	+18 - 27V DC, max. 2 W
Indicators	DPC-RP green LED / DPC-RS red LED
Controls	Service button (no function)
Switchover times	Switchover times according to logic (see table)
Connections	6 × 4-pin bus connectors, Phoenix Contact FKCT-2,5/4-ST-KMGY (female); 4 × 4-pin 24 V power connectors, Phoenix Contact FKCT-2,5/4-ST-KMGY (female); 1 × 4-pin fault relay, Phoenix Contact FKCT-2,5/4-ST-KMGY (female); 1 × 4-pin control signal connector, Phoenix Contact FKCT-2,5/4-ST-KMGY (female)
EMC Compliance	2014/35/EU, EN61000-6-1, EN61000-6-3, EN61000-4-2 ...-5
Maintenance	Maintenance-free
Mounting	DIN rail housing (Phoenix Contact ME 22,5 TBUS 1,5/5-ST-3,81 KMGY 5-pin)
Temperature	0° to +50°C
Humidity	Storage: 0% – 80%, non-condensing Operation: 0% – 70%, non-condensing
Protection Class	IP 20
Dimensions (W × H × D)	46 mm x 114 mm x 120 mm
Housing	Phoenix ME MAX (orange)
Weight	Approx. 0.3 kg



Connection Diagram

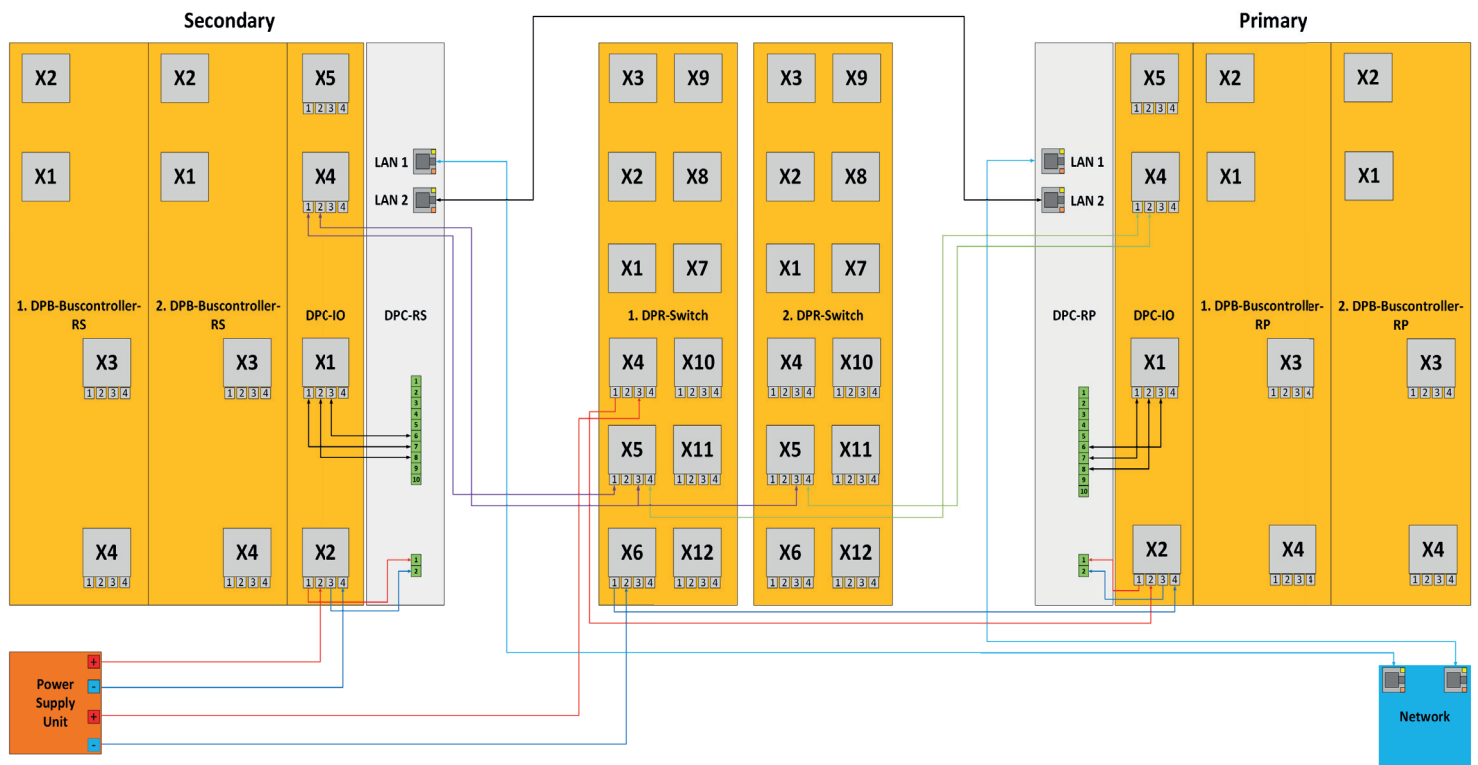


Terminals	Description
DIN rail connector	5-pin direct connector for connection of up to 4 DPR-Units. Pass-through of the 24 V supply and the DPC-RS ON1 signal
DPC-RS	LED indicating secondary operation
DPC-RP	LED indicating normal operation (primary)
SERVICE	No function
X1	Ring bus connection to DPB-Primary, Port A (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X2	Bus connection from modules, Port A (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X3	Bus connection to DPB-Secondary, Port A (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X4	24 V power supply connection for DPC-IO-RP (+24 V to primary (1,2), +24 V from power supply (3,4))
X5	Control Signals X5-1 or X5-2 (DPC-RS ON1 signal) - Switchover signal for the DPC-RS (secondary controller) and connected to DIO-1 on the DPC-IO. X5-3 (DPC-RS ON2 signal) - Additional (redundant) switchover signal for the DPC-RS (secondary controller), connected to DIO-2 on the DPC-IO. If multiple DPR-Switches are installed, the contact must be bridged between the DPR-Units. X5-4 (DPC-RP lifebit signal) - The lifebit signal allows the DPC-RP (primary controller) to monitor up to 4 DPR-Switches. This signal is connected to DIO-1 to DIO-4 on the DPC-IO, depending on the number of installed DPR-Units.
X6	0 V power supply (GND) for DPC-IO-RP (1,2,3,4)
X7	Bus connection to DPB-Primary, Port B (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X8	Bus connection from modules, Port B (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X9	Bus connection to DPB-Secondary, Port B (PLUS (1), DATA (2), MINUS (3), SHIELD (4))
X10	Connection (not assigned)
X11	ERROR relay Switches ON when DPC-RS (secondary) is active
X12	Connection (not assigned)



Connection Diagram

Redundant BACring-System Architecture – 24 V Power Supply and Communication between DPC & DPR



1. All DPR-Switches are interconnected via the DIN rail bus connectors.
2. The DIN rail bus connectors distribute the 24 V power supply from DPR 1 to DPR 2-4.
3. Each DPR requires two DIN rail bus connectors.
4. The 24 V power supply is routed from DPR 1 to the primary DPC-IO.
5. The secondary DPC-IO is supplied directly by the power supply unit.
6. **DPR 1** → DPB-Buscontroller 1 must be connected (coding rotary switch set to address "1").
7. **DPR 2** → DPB-Buscontroller 2 must be connected (coding rotary switch set to address "2").
8. **DPR 3** → DPB-Buscontroller 3 must be connected (coding rotary switch set to address "3").
9. **DPR 4** → DPB-Buscontroller 4 must be connected (coding rotary switch set to address "4").
10. When fully expanded with four DPR-Switches, terminal **X5-3** must be bridged between the DPR-Units.
11. When fully expanded with four DPR-Switches, terminal **X5-4** of each DPR must be connected to the terminals of the **primary DPC-IO** as follows: 1st DPR → X4-1, 2nd DPR → X4-2, 3rd DPR → X4-3, 4th DPR → X4-4.

Connection Diagram

Redundant BACring-System –
Architecture of 24 V Power Supply and
Communication between DPC & DPR •
05-09-2025



Connection Diagram

Redundant BACring System – Ring Bus Connection Diagram



Bus Connection:

1	+ Ub
2	DATA
3	- Ub
4	PE/GND

Connection Diagram
Redundant BACring System – Ring Bus Connection Diagram • 05-09-2025