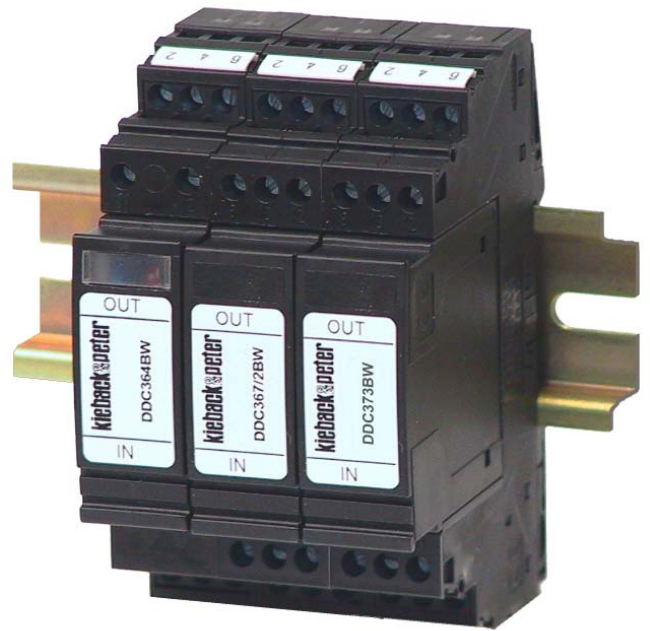


Device Description

DDC364..368BW, DDC371..375BW Overvoltage Protection

Overvoltage Protection DDC364..368BW, DDC371..375BW

For discharging voltage and current peaks on power and bus lines as well as on connection lines for sensors and actuators.



Contents subject to change

Issue date: August 16, 2007 MNR: 9660161_02

Contents	Page
Overvoltage Protection DDC364..368BW, DDC371..375BW	1
Information About the Device Description.....	2
Safety Instructions	2
Qualified Technicians.....	2
Application.....	3
Types	3
Technical Data	4
Dimensions	6
Function Monitoring for DDC364BW and DDC365BW	6
Modular Mounting Position	6
Mounting/Installation	7
Wiring Diagrams.....	7
DDC3000 System Connection Examples	9
DDC4000 System Connection Examples	10

Information About the Device Description

The description contains information on using and installing overvoltage protection components DDC364..368BW, DDC371..375BW.

If you have any questions that are not covered by the device description, contact the supplier or manufacturer for further information.

The specified regulations/guidelines for installation and mounting are applicable for the Federal Republic of Germany.

When overvoltage protection components are used abroad, local regulations are to be complied with at the personal responsibility of the system installer or operator.

Operating personnel are to be instructed according to the description of the technical data sheet.

Safety Instructions

Adhere to applicable regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies) when mounting and using overvoltage protection components.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. See the section "Qualified technicians".

All persons using overvoltage protection components must have read and understood the descriptions on the technical data sheet.

If the device is not used according to the device description, the protection provided could be impaired.

Meanings of symbols on the technical data sheet:



Danger

Warning of dangerous electric voltage

Danger Means that non-observance could lead to mortal danger, serious bodily injury or major material damage.

Qualified Technicians

Qualified technicians in the context of the technical data sheet are persons who are familiar with the described devices and have the necessary qualifications for their job.

This includes, for example:

- Authorization to connect the devices in accordance with VDE regulations and the local power company's regulations, as well as authorization to switch on, off and enable devices according to in-house regulations.
- Knowledge of accident prevention regulations.
- Knowledge of the use of overvoltage protection components within the system.
- etc.

Device Description

DDC364..368BW, DDC371..375BW Overvoltage Protection

Application

For a number of reasons (e.g. effects of lightning, switching operations, short circuits, etc.), voltage and current peaks can occur which may disrupt or destroy the DDC systems.

The overvoltage protection components DDC364BW, DDC365BW, DDC366BW, DDC367BW, DDC367/2BW, DDC368BW, DDC371BW, DDC372BW, DDC373BW and DDC375BW are used to discharge these voltage and current peaks on power and bus lines as well as on connection lines for sensors and actuators.

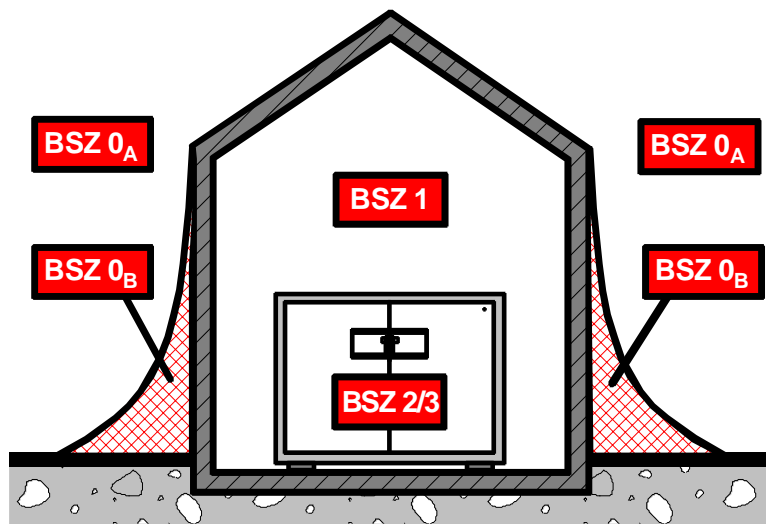
Types

- DDC364BW Overvoltage protection with function monitoring of requirement category D (class III) AC 230 V for power connection lines for power transformers of the DDC system.
- DDC365BW Overvoltage protection with function monitoring of requirement category D (class III) up to AC 24 V for power connection lines of the DDC system as well as for DC 12 V connection lines (fieldbus).
- DDC366BW Overvoltage protection for bus lines in MRP, DDC3000/DDC4000 and HRP/LRP systems, lightning protection zone: transition LPZ 1 – 2/3
- DDC367BW Overvoltage protection for field devices, lightning protection zone: transition LPZ 1 – 2/3
- DDC367/2BW Overvoltage protection (2 signal circuits) for field devices, lightning protection zone: transition LPZ 1 – 2/3
- DDC368BW Overvoltage protection for bus lines and sensors in MRP, DDC3000/DDC4000 and HRP/LRP systems, lightning protection zone: transition LPZ 0 – 1 (building-to-building lines)
- DDC371BW Overvoltage protection for drive lines (GLT2222H: R+/R-), lightning protection zone: transition LPZ 1 – 2/3
- DDC372BW Overvoltage protection for drive lines (GLT2222H: T+/T-), lightning protection zone: transition LPZ 1 – 2/3
- DDC373BW Overvoltage protection for fieldbus lines and DC 12 V power supply for the fieldbus lightning protection zone: transition LPZ 1 – 2/3
- DDC375BW Overvoltage protection for a LON bus, lightning protection zone: transition LPZ 1 – 2/3



Fig. DDC364BW

Lightning Protection Zones LPZ 0 to LPZ 2/3



See also section on connection examples of DDC3000 system, DDC4000 system

Technical Data

Type	DDC364BW	DDC365BW
IEC category/VDE requirement class/EN type	III/D/3	III/D/3
Nominal voltage U_N (50/60 Hz)	AC 230 V	AC 24 V
Max. operating voltage U_c	AC 253 V	AC 34 V
Nominal voltage I_N	26 A at 30°C	26 A at 30°C
Operating current I_c with U_c	≤ 1.5 mA	≤ 1.5 mA
Discharge current to PE with U_N	≤ 1 μA	≤ 1 μA
Nominal discharge surge current I_n (8/20) μs symmetric L→N/asymmetric L(N) →PE	3 kA/3 kA	1 kA/1 kA
Max. discharge surge current I_{max} (8/20) μs symmetric L→N/asymmetric L(N) →PE	10 kA/10 kA	2 kA/2 kA
Combined surge U_{oc}	6 kV	2 kV
Protection level U_p symmetric L→N	≤ 1.1 kV	≤ 180 V
asymmetric L(N) →PE	≤ 1.5 kV	≤ 550 V
Response time t_A symmetric L→N/asymmetric L(N) →PE	≤ 25 ns/≤ 100 ns	≤ 25 ns/≤ 100 ns
Remote indicator contact	NC contact 250 V/3 A	NC contact 250 V/3 A
Degree of protection	IP20	IP20
Max. required pre-fuse	25 A gL/gG	25 A gL/gG
Ambient temperature	-40..85°C	-40..85°C
Finely stranded/single-wire connection	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²
Weight	70 g	70 g

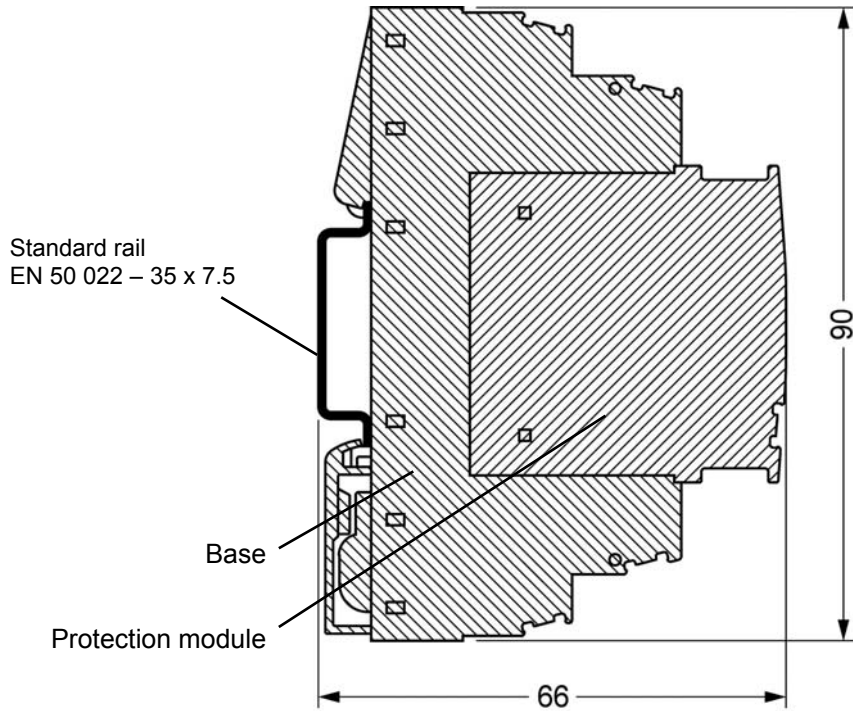
Type	DDC366BW	DDC367BW	DDC367/2BW
Signal circuits	1	1	2
IEC category/VDE requirement class	C1; C2; C3; D1	C1; C2; C3	C1; C2; C3
Nominal voltage U_N	DC 5 V	DC 24 V	DC 24 V
Max. operating voltage U_c	DC 5.2 V	DC 28 V	DC 28 V
Nominal voltage I_N	450 mA at 45°C	450 mA at 45°C	450 mA at 45°C
Operating current I_c with U_c	≤ 300 μA	≤ 5 μA	≤ 5 mA
Discharge current to PE with U_c	≤ 1 μA	≤ 2 μA	≤ 4 μA
Nominal discharge surge current I_n (8/20) μs symmetric lead→lead	10 kA	10 kA	10 kA
asymmetric in total Σ leads→PE	20 kA	20 kA	20 kA
Output voltage limitation at 1 kV/μs symmetric lead→lead	≤ 15 V	≤ 40 V	≤ 40 V
asymmetric lead→PE	≤ 30 V	≤ 450 V	≤ 450 V
Response time t_A symmetric lead→lead	≤ 500 ns	≤ 1 ns	≤ 1 ns
asymmetric lead→PE	≤ 500 ns	≤ 100 ns	≤ 100 ns
Resistance per path (terminals 7-8, 11-12)	2.2 Ω ± 10%	2.2 Ω ± 10%	---
(terminals 1-2, 5-6, 7-8, 11-12)	---	---	2.2 Ω ± 10%
Degree of protection	IP20	IP20	IP20
Max. required pre-fuse	500 mA	500 mA	500 mA
Ambient temperature	-40..85°C	-40..85°C	-40..85°C
Finely stranded/single-wire connection	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²
Weight	70 g	70 g	70 g

Device Description

DDC364..368BW, DDC371..375BW Overvoltage Protection

Type	DDC368BW	DDC371BW	DDC372BW
Signal circuits	1	1	1
IEC category/VDE requirement class	C1; C2; C3; D1	C1; C2; C3	C1; C2; C3; D1
Nominal voltage U_N	AC 110 V	DC 5 V	DC 12 V
Max. operating voltage U_C	AC 120 V; DC 170 V	DC 6 V	DC 14 V
Nominal voltage I_N	2 A at 80°C per path	450 mA at 45°C	450 mA at 45°C
Operating current I_C with U_C	$\leq 2 \mu\text{A}$ per path	$\leq 1 \text{ mA}$	$\leq 5 \mu\text{A}$
Lightning test current I_{imp} (10/350) μs per path	2.5 kA	---	---
Discharge current to PE with U_C	$\leq 8 \mu\text{A}$	$\leq 2 \mu\text{A}$	$\leq 5 \mu\text{A}$
Nominal discharge surge current I_n (8/20) μs			
symmetric lead→lead	---	10 kA	10 kA
asymmetric in total Σ leads→PE	20 kA	20 kA	20 kA
Output voltage limitation at 1 kV/ μs			
symmetric lead→lead	---	$\leq 10 \text{ V}$	$\leq 25 \text{ V}$
asymmetric lead→PE	$\leq 450 \text{ V}$	$\leq 450 \text{ V}$	$\leq 25 \text{ V}$
Response time t_A			
symmetric lead→lead	---	$\leq 1 \text{ ns}$	$\leq 500 \text{ ns}$
asymmetric lead→PE	$\leq 100 \text{ ns}$	$\leq 100 \text{ ns}$	$\leq 500 \text{ ns}$
Resistance per path (terminals 7-8, 11-12)	---	$2.2 \Omega \pm 10\%$	$2.2 \Omega \pm 10\%$
Degree of protection	IP20	IP20	IP20
Max. required pre-fuse	2 A	500 mA	500 mA
Ambient temperature	-40..85°C	-40..85°C	-40..85°C
Finely stranded/single-wire connection	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²
Weight	70 g	70 g	70 g
Type	DDC373BW	DDC375BW	
Signal circuits	2	2	
IEC category/VDE requirement class	C1; C2; C3; D1	C1; C2; C3; D1	
Nominal voltage U_N	DC 5 V / DC 12 V	DC 48 V	
Max. operating voltage U_C	DC 10 V / DC 25 V	DC 53 V	
Nominal voltage I_N	2 A at 40°C	450 mA at 45°C	
Operating current I_C with U_C	$\leq 300 \mu\text{A}$	$\leq 5 \mu\text{A}$	
Lightning test current I_{imp} (10/350) μs per path	2.5 kA	2.5 kA	
Discharge current to PE with U_C	$\leq 4 \mu\text{A}$	$\leq 2 \mu\text{A}$	
Nominal discharge surge current I_n (8/20) μs			
symmetric lead→lead	720 A	10 kA	
asymmetric in total Σ leads→PE	20 kA	20 kA	
Output voltage limitation at 1 kV/ μs			
symmetric lead→lead	$\leq 10 \text{ V}$	$\leq 70 \text{ V}$	
asymmetric lead→PE	$\leq 450 \text{ V}$	$\leq 450 \text{ V}$	
Response time t_A			
symmetric lead→lead	$\leq 1 \text{ ns}$	$\leq 1 \text{ ns}$	
asymmetric lead→PE	$\leq 100 \text{ ns}$	$\leq 100 \text{ ns}$	
Resistance per path (terminals 7-8, 11-12)	---	$2.2 \Omega \pm 10\%$	
Degree of protection	IP20	IP20	
Max. required pre-fuse	2 A	500 mA	
Ambient temperature	-40..85°C	-40..85°C	
Finely stranded/single-wire connection	2.5 mm ² / 4 mm ²	2.5 mm ² / 4 mm ²	
Weight	70 g	70 g	

Dimensions



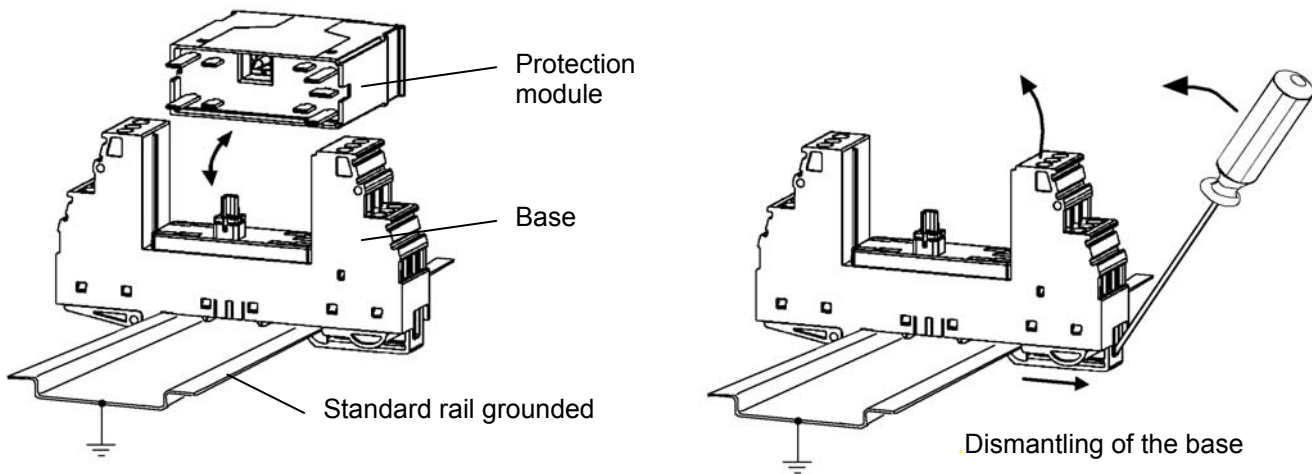
Function Monitoring for DDC364BW and DDC365BW

Overvoltage protection components for AC 230 V and AC 24 V power connection lines have a LED display and a remote indicator contact (terminals 11 – 12) for function monitoring.

- LED off Remote indicator contact closed = Component is fully functional.
- LED lights up red Remote indicator contact open = Component is defective.
- Remote indicator contact load: max. AC 250 V / 3 A.

Modular Mounting Position

Overvoltage protection components DDC364..373BW have a modular design which means the protection module can be pulled out of the base and cleaned if there is a fault without having to switch off the power. The base and protection module are coded so there is no confusion when putting them back together.



Device Description

DDC364..368BW, DDC371..375BW Overvoltage Protection

Mounting/Installation

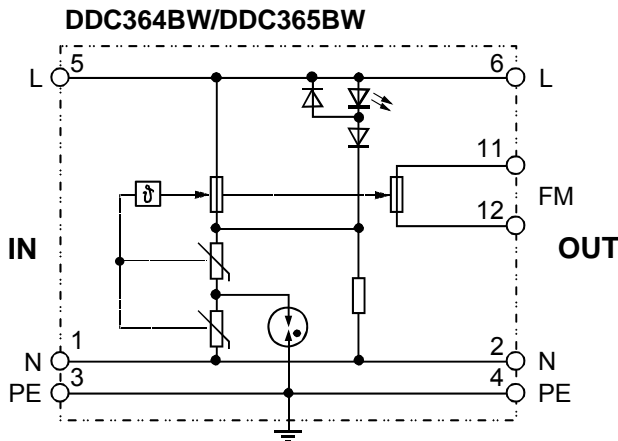


Mounting and installation of overvoltage protection components DDC364..373BW may only be carried out by qualified technicians. When using the components in a switch cabinet, it must be safely disconnected from the mains before beginning work.

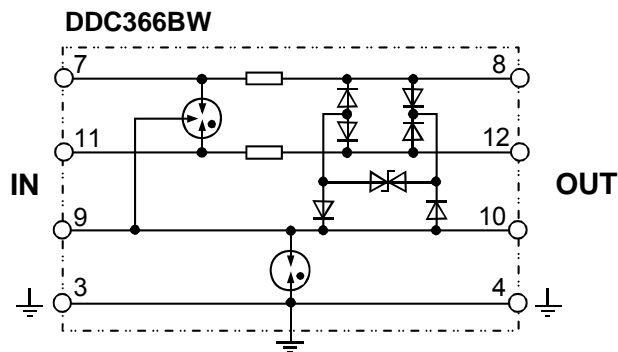
- Overvoltage protection components are designed for switch cabinet installation and are snapped onto a standard rail (EN 50022 – 35 x 7.5).
- The protection components must be installed directly in front of the devices that are to be protected.
- As part of the lightning protection zone concept, energy supply lines in the supply area of buildings must be protected with class B and C upstream components.
- Ensure that the installation process complies with VDE guidelines and local wiring regulations.
- Due to the division into various lightning protection zones (LPZ 0 to LPZ 2), the overvoltage protection components are adapted for use in the DDC system. Therefore, type details for mounting and installation must be observed, see also “DDC3000 system connection examples” section.
- Overvoltage protection components are grounded via the standard rail. Therefore, the standard rail must be grounded.
- Overvoltage protection components must be connected so that the connection lines at the input terminals marked with IN are coming from the direction from which the overvoltage is expected (unprotected side). The device to be protected must be connected to the output terminals marked with OUT (protected side).
- Overvoltage protection components must be connected in accordance with the applicable system wiring diagram.

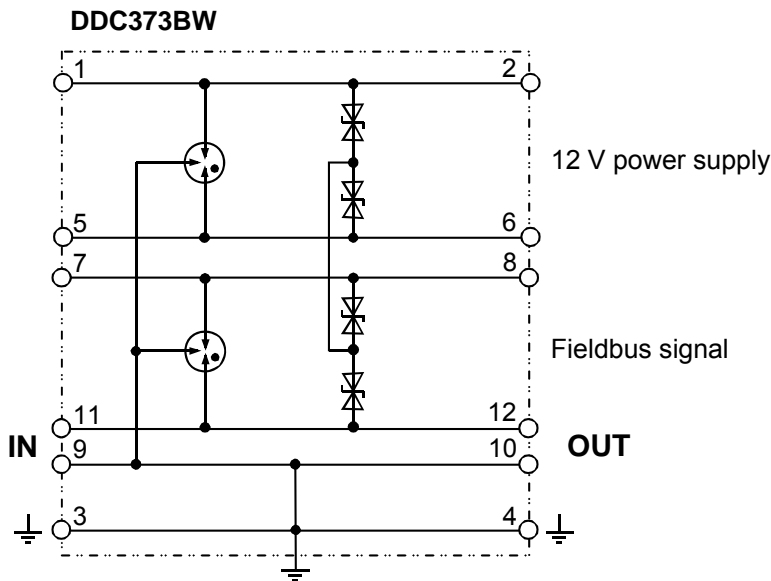
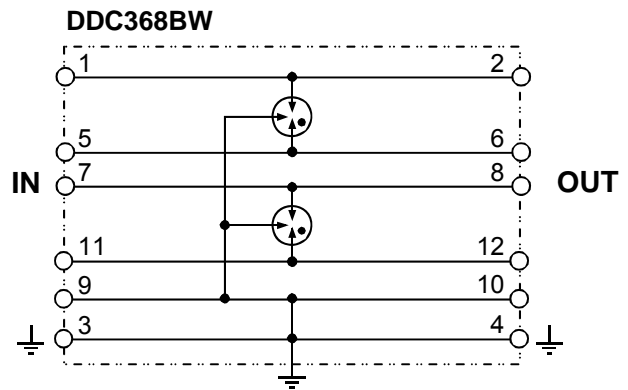
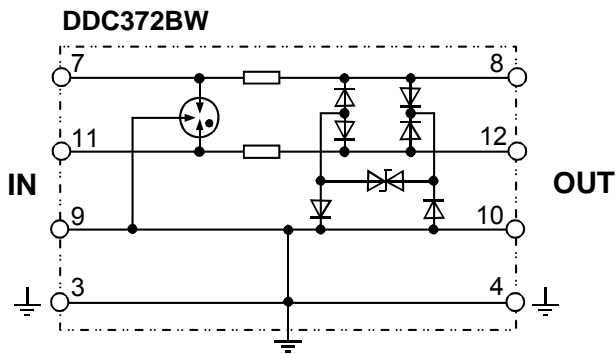
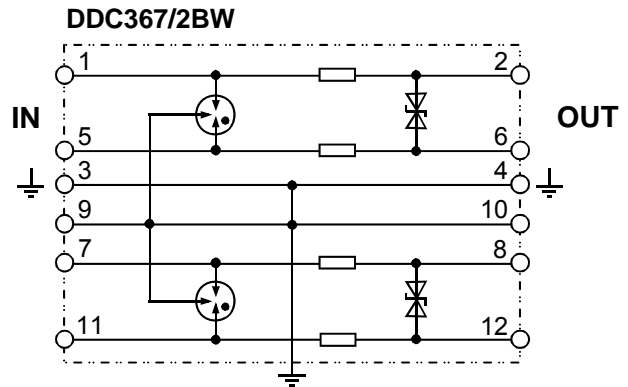
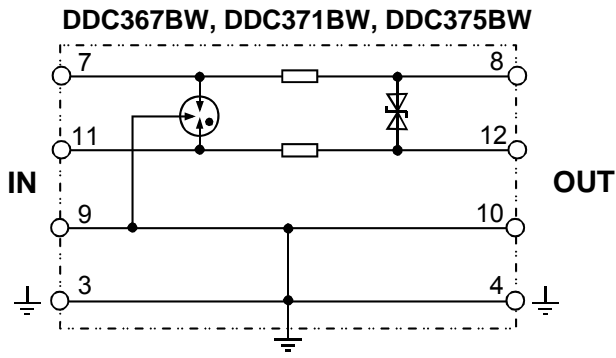
Wiring Diagrams

IN = Input (unprotected side)
 OUT = Output (protected side)
 Connection of device to be protected



Remote indicator contact
 Max. AC 250 V, 3A



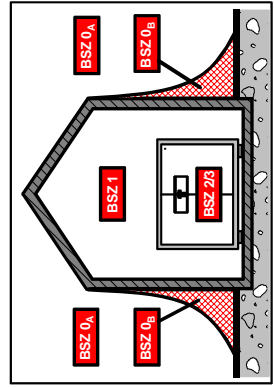
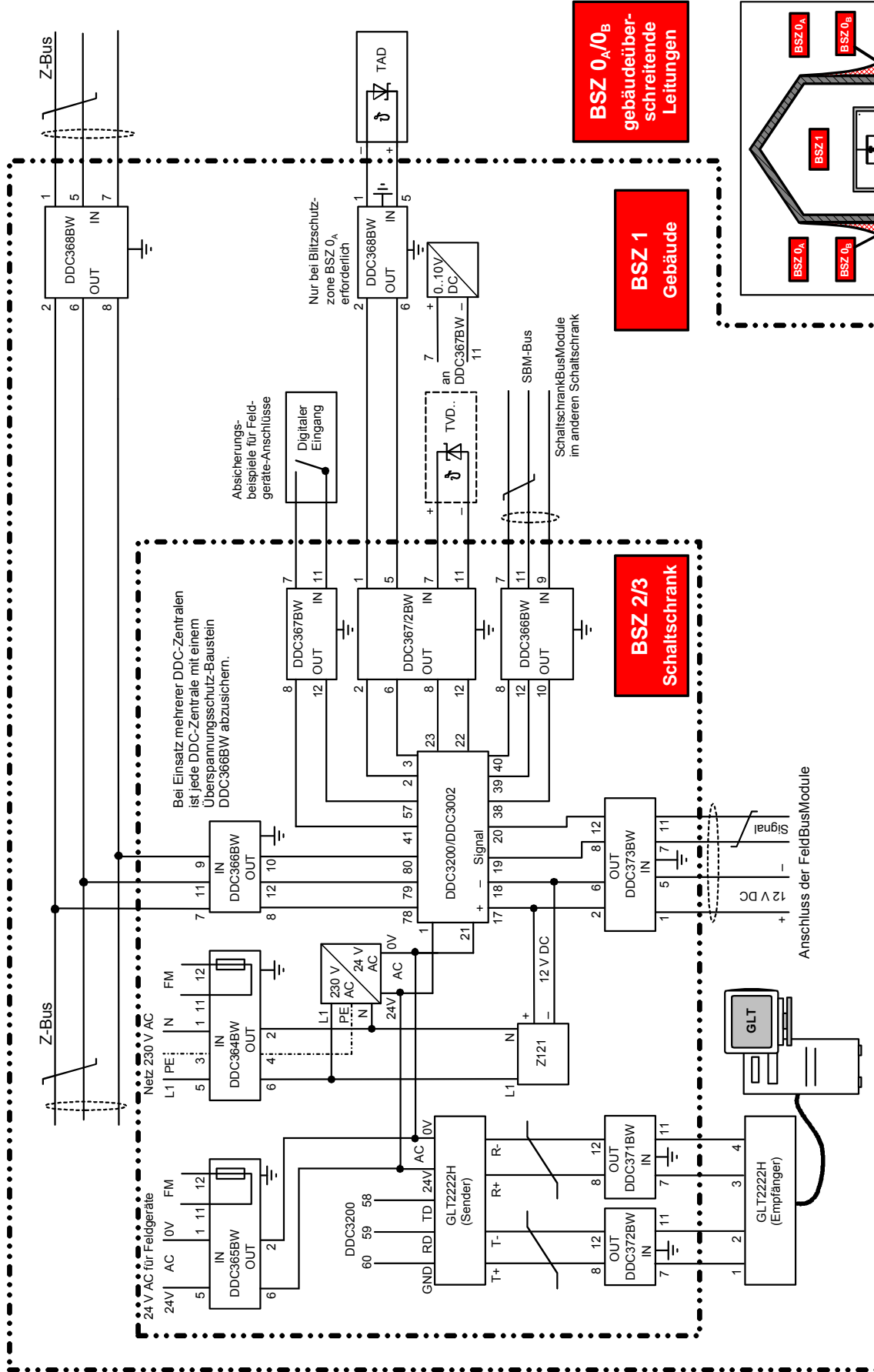


Device Description

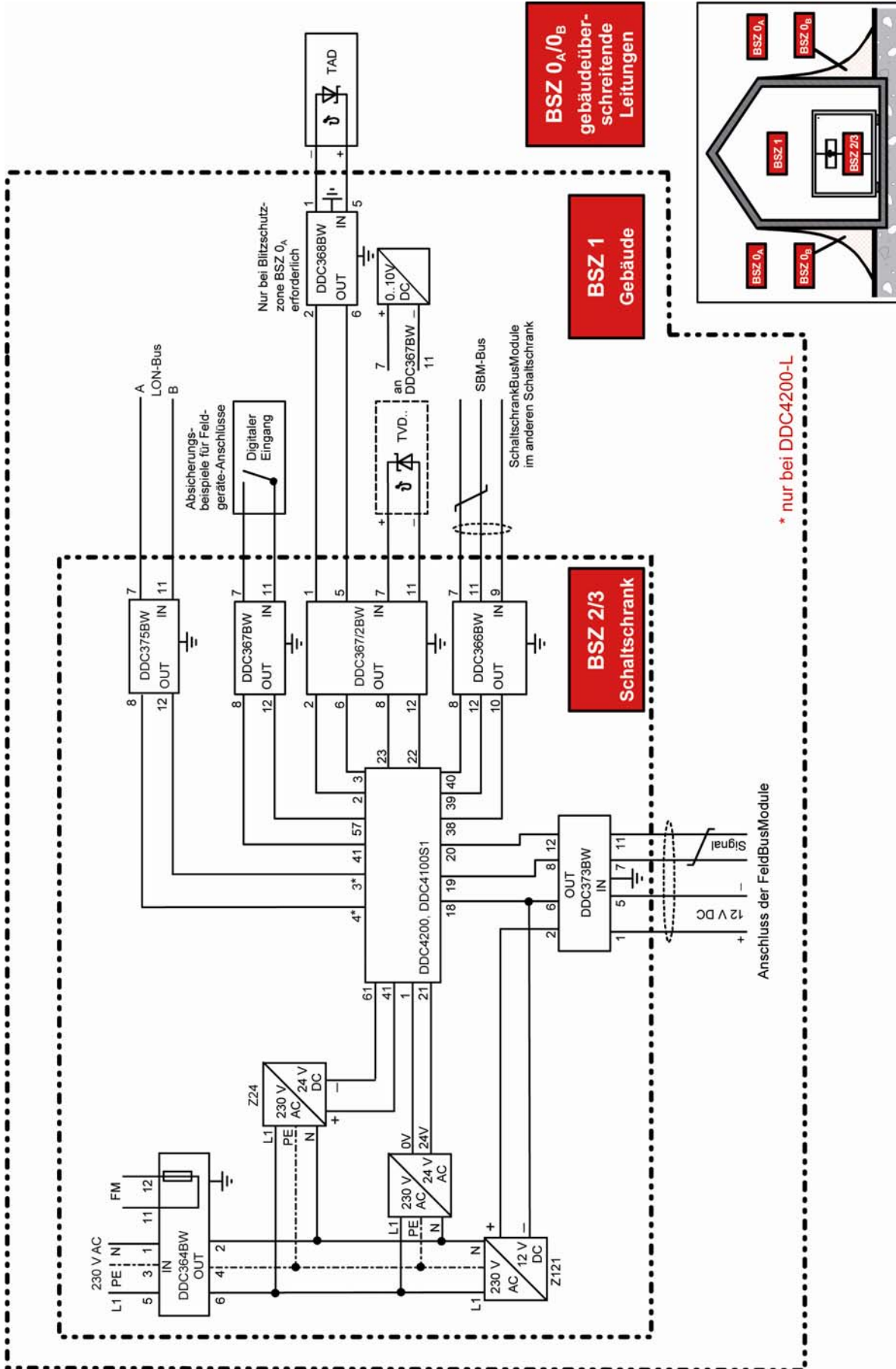
DDC364..368BW, DDC371..375BW Overvoltage Protection

DDC3000 System Connection Examples

DDC3000 System Connection Examples



DDC4000 System Connection Examples



DDC4000 System Connection Examples