



MDP and FDB lightning barriers

Safety for data and control systems in plants and industrial and potentially explosive areas



THINK CONNECTED.

Data and control systems are omnipresent in modern buildings and plants.

OBO protection devices reliably protect sensitive components.

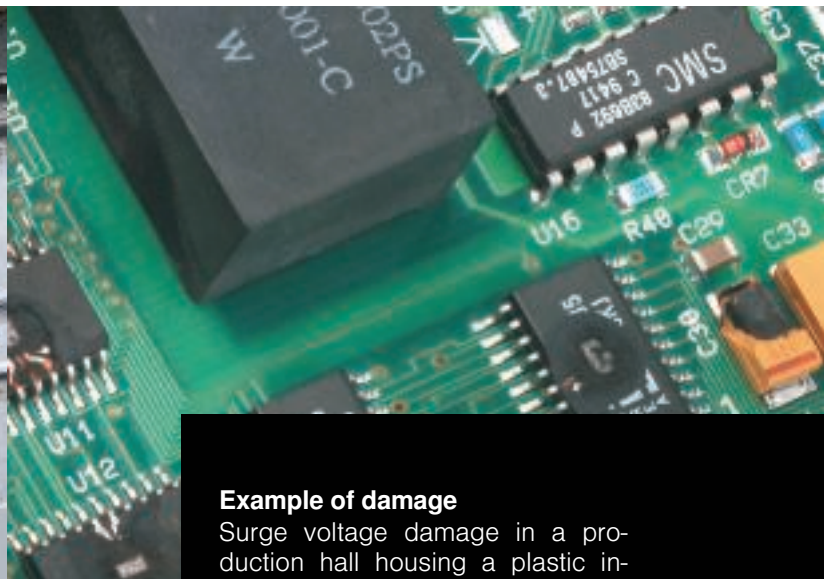


Surge protection guarantees plant availability

Measurement and control technology and fieldbus systems allow automated control of production lines or remote monitoring of many different types of sensors and actuators. Today, this technology forms the core of any modern industrial company. Their failure would result in high financial losses. To prevent this, the systems must be protected against surge voltages from inductive and capacitive couplings. OBO can offer reliable protection of the electronic system with a broad portfolio of surge protection devices and lightning arrestors.

Additional areas of application

- Water supply
- Wastewater treatment plants
- Wind power
- Production
- Industry
- Refineries, oil and gas industry
- Tunnels
- Office buildings



Example of damage

Surge voltage damage in a production hall housing a plastic injection moulding facility and adjoining office area: A lightning strike on a 10 kV medium voltage overhead power line 500 metres away, leading to surge damage to the injection moulding plant's control circuitry. The resultant costs stretch to hundreds of thousands of euros.

€250

Control circuitry

€20,000

Computers and servers

€500,000

Production outage

The plus of the MDP family

Besides the high current capacity, the lightning barriers of type MDP offer a narrow installation width of just 8.7 mm. A separate screen connection permits shield attachment of the equipotential bonding, thus optimising the shield effect against capacitive and inductive couplings. Depending on the version, a nominal current of up to 10 A can be applied to the devices, meaning that they are thus ideally suited to use in special applications, such as measuring and heating systems in wind power systems.



Wide area of use

High frequency bandwidth up to 100 MHz



Versatile

- 2, 3, 4-pin
- 5 V, 12 V, 24 V, 48 V voltage
- Up to 10 A load current



Powerful:

- Lightning arrestor
Up to 2 kA (D1: 10/350)
- Surge arrestors up to 10 kA (I_{T0-tal} : 8/20)



Safety

- Direct shield earthing
- Earthing via hat rail or connecting bridge





Space-saving

Narrow installation width of 8.7 mm



Tested

- According to IEC 61643-21
- UL-listed (4DG1)



Testable

Testable with Life Control when installed and during operation



Easy mounting

Connection with screwless spring terminals



The plus of the MDP family for Ex areas

Surge protection in potentially explosive areas is an important topic. Here, it is important to protect costly measuring technology against the influence of surge voltages through atmospheric discharge. OBO lightning barriers are tested for intrinsic safety (ia) and are independently certified. With a high arresting capacity of 10 kA, they offer optimum protection for four-pole measurement and control applications. Different voltage variants offer a wide range of applications.



Versatile

- 5 V, 24 V, 48 V voltage
- Up to 580 mA load current



Powerful:

- Lightning arrestors up to 2 kA (D1: 10/350)
- Surge arrestors up to 10 kA ($I_{T0-tail}$: 8/20)



Wide area of use

High frequency bandwidth up to 100 MHz





Approved

- Can be used in intrinsically safe Ex (ia) circuits
- Ex II 2(1) G Ex ia IIC T4



Certified

by Dekra (ATEX) and the Fieldbus Foundation



The plus of the Petrol Field Protector family

In the Petrol Field Protector for data cable protection device, OBO Bettermann can offer a surge protection device for sensors in potentially explosive areas. The protector permits two or three-pole protection for all kinds of sensors. The protection device can be fastened directly on the sensor and wired in using the appropriate metric or NPT thread. The robust stainless steel housing means that aggressive atmospheres are no problem. The intrinsic safety of the Petrol Field Protector has been independently tested and certified. It offers safety and availability wherever effective surge protection is required for safety-relevant applications.



Versatile

- 24 V voltage
- 2 or 3-pole protection



Powerful:

High arresting capacity: Surge protection up to 10 kA (I_{Total} : 8/20)



Robust

Load-bearing, corrosion-resistant stainless steel housing



Tested safety

The surge protection devices of the MDP and FDB series are tested for the fieldbuses Profibus (PA/DP) and Foundation Fieldbus. The blue MDPs have UL approval and, as with FDBs, are approved for use in areas at risk of explosion.

TESTED



11/11/2014

02 TBS_Bi



The BET Test Centre

Lightning is on the menu at OBO Bettermann's own Test Centre. The lightning protection experts here test lightning and surge protection components. Scientific studies are also conducted to investigate the effect of lightning events.

High-end equipment

The BET Test Centre has a test generator that can conduct lightning current tests at up to 200 kA, and a hybrid generator for surge voltage tests at up to 20 kV. Both generators were developed in conjunction with Soest University of Applied Sciences.

Standard-compliant testing

























Top of the agenda at the Test Centre is the expert testing of OBO's transient and lightning protection. This includes testing newly developed products, modifying existing products and comparing lightning protection components, surge protection equipment and lightning arrestors. The surge arrestors and all of our protective equipment for data and telecommunications lines are tested in accordance with IEC and national standards.

Overview

Here, you can find the right protection for the most common interfaces



Interface	Ex	Max. voltage	Operating current	Number of wires	Recommended MDP type	Article number
(0)4-20 mA	-	24 V	4-20 mA	2	MDP-2 D-24-T	5098 42 2
		24 V	4-20 mA	2	MDP-4 D-24-EX	5098 43 2
		24 V	4-20 mA	2	FDB-2 24-M	5098 38 0
		24 V	4-20 mA	2	FDB-2 24-N	5098 39 0
	-	24 V	4-20 mA	4	MDP-4 D-24-T	5098 43 1
		24 V	4-20 mA	4	MDP-4 D-24-EX	5098 43 2
0-10 V	-	24 V	100 mA	2	MDP-2 D-24-T	5098 42 2
		24 V	100 mA	2	MDP-4 D-24-EX	5098 43 2
		24 V	100 mA	2	FDB-2 24-M	5098 38 0
		24 V	100 mA	2	FDB-2 24-N	5098 39 0
AS-I	-	24 V	max. 2 A	2	MDP-2 D-24-T-10	5098 42 5
Binary signals	-	e.g. 24 V	20 mA	2	MDP-2 D-24-T	5098 42 2
		e.g. 24 V	20 mA	2	MDP-4 D-24-EX	5098 43 2
		e.g. 24 V	20 mA	2	FDB-2 24-M	5098 38 0
		e.g. 24 V	20 mA	2	FDB-2 24-N	5098 39 0
CAN	-	5 V	70 mA	4	MDP-3 D-5-T	5098 40 7
CAN-OPEN	-	24 V	60 mA	4	MDP-4 D-24-T	5098 43 1
C-Bus	-	36 V	40 mA	4	MDP-4 D-48-T	5098 45 0
		36 V	40 mA	4	MDP-4 D-48-EX	5098 45 2
CC-Link	-	24 V	450 mA	4	MDP-4 D-24-T	5098 43 1
Device Net	-	24 V	270 mA	4	MDP-4 D-24-T	5098 43 1

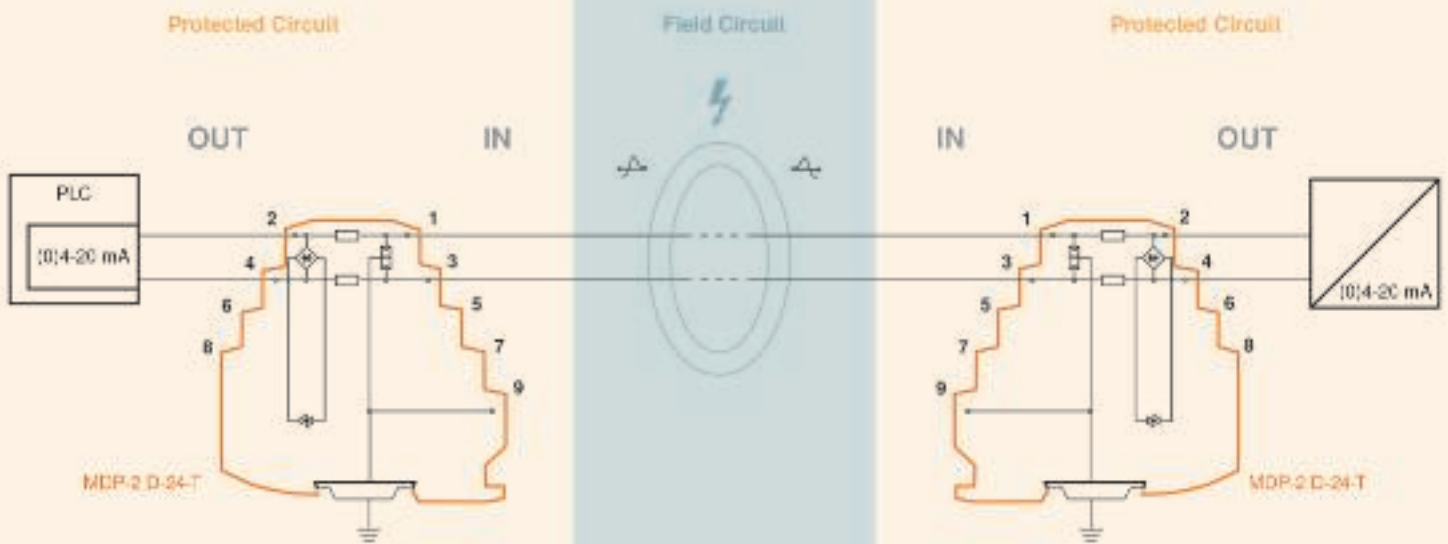
Interface	Ex	Max. voltage	Operating current	Number of wires	Recommended MDP type	Article number
Foundation Fieldbus	-	24 V	10-15 mA	2	MDP-4 D-48-T	5098 45 0
		24 V	10-15 mA	2	MDP-4 D-48-EX	5098 45 2
		24 V	10-15 mA	2	FDB-2 24-M	5098 38 0
		24 V	10-15 mA	2	FDB-2 24-N	5098 39 0
Direct current supplies up to 28 V	-	0-28 V	Various	2	MDP-2 D-12-T-10	5098 41 5
	-	0-28 V	Various	2	MDP-2 D-24-T-10	5098 42 5
	-	0-28 V	Various	4	MDP-4 D-5-T-10	5098 41 3
	-	0-28 V	Various	4	MDP-4 D-12-T-10	5098 41 9
	-	0-28 V	Various	4	MDP-4 D-24-T-10	5098 43 3
Interbus (Loop)	-	30 V	max. 1.8 A	2	MDP-2 D-24-T10	5098 42 5
Interbus	-	5 V	250 mA	4	MDP-4 D-5-T	5098 41 1
Interbus (Loop)		5 V	250 mA	4	MDP-4 D-5-EX	5098 41 2
KNX (EIB)	-	29 V	640 mA	2	MDP-2 D-24-T10	5098 42 5
LON (RS 485)	-	12 V	500 mA	2	MDP-2 D-24-T	5098 42 2
		12 V	500 mA	2	MDP-4 D-24-EX	5098 43 2
		12 V	500 mA	2	FDB-2 24-M	5098 38 0
KNX (EIB)		12 V	500 mA	2	FDB-2 24-N	5098 39 0
M-Bus	-	36 V	11-20 mA	2	MDP-2 D-48-T	5098 44 2
LON (RS 485)		36 V	11-20 mA	2	MDP-4 D-48-EX	5098 45 2
MOD-Bus	-	24 V	20 mA	2	MDP-2 D-24-T	5098 42 2
		24 V	20 mA	2	MDP-4 D-24-EX	5098 43 2
Profibus DP	-	5 V	100 mA	2	MDP-2 D-5-T	5098 40 4
Profibus PA	-	32 V	10-15 mA	2	MDP-2 D-48-T	5098 44 2
M-Bus		32 V	10-15 mA	2	MDP-4 D-48-EX	5098 45 2
		32 V	10-15 mA	2	FDB-2 24-M	5098 38 0
		32 V	10-15 mA	2	FDB-2 24-N	5098 39 0
RS232, V24	-	15 V	100 mA	2	MDP-2 D-24-T	5098 42 2
		15 V	100 mA	2	MDP-4 D-24-EX	5098 43 2
		15 V	100 mA	2	FDB-2 24-M	5098 38 0
Profibus DP		15 V	100 mA	2	FDB-2 24-N	5098 39 0
	-	15 V	100 mA	4	MDP-4 D-24-T	5098 43 1
		15 V	100 mA	4	MDP-4 D-24-EX	5098 43 2
RS422, V11	-	12 V	150 mA	2	MDP-2 D-24-T	5098 42 2
		12 V	150 mA	2	MDP-4 D-24-EX	5098 43 2
		12 V	150 mA	2	FDB-2 24-M	5098 38 0
		12 V	150 mA	2	FDB-2 24-N	5098 39 0
	-	12 V	150 mA	4	MDP-4 D-24-T	5098 43 1
PROFINET		12 V	150 mA	4	MDP-4 D-24-EX	5098 43 2
RS485	-	5 V	250 mA	2	MDP-2 D-5-T	5098 40 4
		5 V	250 mA	2	MDP-4 D-5-EX	5098 41 2
RS232	-	5 V	250 mA	4	MDP-4 D-5-T	5098 41 1
		5 V	250 mA	4	MDP-4 D-5-EX	5098 41 2
TTL	-	5 V	20 mA	2	MDP-2 D-5-T	5098 40 4
		5 V	20 mA	2	MDP-4 D-5-EX	5098 41 2
	-	15 V	100 mA	4	MDP-4 D-24-T	5098 43 1
		15 V	100 mA	4	MDP-4 D-24-EX	5098 43 2

Application examples

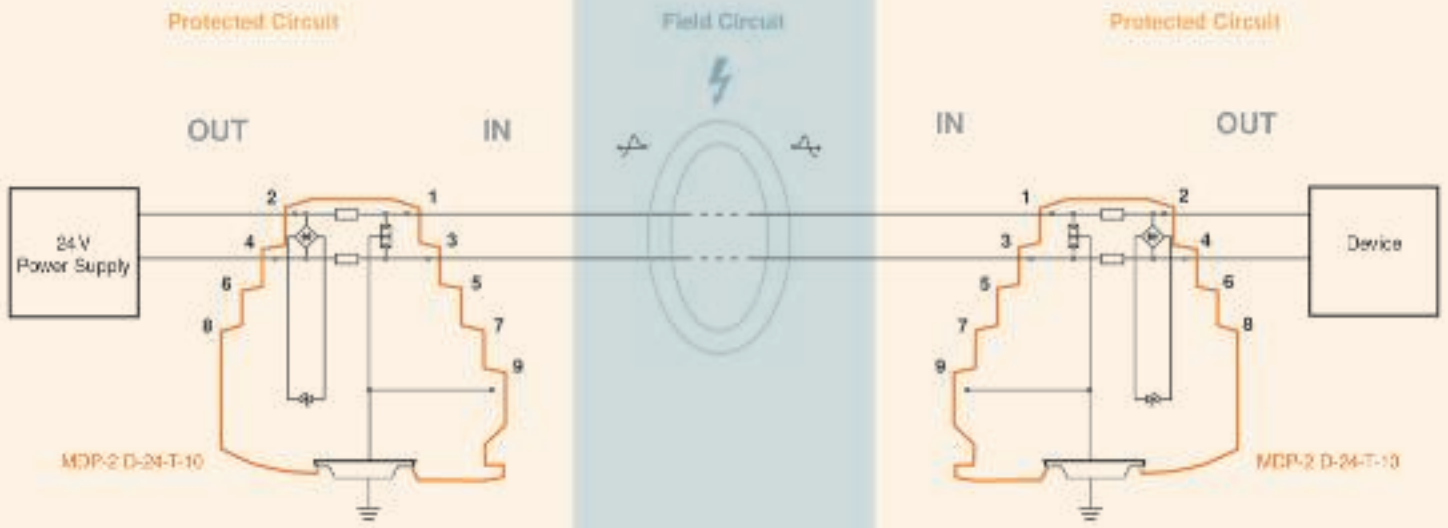
Surge protection for data and information technology



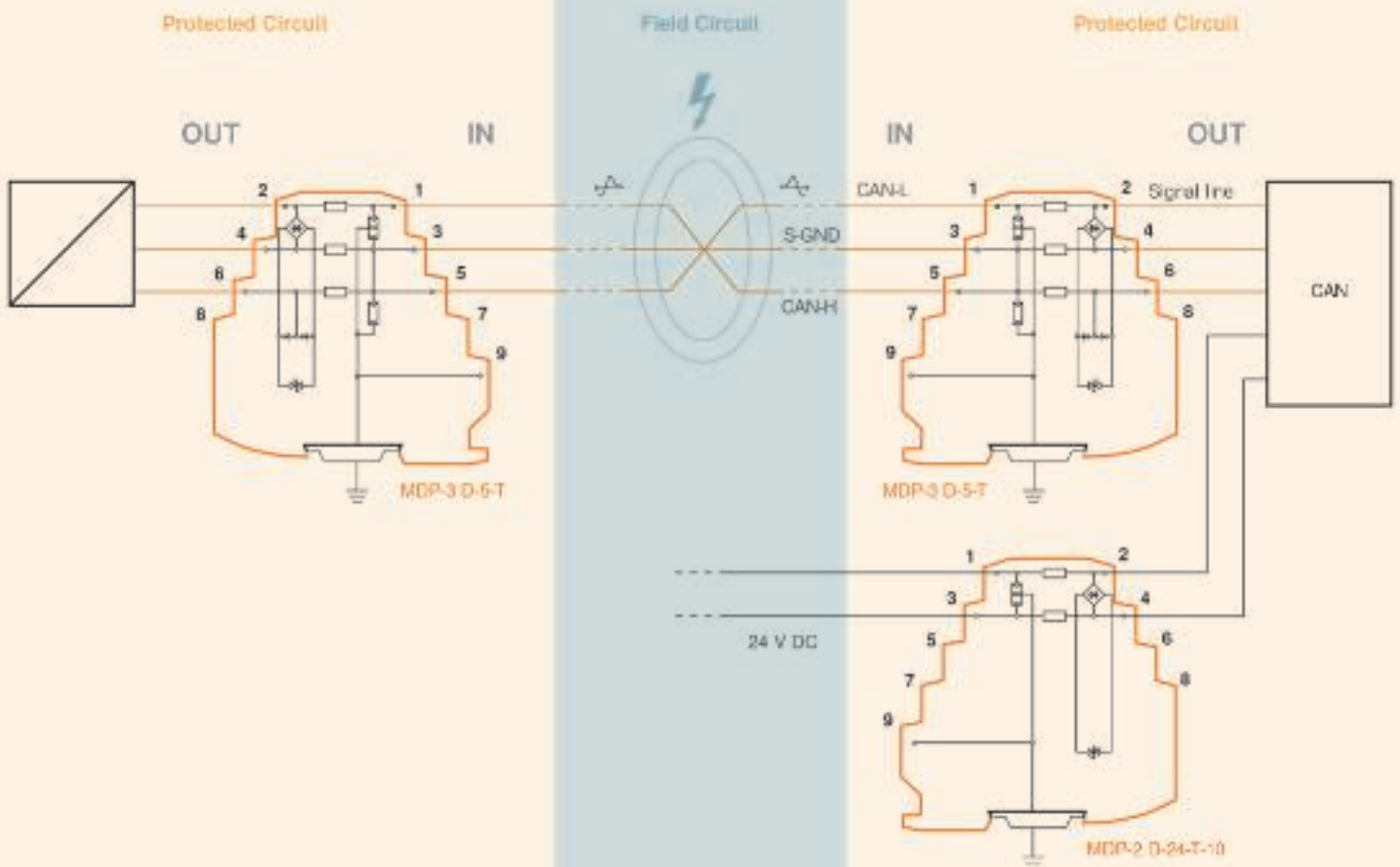
Current loop (0) 4-20 mA



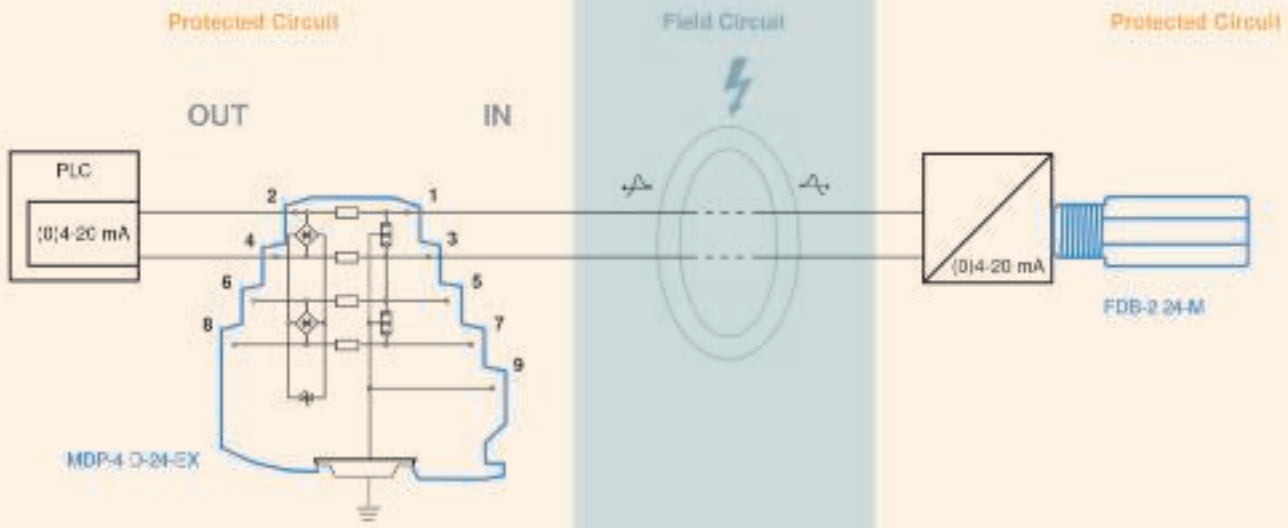
Sensor with current feed up to 10 A



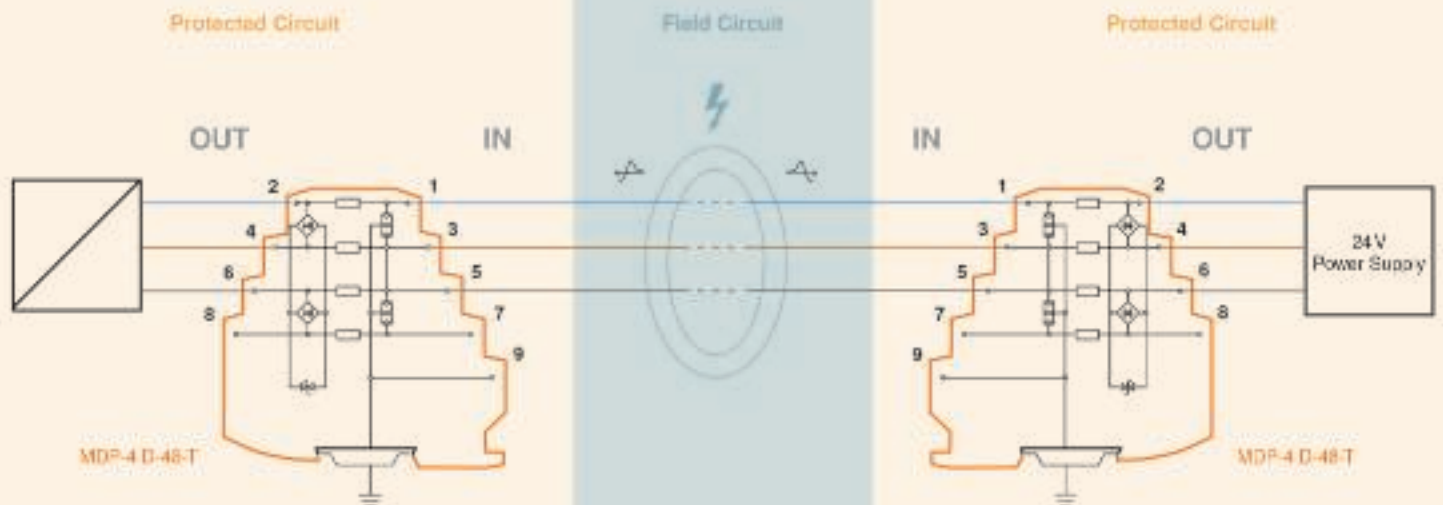
CAN bus



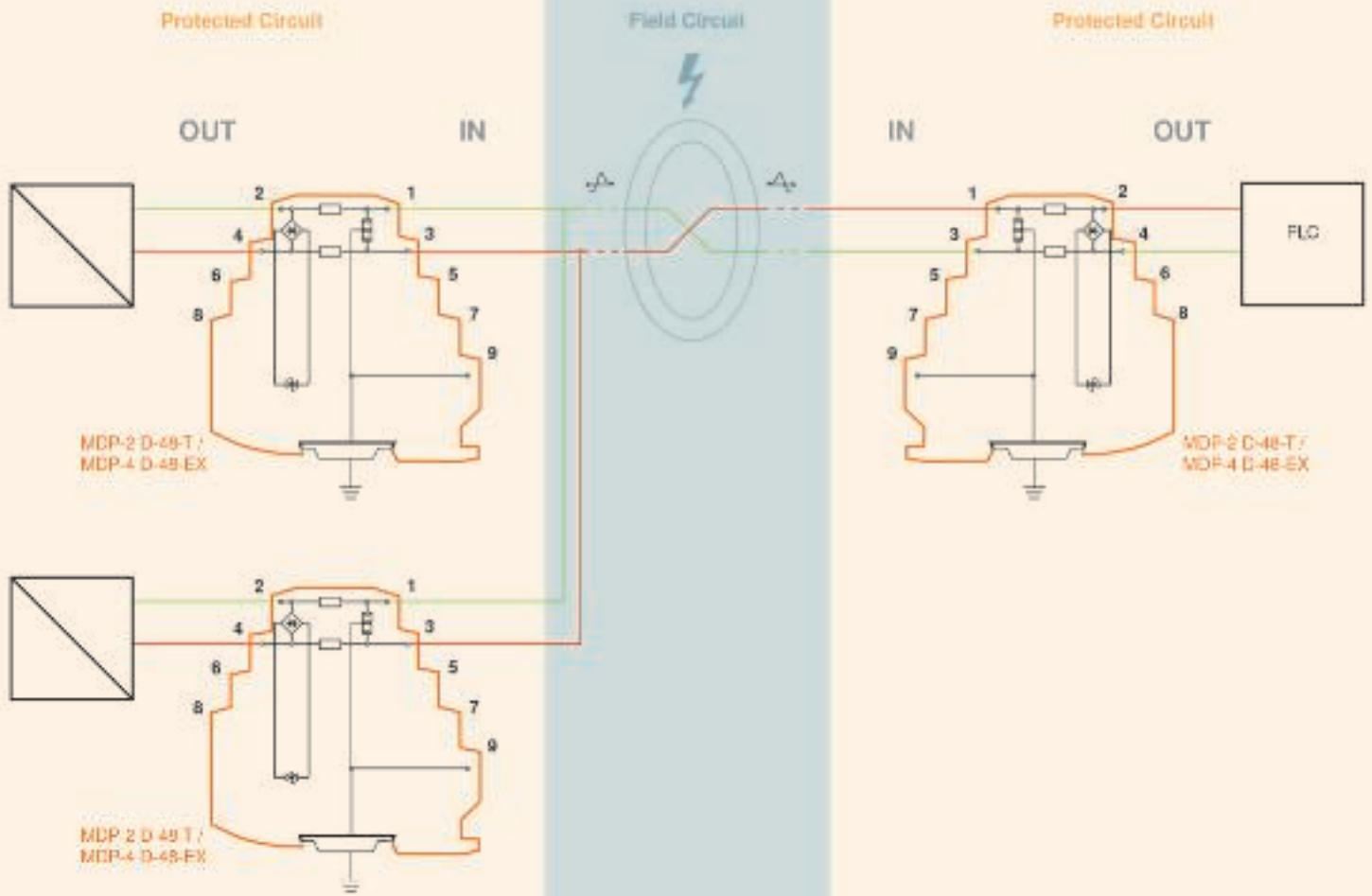
Current loop in potentially explosive area (0) 4-20 mA



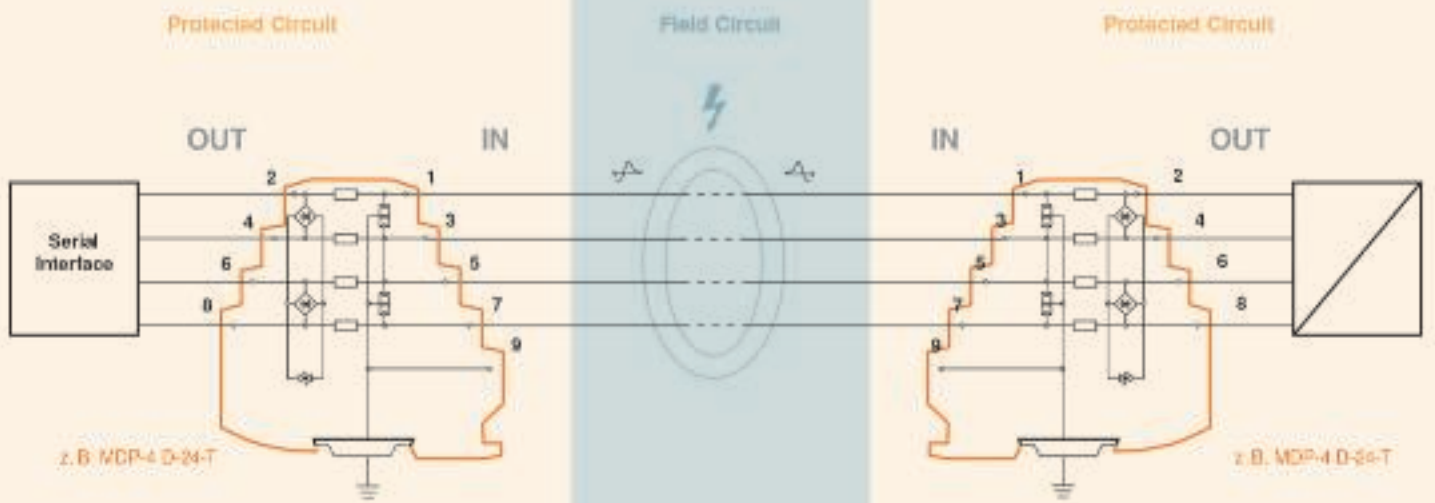
Fieldbus



Profibus PA



Serial interface (e.g. RS 232; RS 422; RS 485; ...)



Technical information

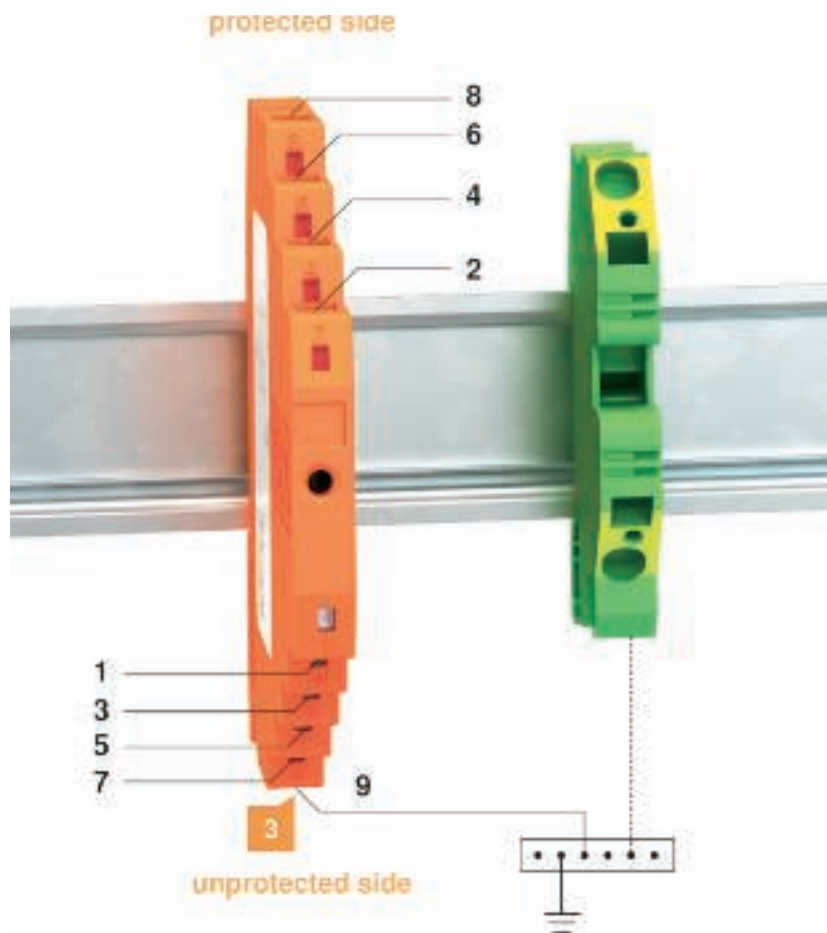
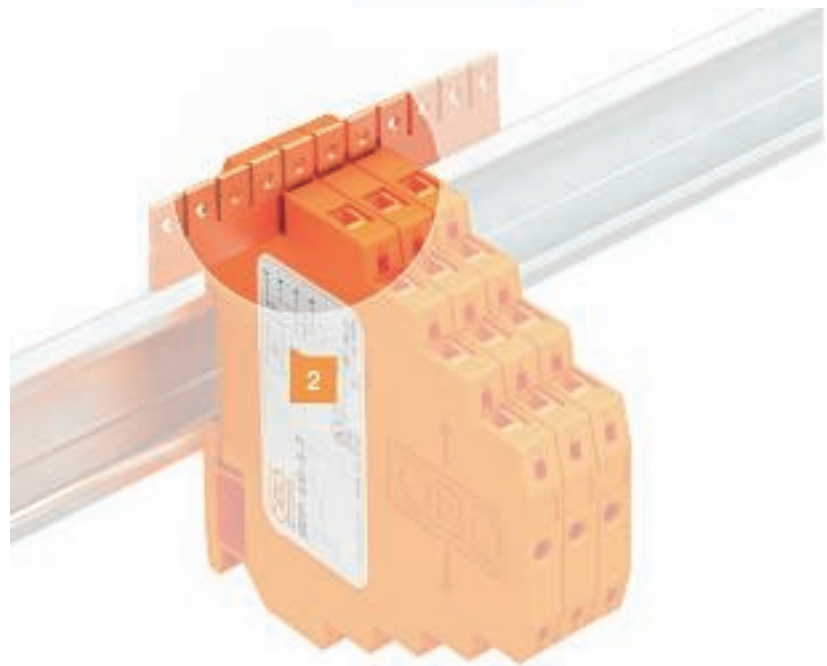
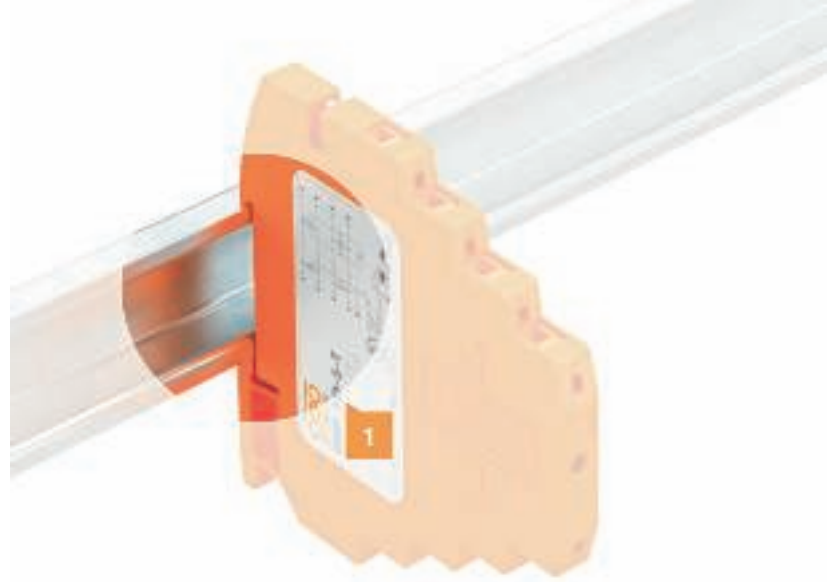
Earth connection on the MDP

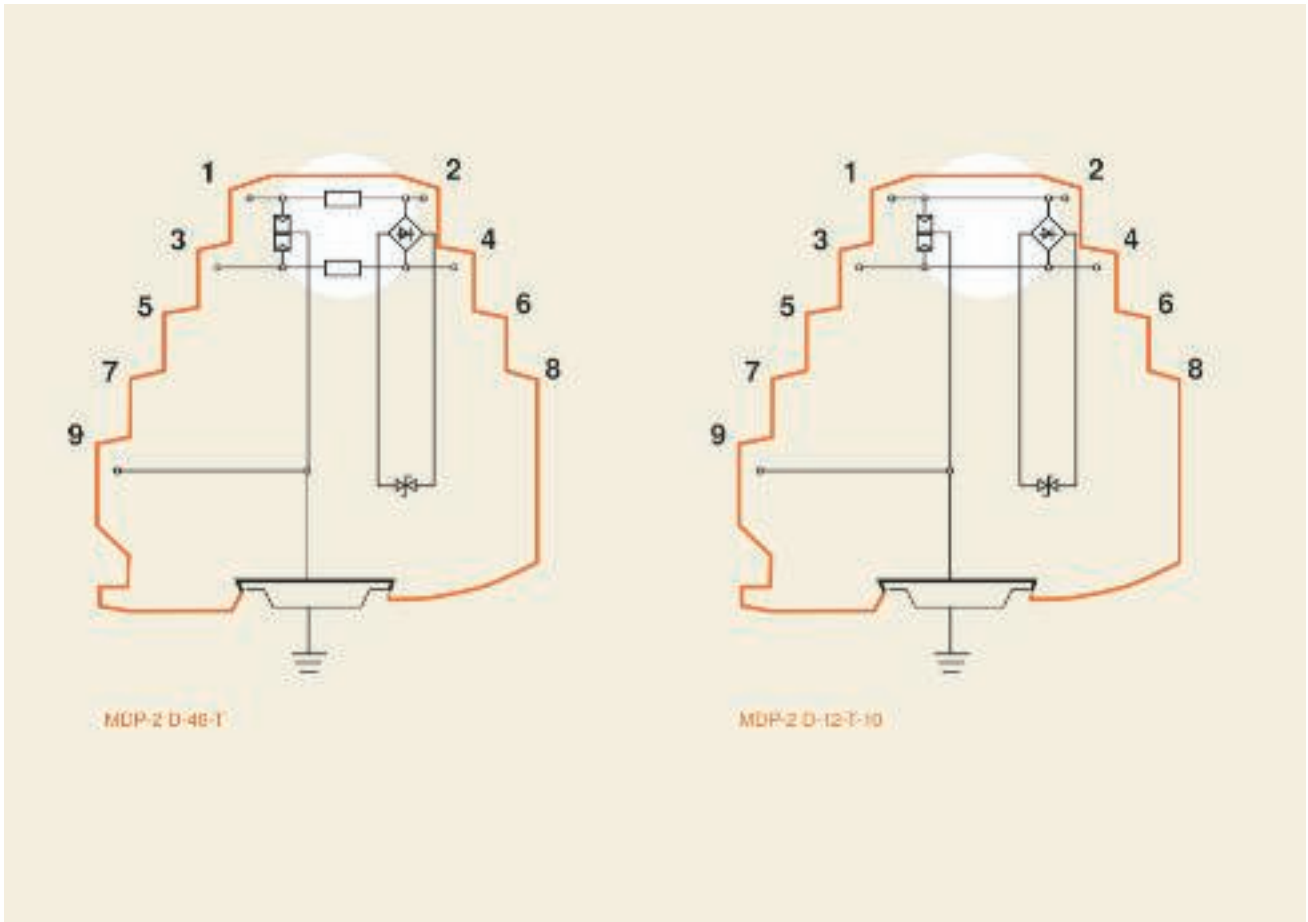
The MDP offers various options for creating the equipotential bonding:

1. **Earthing via hat rail (recommended), if the hat rail is integrated in the equipotential bonding**
2. **Joint earthing of multiple MDP devices via flat copper conductor**
3. **Earthing via separate earthing line**

Installation direction of the MDP

As the MDP is a multilevel protection device, the correct installation direction must be ensured for safe operation. The protected side must always be installed toward the device to be protected. Otherwise, an excessively high current could destroy the diode in Differential mode or in Common mode.





Left: Protection device with decoupling (rated load current: 580 mA), right: Protection device without decoupling (rated load current: 10 A)

Difference between standard solution and 10 A solution

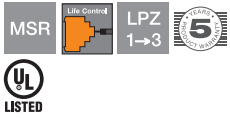
The 10 A solution is available for MDP applications in systems with high rated load currents (e.g. heated wind sensor). The technical difference is that, in the 10 A solution, the copper areas on the board were enlarged and there are no decoupling resistors.



Function testing

OBO Life Control allows function testing of the lightning barriers of type MDP. The lightning barriers can be tested whilst installed. The measuring signal is not influenced by this. Life Control possesses an integrated OLED with a visual and acoustic defect signal and a separately switchable LED for illumination on the testing pin.

MCR protection for multi-wire systems (testable)



MDP... D-5-T: Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

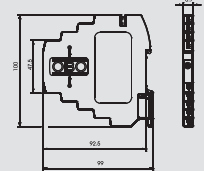
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.

Series protection device, 2-pole, 5 V version



Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-5-T	Terminal	7	10	2	1	6,000	5098 40 4

/pc.

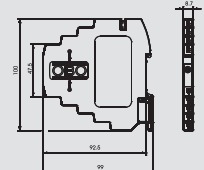


Series protection device, 3-pole, 5 V version



Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-5-T	Terminal	7	10	3	1	6,000	5098 40 7

/pc.

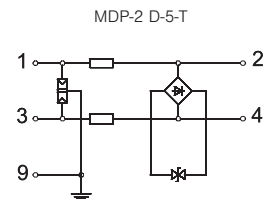
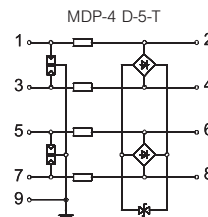
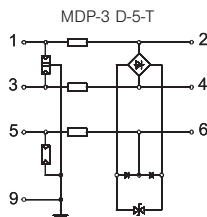
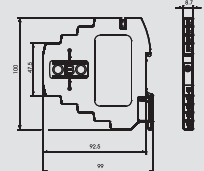


Series protection device, 4-pole, 5 V version



Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-5-T	Terminal	7	10	4	1	6,000	5098 41 1

/pc.

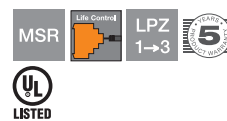


Maximum continuous operating voltage Vc/AC	V	7	7	7
Maximum continuous voltage Vc/DC	V	10	10	10
Lightning protection zone LPZ		0→3	0→3	0→3
Number of poles		3	4	2
Rated current	I _L	A	0,58	0,58
Serial impedance per path	Ω	2.35 ± 5 %	2.35 ± 5 %	2.35 ± 5 %
Impulse durability line-line			C1: 0.5 kV / 0.25 kA	
Impulse durability line-earth		C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA
Total impulse durability (10/350)	kA	D1: 1.5	D1: 2kA	D1: 1
Total arrester peak current (8/20)	kA	7.5	10 kA	5
Voltage protection level line-line	V	35	35	35
Voltage protection level line-earth	V	800	800	800
Shielding connection available		Yes	Yes	Yes
Shield connection		Direct	Direct	Direct
Temperature range	θ	°C	-40 - +80	-40 - +80
Connection cross-section, flexible	mm ²	2,5	2,5	2,5
Connection cross-section, multi-wire	mm ²	1,5	1,5	1,5
Connection cross-section, rigid	mm ²	2,5	2,5	2,5
Testing standard		IEC 61643-21	IEC 61643-21	IEC 61643-21
Item No.		5098 40 7	5098 41 1	5098 40 4

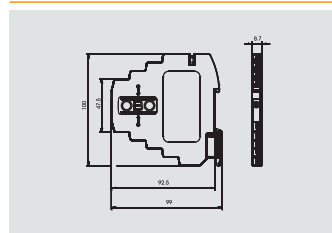
MCR protection for multi-wire systems (testable)

MDP... D-24-T: Lightning barrier with test function; 24 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)



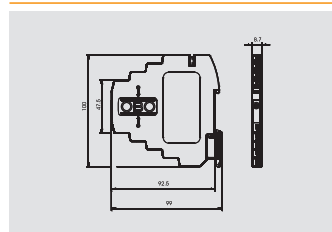
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.



Series protection device, 2-pole, 24 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-24-T	Terminal	20	28	2	1	6,000	5098 42 2

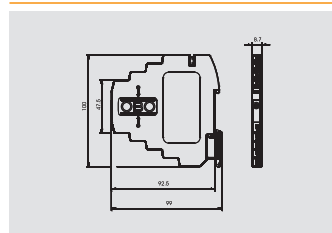
/pc.



Series protection device, 3-pole, 24 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-24-T	Terminal	20	28	3	1	6,000	5098 42 7

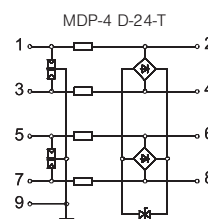
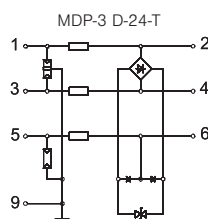
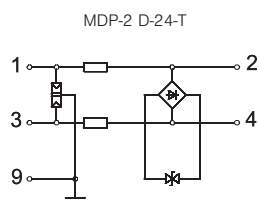
/pc.



Series protection device, 4-pole, 24 V version

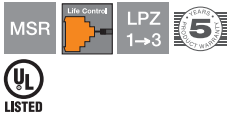
Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-T	Terminal	20	28	4	1	5,800	5098 43 1

/pc.



Maximum continuous operating voltage Vc/AC	V	20	20	20
Maximum continuous voltage Vc/DC	V	28	28	28
Lightning protection zone LPZ		0-3	0-3	0-3
Number of poles		2	3	4
Rated current	I _L A	0,58	0,58	0,58
Serial impedance per path	Ω	2.35 ± 5 %	2.35 ± 5 %	2.35 ± 5 %
Impulse durability line-line				C1: 0.5 kV / 0.25 kA
Impulse durability line-earth		C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA
Total impulse durability (10/350)	kA	D1: 1	D1: 1.5	D1: 2
Total arrester peak current (8/20)	kA	5	7.5	10 kA
Voltage protection level line-line	V	55	55	55
Voltage protection level line-earth	V	800	800	800
Shielding connection available		Yes	Yes	Yes
Shield connection		Direct	Direct	Direct
Temperature range	θ °C	-40 - +80	-40 - +80	-40 - +80
Connection cross-section, flexible	mm ²	2,5	2,5	2,5
Connection cross-section, multi-wire	mm ²	1,5	1,5	1,5
Connection cross-section, rigid	mm ²	2,5	2,5	2,5
Testing standard		IEC 61643-21	IEC 61643-21	IEC 61643-21
Item No.		5098 42 2	5098 42 7	5098 43 1

MCR protection for multi-wire systems (testable)



MDP... D-48-T: Lightning barrier with test function; 48 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

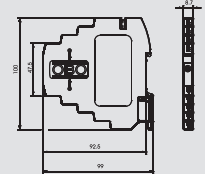
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.



Series protection device, 2-pole, 48 V version

Type	Connection system	Max. continuous operating voltage V _C /AC V	Maximum continuous voltage V _C /DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-48-T	Terminal	41	58	2	1	6,000	5098 44 2

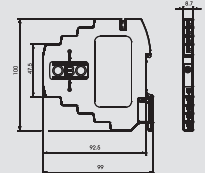
/pc.



Series protection device, 3-pole, 48 V version

Type	Connection system	Max. continuous operating voltage V _C /AC V	Maximum continuous voltage V _C /DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-48-T	Terminal	41	58	3	1	6,000	5098 44 6

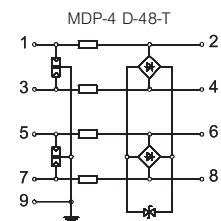
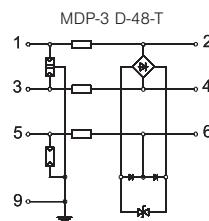
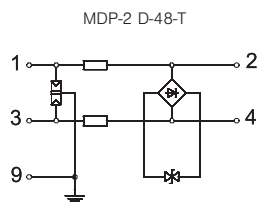
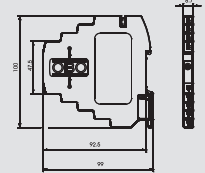
/pc.



Series protection device, 4-pole, 48 V version

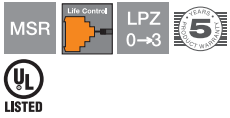
Type	Connection system	Max. continuous operating voltage V _C /AC V	Maximum continuous voltage V _C /DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-48-T	Terminal	41	58	4	1	5,800	5098 45 0

/pc.



Maximum continuous operating voltage V _C /AC	V	41	41	41
Maximum continuous voltage V _C /DC	V	58	58	58
Lightning protection zone LPZ		0→3	0→3	0→3
Number of poles		2	3	4
Rated current	I _L	A	0,58	0,58
Serial impedance per path	Ω	2.35 ± 5%	2.35 ± 5%	2.35 ± 5%
Impulse durability line-line				
Impulse durability line-earth		C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA
Total impulse durability (10/350)	kA	D1: 1	D1: 1.5	D1: 2
Total arrester peak current (8/20)	kA	5	7.5	10
Voltage protection level line-line	V	95	95	95
Voltage protection level line-earth	V	800	800	800
Shielding connection available		Yes	Yes	Yes
Shield connection		Direct	Direct	Direct
Temperature range	θ	°C	-40 - +80	-40 - +80
Connection cross-section, flexible	mm ²	2,5	2,5	2,5
Connection cross-section, multi-wire	mm ²	1,5	1,5	1,5
Connection cross-section, rigid	mm ²	2,5	2,5	2,5
Testing standard		IEC 61643-21	IEC 61643-21	IEC 61643-21
Item No.		5098 44 2	5098 44 6	5098 45 0

MCR protection for multi-wire systems (testable) to 10 A



MDP... D-12-T-10: Lightning barrier with test function; 12 V version

- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

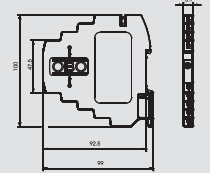
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.



Series protection device, 2-pole, 12 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-12-T-10	Terminal	10.5	15	2	1	6,000	5098 41 5

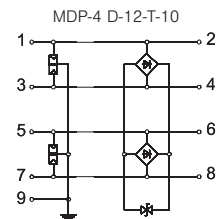
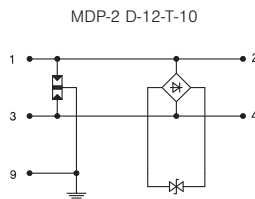
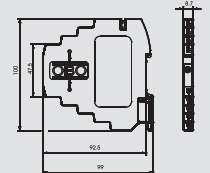
/pc.



Series protection device, 4-pole, 12 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-12-T-10	Terminal	10.5	15	4	1	6,000	5098 41 9

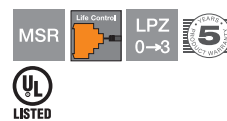
/pc.



Maximum continuous operating voltage Vc/AC	V	10,5	10,5
Maximum continuous voltage Vc/DC	V	15	15
Lightning protection zone LPZ		0-3	0-3
Number of poles		2	4
Rated current	I_L	A	10
Serial impedance per path	Ω	-	-
Impulse durability line-line			
Total impulse durability (10/350)	kA	D1: 1	D1: 2
Total arrester peak current (8/20)	kA	5	10
Voltage protection level line-line	V	55	55
Voltage protection level line-earth	V	800	800
Shielding connection available		Yes	Yes
Shield connection		Direct	Direct
Temperature range	ϑ	$^{\circ}\text{C}$	-40 - +80
Connection cross-section, flexible	mm^2	2,5	2,5
Connection cross-section, multi-wire	mm^2	1,5	1,5
Connection cross-section, rigid	mm^2	2,5	2,5
Testing standard		IEC 61643-21	IEC 61643-21
Item No.		5098 41 5	5098 41 9

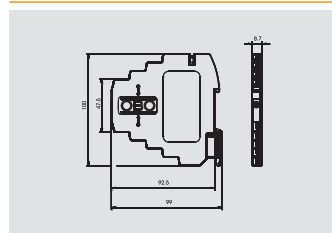
MCR protection for multi-wire systems (testable) to 10 A

MDP... D-24-T-10: Lightning barrier with test function; 24 V version



- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

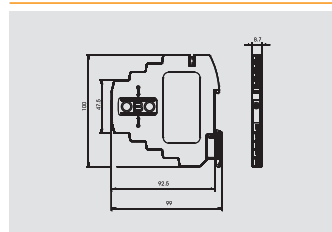
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.



Series protection device, 2-pole, 24 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-24-T-10	Terminal	20	28	2	1	6,000	5098 42 5

/pc.



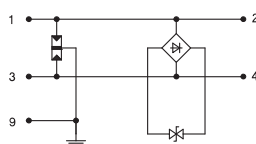
Series protection device, 4-pole, 24 V version

Type	Connection system	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-T-10	Terminal	20	28	4	1	7,200	5098 43 3

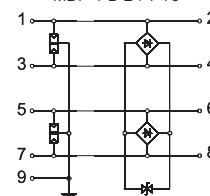
/pc.



MDP-2 D-24-T-10



MDP-4 D-24-T-10



Maximum continuous operating voltage Vc/AC	V	20	20
Maximum continuous voltage Vc/DC	V	28	28
Lightning protection zone LPZ		0→3	0→3
Number of poles		2	4
Rated current I_L	A	10	10
Serial impedance per path	Ω	-	-
Impulse durability line-line			
Total impulse durability (10/350)	kA	D1: 1	D1: 2
Total arrester peak current (8/20)	kA	5	10
Voltage protection level line-line	V	70	70
Voltage protection level line-earth	V	800	800
Shielding connection available		Yes	Yes
Shield connection		Direct	Direct
Temperature range ϑ	$^{\circ}\text{C}$	-40 - +80	-40 - +80
Connection cross-section, flexible	mm ²	2,5	2,5
Connection cross-section, multi-wire	mm ²	1,5	1,5
Connection cross-section, rigid	mm ²	2,5	2,5
Testing standard		IEC 61643-21	IEC 61643-21
Item No.		5098 42 5	5098 43 3

MCR protection for explosive areas



Data cable protection devices for intrinsically safe measuring circuits and bus systems

- Different connection systems available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- Ex-tested: Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)

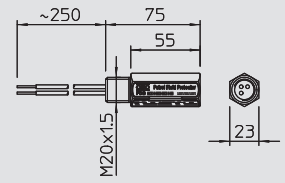
Application: Flow sensors, temperature sensors

MCR protection for explosive areas, 2-pole, 24 V



Type	Version	U max AC V	U max DC V	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-2 24-M	2-pole; metric	22	32	1	18,500	5098 38 0

/pc.

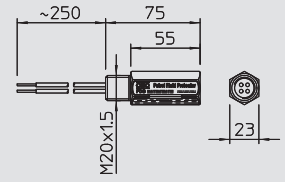


MCR protection for explosive areas, 3-pole, 24 V



Type	Version	U max AC V	U max DC V	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-3 24-M	3-pole; metric	22	32	1	19,000	5098 38 2

/pc.

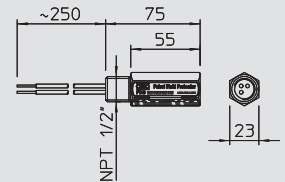


MCR protection for explosive areas, 2-pole, 24 V



Type	Version	U max AC V	U max DC V	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-2 24-N	2-pole; NPT	22	32	1	19,000	5098 39 0

/pc.

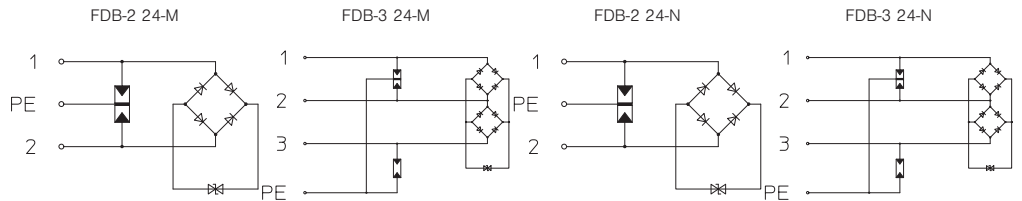
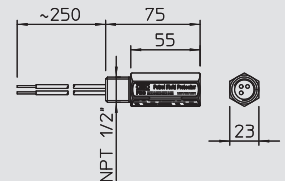


MCR protection for explosive areas, 3-pole, 24 V



Type	Version	U max AC V	U max DC V	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-3 24-N	3-pole; NPT	22	32	1	19,500	5098 39 2

/pc.



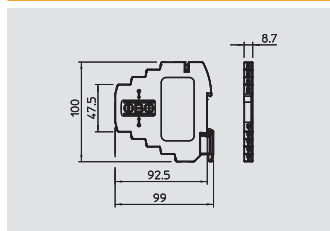
U max AC	U _c AC	V	22	22	22	22
U max DC	U _c DC	V	32	32	32	32
Lightning protection zone LPZ			1-3	1-3	1-3	1-3
Total impulse durability into C2 (8/20)		kA	10	10	10	10
Impulse durability int C2 (wire-wire)		kA	0,25	0,25	0,25	0,25
Voltage protection level line-earth		V	< 850	< 850	< 850	< 850
Voltage protection level line-line		V	< 80	< 80	< 80	< 80
Temperature range	θ	°C	-20 - +70	-20 - +70	-20 - +70	-20 - +70
Signalling on device			None	None	None	None
Capacity (wire-wire)			< 27 pF	< 27 pF	< 27 pF	< 27 pF
Capacity (wire-earth)			< 27 pF	< 27 pF	< 27 pF	< 27 pF
Mounting of input / output			M20 x 1.5 external thread	M20 x 1.5 external thread	1/2" NPT	1/2" NPT
Mounting of field / device side:			Connection cable 1.5 mm ² Length ~ 250 mm Connection cable	Connection cable 1.5 mm ² Length ~ 250 mm Connection cable	Connection cable 1.5 mm ² Length ~ 250 mm Connection cable	Connection cable 1.5 mm ² Length ~ 250 mm Connection cable
Earthing via:						
Housing material			V2A	V2A	V2A	V2A
Approvals			ATEX	ATEX	ATEX	ATEX
Item No.			5098 38 0	5098 38 2	5098 39 0	5098 39 2

MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits



- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High bandwidth up to 100 MHz
- Ex-tested: Ex II 2(1) G Ex ia IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

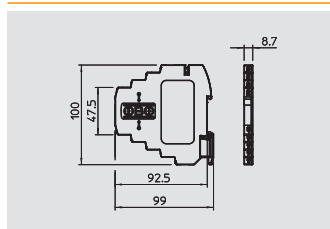
Application: Universal use on 35 mm hat profile rail in any standard distribution housing.



Series protection device, 4-pole, 5 V version, Ex-tested

Type	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-5-EX	7	10	4	1	5,800	5098 41 2

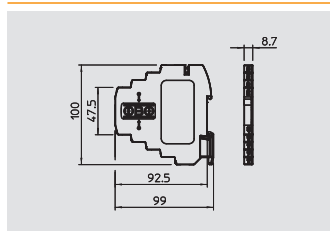
/pc.



Series protection device, 4-pole, 24 V version, Ex-tested

Type	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-EX	20	28	4	1	5,800	5098 43 2

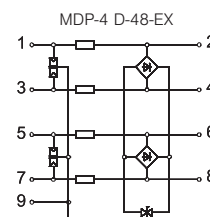
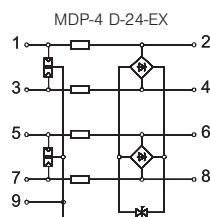
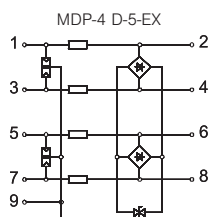
/pc.



Series protection device, 4-pole, 48 V version, Ex-tested

Type	Max. continuous operating voltage Vc/AC V	Maximum continuous voltage Vc/DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-48-EX	41	58	4	1	5,800	5098 45 2

/pc.



Maximum continuous operating voltage Vc/AC	V	7	20	41
Maximum continuous voltage Vc/DC	V	10	28	58
Lightning protection zone LPZ		1-3	1-3	1-3
Number of poles		4	4	4
Rated current I _L	A	0,58	0,58	0,58
Serial impedance per path	Ω	2.35 ± 5%	2.35 ± 5%	2.35 ± 5%
Impulse durability line-line		C1: 0.5 kV / 0.25 kA	C1: 0.5 kV / 0.25 kA	C1: 0.5 kV / 0.25 kA
Impulse durability line-earth		C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA	C2: 5 kV / 2.5 kA
Total impulse durability (10/350)	kA	D1: 2 kA	D1: 2	D1: 2
Total arrester peak current (8/20)	kA	10 kA	10 kA	10
Voltage protection level line-line	V	35 V	55	95
Voltage protection level line-earth	V	800 V	800	800
Shielding connection available		Yes	Yes	Yes
Shield connection		Direct	Direct	Direct
Temperature range θ	°C	-40 - +80	-40 - +80	-40 - +80
Connection cross-section, flexible	mm ²	2,5	2,5	2,5
Connection cross-section, multi-wire	mm ²	1,5	1,5	1,5
Connection cross-section, rigid	mm ²	2,5	2,5	2,5
Ex approval		Ex II 2(1) G Ex ia IIC T4	Ex II 2(1) G Ex ia IIC T4	Ex II 2(1) G Ex ia IIC T4
Testing standard		IEC 61643-21	IEC 61643-21	IEC 61643-21
Item No.		5098 41 2	5098 43 2	5098 45 2

Accessories for MCR protection



Accessories for series terminal

Type	Pack.	Weight	Item No.
	pcs	kg/100 pcs.	
VB-MDP 10-MD	1	2,300	5098 47 0

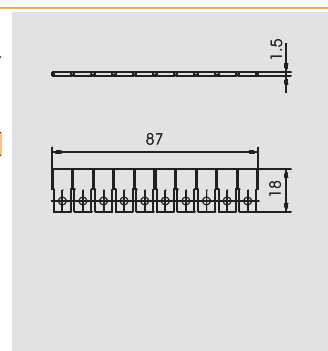
Cu Copper

/pc.

Connecting bridge for 8 mm lightning barriers

- Length of bridge can be adjusted
- Material: Copper
- Allows quick equipotential bonding

Application: Parallel switching of the MDP lightning barriers





Testing unit for lightning barriers



Type	Pack.	Weight	Item No.
	pcs	kg/100 pcs.	
LFC	1	164,500	5096 78 6

/pc.

OBO Life Control allows function control of the MDP lightning barriers. The lightning barriers can be checked while installed. Life Control will not have any influence on the measuring signal. Life Control possesses an integrated OLED with visual and acoustic defect signalling. A separate LED inside the testing pin is also integrated. Life Control is delivered in a case, complete with a CD and instructions.






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When the building size and the challenge of use increases, the complexity of the electrical infrastructure also increases. For decades, our electrical systems have contributed to the success of major projects. The comprehensive product range allows precise matching to the appropriate deployment location. Our customers can profit from the matching service process, which stretches from project planning through to delivery and consultation on the construction site.

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