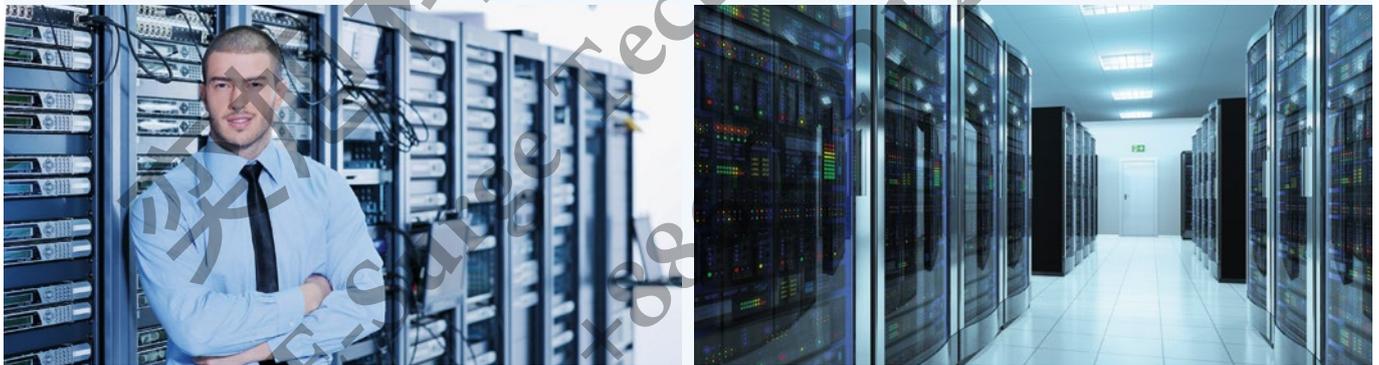


# SPDs for data / signalling / telecommunication networks



Data, signal and telecommunication networks



- Security, Fire Alarm and CCTV systems
- IP technology and data networks (Ethernet)
- ADSL and telecommunications
- Antennas
- Attendance systems
- Control systems for industry

- Lightning Current Arresters ST 1, ST 1+2+3
- Surge Arresters ST 2+3, ST 3

# Data, signal and telecommunication protections

The basic principle for surge protection is the **complexity** and **coordination** of devices. The complexity requirement can be met only by installing surge arresters at all inputs and outputs (!) of the given equipment, i.e. it is necessary to protect the power supply line and also the measuring and communication interface. We can ensure coordination by installing devices with various protective effects in sequence into the line or the communication core and the interface.

Criteria to meet the requirement for complexity and coordination particularly include position of installation respective to LPZ boundary, maximum impulse or discharge current, required protection level and response time.

Fig. 1 shows the principle of protection coordination and protection complexity.

In order to select the correct type of dataline protection there must be detailed information about the protected signal:

- Signal peak voltage
- Signal current
- Frequency bandwidth – frequency and signal form
- Conduit in lightning protection zones (LPZ 0 to LPZ 2)
- Longitudinal impedance – maximum line attenuation
- Possibility of steady overvoltage (so-called high-ohm fault)

During the installation of all surge devices, strictly observe the elimination of the coupling between the input of the unprotected line and the output of the protected line and the earthing line. Examples of the most frequent installation errors concerning the coupling between the input and output of the protected line and earth are shown in Fig. 2. This figure also shows an example of correct wiring.

Potential balancing of pulse overvoltage must always proceed outside the protected equipment. Fig. 3 shows the correct wiring of surge arresters in a control system with external power source, communicating with the surroundings via a measuring and communication interface. Potential balancing via the protected equipment is inadmissible.

The table with principle of marking for easier orientation:

Transition from zones	Marking
LPZ 0 – LPZ 1	ST 1
LPZ 1 – LPZ 2	ST 2
LPZ 2 – LPZ 3	ST 3

Example of marking:

Product	Description	Marking
BD-250-T	lightning current arrester	ST 1
BDG-024-V/1-FR1	combined lightning and surge currents arrester	ST 1+2+3
DM-024/1 R DJ	combined surge protection	ST 2+3

Fig. 1 Principle of protection coordination and protection complexity

FLP – lightning current arrester class B  
 SLP – surge arrester class C  
 DA – surge protection class D  
 BD-T – lightning current arrester  
 DM – combined surge protection  
 MaR – measurement and control room

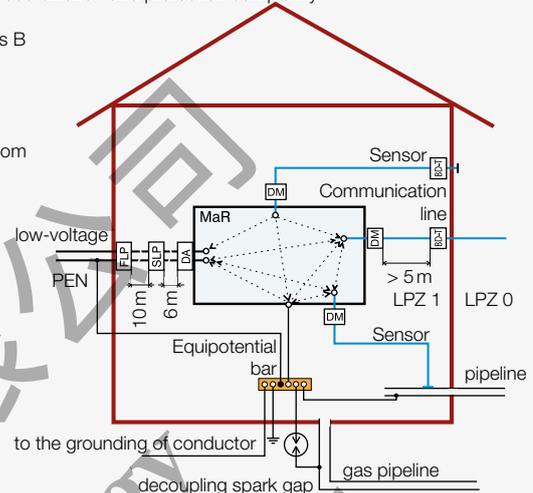


Fig. 2 Coupling between input and output line and earth connection

An unprotected input line should be removed from the protected output line as far as possible

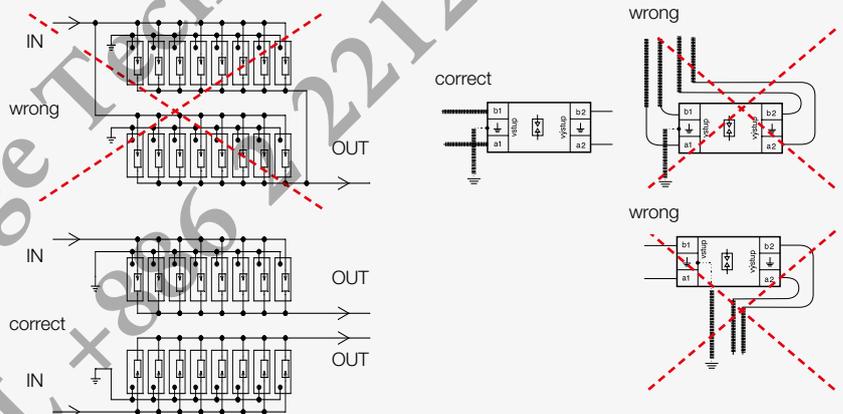
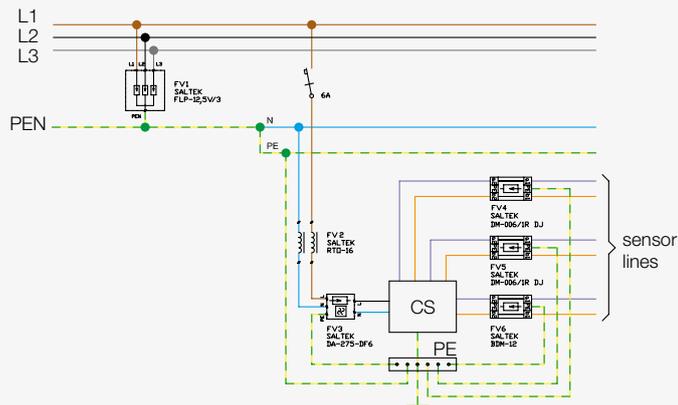


Fig. 3 Principle of the protection of control systems



**The principle of placing the dataline protections**

For easier placing of dataline protections SALTEK introduced a new type of categorization of dataline protections under SALTEK marking ST 1, ST 2 and ST 3. This new designation quite specifically define the placing of dataline protections within the principles of Zonal protection and complies with standards IEC (EN) 61643-21 + A1, A2 and IEC (EN) 62305 - Zonal protection.

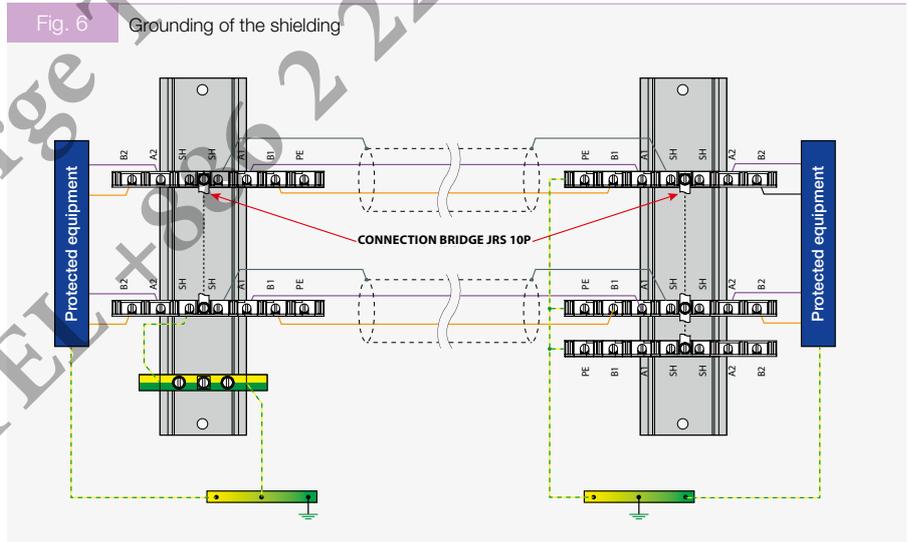
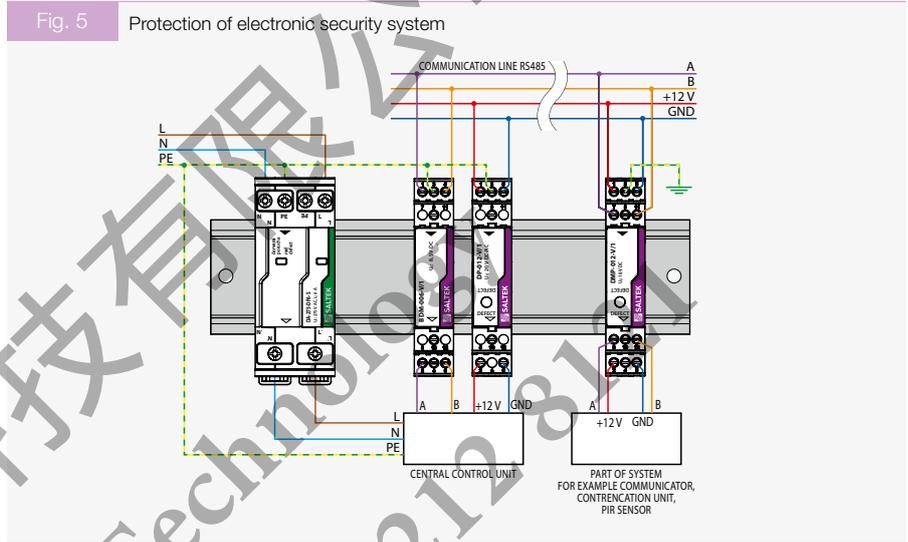
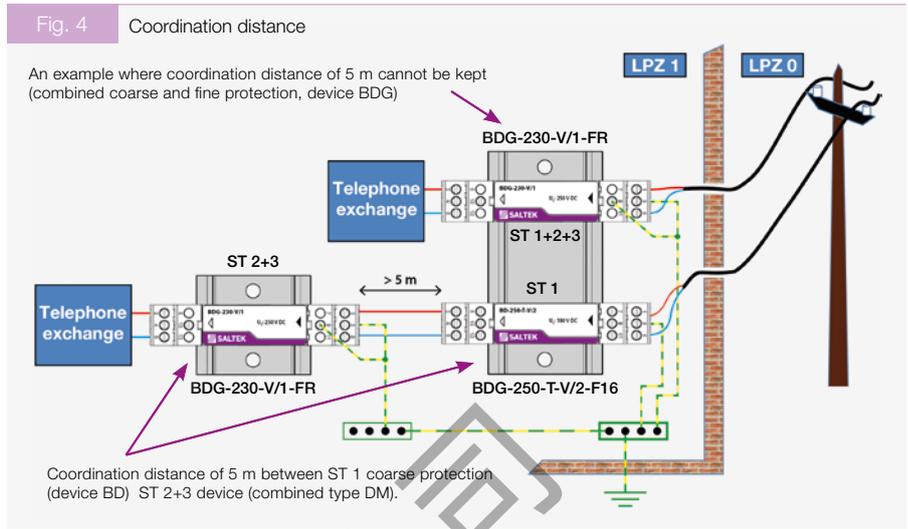
Another important thing to note is the fact that the majority of dataline protection is multi-type. The most commonly used protection is two-type, composed of second and third type (ST 2+3). This includes units of the DM line intended to protect communication lines which are inside the building.

For communication lines that go to the outside of the building (i.e. between LPZ 0 to LPZ 1), a combination of devices can be used, i.e. protection DM series (ST 2+3) and lightning current arrester BD type (ST 1) or three-type protection BDM series or BDG (ST 1+2+3). On the Fig. 4 it is clearly shown which variant for which case is suitable.

Given that most of the dataline protection is a multi-type, it must be remembered that these are directional and must be fitted in the correct manor (installed in the correct direction). The communication line (wire) is connected to the input of dataline device and the output of dataline device is connected to the protected equipment as shown in Fig. 5. For comprehensive protection of communication and instrumentation systems, it is necessary that as well as protecting the measuring and datalines, the power supply line must be also protected. Protection of the AC power supply 230 V AC is shown in Fig. 3 (the principle of the protection of control system). When protecting small voltages, the DP units are used. These are adapted for protection of both AC and DC voltage. The signal lines often use shielded cables. The principle of grounding of shielding is shown in Fig. 6 (grounding of shielding)

**Maintenance of protective devices**

Surge protective devices from SALTEK do not require maintenance during its life-time. But it is appropriate to provide periodic inspection during the operation and remedy when any problem occurs. The damage of the dataline protection cause the interruption and/or permanent short circuit of the line.



Data, signal and telecommunication networks

# SALTEK® SPD applications in data / signalling / telecommunication systems

## MEASURING AND CONTROL TECHNOLOGY AND BUS SYSTEMS

Interface/Signal	Protected lines	U (DC) [V]	Discharge current per core		SPD xx – corresponding voltage	Mounting	Notes	
			10/350 µs	8/20 µs				
Current loop 0 ÷ 20 mA, 4 ÷ 20 mA	2	12/24	x	10 kA	DM-xx/1R DJ	DIN 35		
			x	5 kA	DM-xx/1-Ry*	DIN 35		
	2	12/24	x	5 kA	CLSA-xx	LSA plus	disconnection	
	4		2,5 kA	10 kA	BDM-xx-V/2-FR1	DIN 35		
			x	10 kA	2pcs DM-xx/1 R DJ	DIN 35		
	2	12/24	x	5 kA	DMG-xx/1-Ry*	DIN 35		
Binary signals	2	12/24	2,5 kA	10 kA	BDG-xx-V/1-FR1	DIN 35		
			x	5 kA	DMLF-024/1-Ry*	DIN 35		
	2	24	x	5 kA	BDM-xx-V/1-FR1	DIN 35		
			2,5 kA	10 kA	BDM-xx-V/1-FR1	DIN 35		
			x	5 kA	CLSA-xx	LSA plus	disconnection	
			x	10 kA	DM-xx/1R DJ	DIN 35		
BLN Building Level Network	2	15/48	2,5 kA	10 kA	BDM-xx-V/1-FR1	DIN 35		
			x	10 kA	DM-xx/1R DJ	DIN 35		
TTL	2	5	2,5 kA	10 kA	BDM-012-V/1-FR1	DIN 35		
			x	10 kA	DM-012/1R DJ	DIN 35		
RS-485 up to 1,5 Mbit/s	2	5	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35		
			x	10 kA	DM-006/1R DJ	DIN 35		
	3	5	x	10 kA	DM-006/3R DJ	DIN 35		
	3/4	5	2,5 kA	10 kA	BDG-006-V/1-4FR1	DIN 35		
	4	5	x	10 kA	DM-006/4R DJ	DIN 35		
RS 485 combined with power line (e.g. security and fire alarm system)	2	12	x	10 kA	DMP-012-V/1-FR1	DIN 35		
		24	x	10 kA	DMP-024-V/1-FR1	DIN 35		
RS-422	2	5	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35		
			x	10 kA	DM-006/1R DJ	DIN 35		
	4	5	2,5 kA	10 kA	BDG-006-V/1-4FR1	DIN 35		
			x	10 kA	DM-006/4R DJ	DIN 35		
Analog signals	I = 0,06 A	2	6 ÷ 48	x	10 kA	DM-xx/1-R DJ	DIN 35	
	I = 0,37 A	2	6 ÷ 48	x	10 kA	DM-xx/1-L DJ	DIN 35	
			6 ÷ 48	x	5 kA	CLSA-xx	LSA plus	disconnection
	I = 0,5 A	2	6 ÷ 110	x	5 kA	DM-xx/1-Ry*	DIN 35	
			6 ÷ 110	x	5 kA	DMG-xx/1-Ry*	DIN 35	
			24	x	5 kA	DMLF-024/1-Ry*	DIN 35	
	I = 1 A	2	6 ÷ 230	2,5 kA	10 kA	BDM-xx-V/1-FR1	DIN 35	
				2,5 kA	10 kA	BDG-xx-V/1-FR1	DIN 35	
			6 ÷ 48	x	10 kA	DM-xx/1-L2 DJ	DIN 35	
	I = 2 A	2	6 ÷ 60	2,5 kA	10 kA	BDM-xx-V/1-FR2	DIN 35	
			2,5 kA	10 kA	BDG-xx-V/1-FR2	DIN 35		
Multipurpose coarse protection	2	70	2,5 kA	x	BD-090-T-V/2-F16	DIN 35		
RS-232-C	2	15	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35	floating	
			x	10 kA	DM-024/1R DJ	DIN 35		
Measurement of temperature	2	up to 6	x	5 kA	CLSA-006	LSA plus	disconnection	
			2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35		
			x	10 kA	DM-006/1R DJ	DIN 35		
Pt-100, Pt-1000 Ni-1000, NTC, PTC	3	up to 6	x	10 kA	DM-006/3R DJ	DIN 35		
	3/4	up to 6	2,5 kA	10 kA	BDG-006-V/1-4FR1	DIN 35		
	4	up to 6	x	10 kA	DM-006/4R DJ	DIN 35		
Opron protocol	2	6 ÷ 24	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	floating	
			x	10 kA	DM-xx/1R DJ	DIN 35		

\* Ry means version of the terminal block: RS - screw terminals, RB - screwless terminals

MEASURING AND CONTROL TECHNOLOGY AND BUS SYSTEMS

Interface/Signal	Protected lines	U (DC) [V]	Discharge current per core		SPD xx – corresponding voltage	Mounting	Notes				
			10/350 µs	8/20 µs							
DC power supply	I = 16 A	2	12 ÷ 48	x	2 kA	DP-xxxDC-16	DIN 35				
	I = 6 A	2	12 ÷ 48	x	2 kA	DP-xx-V/1-F16	DIN 35				
KNX TP (EIB)	2	24	2,5 kA	10 kA	1 kA	DPF-xxxDC-16(-S)	DIN 35	RFI filter			
						BDG-024-V/1-FR1	DIN 35				
M-Bus (Meter Bus)	2	36	2,5 kA	10 kA	10 kA	DMG-024/1-RB	DIN 35				
						BDM-048-V/1-FR1	DIN 35				
CAN-Bus communication max. 1,5 Mbit/s	2	6	2,5 kA	10 kA	10 kA	DM-024/1 L2 DJ	DIN 35				
						BDM-006-V/1-FR1	DIN 35				
Device Net communication 500 kbit/s	I = 2 A	2	24	2,5 kA	10 kA	BDM-024-V/1-FR2	DIN 35				
						DM-024/1 L2 DJ	DIN 35				
	I = 2 A	2	5	2,5 kA	10 kA	BDM-006-V/1-FR2	DIN 35				
						DM-006/1L2 DJ	DIN 35				
	I = 1 A	2	24	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35				
						5	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
C-Bus	2	5	x	10 kA	10 kA	DM-006/1R DJ	DIN 35				
Honeywell communication max. 0.9 Mbit/s	2	5	2,5 kA	10 kA	10 kA	BDM-006-V/1-FR1	DIN 35				
Dupline	2	15	2,5 kA	10 kA	10 kA	BDG-012-V/1-FR1	DIN 35				
E-Bus (Honeywell)	2	48	2,5 kA	10 kA	10 kA	BDG-048-V/1-FR1	DIN 35				
Fieldbus Foundation	2	30	2,5 kA	10 kA	10 kA	BDG-048-V/1-FR1	DIN 35				
Genius I/O Bus	2	12	2,5 kA	10 kA	10 kA	BDG-012-V/1-FR1	DIN 35				
FIPIO/FIPWAY	2	30	2,5 kA	10 kA	10 kA	BDG-048-V/1-FR1	DIN 35				
INTERBUS INLINE	2	48	2,5 kA	10 kA	10 kA	BDG-048-V/1-FR1	DIN 35				
K-Bus	2	24	2,5 kA	10 kA	10 kA	BDG-024-V/1-FR1	DIN 35				
LUXMATE-Bus	2	24	2,5 kA	10 kA	10 kA	BDG-024-V/1-FR1	DIN 35				
Procontic CS31 (RS-232)	2	15	2,5 kA	10 kA	10 kA	BDM-024-V/1-FR1	DIN 35				
Profibus-DP/FMS high-speed lines	up to 1,5 Mbit/s	2	9	x	10 kA	DM-006/1R DJ	DIN 35				
						6	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
	up to 20 Mbit/s	2	9	18	x	150 A	DL-RS DD9	Canon			
							6/15	x	5 kA	DMHF-xx/1-Ry*	DIN 35
	up to 50 Mbit/s	2	3/4	6/24	2,5 kA	10 kA	BDMHF-xx-V/1-FR1	DIN 35			
							6/24	2,5 kA	10 kA	BDMHF-xx-V/1-FR1	DIN 35
6 ÷ 24							2,5 kA	10 kA	BDGHF-xx-V/1-FR1	DIN 35	
6 ÷ 24							2,5 kA	10 kA	BDGHF-xx-V/2-FR1	DIN 35	
R-Bus	2	6	2,5 kA	10 kA	10 kA	BDG-006-V/1-FR1	DIN 35				
SDLS	2	6	x	5 kA	5 kA	CLSA-6	Krone LSA+				
Securilan-LON-Bus	2	6	2,5 kA	10 kA	10 kA	BDG-006-V/1-FR1	DIN 35				
SIGMA SYS (Siemens EPS)	2	48	2,5 kA	10 kA	10 kA	BDG-048-V/1-FR1	DIN 35				
SS97 SINIS (RS-232)	2	48	2,5 kA	10 kA	10 kA	BDM-048-V/1-FR1	DIN 35				
SUCONET	2	6	12	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35				
						2,5 kA	10 kA	BDG-006-V/1-FR1	DIN 35		
TELEPERM M analog input	2	24	12	2,5 kA	10 kA	BDM-012-V/1-FR1	DIN 35				
						24	x	5 kA	CLSA-12	Krone LSA+	
						24	x	5 kA	CLSA-24	Krone LSA+	
TELEPERM M binary I/O	2	48	12	x	10 kA	DM-048/1L DJ	DIN 35				
						2,5 kA	10 kA	BDM-048-V/1-FR1	DIN 35		
						2,5 kA	10 kA	DM-012/1L DJ	DIN 35		
TELEPERM MFM100	2	12	2,5 kA	10 kA	10 kA	BDM-012-V/1-FR1	DIN 35				
						2,5 kA	10 kA	BDG-012-V/1-FR1	DIN 35		
TTY	2	6 ÷ 24	x	10 kA	10 kA	DM-xxx/1R DJ	DIN 35				
						2,5 kA	10 kA	BDM-xxx-V/1-FR1	DIN 35		
Potential-free (isolated) contacts	1	6 ÷ 110	x	10 kA	10 kA	DMJ-xx/2-Ry*	DIN 35				
						2,5 kA	10 kA	BDM-xx-V/2-JFR1	DIN 35		
						2,5 kA	10 kA	BDM-xx-V/2-JFR2	DIN 35		
						2,5 kA	10 kA	BDM-xx-V/4-JFR1	DIN 35		
						2,5 kA	10 kA	BDM-xx-V/4-JFR1	DIN 35		
Protection against power crossing of lines up to 400 V	2	24/48	x	5 kA	5 kA	DMS-xx	DIN 35				

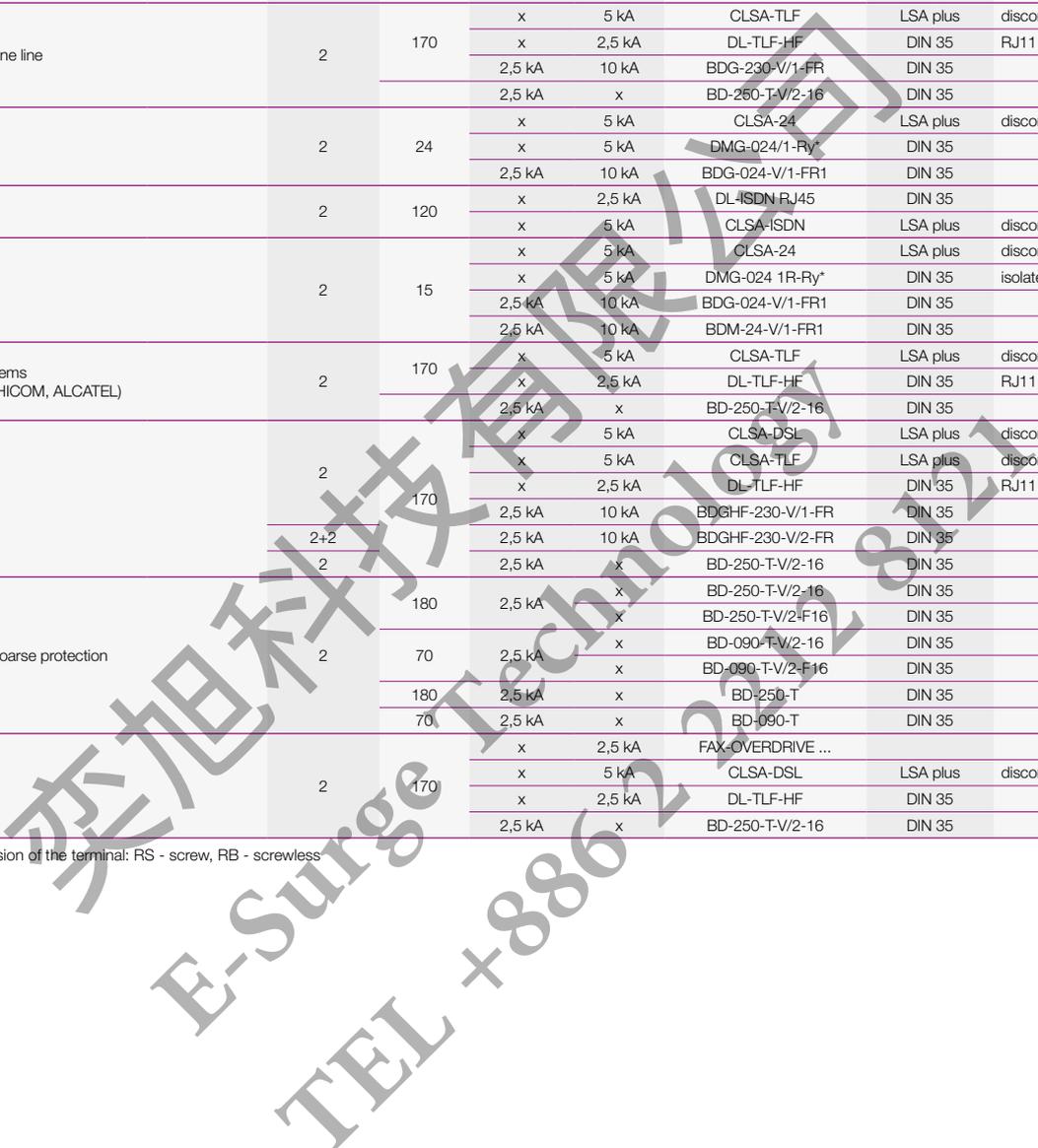
Data, signal and telecommunication networks

# SALTEK® SPD applications in data / signalling / telecommunication systems

TELECOMMUNICATIONS, TELEPHONE SYSTEMS							
Interface/Signal	Protected lines	U (DC) (V)	Discharge current per core		SPD xx – corresponding voltage	Mounting	Notes
			10/350 µs	8/20 µs			
ADSL analog line	2	170	x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	2,5 kA	DL-TLF-HF	DIN 35	RJ11
			2,5 kA	10 kA	BDG-230-V/1-FR	DIN 35	
Analog telephone line	2	170	x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-HF	DIN 35	RJ11
			2,5 kA	10 kA	BDG-230-V/1-FR	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
DATEX-P	2	24	x	5 kA	CLSA-24	LSA plus	disconnection
			x	5 kA	DMG-024/1-Ry*	DIN 35	
			2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
ISDN U <sub>ko</sub>	2	120	x	2,5 kA	DL-ISDN RJ45	DIN 35	
Modem M1	2	15	x	5 kA	CLSA-ISDN	LSA plus	disconnection
			x	5 kA	CLSA-24	LSA plus	disconnection
			x	5 kA	DMG-024 1R-Ry*	DIN 35	isolated signal ground
			2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
Telephony systems (eg. Siemens, HICOM, ALCATEL)	2	170	2,5 kA	10 kA	BDM-24-V/1-FR1	DIN 35	
			x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-HF	DIN 35	RJ11
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
T-DSL	2	170	x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-HF	DIN 35	RJ11
	2+2	180	2,5 kA	10 kA	BDGHF-230-V/1-FR	DIN 35	
			2,5 kA	10 kA	BDGHF-230-V/2-FR	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
Multipurpose coarse protection	2	70	2,5 kA	x	BD-250-T-V/2-16	DIN 35	
			x	x	BD-250-T-V/2-F16	DIN 35	
		180	2,5 kA	x	BD-090-T-V/2-F16	DIN 35	
		70	2,5 kA	x	BD-250-T	DIN 35	
		70	2,5 kA	x	BD-090-T	DIN 35	
VDSL/VDL2	2	170	x	2,5 kA	FAX-OVERDRIVE ...		
			x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	2,5 kA	DL-TLF-HF	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	

\* Ry means version of the terminal: RS - screw, RB - screwless

Data, signal and telecommunication networks



ETHERNET AND GENERAL STRUCTURED CABLING

Application	Protected pairs	Max. bitrate	Impulse current per core [A]		PoE compatibility (IEEE802.3)	SPD type	Mounting	LPZ location
			10/350 µs	8/20 µs				
Gigabit Ethernet (without PoE)	4	1 Gbps	x	200	NO	DL-Cat. 5e	DIN 35	LPZ 1 ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	NO	DL-Cat. 6	DIN 35	LPZ 1 ->
	4	10 Gbps	x	200	NO	DL-Cat. 6A	DIN 35	LPZ 1 ->
	4	1 Gbps	x	200	NO	DL-Cat.5e-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	NO	DL-Cat.6-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	10 Gbps	x	200	NO	DL-Cat.6A-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps	x	200	NO	DL-PCB-Cat.5e	DL-CS-RACK-1U	LPZ 1 ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	NO	DL-PCB-Cat.6	DL-CS-RACK-1U	LPZ 1 ->
Gigabit Ethernet with PoE	4	10 Gbps	x	200	NO	DL-PCB-Cat.6A	DL-CS-RACK-1U	LPZ 1 ->
	4	1 Gbps	250	150	af/at/bt	DL-1G-RJ45-PoE-AB	DIN 35	LPZ 0 <sub>B</sub> ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-RJ45-PoE-AB	DIN 35	LPZ 0 <sub>B</sub> ->
	4	1 Gbps	250	150	af/at/bt	DL-1G-POE-M	DL-PL-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-POE-M	DL-PL-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	af/at/bt	DL-Cat.6-60V-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	af/at/bt	DL-Cat.6-60V	DIN 35	LPZ 1 ->
	4	1 Gbps	250	150	af/at/bt	DL-1G-RJ45-PCB-PoE-AB	DL-CS-RACK-1U	LPZ 0 <sub>B</sub> ->
Gigabit Ethernet PoE Injector	4	10 Gbps	250	150	af/at/bt	DL-10G-RJ45-PCB-PoE-AB	DL-CS-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	1 Gbps	250	150	af/at	DL-1G-POE-INJECTOR	DIN 35	LPZ 0 <sub>B</sub> ->
General structured cabling (IP telephony, KNX, DMX, RS-485,...)	4	1 Gbps	250	150	af/at	DL-1G-POE-PCB-INJECTOR	DL-CS-RACK-1U-INJECTOR	LPZ 0 <sub>B</sub> ->
	4	1 Gbps	250	150	af/at/bt *	DL-1G-RJ45-60V	DIN 35	LPZ 0 <sub>B</sub> ->
	4	10 Gbps	250	150	af/at/bt *	DL-10G-RJ45-60V	DIN 35	LPZ 0 <sub>B</sub> ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	af/at/bt	DL-Cat.6-60V-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps (10 Gbps < 50 m)	x	200	af/at/bt	DL-Cat.6-60V	DIN 35	LPZ 1 ->
	4	1 Gbps	250	150	af/at/bt *	DL-1G-60V-M	DL-PL-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	10 Gbps	250	150	af/at/bt *	DL-10G-60V-M	DL-PL-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	1 Gbps	250	150	af/at/bt *	DL-1G-RJ45-PCB-60V	DL-CS-RACK-1U	LPZ 0 <sub>B</sub> ->
Ethernet, Fast Ethernet, Token Ring, CDDI/FDDI	4	10 Gbps	250	150	af/at/bt *	DL-10G-RJ45-PCB-60V	DL-CS-RACK-1U	LPZ 0 <sub>B</sub> ->
	4	1 Gbps	x	200	NO	DL-Cat. 5e	DIN 35	LPZ 1 ->
	2 + 1 PoE	500 Mbps	x	1500	af	DL-Cat.5e POE plus	DIN 35	LPZ 1 ->
	4	1 Gbps	x	200	NO	DL-Cat.5e-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps	x	200	NO	DL-PCB-Cat.5e	DL-CS-RACK-1U	LPZ 1 ->

\* Coarse protection of PoE

# SALTEK® SPD applications in data / signalling / telecommunication systems

## TELECOMMUNICATIONS AND RADIOCOMMUNICATIONS (COAXIAL INTERFACES)

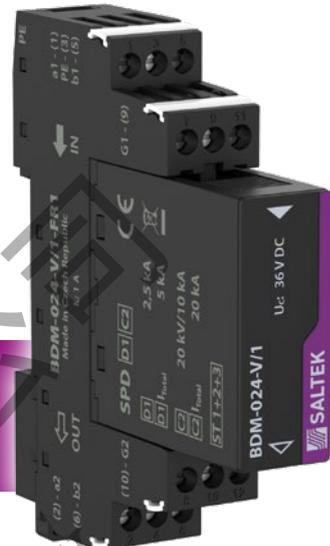
Application	Power load CW* [W]	Frequency range [GHz]	Max. DC load [A]	Impulse current per core [kA]		SPD type	Connectors	Impedance	LPZ location
				10/350 µs	8/20 µs				
Transmitters	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 <sub>b</sub> ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	295	DC - 3,8	6	2,5	10	HX-230 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	570	DC - 3,5	6	2,5	10	HX-350 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	1175	DC - 2,3	6	2,5	10	HX-470 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	tuning based	tuned (NB)	NO	5	20	ZX-0,44 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
Transceivers, cellular networks (GSM, GSM-R, UMTS, 3G, LTE, 4G, 5G, TETRA,...)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 <sub>b</sub> ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	295	DC - 3,8	6	2,5	10	HX-230 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	570	DC - 3,5	6	2,5	10	HX-350 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	1175	DC - 2,3	6	2,5	10	HX-470 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	tuning based	tuned (NB)	NO	5	20	ZX-0,44 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
Professional receivers (GPS, Galileo, Glonass, Beidou, SAT LNB, measuring and monitoring receivers,...)	x	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 <sub>b</sub> ->
	x	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
	x	DC - 3,0	0,7	0,5	2,5	SX-090-B50 F/F	BNC (F/F)	50 Ω	LPZ 1 ->
	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 <sub>b</sub> ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 1 ->
	x	DC - 2,15	4	2,5	10	FX-090 F75 T F/F	F (F/F)	75 Ω	LPZ 0 <sub>b</sub> ->
Commercial TV/SAT receivers (DVB-T2, DVB-S2,...)	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 <sub>b</sub> ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 1 ->
Microwave PtP links (split)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 <sub>b</sub> ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->
Microwave PtP links (all outdoor)	x	0,5	2x 1 (PoE)	0,25	0,15	DL-10G-RJ45-POE	RJ45	100 Ω	LPZ 0 <sub>b</sub> ->
	x	0,15	0,06	x	5	VL-B75 F/F	BNC (F/F)	75 Ω	LPZ 1 ->
Coaxial video networks (CCTV, analogue)	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 <sub>b</sub> ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 1 ->
WLAN, WiFi (coaxial interfaces)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 <sub>b</sub> ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 <sub>b</sub> ->

\* A correction related to the peak power (PAPR, Crest factor) should be done for digital signal modulations (OFDM etc.)

Data, signal and telecommunication networks

奕旭科技  
E-Surge Technology  
TEL +886 2 2212 8121

# SPDs for data / signalling / telecommunication networks



Devices with pluggable module



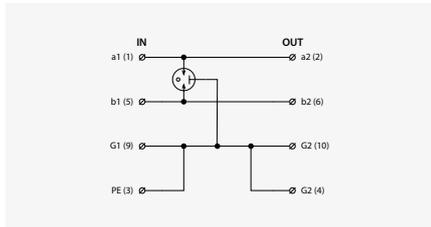
Data, signal and telecommunication networks

- SPDs with coarse and fine protection
- Pluggable modules for easy replacement
- For 1 up to 4-core lines
- Multiple core lines save the space
- All variants in “F” version with separated line and protective earth
- Line BD – lightning current arresters
- Line BDM – for 2/3/4-core communication lines
- Line BDG – with separated signal ground and protective earth
- Line BDMHF, BDGHF – for high-speed lines
- Line DMP – for protection of signal and low-voltage power line
- Line DP – for extra-low voltage circuits

# Overview of SPDs for data / signalling / telecommunication networks

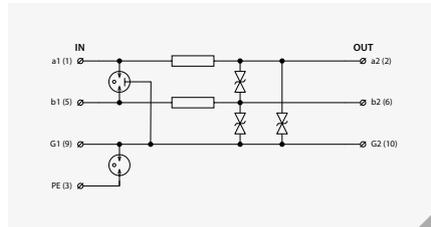
## Devices with pluggable module

### BD---T...



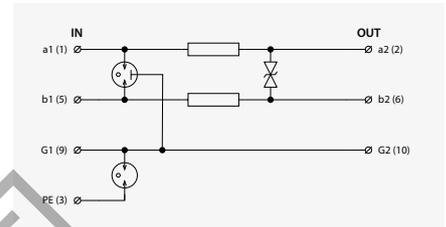
2 core line incoming from LPZ 0 to structure.  
See page: 101

### BDM---



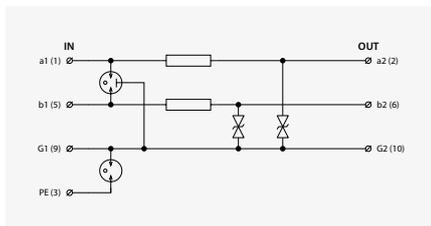
2-3 core line incoming from LPZ 0 to structure with one-pole connected with ground.  
See page: 102-105

### BDG---



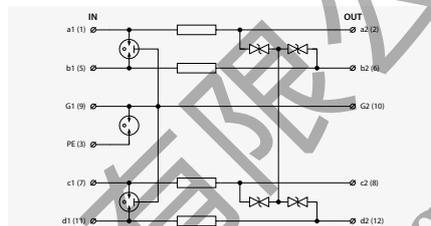
2 core floating line incoming from LPZ 0 to structure.  
See page: 106-109

### BDM---J...



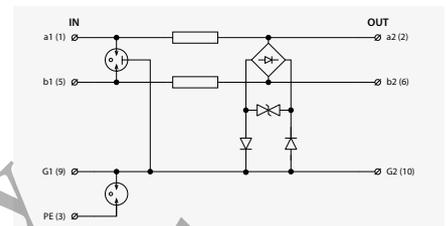
Single core lines.  
See page: 110-112

### BDG---4...



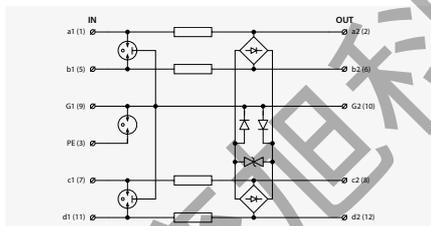
3-4 core floating line.  
See page: 113

### BDMHF---



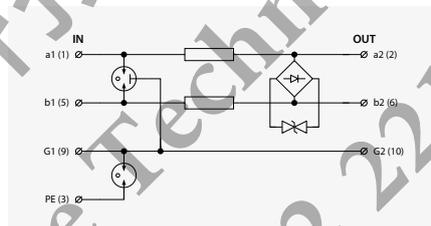
2 or 3 cores high-speed line.  
See page: 114

### BDMHF---4...



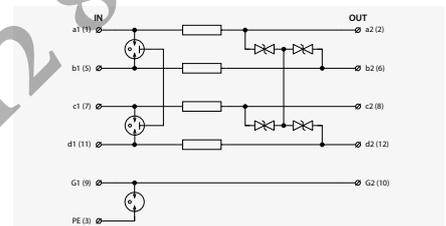
3-4 core high-speed line.  
See page: 115

### BDGHF---



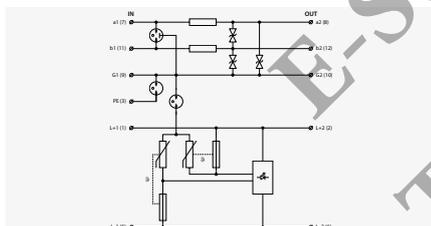
2 core high-speed floating line.  
See page: 116-117

### DMG-024-V/1-4FR1-DIF



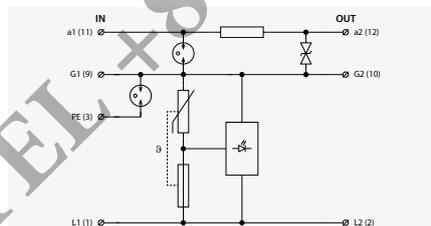
Up to 4 core line with differential surge protection.  
Line separated from ground.  
See page: 118

### DMP---



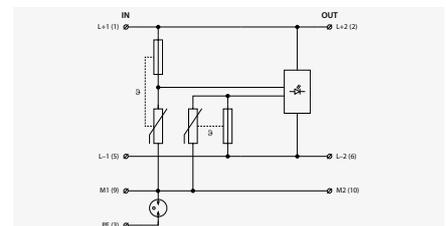
2 core line combined with power supply.  
See page: 119

### DMP---J...



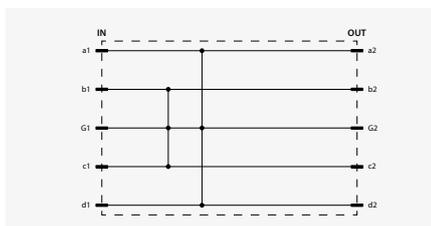
Single core line combined with power supply.  
See page: 120

### DP---16



Power supply 12, 24, 48, 60 V up to 16 A.  
See page: 121

### DMZ-V-0 (Accessories)



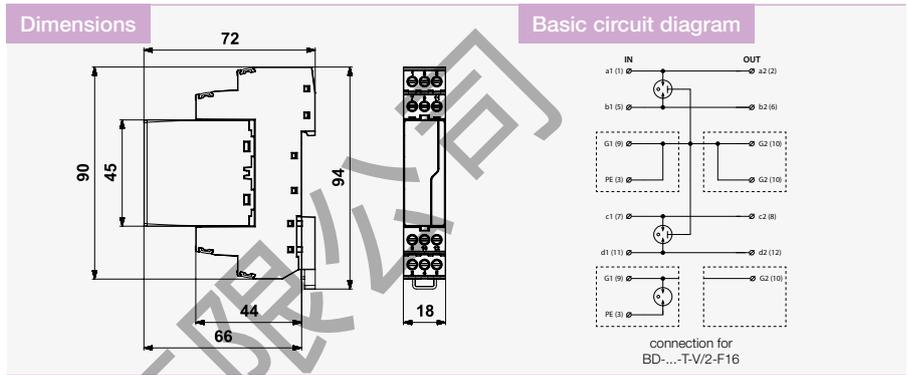
Short-circuiting module for maintenance of signalling lines.  
See page: 194

Data, signal and telecommunication networks

# BD-...-T-V/2-(F)16

Lightning current arresters, ST1 with pluggable module  
pluggable module

- lightning current arrester of two 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- mainly for protection of telecommunication lines against surge voltage
- in "F" version is the line separated from protective earth via GDT



Parameter / Type		BD-090-T-V/2-16	BD-250-T-V/2-16	BD-090-T-V/2-F16	BD-250-T-V/2-F16
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1	ST 1	ST 1	ST 1
Maximum operating voltage	$U_c$	50 V AC / 70 V DC	128 V AC / 180 V DC	50 V AC / 70 V DC	128 V AC / 180 V DC
Nominal load current	$I_L$	16 A	16 A	16 A	16 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$	-	-	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core	$I_{imp}$	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	550 V	550 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$	-	-	550 V	550 V
Response time core-core	$t_a$	100 ns	100 ns	100 ns	100 ns
Response time core-PE	$t_a$	100 ns	100 ns	-	-
Response time GND-PE	$t_a$	-	-	100 ns	100 ns
Response time core-GND	$t_a$	-	-	100 ns	100 ns
Threshold frequency core-core	f	120 MHz	120 MHz	120 MHz	120 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)		0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A05550	A05551	A05554	A05555

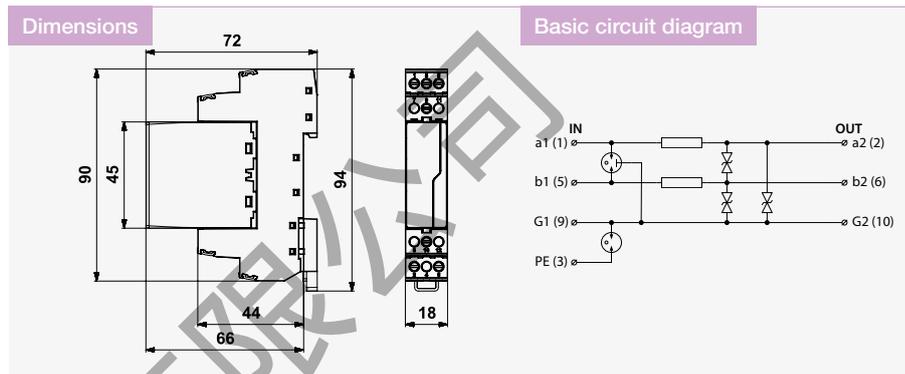
Spare module	BD-090-T-V/2-0	BD-250-T-V/2-0	BD-090-T-V/2-0	BD-250-T-V/2-0
Ordering number	A05390	A05391	A05390	A05391

Data, signal and telecommunication networks

# BDM-...-V/1-FR1

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of 2/3-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDM-230) and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



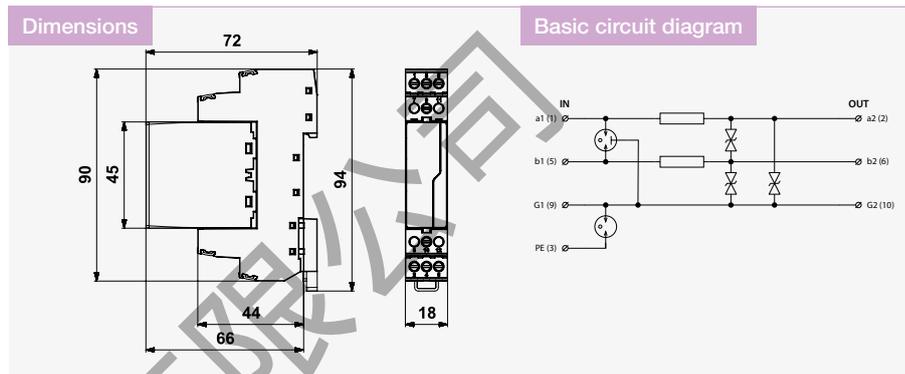
Parameter / Type	BDM-006-V/1-FR1	BDM-012-V/1-FR1	BDM-024-V/1-FR1	BDM-048-V/1-FR1
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$ 10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$
Threshold frequency core-core	f 0,8 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A05709	A05710	A05711	A05712

Spare module	BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0
Ordering number	A05501	A05502	A05503	A05504

# BDM-...-V/1-FR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of 2/3-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDM-230) and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type	BDM-060-V/1-FR1	BDM-230-V/1-FR	BDM-230-V/1-FR1
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 60 V DC	230 V DC	230 V DC
Maximum operating voltage	$U_c$ 45 V AC / 64 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	$I_n$ 1 A	0,5 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$ 10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core	$I_{imp}$ 85 V	350 V	350 V
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 550 V	550 V	550 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 85 V	350 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 1 ns	1 ns	1 ns
Serial resistance per core	R 0,8 $\Omega$	3,3 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f 6,5 MHz	11 MHz	11 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2		
Ordering number	A06438	A05713	A06461

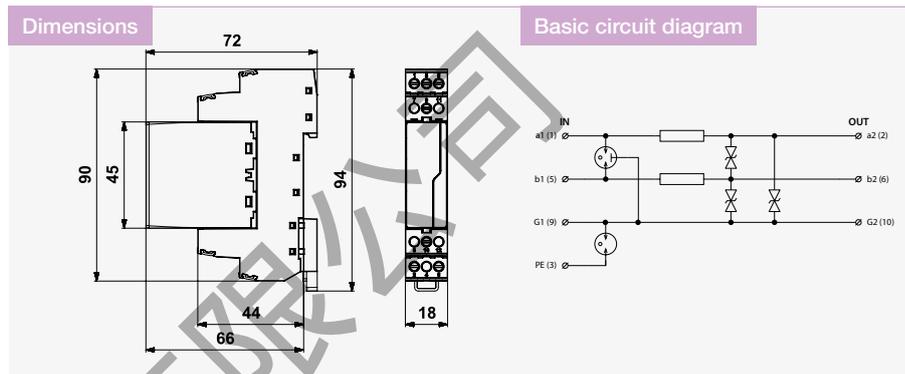
Spare module	BDM-060-V/1-0	BDM-230-V/1-0	BDM-230-V/1-0
Ordering number	A06437	A05505	A05505

Data, signal and telecommunication networks

# BDM-...-V/1-FR2

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for 2/3-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



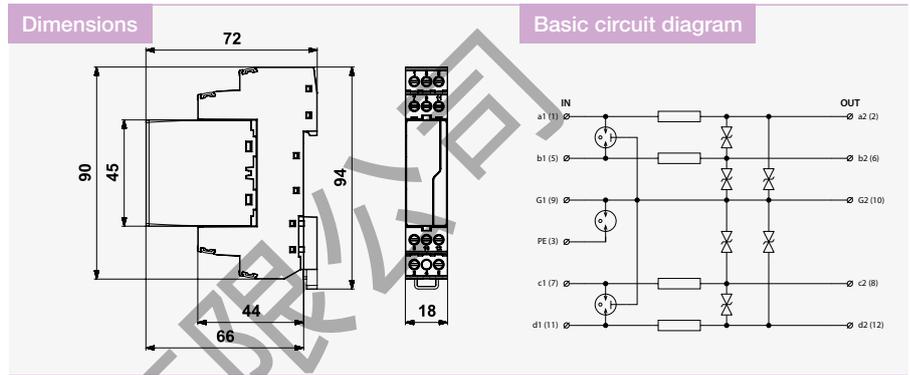
Parameter / Type	BDM-006-V/1-FR2	BDM-012-V/1-FR2	BDM-024-V/1-FR2	BDM-048-V/1-FR2	BDM-060-V/1-FR2
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC	60 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	$I_n$ 2 A	2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{n,c}$ 10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_{n,g}$ 20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{total}$ 20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{total}$ 5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R 0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$
Threshold frequency core-core	f 0,8 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2				
Ordering number	A06385	A06398	A06411	A06424	A06439

Spare module	BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0	BDM-060-V/1-0
Ordering number	A05501	A05502	A05503	A05504	A06437

# BDM-...-V/2-FR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type	BDM-006-V/2-FR1	BDM-012-V/2-FR1	BDM-024-V/2-FR1	BDM-048-V/2-FR1	BDM-060-V/2-FR1	BDM-230-V/2-FR
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	230 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	177 V AC / 250 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V	350 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA	1 ns
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA	5 kA	2,5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns	5 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	3,3 $\Omega$
Threshold frequency core-core	f 0,3 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz	11 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2					
Ordering number	A06388	A06401	A06414	A06427	A06443	A06464

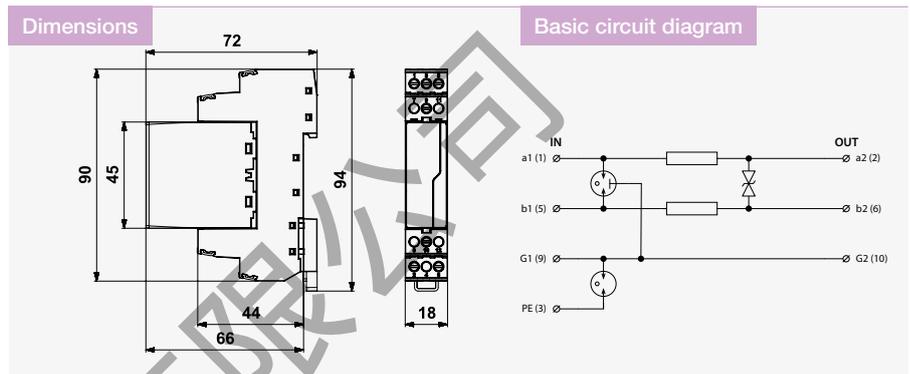
Spare module	BDM-006-V/2-0	BDM-012-V/2-0	BDM-024-V/2-0	BDM-048-V/2-0	BDM-060-V/2-0	BDM-230-V/2-0
Ordering number	A06387	A06400	A06413	A06426	A06442	A06463

Data, signal and telecommunication networks

# BDG-...-V/1-FR1

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of shielded 2-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDG-230) and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage
- coarse and fine surge protection (core – core) and coarse protection (core – GND) in differential mode, coarse surge protection in common mode (line – PE)



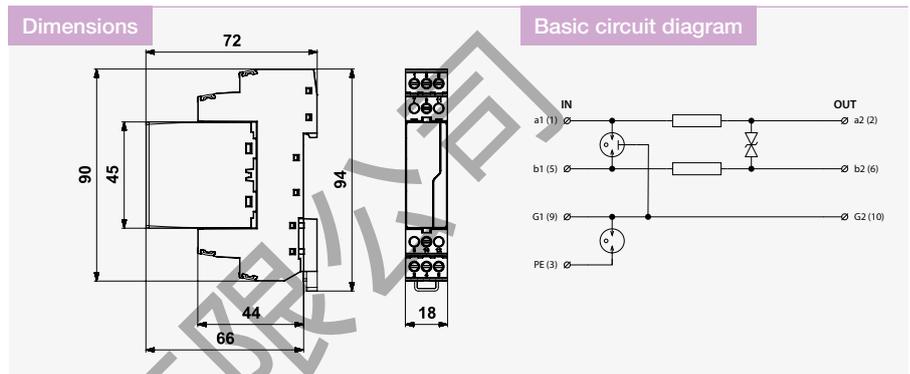
Parameter / Type	BDG-006-V/1-FR1	BDG-012-V/1-FR1	BDG-024-V/1-FR1	BDG-048-V/1-FR1
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$ 10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$
Threshold frequency core-core	f 1,2 MHz	3 MHz	6 MHz	7 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A05704	A05705	A05706	A05707

Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0
Ordering number	A05399	A05400	A05401	A05402

# BDG-...-V/1-FR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of shielded 2-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDG-230) and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage
- coarse and fine surge protection (core – core) and coarse protection (core – GND) in differential mode, coarse surge protection in common mode (line – PE)



Parameter / Type	BDG-060-V/1-FR1	BDG-230-V/1-FR	BDG-230-V/1-FR1
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 1+2+3	ST 1+2+3
Nominal voltage $U_n$	60 V DC	230 V DC	230 V DC
Maximum operating voltage $U_c$	45 V AC / 64 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current $I_n$	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{pk}$	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE $I_n$	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core $I_{imp}$	85 V	350 V	350 V
D1 total discharge current (10/350 $\mu$ s) cores-PE $I_{Total}$	550 V	550 V	550 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	550 V	550 V	550 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s $U_p$	2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s $U_p$	5 kA	5 kA	5 kA
Response time core-core $t_a$	1 ns	1 ns	1 ns
Response time GND-PE $t_a$	100 ns	100 ns	100 ns
Response time core-GND $t_a$	100 ns	100 ns	100 ns
Serial resistance per core $R$	0,8 $\Omega$	3,3 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	10 MHz	16 MHz	16 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2		
Ordering number	A06499	A05708	A06514

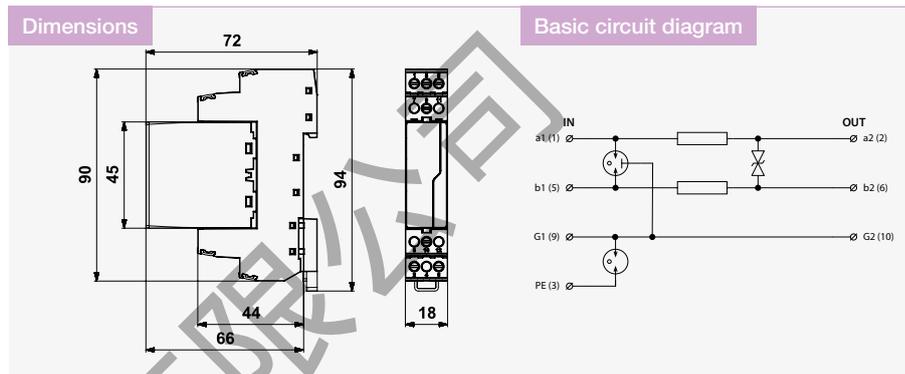
Spare module	BDG-060-V/1-0	BDG-230-V/1-0	BDG-230-V/1-0
Ordering number	A06498	A05403	A05403

Data, signal and telecommunication networks

# BDG-...-V/1-FR2

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation close to protected device
- for protection of communication interfaces of I&C (version BDG-230), MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type	BDG-006-V/1-FR2	BDG-012-V/1-FR2	BDG-024-V/1-FR2	BDG-048-V/1-FR2	BDG-060-V/1-FR2
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC	60 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	$I_n$ 2 A	2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pn}$ 10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) per core GND-PE	$I_{pn}$ 20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V
C3 voltage protection level mode core GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$	0,4 $\Omega$
Threshold frequency core-core	f 1,2 MHz	3 MHz	6 MHz	7 MHz	10 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2				
Ordering number	A06469	A06477	A06485	A06493	A06500

Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0	BDG-060-V/1-0
Ordering number	A05399	A05400	A05401	A05402	A06498

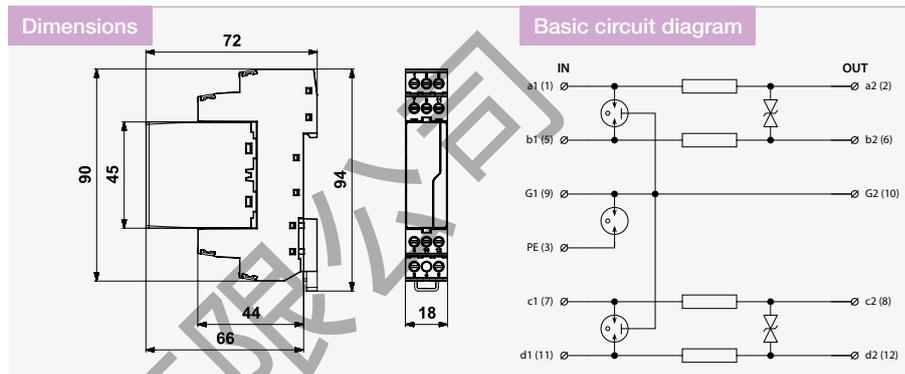
# BDG-...-V/2-FR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation

- close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge

- voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type	BDG-006-V/2-FR1	BDG-012-V/2-FR1	BDG-024-V/2-FR1	BDG-048-V/2-FR1	BDG-060-V/2-FR1	BDG-230-V/2-FR
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	230 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	177 V AC / 250 V DC
Nominal load current	$I_L$ 1 A	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) per core GND-PE	$I_n$ 20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA	20 kA	10 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	22 V	46 V	65 V	85 V	350 V
C3 voltage protection level mode core GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	3,3 $\Omega$
Threshold frequency core-core	f 1,2 MHz	3 MHz	6 MHz	7 MHz	10 MHz	16 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2					
Ordering number	A06472	A06480	A06488	A06496	A06504	A06517

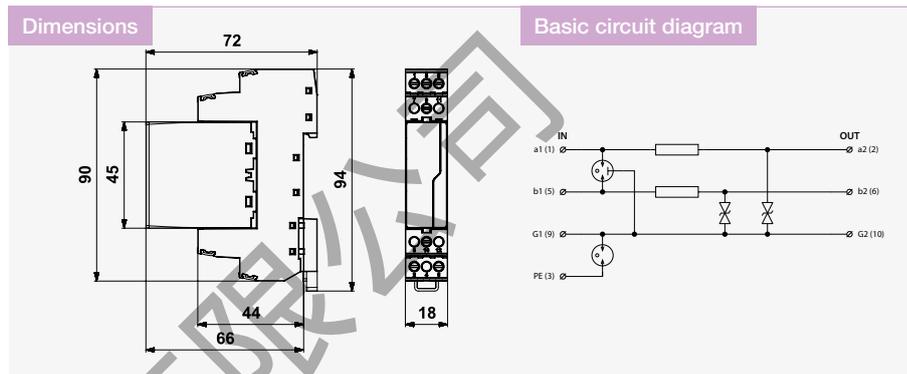
Spare module	BDG-006-V/2-0	BDG-012-V/2-0	BDG-024-V/2-0	BDG-048-V/2-0	BDG-060-V/2-0	BDG-230-V/2-0
Ordering number	A06471	A06479	A06487	A06495	A06503	A06516

Data, signal and telecommunication networks

# BDM-...-V/2-JFR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for two 1-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones or higher, at the line entry into building and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – GND) in differential mode and coarse surge protection in common mode (line – PE)



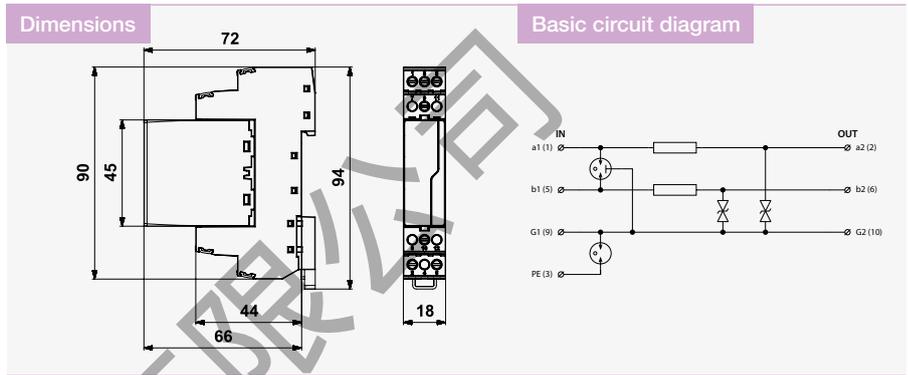
Parameter / Type	BDM-006-V/2-JFR1	BDM-006-V/2-JFR2	BDM-012-V/2-JFR1	BDM-012-V/2-JFR2
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage $U_n$	6 V DC	6 V DC	12 V DC	12 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC	11 V AC / 16 V DC	11 V AC / 16 V DC
Nominal load current $I_n$	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{n,c}$	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE $I_{n,g}$	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{total}$	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core GND-PE at 1 kV/ $\mu$ s $U_p$	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s $U_p$	12 V	12 V	22 V	22 V
D1 lightning impulse current (10/350 $\mu$ s) per core $I_{imp}$	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE $I_{total}$	5 kA	5 kA	5 kA	5 kA
Response time GND-PE $t_a$	100 ns	100 ns	100 ns	100 ns
Response time core-GND $t_a$	1 ns	1 ns	1 ns	1 ns
Serial resistance per core $R$	0,8 $\Omega$	0,4 $\Omega$	0,8 $\Omega$	0,4 $\Omega$
Threshold frequency core-GND $f$	0,8 MHz	0,8 MHz	2 MHz	2 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A06390	A06391	A06403	A06404

Spare module	BDM-006-V/2-J-0	BDM-006-V/2-J-0	BDM-012-V/2-J-0	BDM-012-V/2-J-0
Ordering number	A06389	A06389	A06402	A06402

# BDM-...-V/2-JFR.

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for two 1-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones or higher, at the line entry into building and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type		BDM-024-V/2-JFR1	BDM-024-V/2-JFR2	BDM-048-V/2-JFR1	BDM-048-V/2-JFR2
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$	24 V DC	24 V DC	48 V DC	48 V DC
Maximum operating voltage	$U_c$	25 V AC / 36 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	36 V AC / 51 V DC
Nominal load current	$I_n$	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{n1}$	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_{n2}$	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core GND-PE at 1 kV/ $\mu$ s	$U_p$	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s	$U_p$	46 V	46 V	65 V	65 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$	5 kA	5 kA	5 kA	5 kA
Response time GND-PE	$t_a$	100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 $\Omega$	0,4 $\Omega$	0,8 $\Omega$	0,4 $\Omega$
Threshold frequency core-GND	f	4 MHz	4 MHz	5 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)		0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A06416	A06417	A06429	A06430

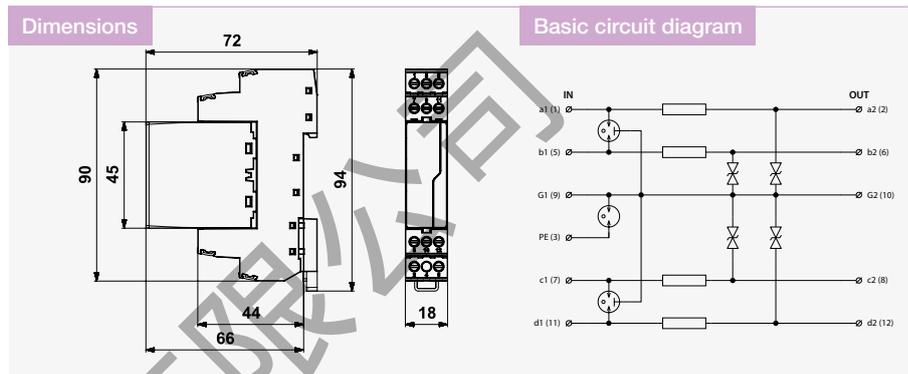
Spare module	BDM-024-V/2-J-0	BDM-024-V/2-J-0	BDM-048-V/2-J-0	BDM-048-V/2-J-0
Ordering number	A06415	A06415	A06428	A06428

Data, signal and telecommunication networks

# BDM-...-V/4-JFR1

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
 pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for 4-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



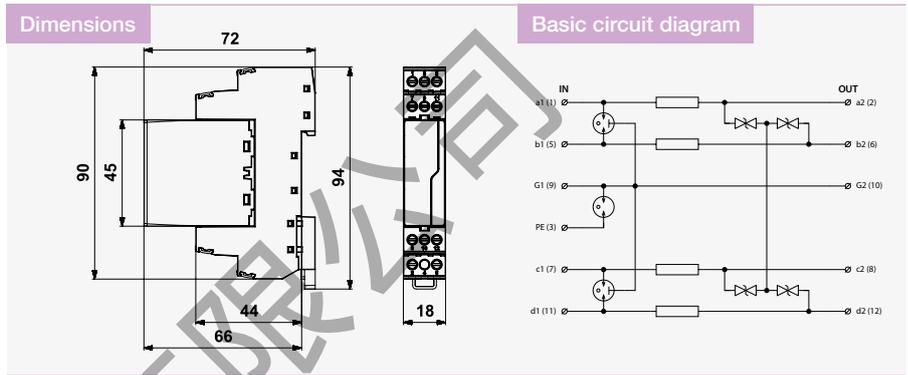
Parameter / Type	BDM-006-V/4-JFR1	BDM-012-V/4-JFR1	BDM-024-V/4-JFR1	BDM-048-V/4-JFR1
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage $U_n$	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current $I_n$	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{n,c}$	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE $I_{n,g}$	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s $U_p$	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s $U_p$	12 V	22 V	46 V	65 V
D1 lightning impulse current (10/350 $\mu$ s) per core $I_{imp}$	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE $I_{Total}$	5 kA	5 kA	5 kA	5 kA
Response time GND-PE $t_a$	100 ns	100 ns	100 ns	100 ns
Response time core-GND $t_a$	1 ns	1 ns	1 ns	1 ns
Serial resistance per core $R$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$
Threshold frequency core-GND $f$	0,8 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A06396	A06409	A06422	A06435

Spare module	BDM-006-V/4-J-0	BDM-012-V/4-J-0	BDM-024-V/4-J-0	BDM-048-V/4-J-0
Ordering number	A06395	A06408	A06421	A06434

# BDG-...-V/1-4FR1

Lightning current arrester with coarse and fine surge protection, ST1+2+3 with pluggable module  
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection for up to 4-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation close to protected device
- for protection of communication interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type	BDG-006-V/1-4FR1	BDG-012-V/1-4FR1	BDG-024-V/1-4FR1	BDG-048-V/1-4FR1
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{n1}$ 10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_{n2}$ 20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 18 V	24 V	46 V	90 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$
Threshold frequency core-core	f 1,2 MHz	3 MHz	6 MHz	7 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm	DIN rail 35mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A06467	A06475	A06483	A06491

Spare module	BDG-006-V/1-4-0	BDG-012-V/1-4-0	BDG-024-V/1-4-0	BDG-048-V/1-4-0
Ordering number	A06466	A06474	A06482	A06490

Data, signal and telecommunication networks

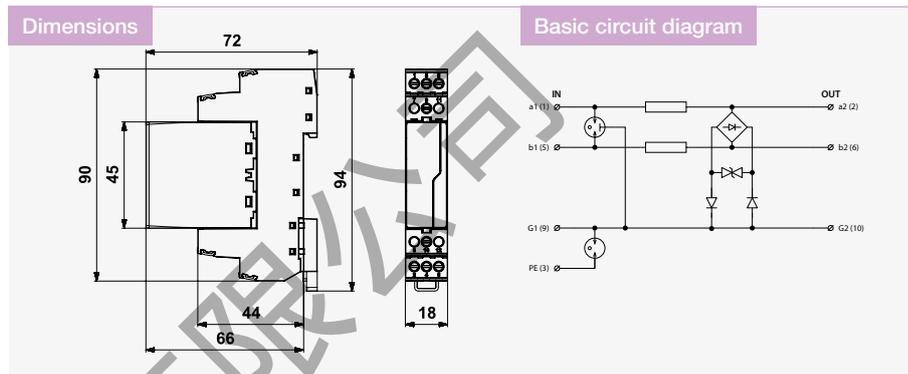
# BDMHF-...-V/1-FR1

Surge protection for industrial communication bus (eg. PROFIBUS)  
pluggable module, coupling impedance (R – resistance)

- lightning current arrester with coarse and fine surge protection of 2-core high-speed signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation

- close to protected device
- for protection of communication interfaces, MaR systems, mainly the RS-485 and PROFIBUS lines, of I&C, MaR, electronic security and fire detection systems, etc. against impact

- of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)
- F – the line separated from protective earth via GDT



Parameter / Type	BDMHF-006-V/1-FR1	BDMHF-024-V/1-FR1
Connection (input – output)	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	24 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current	$I_n$ 1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 14 V	48 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ –	–
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s	$U_p$ 14 V	48 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns
Response time core-PE	$t_a$ –	–
Response time GND-PE	$t_a$ 100 ns	100 ns
Response time core-GND	$t_a$ 1 ns	1 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$
Treshold frequency core-core	f 70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number	A06547	A06553

Spare module	BDMHF-006-V/1-0	BDMHF-024-V/1-0
Ordering number	A06543	A06549

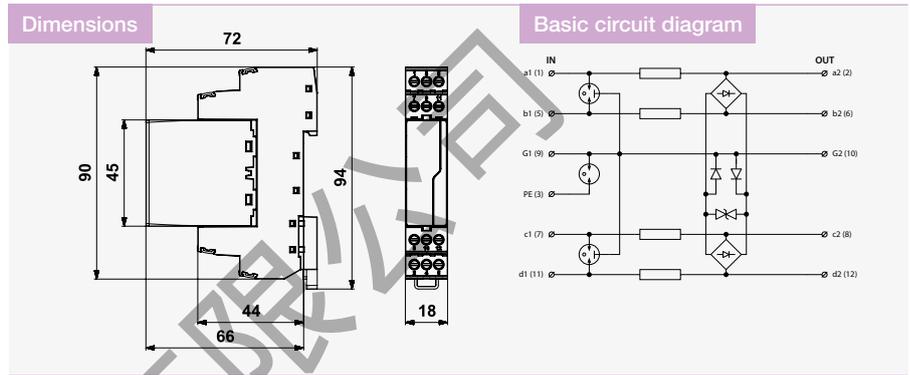
# BDMHF-...-V/1-4FR1

Surge protection for industrial communication bus (eg. PROFIBUS)  
pluggable module, coupling impedance (R – resistance)

- lightning current arrester with coarse and fine surge protection of 4-core high-speed signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation

- close to protected device
- for protection of communication interfaces, MaR systems, mainly the RS-485 and PROFIBUS lines, of I&C, MaR, electronic security and fire detection systems, etc. against impact

- of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)
- F – the line separated from protective earth via GDT



Parameter / Type	BDMHF-006-V/1-4FR1	BDMHF-024-V/1-4FR1
Connection (input – output)	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3
Nominal voltage $U_n$	6 V DC	24 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current $I_n$	1 A	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_n$	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE $I_n$	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	20 kA	20 kA
C3 volt. prot. lev. mode core-core at 1 kV/ $\mu$ s $U_p$	16 V	48 V
C3 volt. prot. lev. mode core-PE at 1 kV/ $\mu$ s $U_p$	–	–
C3 volt. prot. lev. mode GND-PE at 1 kV/ $\mu$ s $U_p$	550 V	550 V
C3 volt. prot. lev. mode core GND at 1 kV/ $\mu$ s $U_p$	16 V	48 V
D1 lightning impulse current (10/350 $\mu$ s) per core $I_{imp}$	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE $I_{Total}$	5 kA	5 kA
Response time core-core $t_a$	1 ns	1 ns
Response time core-PE $t_a$	–	–
Response time GND-PE $t_a$	100 ns	100 ns
Response time core-GND $t_a$	1 ns	1 ns
Serial resistance per core $R$	0,8 $\Omega$	0,8 $\Omega$
Threshold frequency core-core $f$	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35mm	DIN rail 35mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number	A06545	A06551

Spare module	BDMHF-006-V/1-4-0	BDMHF-024-V/1-4-0
Ordering number	A06544	A06550

Data, signal and telecommunication networks

# BDGHF-...-V/1-FR.

## Surge protection for industrial communication bus (eg. PROFIBUS)

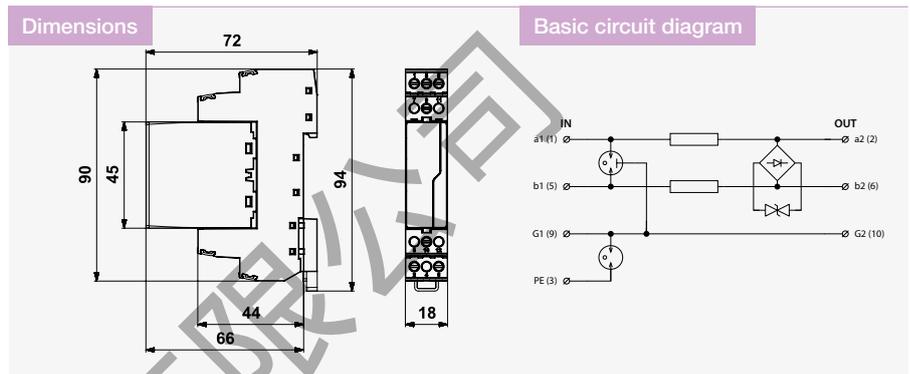
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection of 2-core high-speed signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation

- close to protected device
- for protection of telecommunication lines (version BDGHF-230) and interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485,

PROFIBUS interfaces) against surge voltage

- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type	BDGHF-006-V/1-FR1	BDGHF-012-V/1-FR1	BDGHF-024-V/1-FR1	BDGHF-230-V/1-FR
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	230 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	177 V AC / 250 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$ 10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_n$ 20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	3,3 $\Omega$
Threshold frequency core-core	f 70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A06520	A06526	A06532	A06538

Spare module	BDGHF-006-V/1-0	BDGHF-012-V/1-0	BDGHF-024-V/1-0	BDGHF-230-V/1-0
Ordering number	A06519	A06525	A06531	A06537

# BDGHF-...-V/2-FR.

## Surge protection for industrial communication bus (eg. PROFIBUS)

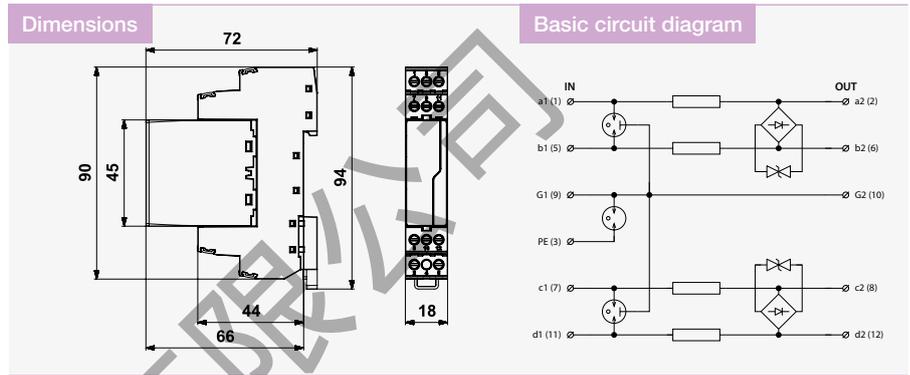
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- lightning current arrester with coarse and fine surge protection of 2-core high-speed signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building or higher and also installation

- close to protected device
- for protection of telecommunication lines (version BDGHF-230) and interfaces of I&C, MaR systems, electronic security and fire detection systems, etc. (mainly for RS-485,

PROFIBUS interfaces) against surge voltage

- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type	BDGHF-006-V/2-FR1	BDGHF-012-V/2-FR1	BDGHF-024-V/2-FR1	BDGHF-230-V/2-FR1
Connection (input – output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	230 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	177 V AC / 250 V DC
Nominal load current	$I_n$ 1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{cn}$ 10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_{cn}$ 20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 $\mu$ s) per core	$I_{imp}$ 2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA	5 kA	5 kA
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time GND-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns
Response time core-GND	$t_a$ 100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 $\Omega$	0,8 $\Omega$	0,8 $\Omega$	3,3 $\Omega$
Threshold frequency core-core	f 70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number	A06523	A06529	A06535	A06541

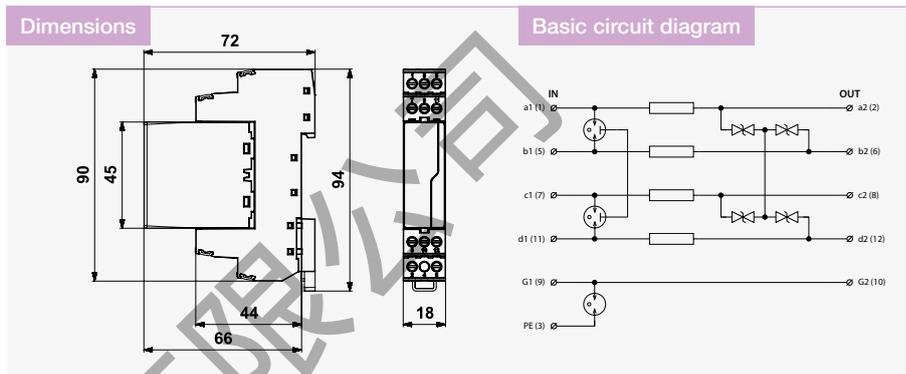
Spare module	BDGHF-006-V/2-0	BDGHF-012-V/2-0	BDGHF-024-V/2-0	BDGHF-230-V/2-0
Ordering number	A06522	A06528	A06534	A06540

Data, signal and telecommunication networks

# DMG-024-V/1-4FR1-DIF

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 with pluggable module  
pluggable module, coupling impedance (R – resistance), shielding (G) separated from protective earth via GDT

- coarse and fine surge protection for max. 4-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces)
- coarse and fine surge protection only in differential mode (core – core)



Parameter / Type	DMG-024-V/1-4FR1-DIF	
Connection (input – output)	terminals-terminals	
Location of SPD	ST 2+3	
Nominal voltage	$U_n$	24 V DC
Maximum operating voltage	$U_c$	25 V AC / 36 V DC
Nominal load current	$I_n$	1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{cn}$	10 kA
C2 nominal discharge current (8/20 $\mu$ s) GND-PE	$I_{cn}$	20 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_{p1}$	46 V
C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s	$U_{p2}$	550 V
Response time core-core	$t_a$	1 ns
Response time GND-PE	$t_a$	100 ns
Serial resistance per core	R	0,8 $\Omega$
Threshold frequency core-core	f	6 MHz
Isolation voltage core-GND(PE)	> 4 kV	
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
Degree of protection	IP 20	
Range of operating temperatures (min/max)	-40 °C / 70 °C	
Mounting	DIN rail 35 mm	
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	
Ordering number	A06281	

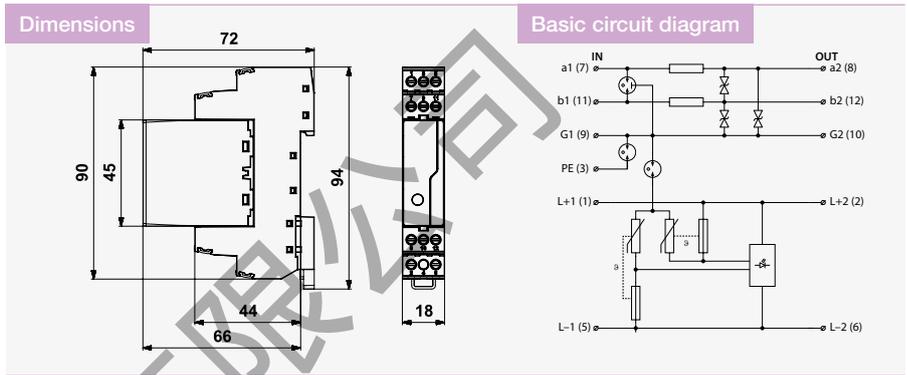
Spare module	DMG-024-V/1-4-0
Ordering number	A06282

# DMP-...-V/1-FR1

## Combination of surge protections for signal and supply lines

pluggable module, coupling impedance (R – resistance) in part of data, line separated from protective earth via GDT

- combination of two-stage surge protection of 2-core signalling line in data part and surge protection for ELV in supply part
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection systems, etc., mainly for measuring circuits and sensors where signal and supply are transmitted in one cable, against surge voltage



Parameter / Type	DMP-012-V/1-FR1	DMP-024-V/1-FR1		
Connection (input - output)	terminals-terminals	terminals-terminals		
Location of SPD	ST 2+3	ST 2+3		
Nominal voltage $U_n$	12 V DC	24 V DC		
Maximum operating voltage $U_c$	11 V AC / 16 V DC	25 V AC / 36 V DC		
line part	Nominal load current $I_L$	1 A	1 A	
	C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{total}$	20 kA	20 kA	
	C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	22 V	46 V	
	C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s $U_p$	550 V	550 V	
	Response time core-core $t_a$	1 ns	1 ns	
	Response time GND-PE $t_a$	100 ns	100 ns	
	Serial resistance per core $R$	0,8 $\Omega$	0,8 $\Omega$	
	Threshold frequency core-core $f$	2 MHz	4 MHz	
	power part	Nominal load current $I_L$	16 A	16 A
		Test voltage L+(L-)-PE $U_{oc}$	4 kV	4 kV
Voltage protection level L+ - L- $U_p$		0,18 kV	0,13 kV	
Voltage protection level L+(L-)-PE $U_p$		0,95 kV	0,95 kV	
Maximum overcurrent protection		16 A gL/gG or B 16 A	16 A gL/gG or B 16 A	
Response time L+ - L- $t_a$		25 ns	25 ns	
Response time L+(L-)-PE $t_a$		100 ns	100 ns	
Fault indication		red indicator	red indicator	
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>		
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>		
Degree of protection	IP 20	IP 20		
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C		
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2			
Ordering number	A05798	A05799		

Spare module	DMP-012-V/1-0	DMP-024-V/1-0
Ordering number	A05814	A05815

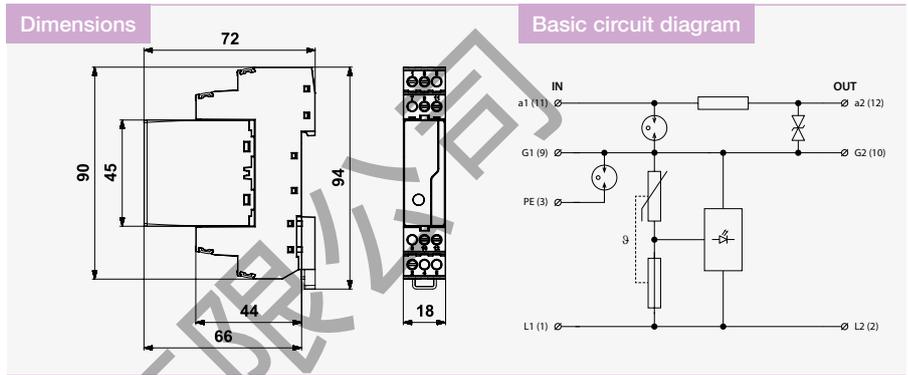
Data, signal and telecommunication networks

# DMP-...-V/1-JFR1

## Combination of surge protections for signal and supply lines

pluggable module, coupling impedance (R – resistance) in part of data, line separated from protective earth via GDT

- surge protection of 3-core line comprehend signal transmission and supply
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection
- systems, etc., mainly for measuring circuits and sensors where signal and supply are transmitted in one cable, against surge voltage
- single common wire for power supply and signal transmission



Parameter / Type	DMP-012-V/1-JFR1	DMP-024-V/1-JFR1	
Connection (input - output)	terminals-terminals	terminals-terminals	
Location of SPD	ST 2+3	ST 2+3	
Nominal voltage $U_n$	12 V DC	24 V DC	
Maximum operating voltage $U_c$	11 V AC / 16 V DC	25 V AC / 36 V DC	
line part	Nominal load current $I_L$	1 A	1 A
	C2 nominal discharge current (8/20 $\mu$ s) per core $I_n$	10 kA	10 kA
	C2 nominal discharge current (8/20 $\mu$ s) GND-PE $I_n$	10 kA	10 kA
	C3 voltage protection level mode GND-PE at 1 kV/ $\mu$ s $U_p$	550 V	550 V
	Response time core-PE $t_a$	1 ns	-
	Response time GND-PE $t_a$	100 ns	100 ns
	Response time core-GND $t_a$	1 ns	1 ns
	Serial resistance per core $R$	0,8 $\Omega$	0,8 $\Omega$
	Threshold frequency core-core $f$	2 MHz	4 MHz
	power part	Nominal load current $I_L$	16 A
Test voltage L+(L-)-PE $U_{oc}$		4 kV	4 kV
Voltage protection level L+(L-)-PE $U_p$		0,75 kV	0,75 kV
Maximum overcurrent protection		16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
Response time L+(L-)-PE		100 ns	100 ns
Fault indication		red indicator	red indicator
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
Degree of protection	IP 20	IP 20	
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2		
Ordering number	A05802	A05803	

Spare module	DMP-012-V/1-J-0	DMP-024-V/1-J-0
Ordering number	A05816	A05817

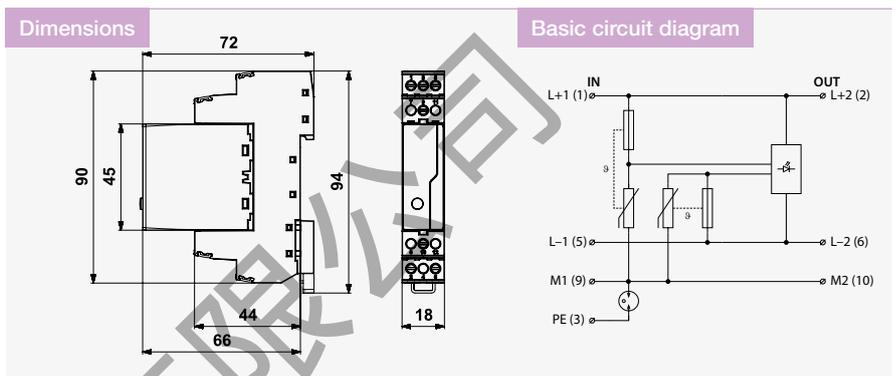
Data, signal and telecommunication networks

# DP-...-V/1-F16

## Surge protection for ELV power supply networks, with pluggable module

pluggable module, visual fault signalling, middle conductor separated from protective earth via GDT

- surge protection for all types of LV electric and electronic equipments against surge voltage
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



Parameter / Type	DP-012-V/1-F16	DP-024-V/1-F16	DP-048-V/1-F16
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2	ST 2	ST 2
Nominal voltage $U_n$	12 V AC	24 V AC	48 V AC
Maximum operating voltage $U_c$	20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current $I_n$	16 A	16 A	16 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{pn}$	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at $I_n$ $U_{pb}$	180 V	230 V	370 V
C2 voltage protection level mode core-PE at $I_n$ $U_{pb}$	750 V	750 V	750 V
C2 voltage protection level mode core-PE at $I_n$	750 V	750 V	750 V
Test voltage L+ - L-	4 kV	4 kV	4 kV
Test voltage L+(L-)-PE	4 kV	4 kV	4 kV
Test voltage M-PE	4 kV	4 kV	4 kV
Voltage protection level L+ - L-	0,18 kV	0,23 kV	0,37 kV
Voltage protection level L+(L-)-PE	0,75 kV	0,75 kV	0,75 kV
Voltage protection level M-PE	0,75 kV	0,75 kV	0,75 kV
Maximum overcurrent protection	16 A gL/gG or B 16 A	16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
Response time L+ - L-	25 ns	25 ns	25 ns
Response time L+(L-)-PE	100 ns	100 ns	100 ns
Response time M-PE	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Fault indication	red indicator	red indicator	red indicator
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2		
Ordering number	A05664	A05665	A05666

Spare module	DP-012-V/1-0	DP-024-V/1-0	DP-048-V/1-0
Ordering number	A05692	A05693	A05694

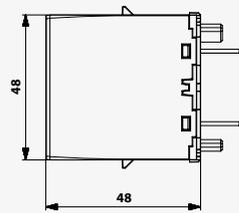
Data, signal and telecommunication networks

# BD / BDM / BDG / BDMHF / BDGHF / DMP / DP-...-V/-0

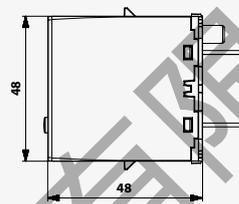
Replaceble modules of BD., DM., DP.



Dimensions

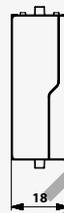


DM-..., BD-..., BDM-..., BDG-...



DMP-..., DP-...

Basic circuit diagram



Data, signal and telecommunication networks

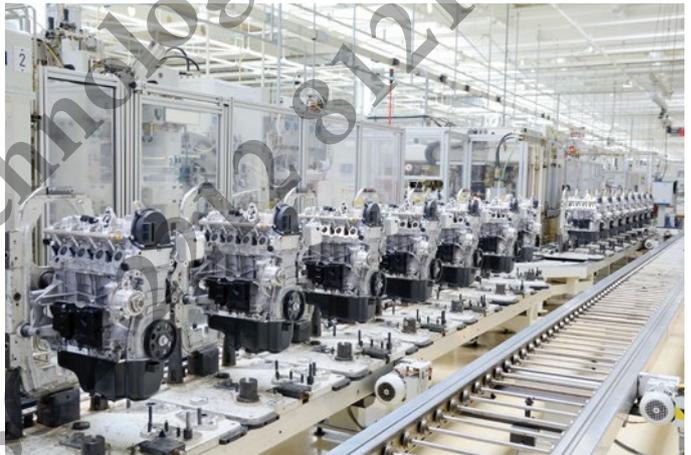
Type	Ordering number
BD-090-T-V/2-0	A05390
BD-250-T-V/2-0	A05391
BDM-006-V/1-0	A05501
BDM-012-V/1-0	A05502
BDM-024-V/1-0	A05503
BDM-048-V/1-0	A05504
BDM-060-V/1-0	A06437
BDM-230-V/1-0	A05505
BDM-006-V/2-0	A06387
BDM-012-V/2-0	A06400
BDM-024-V/2-0	A06413
BDM-048-V/2-0	A06426
BDM-060-V/2-0	A06442
BDM-230-V/2-0	A06463
BDG-006-V/1-0	A05399
BDG-012-V/1-0	A05400
BDG-024-V/1-0	A05401
BDG-048-V/1-0	A05402
BDG-060-V/1-0	A06498

Type	Ordering number
BDG-230-V/1-0	A05403
BDG-006-V/2-0	A06471
BDG-012-V/2-0	A06479
BDG-024-V/2-0	A06487
BDG-048-V/2-0	A06495
BDG-060-V/2-0	A06503
BDG-230-V/2-0	A06516
BDM-006-V/2-J-0	A06389
BDM-012-V/2-J-0	A06402
BDM-024-V/2-J-0	A06415
BDM-048-V/2-J-0	A06428
BDM-006-V/4-J-0	A06395
BDM-012-V/4-J-0	A06408
BDM-024-V/4-J-0	A06421
BDM-048-V/4-J-0	A06434
BDG-006-V/1-4-0	A06466
BDG-012-V/1-4-0	A06474
BDG-024-V/1-4-0	A06482
BDG-048-V/1-4-0	A06490

Type	Ordering number
BDMHF-006-V/1-0	A06543
BDMHF-024-V/1-0	A06549
BDMHF-006-V/1-4-0	A06544
BDMHF-024-V/1-4-0	A06550
BDGHF-006-V/1-0	A06519
BDGHF-012-V/1-0	A06525
BDGHF-024-V/1-0	A06531
BDGHF-230-V/1-0	A06537
BDGHF-006-V/2-0	A06522
BDGHF-012-V/2-0	A06528
BDGHF-024-V/2-0	A06534
BDGHF-230-V/2-0	A06540
DMG-024-V/1-4-0-DIF	A06282
DMP-012-V/1-0	A05814
DMP-024-V/1-0	A05815
DMP-012-V/1-J-0	A05816
DMP-024-V/1-J-0	A05817
DP-012-V/1-0	A05692
DP-024-V/1-0	A05693
DP-048-V/1-0	A05694

# SPDs for data / signalling / telecommunication networks

## Compact devices



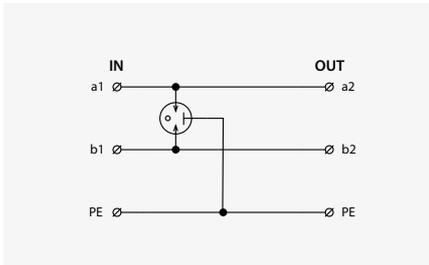
- SPDs with coarse and fine protection
- For 1 up to 4-core lines
- Multiple core lines save the space

- Line BD – lightning current arresters
- Line DM – for 2/3/4-core communication lines
- Line DMS – with current limiting
- Line DP – for extra-low voltage supply
- Line DPF – with integrated RFI filter

# Overview of SPDs for data / signalling / telecommunication networks

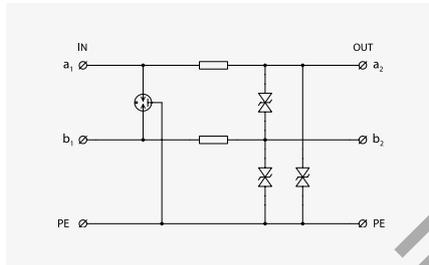
## Compact devices

### BD-...T



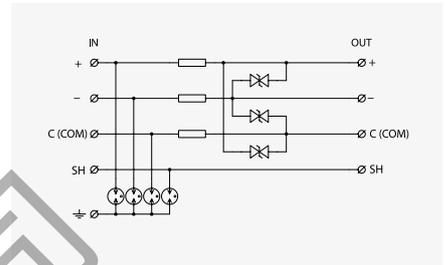
2 core line incoming from LPZ 0 to structure.  
See page: 125

### DM-...



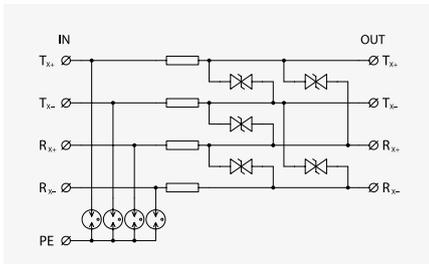
2-3 cores line incoming from LPZ 0 to structure with one-pole connected with ground.  
See page: 126-128

### DM- .../1 3R(L) DJ



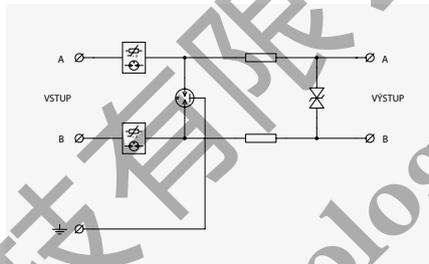
3 core floating line with shielding.  
See page: 129-130

### DM- .../1 4R DJ



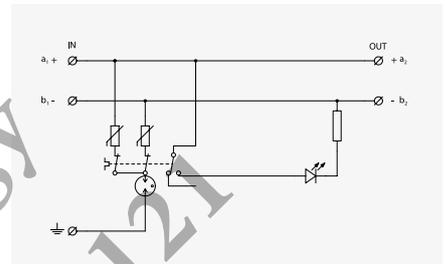
4 core floating line.  
See page: 131

### DMS-...-T



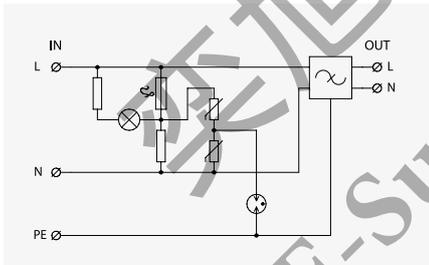
2 core line with current limiting function.  
See page: 132

### DP-...



Power supply 12, 24, 48 V up to 16 A.  
See page: 134

### DPF-...-DC-16(-S)



Power supply 24 V up to 6 A with integrated RFI filter.  
See page: 135-136

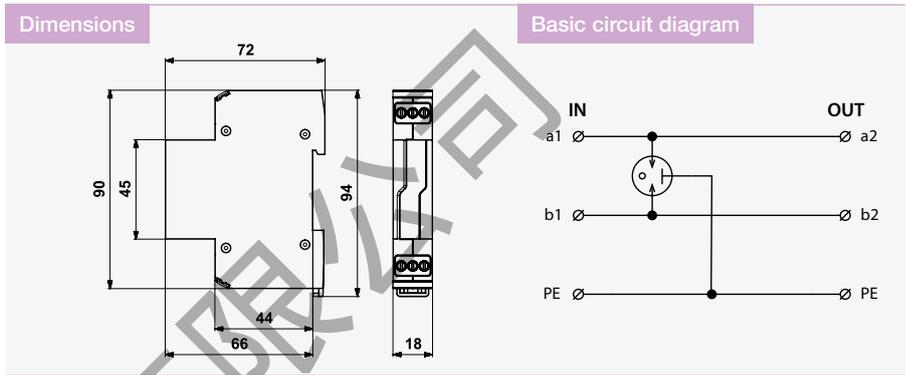
Data, signal and telecommunication networks

奕旭科技有限公司  
E-Surge Technology  
TEL +886 2 2212 8121

# BD-...-T

**Lightning current arresters, compact ST1**  
compact device

- lightning current arrester of 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- mainly for protection of telecommunication lines against surge voltage



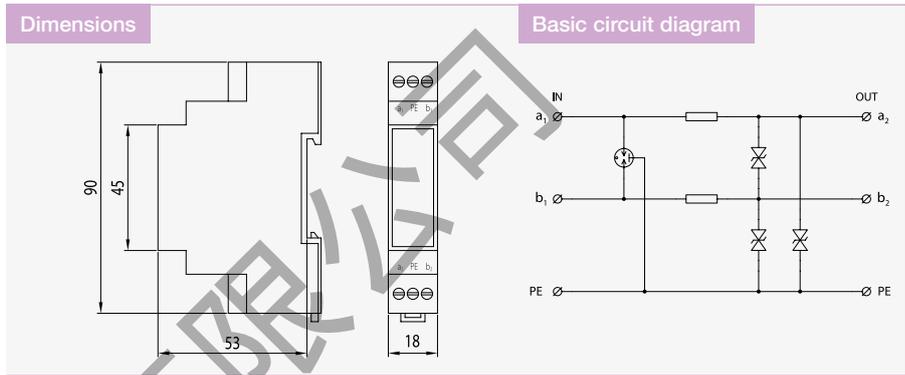
Parameter / Type	BD-090-T	BD-250-T
Connection (input - output)	terminals-terminals	terminals-terminals
Location of SPD	ST 1	ST 1
Maximum operating voltage	$U_c$ 50 V AC / 70 V DC	128 V AC / 180 V DC
Nominal load current	$I_L$ 1,6 A	1,6 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 10 kA	10 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 20 kA	20 kA
D1 impulse discharge current (10/350 $\mu$ s) core-core	$I_{imp}$ 2,5 kA	2,5 kA
D1 total discharge current (10/350 $\mu$ s) cores-PE	$I_{Total}$ 5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 550 V	550 V
Response time core-core	$t_a$ 100 ns	100 ns
Response time core-PE	$t_a$ 100 ns	100 ns
Threshold frequency core-core	$f$ 120 MHz	120 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm <sup>2</sup> / 6 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 6 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,14 mm <sup>2</sup> / 4 mm <sup>2</sup>
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number	A05821	A05822

Data, signal and telecommunication networks

# DM-.../1 R DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (R – resistance)

- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



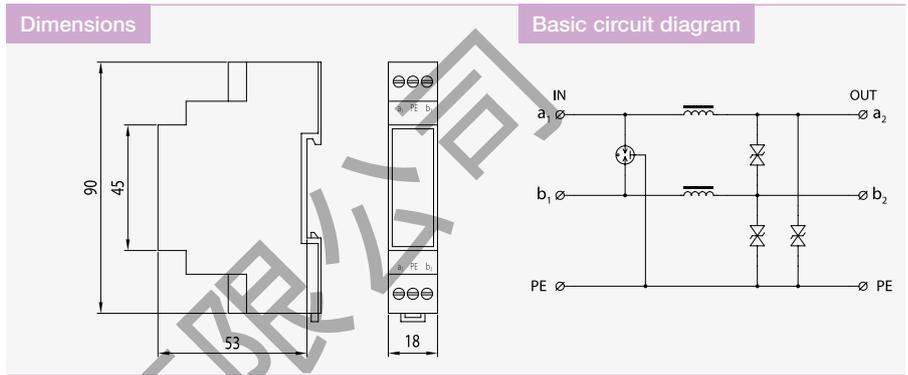
Parameter / Type	DM-006/1 R DJ	DM-012/1 R DJ	DM-024/1 R DJ	DM-048/1 R DJ
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC	35,6 V AC / 50,2 V DC
Nominal load current	$I_n$ 0,06 A	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_p$ 10 kA	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$ 25 V	35 V	50 V	80 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 20 V	35 V	50 V	80 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 15 V	30 V	48 V	75 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$ 1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R 6,8 $\Omega$	6,8 $\Omega$	6,8 $\Omega$	6,8 $\Omega$
Threshold frequency core-core	f 1 MHz	1,7 MHz	3,4 MHz	7 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number	A00930	A00931	A00932	A00933

Data, signal and telecommunication networks

# DM-.../1 L DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (L – inductance)

- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



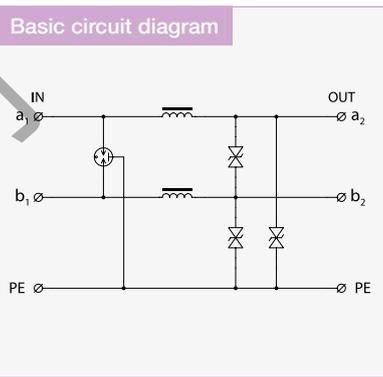
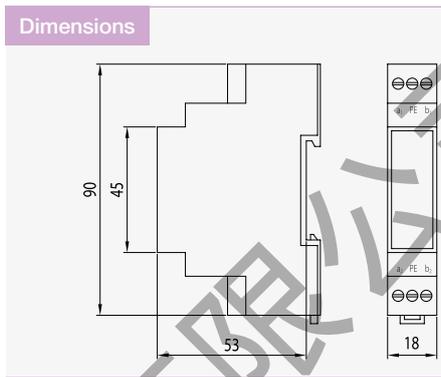
Parameter / Type	DM-006/1 L DJ	DM-012/1 L DJ	DM-024/1 L DJ	DM-048/1 L DJ
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC	35,6 V AC / 50,2 V DC
Nominal load current	$I_n$ 0,37 A	0,37 A	0,37 A	0,37 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_p$ 10 kA	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$ 25 V	35 V	50 V	80 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 20 V	35 V	50 V	80 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 15 V	30 V	48 V	75 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$ 1 ns	1 ns	1 ns	1 ns
Serial inductance per core	L 100 $\mu$ H	100 $\mu$ H	100 $\mu$ H	100 $\mu$ H
Threshold frequency core-core	f 0,16 MHz	0,16 MHz	0,16 MHz	0,16 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number	A01557	A01352	A01237	A01353

Data, signal and telecommunication networks

# DM-.../1 L2 DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (L – inductance)

- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



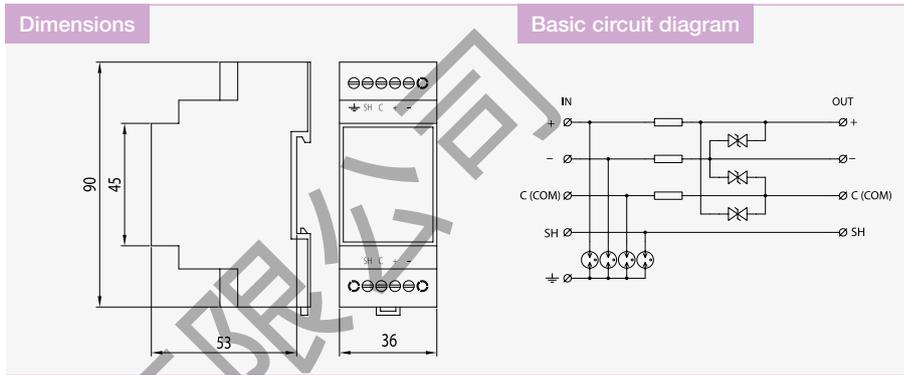
Parameter / Type	DM-006/1 L2 DJ	DM-012/1 L2 DJ	DM-024/1 L2 DJ	DM-048/1 L2 DJ
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	$U_c$ 5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC	35,6 V AC / 50,2 V DC
Nominal load current	$I_n$ 2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_p$ 10 kA	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$ 25 V	35 V	50 V	80 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 20 V	35 V	50 V	80 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 15 V	30 V	48 V	75 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$ 1 ns	1 ns	1 ns	1 ns
Serial inductance per core	L 25 $\mu$ H	25 $\mu$ H	25 $\mu$ H	25 $\mu$ H
Threshold frequency core-core	f 0,55 MHz	0,6 MHz	0,6 MHz	0,6 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number	A01332	A01331	A01333	A01334

Data, signal and telecommunication networks

# DM-.../1 3R DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (R – resistance)

- coarse and fine surge protection for 3-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



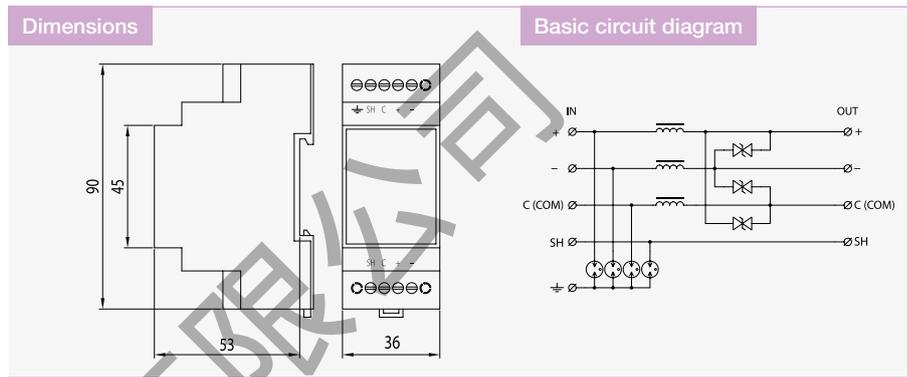
Parameter / Type	DM-006/1 3R DJ	DM-012/1 3R DJ	DM-024/1 3R DJ
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3
Nominal voltage $U_n$	6 V DC	12 V DC	24 V DC
Maximum operating voltage $U_c$	5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current $I_n$	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{pn}$	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$ $U_p$	25 V	35 V	50 V
C2 voltage protection level mode core-PE at $I_n$ $U_p$	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	650 V	650 V	650 V
Response time core-core $t_a$	1 ns	1 ns	1 ns
Response time core-PE $t_a$	100 ns	100 ns	100 ns
Serial resistance per core $R$	6,8 $\Omega$	6,8 $\Omega$	6,8 $\Omega$
Threshold frequency core-core $f$	1 MHz	1,7 MHz	3,4 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number	A01350	A01349	A01234

Data, signal and telecommunication networks

# DM-.../1 3L DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (L – inductance)

- coarse and fine surge protection for 3-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



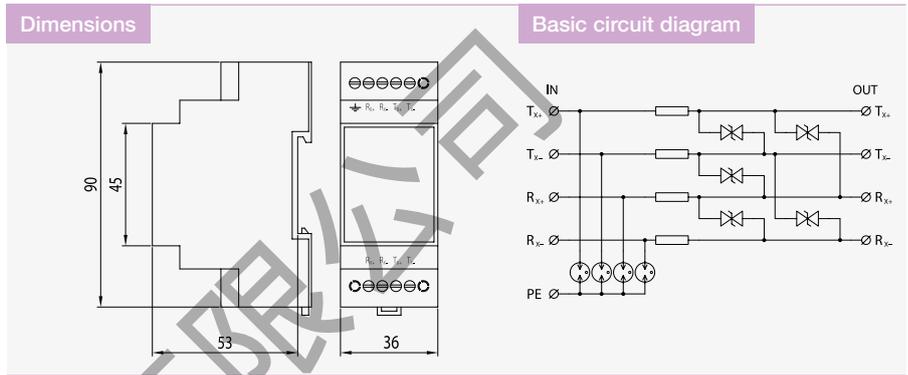
Parameter / Type		DM-006/1 3L DJ	DM-012/1 3L DJ	DM-024/1 3L DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$	6 V DC	12 V DC	24 V DC
Maximum operating voltage	$U_c$	5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current	$I_n$	0,37 A	0,37 A	0,37 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_p$	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	25 V	35 V	50 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	650 V	650 V	650 V
Response time core-core	$t_a$	1 ns	1 ns	1 ns
Response time core-PE	$t_a$	100 ns	100 ns	100 ns
Serial inductance per core	$L$	100 $\mu$ H	100 $\mu$ H	100 $\mu$ H
Threshold frequency core-core	$f$	0,16 MHz	0,16 MHz	0,16 MHz
Cross-section of connected conductors solid (max)		4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)		2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A01402	A02094	A01519

Data, signal and telecommunication networks

# DM-.../1 4R DJ

Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3 coupling impedance (R – resistance)

- coarse and fine surge protection for 4-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type	DM-006/1 4R DJ	DM-012/1 4R DJ	DM-024/1 4R DJ
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC
Maximum operating voltage	$U_c$ 5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current	$I_n$ 0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_p$ 10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$ 25 V	35 V	50 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 650 V	650 V	650 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns
Response time core-PE	$t_a$ 100 ns	100 ns	100 ns
Serial resistance per core	R 6,8 $\Omega$	6,8 $\Omega$	6,8 $\Omega$
Threshold frequency core-core	f 1 MHz	1,7 MHz	3,4 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number	A01675	A01689	A01357

Data, signal and telecommunication networks

# DMS-...-T

**Special surge protection with limiting current**  
coupling impedance (resistance)

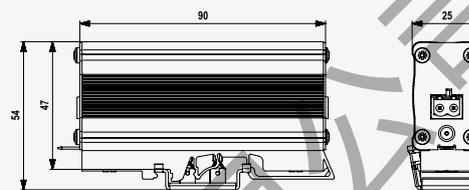
- special two-stage surge protection of 2-core signalling line with current limiting
- installation close to protected equipment
- for protection of communication interfaces, mainly the measuring loops, of I&C, electronic security and fire

detection systems, etc. against surge voltage where are long parallel lines with power network

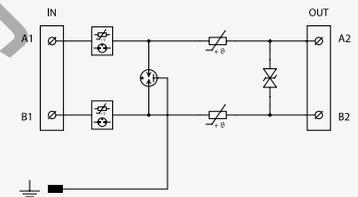
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



Dimensions



Basic circuit diagram

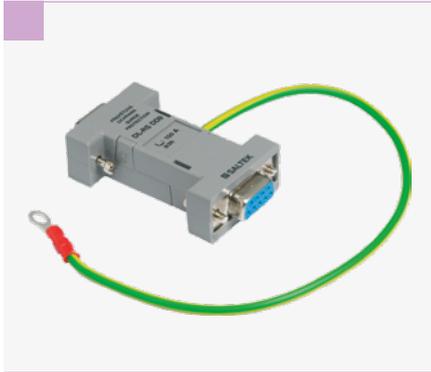


Parameter / Type		DMS-024-T	DMS-048-T
Connection (input - output)		terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3
Nominal voltage	$U_n$	24 V DC	48 V DC
Maximum operating voltage	$U_c$	25 V AC / 33 V DC	39 V AC / 56 V DC
Nominal load current	$I_n$	0,06 A	0,06 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	75 V	110 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	500 V	500 V
Response time core-core	$t_b$	1 ns	1 ns
Response time core-PE	$t_b$	100 ns	100 ns
Serial resistance per core	R	13 $\Omega$	13 $\Omega$
Threshold frequency core-core	f	1,1 MHz	2,0 MHz
Cross-section of connected conductors solid (max)		2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)		2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	
Ordering number		A06596	A06597

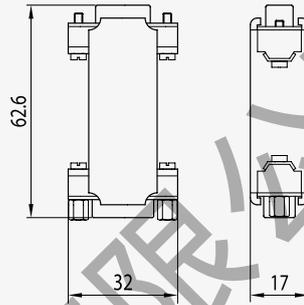
# DL-RS DD9

Surge protection for RS interfaces (with DSUB connectors)  
DSUB 9 connectors

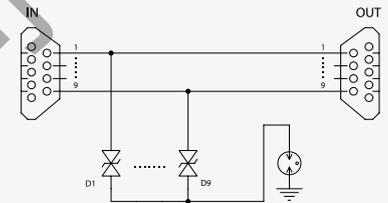
- fine protection
- for protection of serial ports of computers and control systems of I&C, electronic security and fire detection systems, etc. against impact of surge voltage



Dimensions



Basic circuit diagram

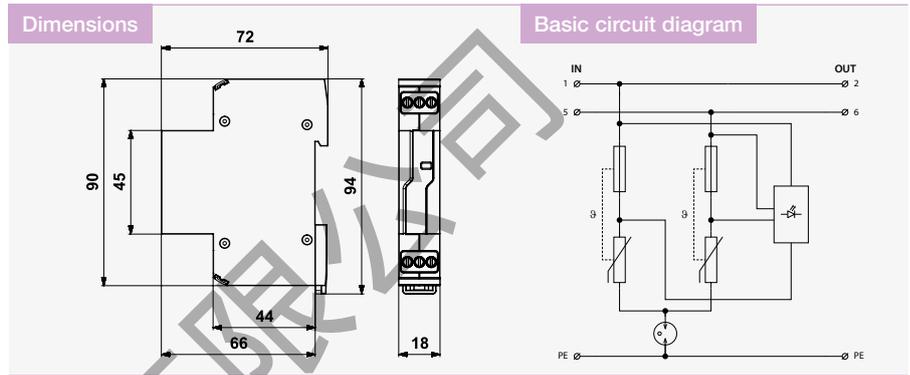


Parameter / Type	DL-RS DD9	
Location of SPD		ST 3
Maximum operating voltage	$U_c$	12,7 V AC / 18 V DC
C1 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	150 A
C1 voltage protection level mode core-core at $I_n$	$U_p$	65 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	50 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	980 V
Response time core-core	$t_a$	1 ns
Response time core-PE	$t_a$	100 ns
Threshold frequency core-core	f	55 MHz
Connection (input - output)		female DSUB 9 - male DSUB 9
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C1,C3
Ordering number		A00968

# DP-...-25

Surge protection for ELV power supply networks, compact version  
visual fault signalling

- surge protection for all types of LV electric and electronic equipments against surge voltage
- installation to ELV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



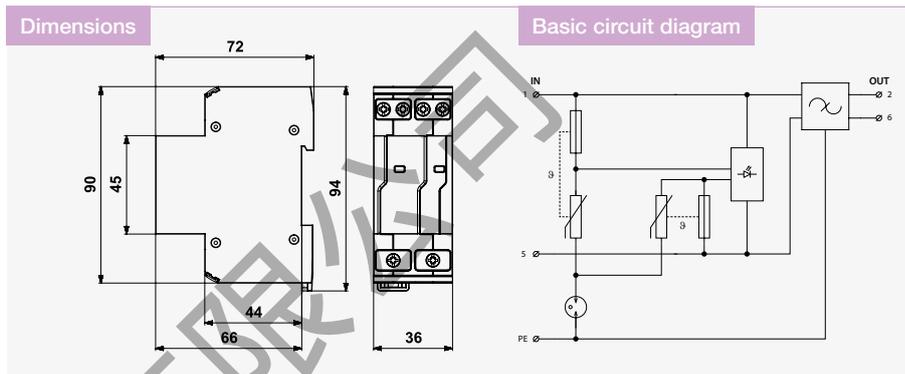
Parameter / Type		DP-012-25	DP-024-25	DP-048-25
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2
Nominal voltage	$U_n$	12 V AC	24 V AC	48 V AC
Maximum operating voltage	$U_c$	20 V AC / 20 V DC	36 V AC / 36 V DC	60 V AC / 60 V DC
Nominal load current	$I_n$	25 A	25 A	25 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	180 V	230 V	380 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	550 V	550 V	550 V
Test voltage L+ - L-		4 kV	4 kV	4 kV
Test voltage L+(L-) - PE		4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,18 kV	0,23 kV	0,38 kV
Maximum overcurrent protection		25 A gL/gG or C 25 A	25 A gL/gG or C 25 A	25 A gL/gG or C 25 A
Response time L+ - L-		25 ns	25 ns	25 ns
Response time L+(L-) - PE		100 ns	100 ns	100 ns
Cross-section of connected conductors solid (max)		6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)		6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Fault indication		red indicator	red indicator	red indicator
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number		A06096	A06097	A06098

Data, signal and telecommunication networks

# DPF-...DC-16

Surge protection for ELV power supply networks, with RFI filter  
visual fault signalling

- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of control systems, electronic security and fire systems against impact of transient overvoltage and RF disturbance
- for AC or DC power supply



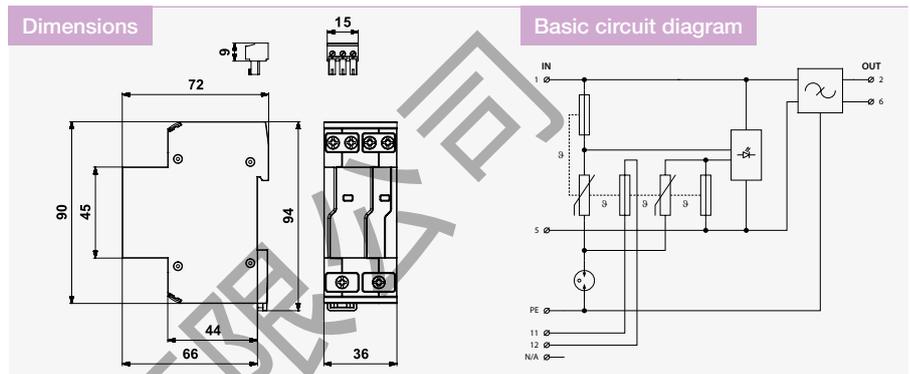
Parameter / Type	DPF-012DC-16	DPF-024DC-16	DPF-048DC-16
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Nominal voltage	$U_n$ 12 V AC	24 V AC	48 V AC
Maximum operating voltage	$U_c$ 20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current	$I_L$ 16 A	16 A	16 A
Test voltage L+ - L-	4 kV	4 kV	4 kV
Test voltage L+(L-)-PE	4 kV	4 kV	4 kV
Voltage protection level L+ - L-	0,25 kV	0,29 kV	0,42 kV
Voltage protection level L+(L-)-PE	0,5 kV	0,5 kV	0,5 kV
Maximum overcurrent protection	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L+ - L-	25 ns	25 ns	25 ns
Response time L+(L-)-PE	100 ns	100 ns	100 ns
RFI filter	yes	yes	yes
Filter attenuation at 1MHz (50 Ω/50 Ω) symmetrical	45 dB	45 dB	45 dB
Filter attenuation at 1MHz (50 Ω/50 Ω) unsymmetrical	30 dB	30 dB	30 dB
Cross-section of connected conductors solid (max)	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Fault indication	red indicator	red indicator	red indicator
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number	A06635	A06636	A06637

Data, signal and telecommunication networks

# DPF-...DC-16-S

Surge protection for ELV power supply networks, with RFI filter  
visual and remote fault signalling

- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of control systems, electronic security and fire systems against impact of transient overvoltage and RF disturbance
- for AC or DC power supply

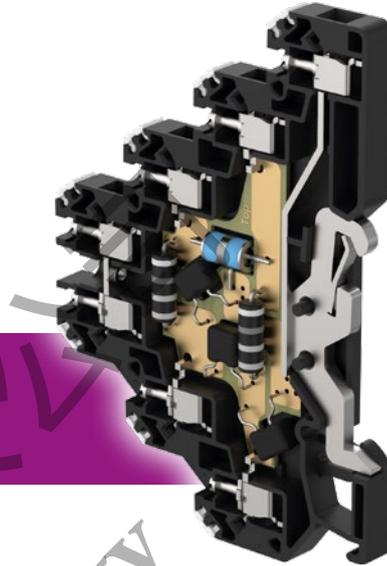


Parameter / Type	DPF-012DC-16-S	DPF-024DC-16-S	DPF-048DC-16-S
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Nominal voltage	$U_n$ 12 V AC	24 V AC	48 V AC
Maximum operating voltage	$U_c$ 20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current	$I_L$ 16 A	16 A	16 A
Test voltage L+ - L-	4 kV	4 kV	4 kV
Test voltage L+(L-)-PE	4 kV	4 kV	4 kV
Voltage protection level L+ - L-	0,25 kV	0,29 kV	0,42 kV
Voltage protection level L+(L-)-PE	0,5 kV	0,5 kV	0,5 kV
Maximum overcurrent protection	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L+ - L-	25 ns	25 ns	25 ns
Response time L+(L-)-PE	100 ns	100 ns	100 ns
RFI filter	yes	yes	yes
Filter attenuation at 1MHz (50 Ω/50 Ω) symmetrical	45 dB	45 dB	45 dB
Filter attenuation at 1MHz (50 Ω/50 Ω) unsymmetrical	30 dB	30 dB	30 dB
Cross-section of connected conductors solid (max)	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	6 mm <sup>2</sup>	6 mm <sup>2</sup>	6 mm <sup>2</sup>
Fault indication	red indicator	red indicator	red indicator
Remote indication	potential-free open contact	potential-free open contact	potential-free open contact
Remote indication contacts	230 V / 0,5 A AC, 24 V / 0,5 A DC	230 V / 0,5 A AC, 24 V / 0,5 A DC	230 V / 0,5 A AC, 24 V / 0,5 A DC
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number	A06664	A06665	A06666

Data, signal and telecommunication networks

# SPDs for data / signalling / telecommunication networks

## Terminal blocks with screw terminals



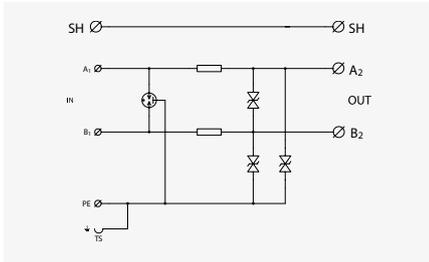
- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Direct grounding via DIN rail clip

- Line DM – for 2/3/4-core communication lines
- Line DMG – with separated signal ground and protective earth
- Line DMJ – for 1-core lines with common ground
- Line DMHF – for high-speed lines
- Line DMLF – with protection against RF disturbance
- Line DS – single-stage protection

# Overview of SPDs for data / signalling / telecommunication networks

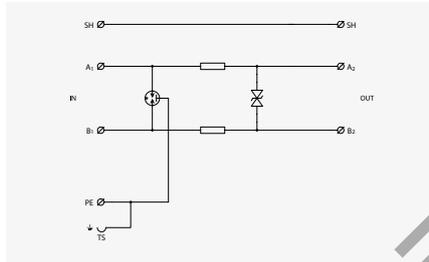
## Terminal blocks with screw terminals

**DM-.../1-RS**



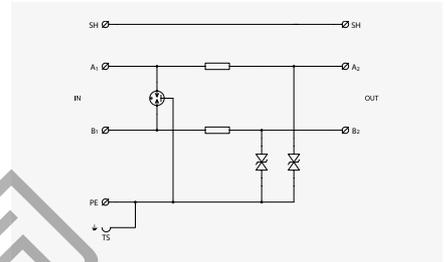
2/3-core line with one pole connected to common ground.  
See page: 139

**DMG-.../1-RS**



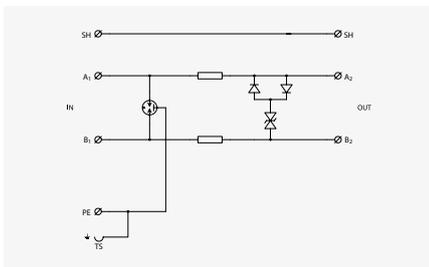
2-core floating line.  
See page: 140

**DMJ-.../2-RS**



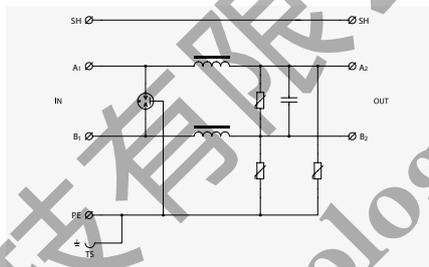
Two single-core lines with common ground.  
See page: 141

**DMHF-.../1-RS**



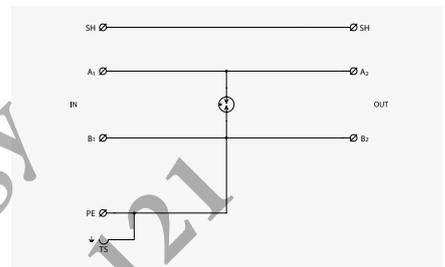
2-core high-speed floating line.  
See page: 142

**DMLF-.../1-RS**



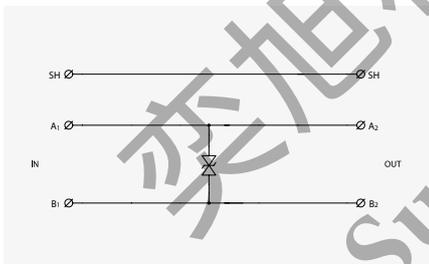
2-core low-frequency line.  
See page: 143

**DS-B...-RS**



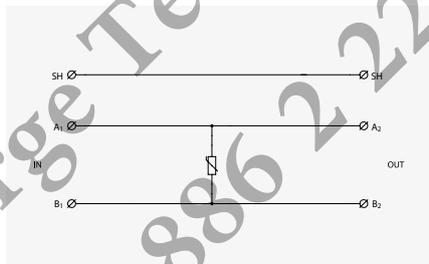
Single stage protection of 2-core line.  
See page: 144

**DS-D...-RS**



Single stage protection of 2-core line.  
See page: 144

**DS-V...-RS**



Single stage protection of 2-core line.  
See page: 144

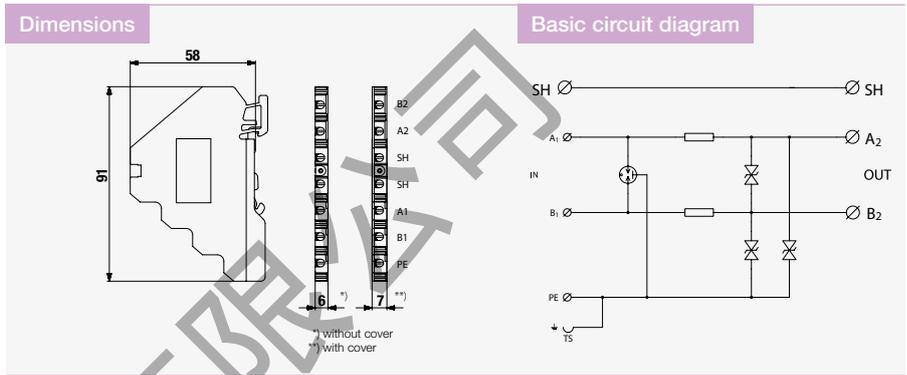
Data, signal and telecommunication networks

# DM-.../1-RS

Coarse and fine surge protection for telecommunication and signalling network, ST2+3 in terminal block  
coupling impedance (resistance), screw terminals

- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines,

- of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Parameter / Type		DM-006/1-RS	DM-012/1-RS	DM-024/1-RS	DM-048/1-RS	DM-060/1-RS	DM-110/1-RS
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$	6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	110 V DC
Maximum operating voltage	$U_c$	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	85 V AC / 120 V DC
Nominal load current	$I_n$	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{total}$	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$	0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	18 V	28 V	50 V	80 V	100 V	210 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	30 V	40 V	65 V	95 V	120 V	230 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	12 V	20 V	45 V	65 V	85 V	170 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	15 V	20 V	45 V	65 V	85 V	170 V
Response time core-core	$t_a$	1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$	1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f	1 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz	10 MHz
Cross-section of connected conductors solid (max)		4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)		2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3					
Ordering number		A05140	A05141	A05142	A05143	A05129	A05130

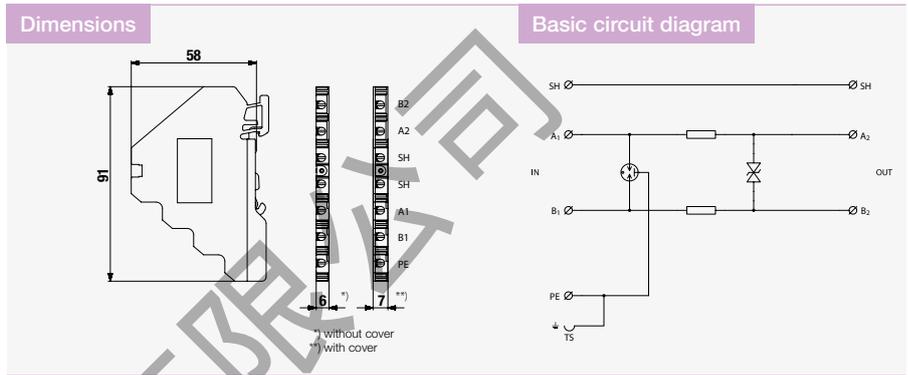
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	188

Data, signal and telecommunication networks

# DMG-.../1-RS

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block coupling impedance (resistance), screw terminals

- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection
- systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type	DMG-006/1-RS	DMG-012/1-RS	DMG-024/1-RS	DMG-048/1-RS	DMG-060/1-RS	DMG-110/1-RS
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	110 V DC
Maximum operating voltage	$U_c$ 6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	85 V AC / 120 V DC
Nominal load current	$I_n$ 0,5 A	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{total}$ 10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$ 0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$ 18 V	28 V	50 V	80 V	100 V	210 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 350 V	350 V	350 V	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$ 12 V	20 V	45 V	65 V	85 V	170 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 500 V	500 V	500 V	500 V	500 V	500 V
Response time core-core	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$ 100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f 1 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz	10 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3					
Ordering number	A05132	A05133	A05134	A05135	A05136	A05137

<b>Accessories:</b> Connection bridge JRS 10P	<b>Ordering number</b>	<b>See page</b>
	B41175	188

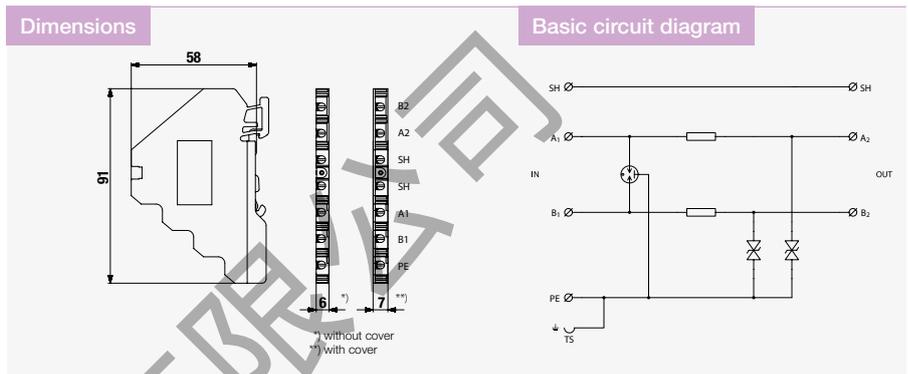
Data, signal and telecommunication networks

# DMJ-.../2-RS

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block  
coupling impedance (resistance), screw terminals

- coarse and fine surge protection for two 1-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and control circuits of I&C,

- electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in common mode (core – PE)



Parameter / Type	DMJ-012/2-RS	DMJ-024/2-RS	DMJ-048/2-RS	DMJ-060/2-RS	DMJ-110/2-RS
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	$U_n$ 12 V DC	24 V DC	48 V DC	60 V DC	110 V DC
Maximum operating voltage	$U_c$ 11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	85 V AC / 120 V DC
Nominal load current	$I_n$ 0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$ 5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$ 10 kA	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$ 0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-PE at $I_n$	$U_p$ 40 V	65 V	95 V	120 V	230 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$ 20 V	45 V	65 V	85 V	170 V
Response time core-PE	$t_a$ 1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R 1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f 2 MHz	4 MHz	5 MHz	6,5 MHz	10 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3				
Ordering number	A05144	A05145	A05131	A05146	A05147

Data, signal and telecommunication networks

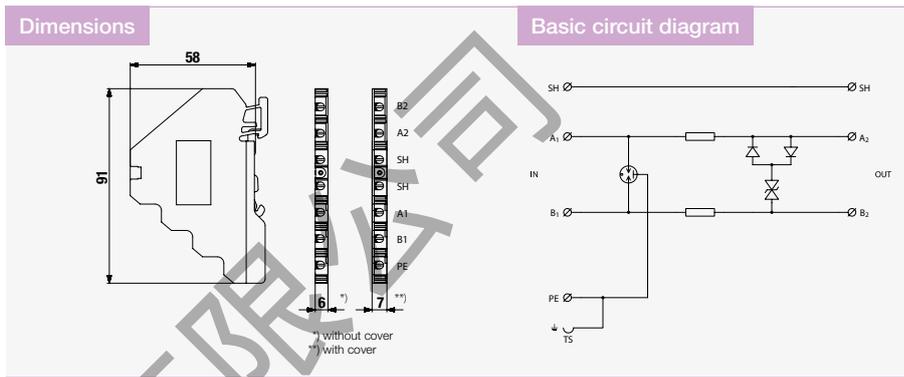
<b>Accessories:</b> Connection bridge JRS 10P	<b>Ordering number</b>	<b>See page</b>
	B41175	188

# DMHF-.../1-RS

## Surge protection for industrial communication bus (eg. PROFIBUS)

coupling impedance (resistance), screw terminals

- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



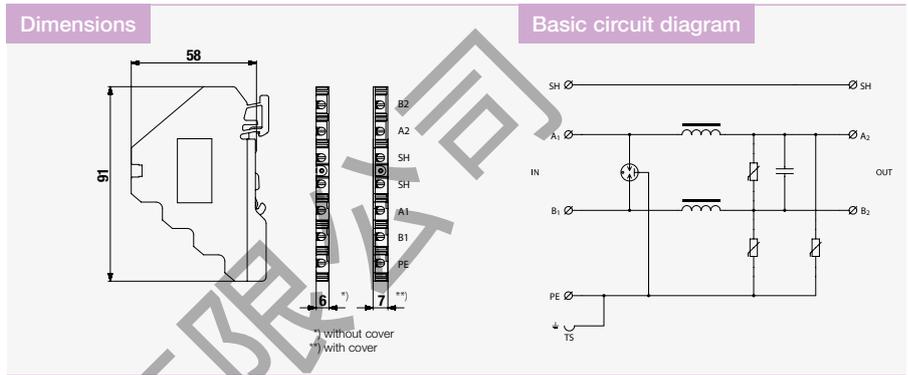
Parameter / Type	DMHF-006/1-RS	DMHF-015/1-RS
Connection (input - output)	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3
Nominal voltage $U_n$	6 V DC	15 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	15 V AC / 22 V DC
Nominal load current $I_n$	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{cn}$	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core $I_{imp}$	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$ $U_p$	26 V	36 V
C2 voltage protection level mode core-PE at $I_n$ $U_p$	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	14 V	28 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	500 V	500 V
Response time core-core $t_a$	1 ns	1 ns
Response time core-PE $t_a$	100 ns	100 ns
Serial resistance per core $R$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	70 MHz	70 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number	A05138	A05139

<b>Accessories:</b> Connection bridge JRS 10P	<b>Ordering number</b>	<b>See page</b>
	B41175	188

# DMLF-.../1-RS

Coarse and fine surge protection for telecommunications and signalling network with limiting Radio-frequency interference coupling impedance (inductance), screw terminals

- coarse and fine surge protection for low-frequency 2-core signalling networks
- installation close to protected equipment
- for protection of analogue measuring lines in the areas with RF disturbance
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Parameter / Type	DMLF-024/1-RS	
Connection (input - output)	terminals-terminals	
Location of SPD	ST 2	
Nominal voltage	$U_n$	24 V DC
Maximum operating voltage	$U_c$	31 V DC
Nominal load current	$I_n$	0,1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$	0,5 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	65 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	80 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	55 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	55 V
Response time core-core	$t_a$	25 ns
Response time core-PE	$t_a$	25 ns
Threshold frequency core-core	$f$	0,07 MHz
Cross-section of connected conductors solid (max)	4 mm <sup>2</sup>	
Cross-section of connected conductors stranded (max)	2,5 mm <sup>2</sup>	
Degree of protection	IP 20	
Range of operating temperatures (min/max)	-40 °C / 70 °C	
Mounting	DIN rail 35 mm	
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number	A05333	

Data, signal and telecommunication networks

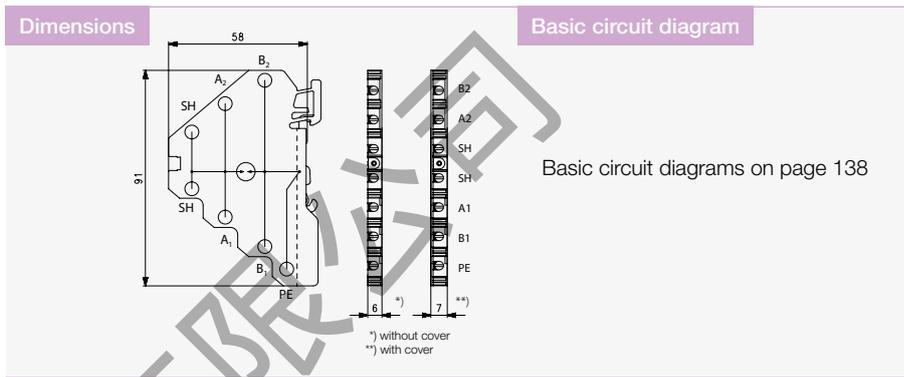
	<b>Accessories:</b>	<b>Ordering number</b>	<b>See page</b>
	Connection bridge JRS 10P	B41175	188

# DS-...-RS

## Single stage surge arrester in terminal block

B – Gas Discharge Tube, V – varistors, D – fast suppressor diods, screw terminal

- coarse single stage surge arrester (B), single stage surge arrester (V), fine single stage surge protection (D)
- for protection of signalling, data and other lines against impact of surge voltage
- version DS-B is usable mainly for the separation of shielding from the protective earth



Basic circuit diagram

Basic circuit diagrams on page 138

Parameter / Type		DS-B090-RS	DS-D024-RS	DS-V130-RS
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 3	ST 2
Maximum operating voltage	$U_c$	50 V AC / 70 V DC	20,6 V AC / 29,1 V DC	140 V AC / 180 V DC
Nominal load current	$I_L$	16 A	16 A	16 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	10 kA	0,3 kA	6 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$	0,5 kA	-	-
C2 voltage protection level mode core-PE at $I_n$	$U_p$	-	48 V	530 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	550 V	-	-
Response time core-PE	$t_a$	100 ns	1 ns	25 ns
Cross-section of connected conductors solid (max)		4 mm <sup>2</sup>	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Cross-section of connected conductors stranded (max)		2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A05148	A05153	A05151

Data, signal and telecommunication networks



**Accessories:**

Connection bridge JRS 10P

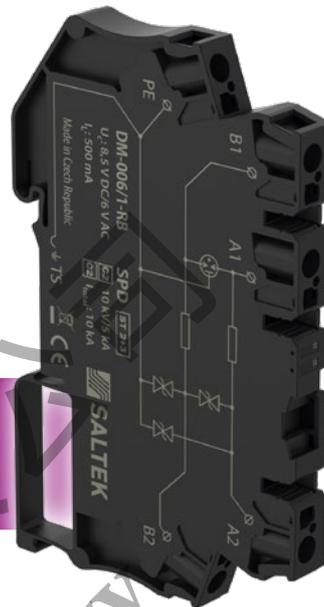
**Ordering number**

B41175

**See page**

188

# SPDs for data / signalling / telecommunication networks



**Terminal blocks with screwless terminals**



Data, signal and telecommunication networks

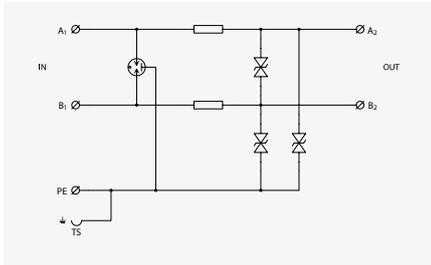
- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Screwless terminals for easy connection

- Line DM – for 2/3/4-core communication lines
- Line DMG – with separated signal ground and protective earth
- Line DMJ – for 1-core lines with common ground
- Line DMHF – for high-speed lines
- Line DMLF – with protection against RF disturbance
- Line DS – single-stage protection

# Overview of SPDs for data / signalling / telecommunication networks

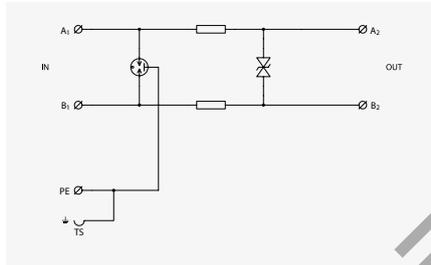
## Terminal blocks with screwless terminals

**DM-.../1-RB**



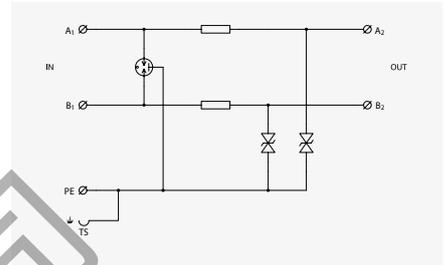
2-core line with one pole connected to common ground.  
See page: 147

**DMG-.../1-RB**



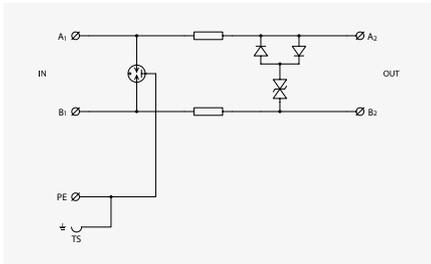
2-core floating line.  
See page: 148

**DMJ-.../2-RB**



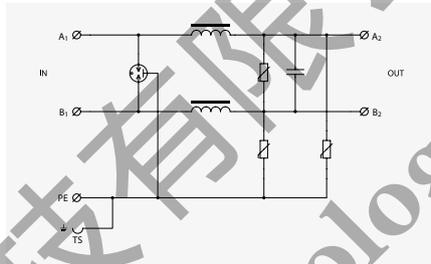
Two single-core lines with common ground.  
See page: 149

**DMHF-.../1-RB**



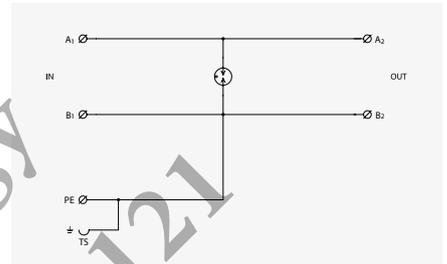
2-core high-speed floating line.  
See page: 150

**DMLF-024/1-RB**



2-core low-frequency line.  
See page: 151

**DS-B090-RB**



Single stage protection of 2-core line.  
See page: 152

Data, signal and telecommunication networks

奕旭科技有限公司  
E-Surge Technology  
TEL +886 2 2212 8121

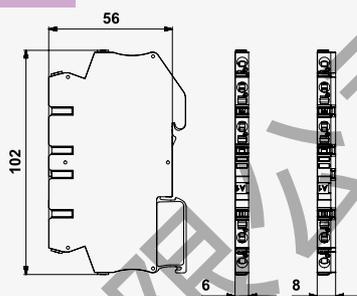
# DM-.../1-RB

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block  
coupling impedance (resistance), screwless terminals

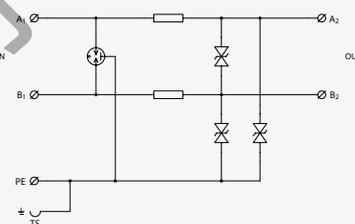
- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter / Type	DM-006/1-RB	DM-012/1-RB	DM-024/1-RB	DM-048/1-RB
Connection (input - output)	screwless terminals	screwless terminals	screwless terminals	screwless terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage $U_n$	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current $I_n$	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_n$	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core $I_{imp}$	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$ $U_p$	18 V	28 V	50 V	80 V
C2 voltage protection level mode core-PE at $I_n$ $U_p$	30 V	40 V	65 V	95 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	12 V	20 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	15 V	20 V	45 V	65 V
Response time core-core $t_a$	1 ns	1 ns	1 ns	1 ns
Response time core-PE $t_a$	1 ns	1 ns	1 ns	1 ns
Serial resistance per core $R$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	1 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number	A06057	A06058	A06059	A06060

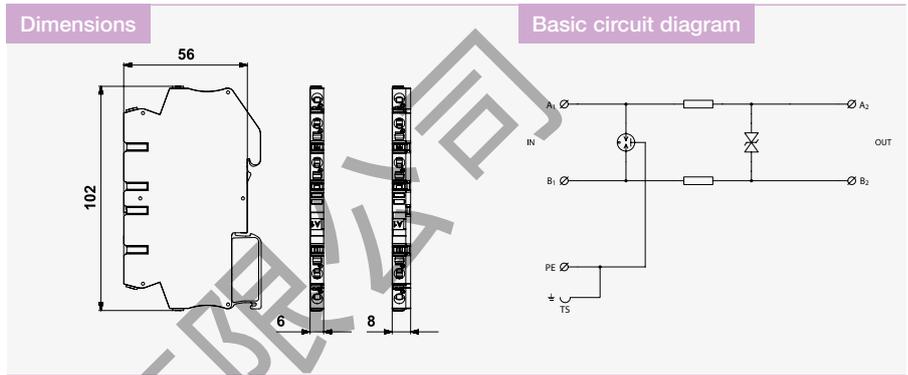
Data, signal and telecommunication networks

<b>Accessories:</b> Cross connectors for terminal blocks with screwless terminals (-RB)	<b>Ordering number</b>	<b>See page</b>
	by type	188

# DMG-.../1-RB

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block  
coupling impedance (resistance), screwless terminals

- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection
- systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



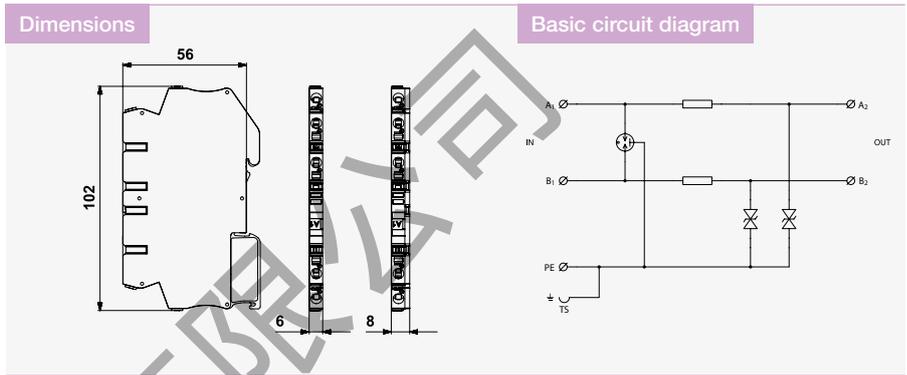
Parameter / Type	DMG-006/1-RB	DMG-024/1-RB	DMG-048/1-RB
Connection (input - output)	screwless terminals	screwless terminals	screwless terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3
Nominal voltage $U_n$	6 V DC	24 V DC	48 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current $I_n$	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{cn}$	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core $I_{imp}$	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$ $U_p$	18 V	50 V	80 V
C2 voltage protection level mode core-PE at $I_n$ $U_p$	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	12 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	500 V	500 V	500 V
Response time core-core $t_a$	1 ns	1 ns	1 ns
Response time core-PE $t_a$	100 ns	100 ns	100 ns
Serial resistance per core $R$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	1 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number	A06061	A06062	A06063

<b>Accessories:</b> Cross connectors for terminal blocks with screwless terminals (-RB)	<b>Ordering number</b>	<b>See page</b>
	by type	188

# DMJ-.../2-RB

Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block  
coupling impedance (resistance), screwless terminals

- coarse and fine surge protection for two 1-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and control circuits of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in common mode (core – PE)



Parameter / Type	DMJ-012/2-RB	DMJ-024/2-RB	DMJ-048/2-RB
Connection (input - output)	screwless terminals	screwless terminals	screwless terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3
Nominal voltage $U_n$	12 V DC	24 V DC	48 V DC
Maximum operating voltage $U_c$	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current $I_n$	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{pn}$	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core $I_{imp}$	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-PE at $I_n$ $U_p$	40 V	65 V	95 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	20 V	45 V	65 V
Response time core-PE $t_a$	1 ns	1 ns	1 ns
Serial resistance per core $R$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number	A06065	A06066	A06067

Data, signal and telecommunication networks

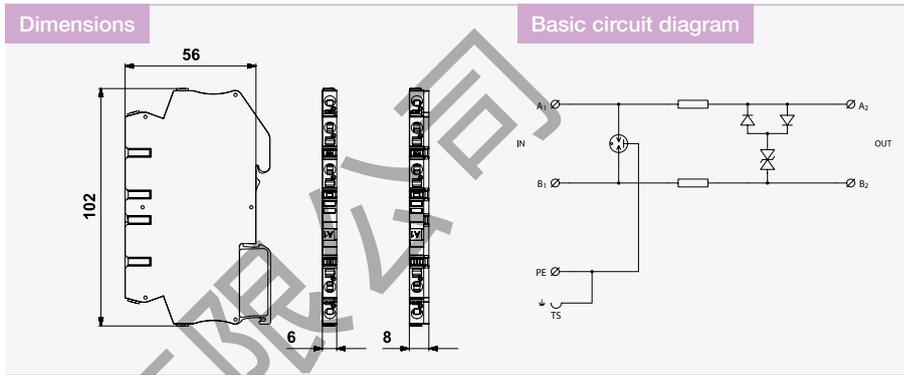
	<b>Accessories:</b>	<b>Ordering number</b>	<b>See page</b>
	Cross connectors for terminal blocks with screwless terminals (-RB)	by type	188

# DMHF-.../1-RB

## Surge protection for industrial communication bus (eg. PROFIBUS)

coupling impedance (resistance), screwless terminals

- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



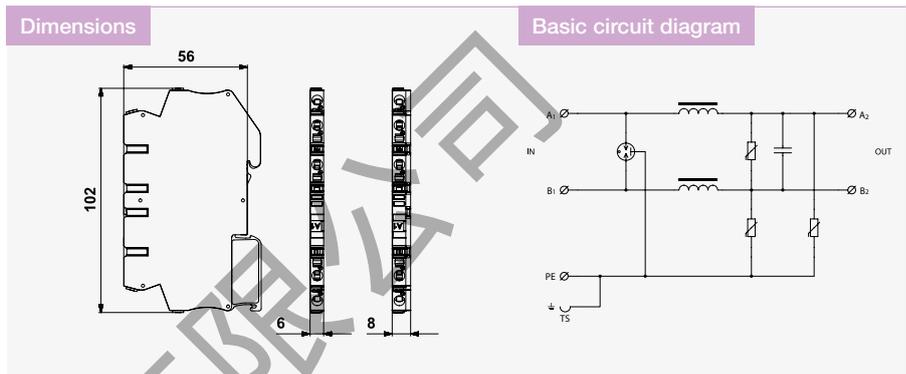
Parameter / Type	DMHF-006/1-RB	DMHF-015/1-RB
Connection (input - output)	screwless terminals	screwless terminals
Location of SPD	ST 2+3	ST 2+3
Nominal voltage $U_n$	6 V DC	15 V DC
Maximum operating voltage $U_c$	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC
Nominal load current $I_n$	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core $I_{cn}$	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE $I_{Total}$	10 kA	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core $I_{imp}$	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at $I_n$ $U_p$	26 V	36 V
C2 voltage protection level mode core-PE at $I_n$ $U_p$	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s $U_p$	14 V	28 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s $U_p$	500 V	500 V
Response time core-core $t_a$	1 ns	1 ns
Response time core-PE $t_a$	100 ns	100 ns
Serial resistance per core $R$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core $f$	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 70 °C	-40 °C / 70 °C
Mounting	DIN rail 35 mm	DIN rail 35 mm
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number	A06064	A06290

<b>Accessories:</b> Cross connectors for terminal blocks with screwless terminals (-RB)	<b>Ordering number</b>	<b>See page</b>
	by type	188

# DMLF-024/1-RB

Coarse and fine surge protection for telecommunications and signalling network with limiting Radio-frequency interference coupling impedance (inductance), screwless terminals

- coarse and fine surge protection for low-frequency 2-core signalling networks
- installation close to protected equipment
- for protection of analogue measuring lines in the areas with RF disturbance
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Parameter / Type	DMLF-024/1-RB	
Connection (input - output)	screwless terminals	
Location of SPD	ST 2	
Nominal voltage	$U_n$	24 V DC
Maximum operating voltage	$U_c$	31 V DC
Nominal load current	$I_n$	0,1 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$	0,5 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	65 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	80 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	55 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	55 V
Response time core-core	$t_a$	25 ns
Response time core-PE	$t_a$	25 ns
Threshold frequency core-core	$f$	0,07 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
Degree of protection	IP 20	
Range of operating temperatures (min/max)	-40 °C / 70 °C	
Mounting	DIN rail 35 mm	
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number	A06069	

Data, signal and telecommunication networks

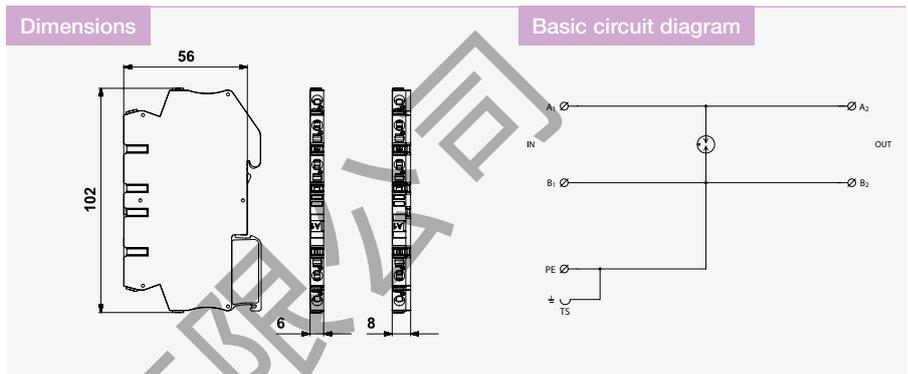
	<b>Accessories:</b>	<b>Ordering number</b>	<b>See page</b>
	Cross connectors for terminal blocks with screwless terminals (-RB)	by type	188

# DS-B090-RB

## Single stage surge protection

B – Gas Discharge Tube, screwless terminal

- coarse single stage surge arrester
- for protection of signalling, data and other lines against impact of surge voltage
- usable mainly for the separation of shielding from the protective earth



Parameter / Type	DS-B090-RB	
Connection (input - output)	screwless terminals	
Location of SPD	ST 2	
Maximum operating voltage	$U_c$	50 V AC / 70 V DC
Nominal load current	$I_L$	10 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_n$	10 kA
D1 impulse discharge current (10/350 $\mu$ s) per core	$I_{imp}$	0,5 kA
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	550 V
Response time core-PE	$t_d$	100 ns
Threshold frequency core-core	f	110 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm <sup>2</sup> / 4 mm <sup>2</sup>	
Cross-section of connected conductors stranded (min/max)	0,08 mm <sup>2</sup> / 2,5 mm <sup>2</sup>	
Range of operating temperatures (min/max)	-40 °C / 70 °C	
Mounting	DIN rail 35 mm	
According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number	A06070	

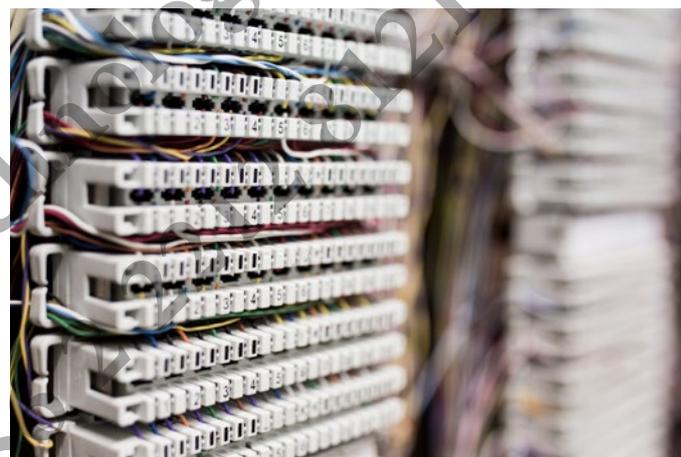
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	<b>Accessories:</b>	<b>Ordering number</b>	<b>See page</b>
	Cross connectors for terminal blocks with screwless terminals (-RB)	by type	188

## SPDs for data / signalling / telecommunication networks

### SPDs for LSA-PLUS strips



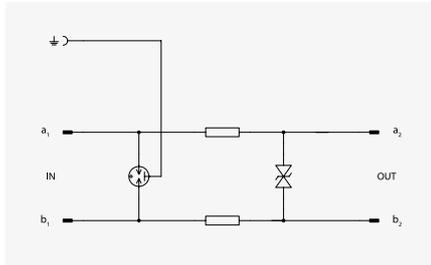
- Coarse and fine surge protection
- Easy connections to disconnection LSA-PLUS strips
- For 2-core signal lines in I&C, electronic security, fire detection and telecommunication systems

- Line CLSA - surge arresters

# Overview of SPDs for data / signalling / telecommunication networks

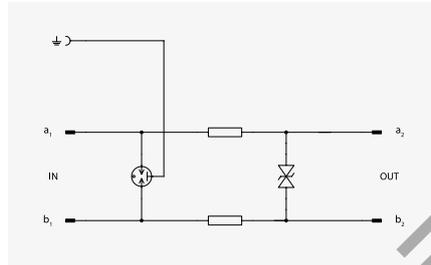
## For LSA-PLUS strips

CLSA-6, 12, 24, 48



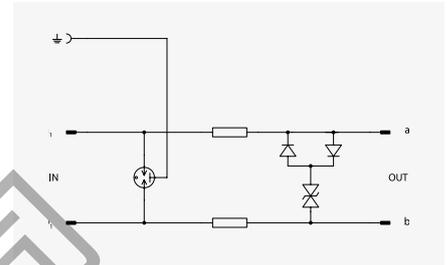
2-core floating line.  
See page: 155

CLSA-ISDN, CLSA-TLF



2-core floating phone line.  
See page: 156

CLSA-HF6, CLSA-DSL



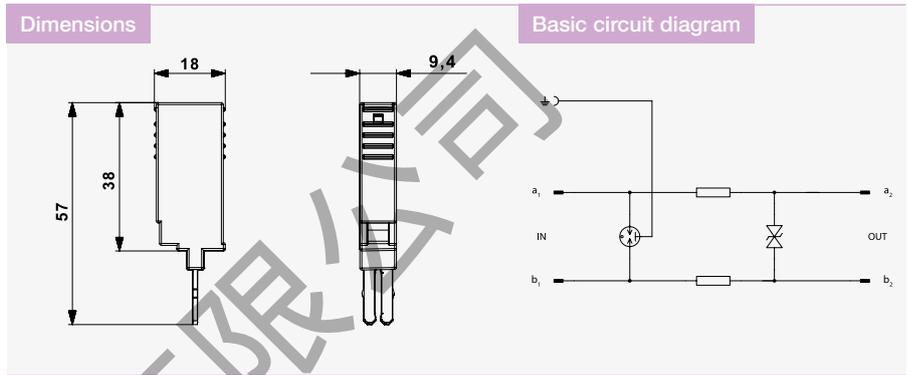
2-core high-speed floating line.  
See page: 157

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# CLSA-...

**SPDs for telecommunication and signalling networks, for LSA-PLUS strips**  
for LSA-PLUS disconnection strips

- combination of coarse and fine protection of data and I&C lines
- installation close to protected equipment
- for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection
- systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type		CLSA-6	CLSA-12	CLSA-24	CLSA-48
Connection (input - output)		LSA disconnection rail	LSA disconnection rail	LSA disconnection rail	LSA disconnection rail
Accessories		grounding rail	grounding rail	grounding rail	grounding rail
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Maximum operating voltage	$U_c$	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	$I_n$	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA	10 kA	10 kA	10 kA
C2 voltage protection level mode core-PE at $I_n$	$U_p$	400 V	400 V	400 V	400 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	13 V	21 V	48 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	350 V	350 V	350 V	350 V
Response time core-core	$t_a$	1 ns	1 ns	1 ns	1 ns
Response time core-PE	$t_a$	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	$R$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	$f$	1,5 MHz	2,5 MHz	4 MHz	6,5 MHz
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C	-40 $^{\circ}$ C / 70 $^{\circ}$ C
Mounting		LSA disconnection rail	LSA disconnection rail	LSA disconnection rail	LSA disconnection rail
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number		A05169	A05170	A05171	A05172

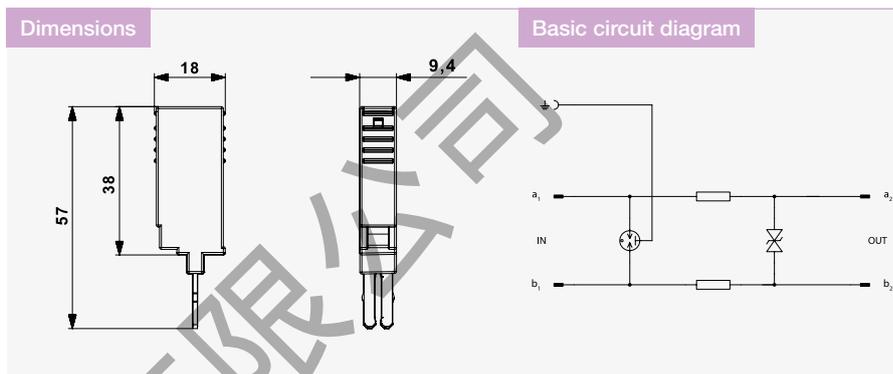
Accessories	Ordering number	See page
Comb grounding rail	B95712	194
Universal disconnection rail LSA 2/10	B95710	194
Mounting frame – 1 position	B95711	194

Data, signal and telecommunication networks

# CLSA-...

**SPDs for telecommunication and signalling networks, for LSA-PLUS strips**  
for LSA-PLUS disconnection strips

- combination of coarse and fine protection of 2-core telecommunication lines
- installation close to protected equipment
- for protection of telecommunication lines against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



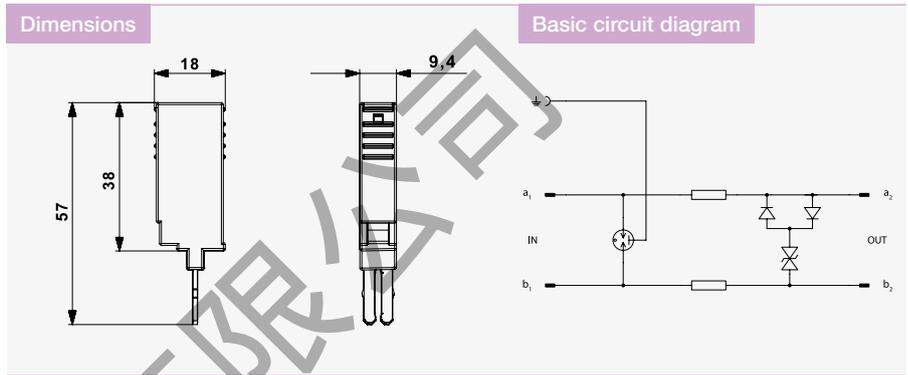
Parameter / Type		CLSA-ISDN	CLSA-TLF
Connection (input - output)		LSA disconnection rail	LSA disconnection rail
Accessories		grounding rail	grounding rail
Location of SPD		ST 2+3	ST 2+3
Maximum operating voltage	$U_c$	85 V AC / 120 V DC	120 V AC / 170 V DC
Nominal load current	$I_n$	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	220 V	310 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	400 V	400 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	170 V	230 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	350 V	350 V
Response time core-core	$t_a$	1 ns	1 ns
Response time core-PE	$t_a$	100 ns	100 ns
Serial resistance per core	R	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f	16 MHz	14 MHz
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		LSA disconnection rail	LSA disconnection rail
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number		A05174	A05173

Accessories	Ordering number	See page
Comb grounding rail	B95712	194
Universal disconnection rail LSA 2/10	B95710	194
Mounting frame – 1 position	B95711	194

# CLSA-...

**SPDs for telecommunication and signalling networks, for LSA-PLUS strips**  
for LSA-PLUS disconnection strips

- combination of coarse and fine protection of 2-core high-speed telecommunication lines including ADSL
- installation close to protected equipment
- CLSA-DSL for protection of telecommunication lines against impact of surge voltage
- CLSA-HF6 for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Parameter / Type		CLSA-HF6	CLSA-DSL
Connection (input - output)		LSA disconnection rail	LSA disconnection rail
Accessories		grounding rail	grounding rail
Location of SPD		ST 2+3	ST 2+3
Maximum operating voltage	$U_e$	6 V AC / 8,5 V DC	120 V AC / 170 V DC
Nominal load current	$I_n$	0,5 A	0,5 A
C2 nominal discharge current (8/20 $\mu$ s) per core	$I_{pk}$	5 kA	5 kA
C2 total discharge current (8/20 $\mu$ s) cores-PE	$I_{Total}$	10 kA	10 kA
C2 voltage protection level mode core-core at $I_n$	$U_p$	32 V	280 V
C2 voltage protection level mode core-PE at $I_n$	$U_p$	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ $\mu$ s	$U_p$	15 V	230 V
C3 voltage protection level mode core-PE at 1 kV/ $\mu$ s	$U_p$	350 V	400 V
Response time core-core	$t_a$	1 ns	1 ns
Response time core-PE	$t_a$	100 ns	100 ns
Serial resistance per core	R	1,6 $\Omega$	1,6 $\Omega$
Threshold frequency core-core	f	55 MHz	65 MHz
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		LSA disconnection rail	LSA disconnection rail
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number		A05175	A05176

Accessories	Ordering number	See page
Comb grounding rail	B95712	194
Universal disconnection rail LSA 2/10	B95710	194
Mounting frame – 1 position	B95711	194

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