

Catalogue Surge Protective Devices

2017–2018



Content

SPDs connected to LV power supply systems up to 1000 V

Type 1 SPDs - lightning current arresters	17
Type 1 and 2 SPDs - combined lightning current and surge arresters	23
Type 2 SPDs - surge arresters	37
Type 3 SPDs - surge protections	49
Surge separating inductors	73

Surge Protective Devices for LED lights

Surge Protective Devices for LED lights	75
---	----

Surge Protective Devices for photovoltaic systems

PV Type 1 and 2 SPDs	81
PV Type 2 SPDs	83

SPDs for data/signalling/telecommunication networks

Devices with pluggable module	95
Compact devices	145
Terminal blocks with screw terminals	159
Terminal blocks with screwless terminals	167
SPDs for LSA-PLUS strips	175
SPDs for phone lines	181
SPDs for Ethernet and other data lines	185
SPDs for video and coaxial lines	195

Voltage guards

Voltage guards	203
----------------	-----

Isolating Spark Gaps

Isolating Spark Gaps ISG and ISG Ex	209
-------------------------------------	-----

Index of SALTEK® products

	219
--	-----

Who we are What we do

SALTEK® is a leading Czech based company specialising in the development and production of Surge Protective Devices. SALTEK® offers a complete range of SPDs (types 1, 2, 3 and its combinations) in areas of low-voltage power systems and installations, renewable energy, information technologies, measuring & regulation and telecommunications.

SALTEK® products provide protection against atmospheric and technological overvoltage and ensure safe and trouble-free operation of technology, machinery and electrical appliances in industry, transport, telecommunications, data centres, office buildings as well as households.



Over 20 years of success in both the Czech Republic and abroad

- We have been on the market since 1995.
- Our products protect various technologies in a lot of countries in Europe, Asia and Africa.

Our own development = foundation of permanent and dynamic company development

- Our R&D department providing continuous innovation is the foundation of our further development.
- Our experienced R&D team utilises a testing laboratory with the latest equipment featuring unique devices and technologies that support fast and high-quality development process.
- State-of-the-art materials, construction procedures and measurement methods are a essential for us.

Flexibility and speed = our basic credo

- Flexible approach to the implementation of special customised solutions and products ODM/OEM all over the world.
- Fast delivery according to customers' requests.

Customers = power engine

- Customers are our everlasting inspiration. Hands-on experience linked to technical innovation gives us the opportunity to provide solutions for complex surge protection.
- High-class and fast technical support, regular training of specialists as well as extensive marketing and sales services are our standards.

Quality + international standards = our essentials

The safety, reliability and top quality of our products come first for us! Quality is our image. We are certified in compliance with international standards:

- EN ISO 9001 ■ EN ISO 14001 ■ OHSAS 18001

We are an active member of Czech and international standardization institutions - ÚNMZ, IEC and CENELEC, which define standards for the development of surge protection in the future.



What we do

Solutions for complex surge protection

We combine technical innovation with expertise. Thanks to our customers' feedback and our own development, SALTEK® products provide solutions for complex surge protection for various applications in different areas.



Industry

Commercial buildings use very sophisticated systems prone to abnormalities caused by overvoltage in the power system and signal lines. SALTEK® products minimize shut-down times of production technologies and subsequent financial losses.

- Protection of 230/400 V power system
- Protection of power system up to 1 000 V
- Protection of access security and fire alarm systems
- Protection of signal and communication lines



Buildings

Both residential and commercial buildings feature a great number of sensitive technologies and appliances. SALTEK® products considerably increase their reliability and, consequently, greatly improve the user comfort of such buildings.

- Protection of 230/400 V power system
- Protection of aerial systems
- Protection of access, security and fire alarm systems, CCTV, telecommunications lines, data networks, etc.
- Protection of technological facilities in buildings (heating, air conditioning, etc.)



Photovoltaic (PV) systems

PV systems must withstand weather conditions as they are located in highly exposed places. SALTEK® products ensure the best possible protection against temporary overvoltage to provide trouble-free operation throughout their working life. Protection of PV power plants/PV technologies for residential houses and for factories/Off grid PV technology.

- Protection of DC and AC side
- Protection of signal lines



Antennas and transmitters

Located in rather exposed places, receiving and transmitting systems must withstand harsh atmospheric conditions during their working life. SALTEK® products ensure the best possible protection of technologies against lightning strikes and induced overvoltage and thus they significantly increase operational reliability of technologies on transmission routes.

- Protection of 230/400 V power system
- Protection of aerial down conductors
- Protection of communication lines



Electric Railways

In the railway applications are the safety of the persons, prevent existence of an impermissible high touch voltage and limiting overvoltage in the system and its connected parts of the most important requirements.

- Protection against high touch voltage
- Protection of railway technological equipment



Oil and gas pipelines

Very large systems which are exposed to undesirable effects of lightning strikes, induction from parallel lines of MV, HV or stray current near railways. These events negatively affect the technologies which are necessary for their trouble-free operation. SALTEK® products ensure the best possible protection of such technologies and significantly increase their reliability.

- Protection of 230/400 V power system and system, up to 1 000 V
- Protection of access security and fire alarm systems, signal and communication lines
- Protection of pipelines against induced voltage

SALTEK® on-line Product information always at hand

If you do not have our Catalogue available or further printed information you would be interested in, visit www.saltek.eu/en to see a comprehensive overview of our products and on-line support.

SALTEK®
Overvoltage control. ANYWHERE.

Home | Solution | Products | Company | Support | Contact | EN |

NEW SPDs IN SCREWLESS TERMINAL BLOCKS

At the end of this year SALTEK® is introducing a new line of SPDs for data, signaling and telecommunication networks in screwless terminal blocks.

1 of 5

SALTEK®
Overvoltage control. ANYWHERE.

Home | Solution | Products | Company | Support | Contact | EN |

Products > LV system to 1000 V

SPD type 1	SPD type 2	SPD type 3	SPD type 4
FLP-5G50 V/S	FLP-5G50 V/S	FLP-25-T1-V/S	FLP-25-T1-V/S
Ordering number: 0305090140140 Lightning current arrester for 5-phase TT location at the entrance, 50 kA (50/50), voltage protection level 2.5 kV, separate module	Ordering number: 0305090140140 Lightning current arrester for 5-phase TT location at the entrance, 50 kA (50/50), voltage protection level 2.5 kV, separate module	Ordering number: 030509013001 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50)	Ordering number: 030509013001 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50)
FLP-25-T1-V/S	FLP-25-T1-V/S	FLP-25-T1-V/S+1	FLP-25-T1-V/S+1
Ordering number: 030509013014 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50), separate module	Ordering number: 030509013014 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50), separate module	Ordering number: 030509013014 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50), separate module	Ordering number: 030509013014 Lightning current arrester for 3-phase TT location at the entrance, 75 kA (50/50), separate module

What can you find at www.saltek.eu/en?

On-line catalogue (www.saltek.eu/en/catalogue-products)

- The latest information about the SALTEK® SPDs
- Generating of the product data sheet for a specific product in PDF format for you to print out or save
- Complete technical data
- Dimension drawings and wiring
- Instruction manuals
- Declaration of conformity

Catalogues and brochures (www.saltek.eu/en/brochures)

Instruction manuals, catalogues, videos and other documents to download.

Technical support (www.saltek.eu/en/tech-support)

For your solutions, optimization of your projects and designs of additional solutions in existing buildings/installations. We offer extensive technical support of surge protection according to EN 62305.

We are on FB! You can like it!

Přepětí pod kontrolou. KDEKOLI.

SALTEK®
SALTEK Industrials

Like | Follow | Message

SALTEK®
SOLUTION
Protection systems
Protection against lightning

SALTEK®
PRACTICAL GUIDE
Protection systems
Protection against lightning

SALTEK®
Surge Protective Devices
Product Overview

SALTEK®
PRACTICAL GUIDE
Low-voltage power systems
Protection against overvoltage

Novelties 2017

DL-...-RJ45-PoE-AB

Universal protection for Ethernet and PoE lines

- Universal two-stage surge protection of Ethernet with protection of power supply transmitted over the same lines (Power over Ethernet - PoE)
- Two variants 1G and 10G based on network speed standard
- For protection of Ethernet Cat. 6 or 6A line with PoE in Mode A or Mode B against surge voltage
- Installation at the entry to the building, close to protected equipment
- Sockets RJ45 for fast and easy connection
- Replacing products DL-1G-RJ45-POE and DL-1G-RJ45-5V

See page: 193



DL-TLF-HF

New version of SPD for phone lines

- Combination of coarse and fine surge protection
- Suitable for protection of one pair of high-speed analogue line in telecommunication equipment (e.g. VDSL2)
- RJ11 sockets for easy connection of protected line
- Universal plastic adapter for mounting on DIN rail and GND 2 holder in the scope of delivery
- Fully replaces product DL-TLF

See page: 182

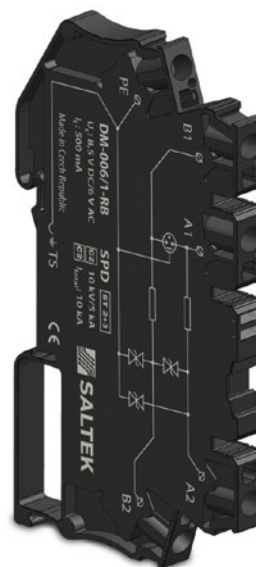


DM...-RB

Surge Protection Devices in screwless terminal blocks

- SPDs with coarse and fine protection for single and two-core lines
- Suitable for industrial applications, mainly for measuring and signalling lines of I&C, electronic security and fire alarm systems
- Using of SPDs for signalling and telecommunication networks increases lifetime and no-failure operation of connected devices
- Significant space saving for multiple data lines, width 6 mm only (without cover)
- Easy wire connection, fast installation and direct grounding via DIN rail clip

See page: 169–174



Features of SALTEK® surge arresters

Example: SLP-275 V/3S+1

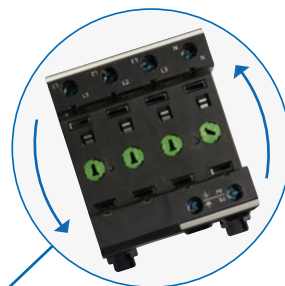
Remote signalling



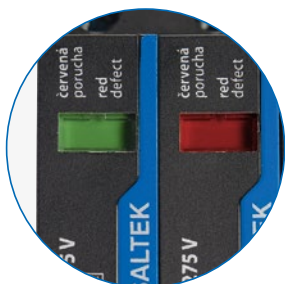
Biconnect terminals



Reversible installation



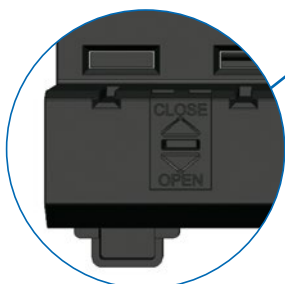
Optical lifetime status indication



Pluggable modules



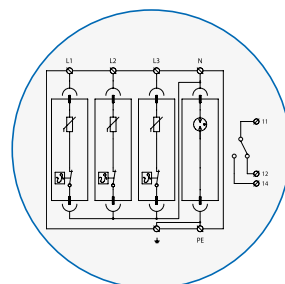
Lock system for fixing of modules



Mechanical coding



Safety thermodynamic disconnecter



Type 1 SPD and Type 1 and 2 SPD.
FLP series



Type 2 SPD. SLP series



Type 3 SPD, e.g., DA series



PV Type 2 SPD. SLP series
for photovoltaic applications



PV Type 1 and 2 SPD. FLP series
for photovoltaic applications



SPD for data/signal/
telecommunication networks

Module marking = easy to identify

To identify arresters in the distribution board easily, SALTEK® pluggable modules and SPDs are marked in colour so it is easy for customers to identify the type of SPD installed in their distribution board.



"N-PE" modules

SPDs connected to LV power supply systems up to 1 000 V

LV power systems
up to 1 000 V



- Office and commercial buildings
- Industrial buildings and installations
- Energy distribution
- Residential buildings
- Smart buildings

- Type 1 – Lightning Current Arresters
- Type 1 and 2 – Lightning Current Arresters
- Type 2 – Surge Arresters
- Type 3 – Surge Protections

Lightning and surge protection

1. Introduction – Legislative

The use of modern sophisticated equipment, consumer electronics and control systems places high demands on their electromagnetic compatibility. Modern electronic control systems provided with circuits with a very high integration level are becoming more and more sensitive to electromagnetic disturbance and overvoltage. The installation of surge protections according to effective legal standards will reduce the danger of their being damaged to a minimum. Technical designs are defined by standards harmonised with EU standards:

- Protective bonding to the same potential including the conductor cross section for the main and additional bonding is defined by standards **EN 50310 ed. 3.**, **IEC 60364-5-54**, **IEC 60364-4-41**
- Lightning protection is specified in the **EN 62305** collection of new standards, harmonised with European standards. **EN 62305-1** deals with general principles.

Lightning protection level	Maximum lightning parameter according to LPL
LPL	First short discharge
LPL I	200 kA
LPL II	150 kA
LPL III	100 kA
LPL IV	100 kA

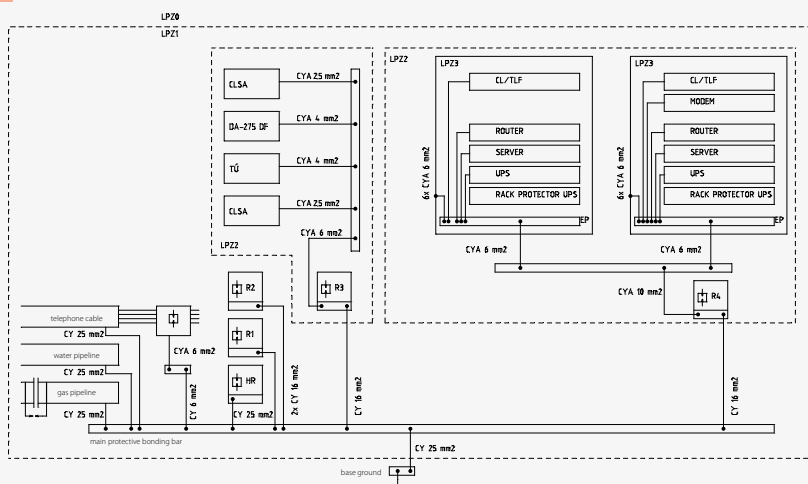
IEC/EN 62305-2 – deals with the risk assessment for buildings or engineering networks struck by lightning.

IEC/EN 62305-3 – deals with the proposal for external lightning protection (lightning conductor).

IEC/EN 62305-4 – deals with protective measures resulting in the reduction of failures of electrical and electronic systems inside the building (zone protection)

- Classification of protections is set forth in standard **EN 61643-11**. Devices are classified into three basic categories:
SPD type 1 – lightning current arresters
SPD type 2 – surge arresters
SPD type 3 – surge arresters
- Classification of low-voltage distribution into impulse resistance categories, including specification of the maximum allowed overvoltage is determined in standard **EN 60664-1**

Example of main and additional bonding



Lightning protection zones

The standard EN 62305-4 defines lightning protection zones LPZ in view of the direct and indirect (electromagnetic pulse – LEMP) lightning effect:

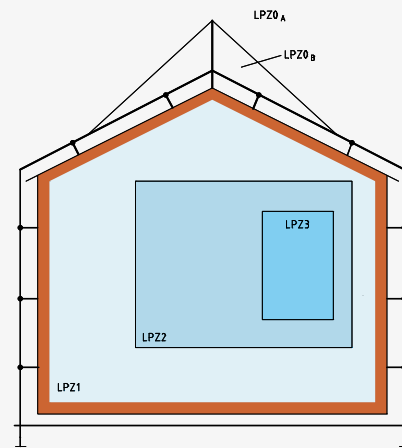
LPZ 0_A – free area (possibility of a direct lightning strike, non-attenuated LEMP)

LPZ 0_B – lightning conductor receiver protection area (direct lightning strike protection, non-attenuated LEMP)

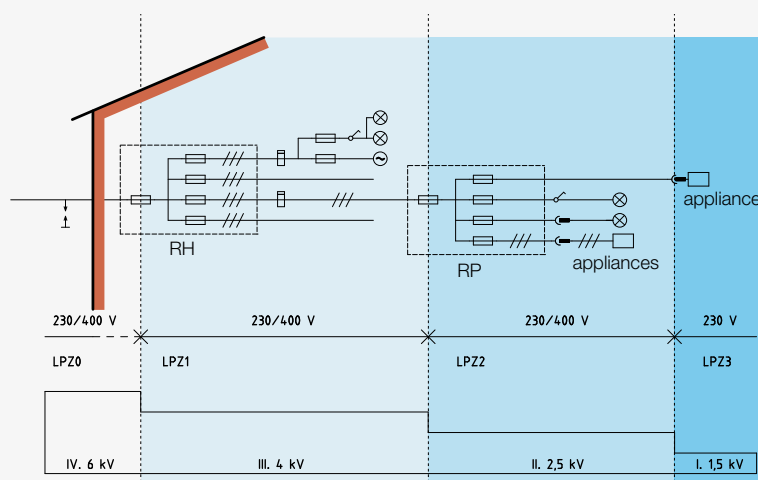
LPZ 1 – inside a building (direct lightning strike is eliminated, attenuated LEMP – depending upon shielding)

LPZ 2 – inside a room – e.g. a server room with a conductive floor, FeAl floors and wall lining (further attenuation of LEMP in connection with a higher shielding level)

LPZ 3 – inside a metal box (e.g. 19" RACK)

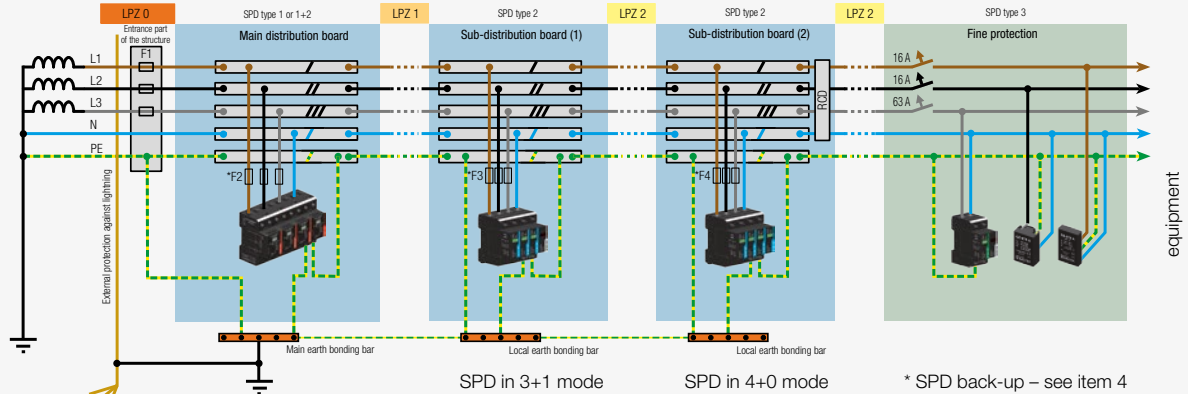


Rated impulse for equipment (acc. to EN 60664-1) or Impulse-withstand voltage.

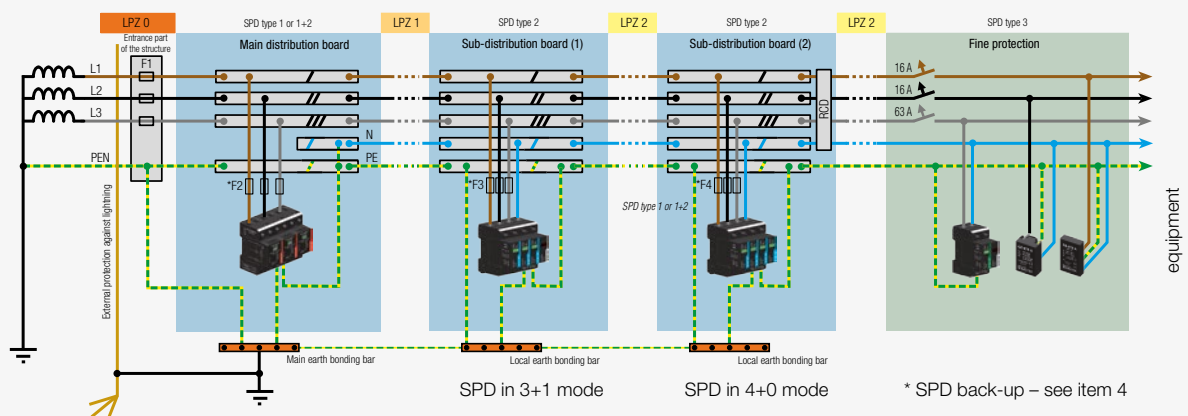


2. Connection of surge protection devices in networks

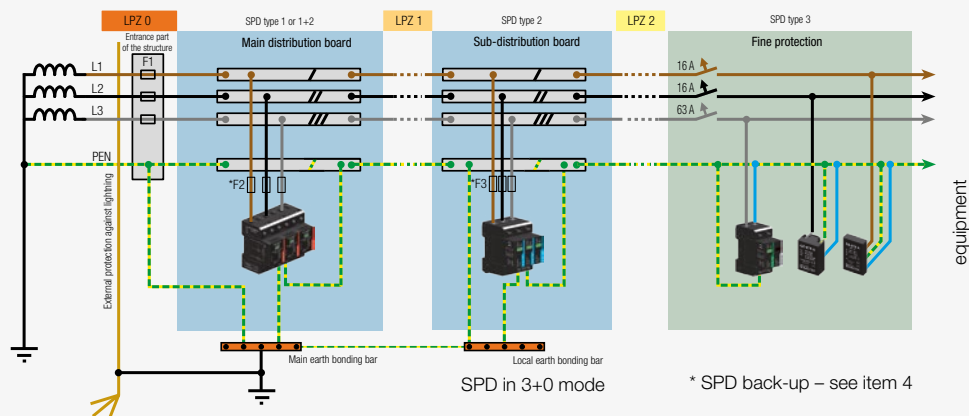
TN-S



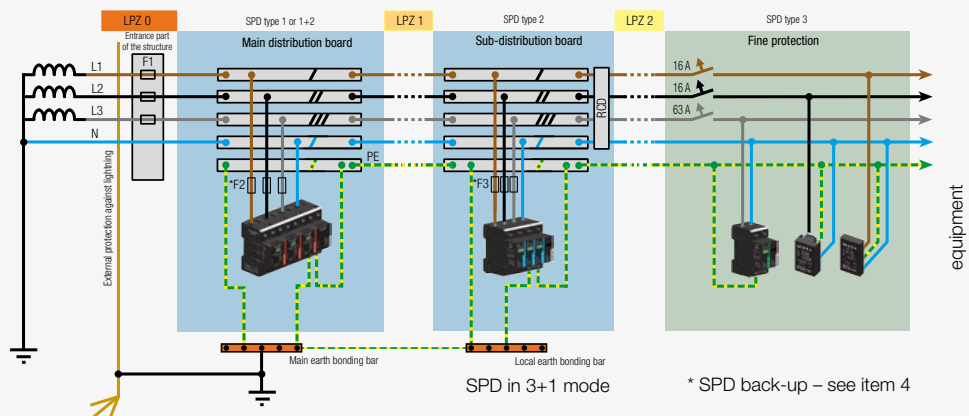
TN-C-S



TN-C



TT



3. SPD dimensioning and their application

Type 1 SPD dimensioning EN 62305		
Location of SPD type 1: at the boundary of LPZ0 and LPZ1 zones in main distribution board		
LPL	Lightning	Total SPD
I.	to 200 kA	100 kA
II.	to 150 kA	75 kA
III.	to 100 kA	50 kA
IV.	to 100 kA	50 kA

Application of SALTEK SPD type 1 EN 62305		
Location of SPD type 1: at the boundary of LPZ0 and LPZ1 zones in main distribution board		
LPL	Lightning	Total SPD
I.	to 200 kA	100 kA
Conditions met by:		
FLP-SG50 V(S)/1	- large industrial facilities - structures of special importance - technological facilities - administrative structures	
FLP-B+C MAXI V(S)	- administrative structures - civic amenities - family houses - near transformer stations	
FLP-25-T1-V(S)		
LPL	Lightning	Total SPD
III.	to 100 kA	50 kA
Conditions met by:		
FLP-12,5 V(S)	- family houses w/o down conductor system with a cable connector in the housing and in the LPS III class - structures in LPS IV class, i.e. structures and halls without persons and interior equipment, structures only with heavy current wiring	
FLP-12,5 V(S)	- on LW earthing supply cables to the structure where the connection is not directly to the public distribution network (i.e. interconnection between 2 structures) - to sub-distribution boards within the structure, with a cable length from the last SPD of over 50 m	

Application of SALTEK SPD type 2 EN 62305	
Location of SPD type 2: at the boundary of LPZ1 and LPZ2 zones or sub-distribution board	
Conditions met by:	
SLP-xxx	- all types of wiring - type of network (TN, IT, T T) - connection method - nominal voltage

Application of SALTEK SPD type 3 EN 62305	
Location of SPD type 3: at the boundary of LPZ2 and LPZ3 zones (technology)	
Conditions met by:	
DA-275 (DIN rail version)	- all types of wiring (if the equipment is in the clamp or distribution board)
DA-275..., CZ...	- all types of wiring (sockets with overvoltage protection at the shortest possible distance from the appliance)
xxx-OVERDRIVE	- all types of wiring adapters for plugs with overvoltage protection

4. Principle of overcurrent protection of SPD

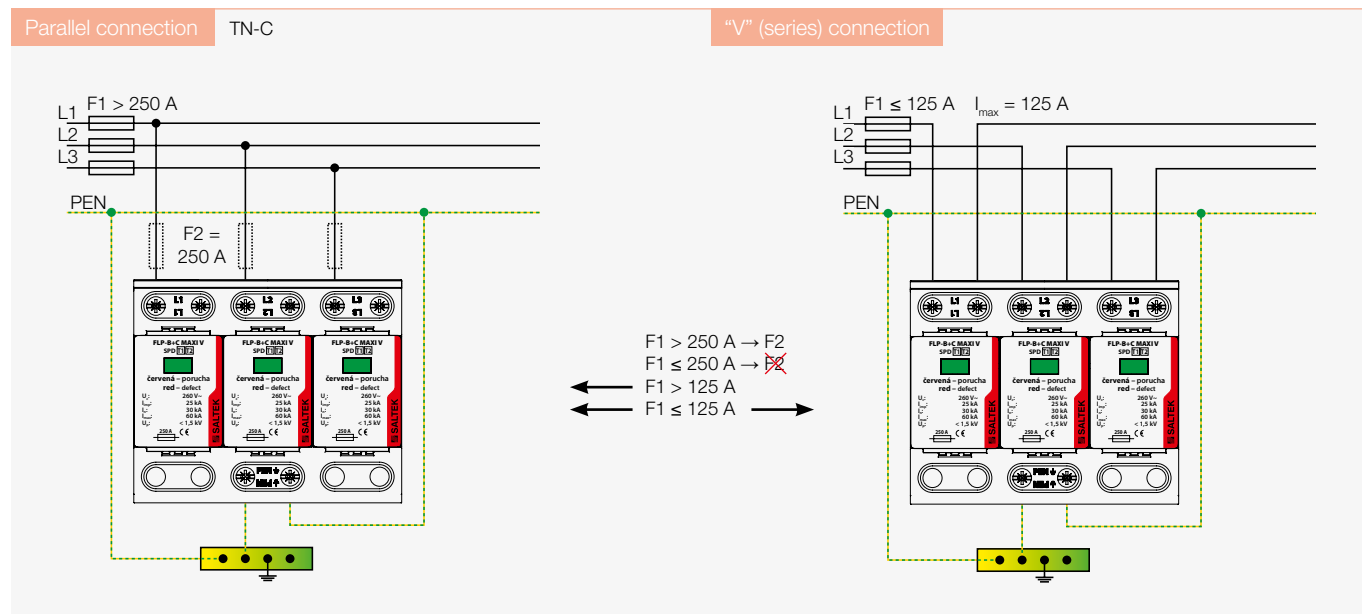
For overcurrent protection of SPD it is important to consider whether we should follow the protection priority principle, which is used in most installations, or the power supply priority principle.

a) protection priority principle – an SPD should be provided with additional protection in this case only if the value of the line protection (F1 fuse) is higher than the value of the respective SPD shown in the catalogue (F2 fuse) and the SPD protection always

has the value shown in the manufacturer's catalogue (parameter – maximum additional protection).

An example of back-up fuse for SPD – FLP-B+C MAXI V – in different supply networks.

The catalogue value of maximum back-up fuse for FLP-B+C MAXI V is 250 A, and 125 A for the "V" connection.



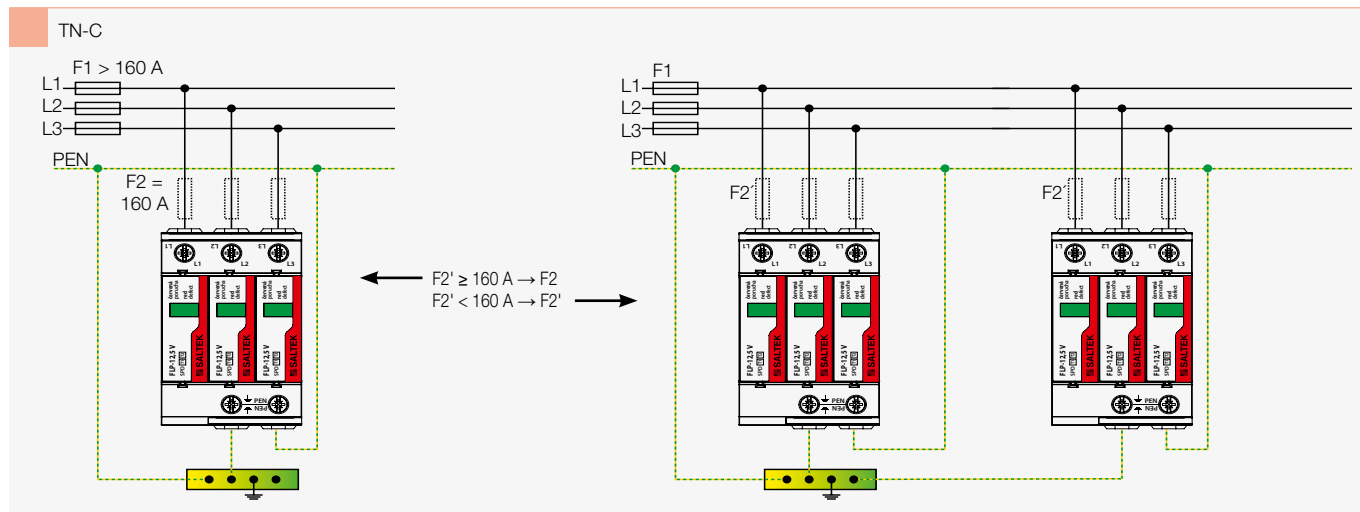
b) supply priority principle – an SPD should always be provided with a back-up fuse in this case, i.e., there are always both F1 and F2 fuses. The value of the SPD back-up (F2 fuse) must be calculated in this case according to the principle of protection selectivity, whereas the value should never be higher than the value specified in the manufacturer's catalogue. Should the calculation show a higher value than that shown in the catalogue, then the value of the SPD back-up fuse is the same as that in the manufacturer's catalogue. Should the value of the SPD back-up be lower than that shown in the catalogue, the whole installation (i.e., the SPD back-up and the

SPD itself) should be provided with at least another protection installation next to the original one, as indicated in the example below.

An example of additional SPD protection - FLP-12,5 V- in different supply networks.

The catalogue value of the maximum back-up for FLP-12,5 V is $F2 = 160 \text{ A}$.

$F2'$ – the value of the SPD back-up established by the calculation



5. Principles for positioning and connecting of lightning and surge arresters

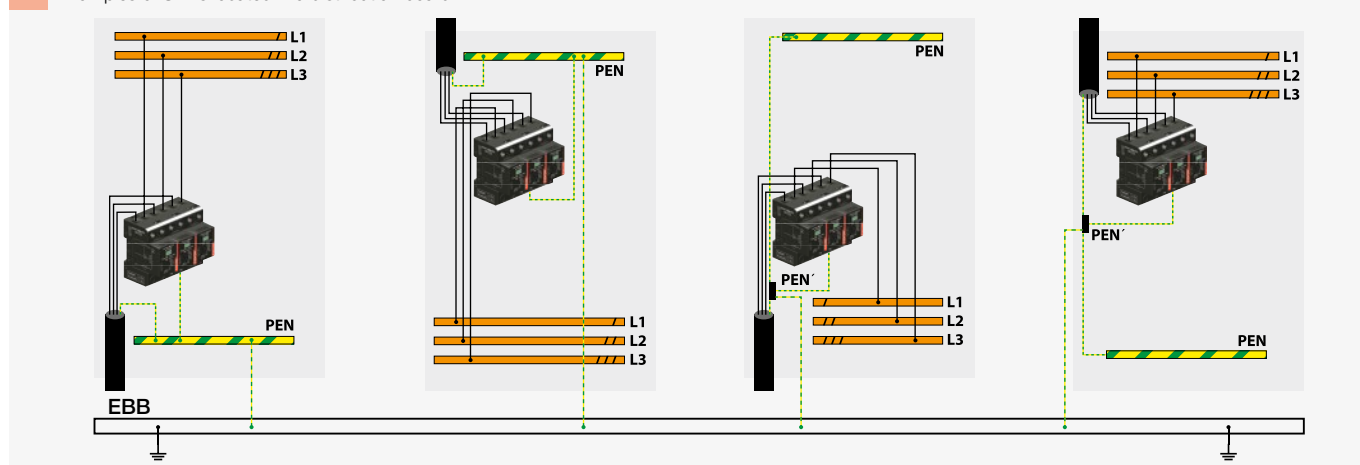
Surge protection devices and lightning current arresters cannot be positioned in the distribution board at random. It should be noted that protection should be located in the closest proximity to the entry feed cable of the distribution board to minimize the area of the induction loop, see the image below.

Another important condition for connecting the SPD is to minimize the impedance of connecting conductors. Stranded conductors or strip lines are preferentially used for connecting SPD type 1. It is also important that the length of the connecting conductors is as small as possible – see IEC 60364-5-53 chapter 534 (the total length of connecting conductors must not exceed 1 m). The cross-section of the connecting conductors should be as large as possible – maximum up to the cross-section according to the type of connector. In SPD type 1 (lightning arresters) the connecting conductors are an integral part of the main bonding – as determined by the IEC 60364-4-41 standard, while minimum cross-sections of the connecting conductors are specified in IEC 60364-5-54.

If SPDs are located in circuits where residual current devices are installed, the SPD should be positioned before the residual current device (not in the residual current device circuit), to prevent spontaneous overload tripping of the RCD affected by surge arresters or lightning current arresters.

Should an overvoltage protection be located in the residual current devices circuit, RCD type S or G should be used. Even in this case it should be noted that the resistance of these residual current devices is not high (5 to 8 kA in wave 8/20 μs) which makes it impossible to use any SPD in the circuit of the residual current device. If you want to prevent a residual current device type S or G responding to surge protection by overload tripping, only a protection SPD type 3 can be used in the circuit of the residual current device.

Examples of SPDs located in a distribution board.



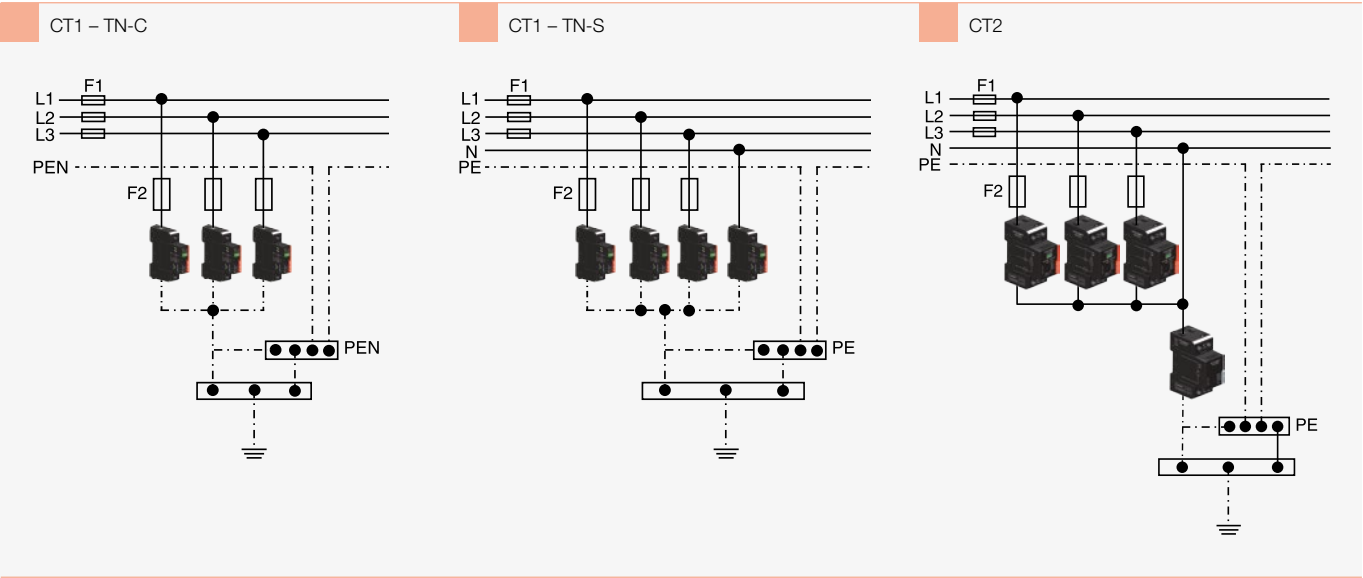
6. SPD dimensioning

Only the SPD type 1 should be dimensioned. Dimensioning of the SPD type 1 should be based on the calculation of the lightning protection level (LPL) for the lightning protection system (LPS).

The table from CLC/TS 50539-12 below shows minimum values of the discharge lightning strike current to the pole considering the lightning protection (LPL) class of the building for the SPD type 1.

If the LPL value is not known, the worse scenario is anticipated			Low voltage networks								
LPL	Maximum current corresponding to LPL	Number of conductors (n)	TT			TN-C	TN-S			IT without neutral conductor	IT with neutral conductor
			Connection mode				Connection mode			Connection mode	
			CT1	CT2			CT1	CT2		CT1	CT2
			L-PE N-PE	L-N	N-PE	L-PEN	L-PE N-PE	L-N	N-PE	L-PE	L-N N-PE
1 or unknown	200 kA		I _{imp} (kA)								
		5	N/A	N/A	N/A	N/A	20,0	20,0	80,0	N/A	N/A
		4	25,0	25,0	100,0	25,0	N/A	N/A	N/A	N/A	25,0
		3	N/A	N/A	N/A	N/A	33,3	33,3	66,7	33,3	N/A
		2	50,0	50,0	100,0	50,0	N/A	N/A	N/A	N/A	50,0
2	150 kA		I _{imp} (kA)								
		5	N/A	N/A	N/A	N/A	15,0	15,0	60,0	N/A	N/A
		4	18,8	18,8	75,0	18,8	N/A	N/A	N/A	N/A	18,8
		3	N/A	N/A	N/A	N/A	25,0	25,0	50,0	25,0	N/A
		2	37,5	37,5	75,0	37,5	N/A	N/A	N/A	N/A	37,5
3 or 4	100 kA		I _{imp} (kA)								
		5	N/A	N/A	N/A	N/A	10,0	10,0	40,0	N/A	N/A
		4	12,5	12,5	50,0	12,5	N/A	N/A	N/A	N/A	12,5
		3	N/A	N/A	N/A	N/A	16,7	16,7	33,3	16,7	N/A
		2	25,0	25,0	50,0	25,0	N/A	N/A	N/A	N/A	25,0

Note: CT1 – SPD connected in the x+0 mode; CT2 – SPD connected in the x+1 mode

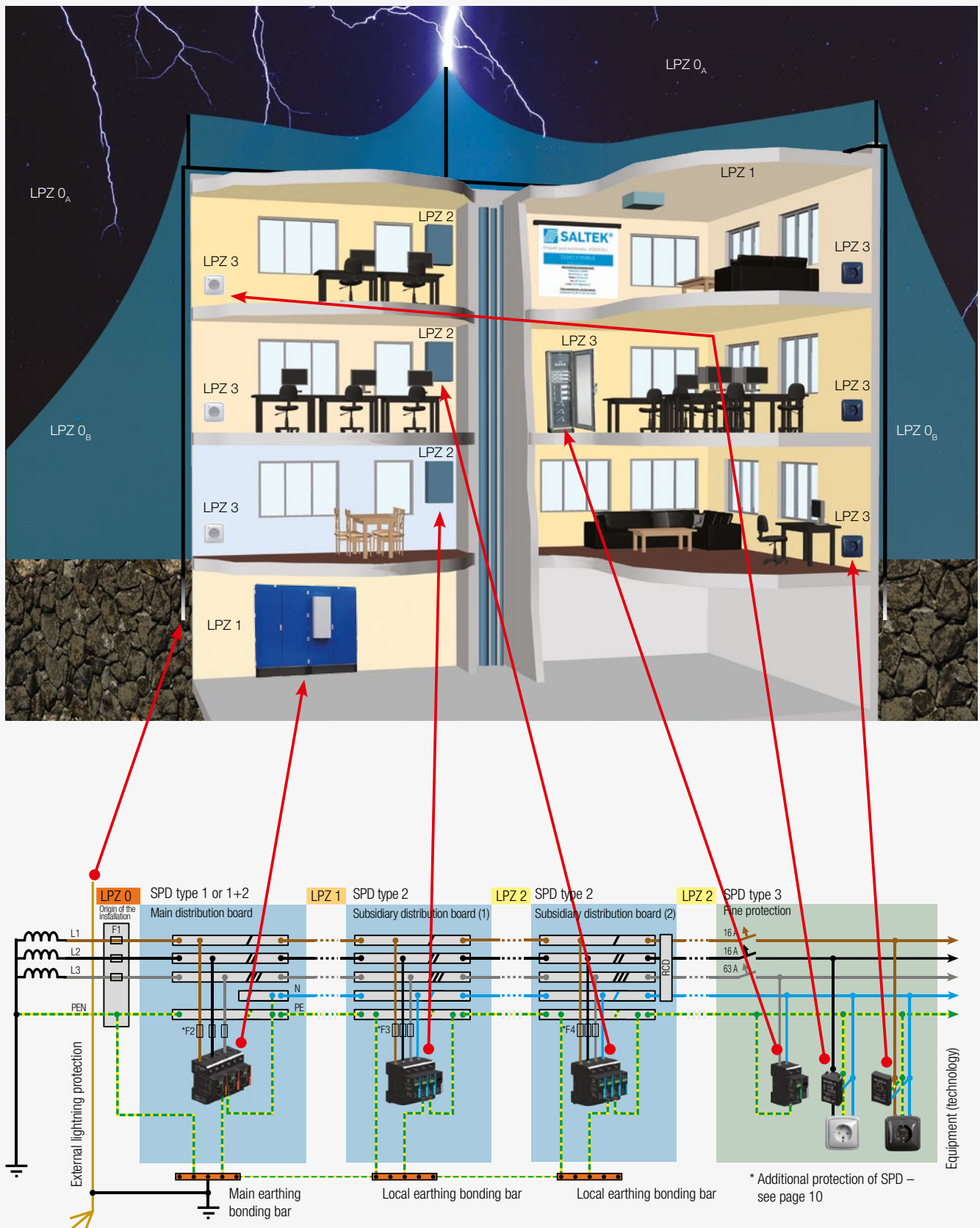


7. Reducing overvoltage in LPZ zones

The principle of reducing voltage using zones lies in progressive reduction of the overvoltage level to a safe value that will not damage the specific equipment or technology. To obtain a safe

overvoltage value, the whole structure is divided into individual zones and the SPD is installed at the boundary between the zones.

LV power systems
up to 1000 V



SALTEK® SPD applications in LV distribution systems

Type of structure	system	main distribution board (in the structure)	sub-distribution board (in the same structure)	end consumer
Family houses, administrative buildings, technologic units, industrial structures	3-ph. TN-C	FLP-B+C MAXI V(S)/3 FLP-25-T1-V(S)/3	distance > 10 m SLP-275 V/3 (S)	distance > 5 m
			distance > 50 m FLP-12,5 V/3 (S)	overvoltage protection to DIN rail: DA-275 V/1(S)+1 (up to 63 A)
			distance > 100 m FLP-B+C MAXI V(S)/3	DA-275 V/3(S)+1 (up to 63 A)
		FLP-25-T1-V(S)/3	distance < 10 m SLP-275 V/3 (S)	DA-275-DJ25-(S) (25 A)
		FLP-B+C MAXI V(S)/3 FLP-25-T1-V(S)/3 + SLP-275 V/3 (S) (also with terminals to the equipment)	distance > 10 m SLP-275 V/3 (S)	overvoltage protection to a DIN rail with a RFI filter: DA-275-DFx-(S) (x = 2, 6, 10, 16 A)
			distance > 50 m FLP-12,5 V/3 (S)	DA-275 DF25 for 25 A
			distance > 100 m FLP-B+C MAXI V(S)/3	DA-275-DFix (x = 6, 10, 16 A)
	3-ph. TN-S	FLP-B+C MAXI V(S)/4 FLP-25-T1-V(S)/4	distance > 10 m SLP-275 V/4 (S)	RACK-PROTECTOR multiple sockets to 19" stands
			distance > 50 m FLP-12,5 V/4 (S)	CZ-275-A, DA-275 CZS
			distance > 100 m FLP-B+C MAXI V(S)/4	DA-275-A, DA-275-S
		FLP-25-T1-V(S)/4	distance < 10 m SLP-275 V/4 (S)	
		FLP-B+C MAXI V(S)/4 FLP-25-T1-V(S)/4 + SLP-275 V/4 (S) (also with terminals to the equipment)	distance > 10 m SLP-275 V/4 (S)	for additional assembly to the sockets and appliances
			distance > 50 m FLP-12,5 V/4 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/4	
Blocks of flats with 12 or more apartments (SPD located in the apart. distr. boards)	3-ph. TN-C-S	FLP-B+C MAXI V(S)/3 FLP-25-T1-V(S)/3	distance > 10 m SLP-275 V/4 (S)	XX-OVERDRIVE socket adapters
			distance > 50 m FLP-12,5 V/4 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/4	
	3-ph. TN-S	FLP-25-T1-V(S)/3	distance < 10 m SLP-275 V/4 (S)	
			distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	
	1-ph. TN-C	FLP-B+C MAXI V(S)/3 FLP-25-T1-V(S)/3 + SLP-275 V/3 (S) (also with terminals to the equipment)	distance > 100 m FLP-B+C MAXI V(S)/4	
			FLP-12,5 V/3 (S)	
			FLP-12,5 V/2 (S)	
Demanding applications (structures – operations classified at the risk of explosion, chemical plants..., structures of a very high importance)	3-ph. TN-C	3x FLP-SG50 V(S)/1	distance < 10 m 1x SLP-275 V/3 (S)	distance < 5 m place before the overvoltage protection RTO-xx (xx – rated current 16, 35 or 63 A)
			distance > 10 m SLP-275 V/3 (S)	number according to connection
			distance > 50 m FLP-12,5 V/3 (S)	1-phase TN-C 1x RTO-xx
		with terminals to the equipment 3x FLP-SG50 V(S)/1 + 1x SLP-275 V/3 (S)	distance > 100 m FLP-B+C MAXI V(S)/3	1-phase TN-S 2x RTO-xx
			distance < 10 m 1x SLP-275 V/4 (S)	3-phase TN-C 3x RTO-xx
			distance > 10 m SLP-275 V/4 (S)	3-phase TN-S 4x RTO-xx
	3-ph. TN-S	4x FLP-SG50 V(S)/1	distance > 50 m FLP-12,5 V/4 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/4	
			distance < 10 m 1x SLP-275 V/4 (S)	
		with terminals to the equipment 4x FLP-SG50 V(S)/1 + 1x SLP-275 V/4(S)	distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/4	
	3-ph. TN-C-S	division in the main distribution board 3x FLP-SG50 V(S)/1	distance < 10 m 1x SLP-275 V/4 (S)	
			distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	
	3-ph. TN-S	with terminals to the equipment 3x FLP-SG50 V(S)/1 + 1x SLP-275 V/4(S)	distance > 100 m FLP-B+C MAXI V(S)/4	
			FLP-12,5 V/4 (S)	
			FLP-B+C MAXI V(S)/4	

SALTEK® SPD applications in LV distribution systems

LV power systems
up to 1000 V

Type of structure	system	main distribution board (in the structure)	sub-distribution board (in the same structure)	end consumer
Structures equipped with ESE (active down conductor)	3-ph. TN-C	3x FLP-SG50 V(S)/1	distance > 10 m SLP-275 V/3 (S)	distance > 5 m
			distance > 50 m FLP-12,5 V/3 (S)	overvoltage protection to DIN rail: DA-275 V/1(S)+1 (do 63 A) DA-275 V/3(S)+1 (do 63 A) DA-275-DJ25-(S) (25 A)
			distance > 100 m FLP-B+C MAXI V(S)/3	
		3x FLP-SG50 V(S)/1	distance < 10 m SLP-275 V/3 (S)	overvoltage protection to DIN rail with RFI filter: DA-275-DFx-(S) (x = 2, 6, 10, 16 A) DA-275 DF25 for 25 A DA-275-DFix (x = 6, 10, 16 A)
		also with terminals to the equipment 3x FLP-SG50 V(S)/1 + SLP-275 V/3(S)	distance > 10 m SLP-275 V/3 (S)	
			distance > 50 m FLP-12,5 V/3 (S)	
	3-ph. TN-S	4x FLP-SG50 V(S)/1	distance > 10 m SLP-275 V/4 (S)	RACK-PROTECTOR multiple sockets for 19" stands
			distance > 50 m FLP-12,5 V/4 (S)	CZ-275-A, DA-275 CZS DA-275-A, DA-275-S for additional mounting to sockets and appliances
			distance > 100 m FLP-B+C MAXI V(S)/4	
		4x FLP-SG50 V(S)/1	distance < 10 m SLP-275 V/4 (S)	
		also with terminals to the equipment 4x FLP-SG50 V(S)/1 + SLP-275 V/4 (S)	distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	XX-OVERDRIVE socket adapters
	3-ph. TN-C-S	3x FLP-SG50 V(S)/1	distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/4	
		3x FLP-SG50 V(S)/1	distance < 10 m SLP-275 V/4 (S)	
		also with terminals to the equipment 3x FLP-SG50 V(S)/1 + SLP-275 V/3 (S)	distance > 10 m SLP-275 V/4 (S)	
			distance > 50 m FLP-12,5 V/4 (S)	
Technology with 1-phase connection	1-ph. TN-C	FLP-SG50 V(S)/1	distance < 10 m SLP-275 V/1 (S)	distance < 5 m SPD back-up RTO-xx (xx – rated current 16, 35 or 63 A)
			distance > 10 m SLP-275 V/1 (S)	
		with terminals to the equipment FLP-SG50 V(S)/1 + SLP-275 V/1(S)	distance > 50 m FLP-12,5 V/1 (S)	number according to connection
			distance > 100 m FLP-B+C MAXI V(S)/1	1-phase TN-C 1x RTO-xx
	1-ph. TN-S	2x FLP-SG50 V(S)/1	distance < 10 m 1x SLP-275 V/2 (S)	1-phase TN-S 2x RTO-xx
			distance > 10 m 1x SLP-275 V/2 (S)	3-phase TN-C 3x RTO-xx
		with terminals to the equipment 2x FLP-SG50 V(S)/1 + 1x SLP-275 V/2 (S)	distance > 50 m 1x FLP-12,5 V/2 (S)	3-phase TN-S 4x RTO-xx
			distance > 100 m FLP-B+C MAXI V(S)/2	
	1-ph. TN-C-S	division in the main distribution board FLP-SG50 V(S)/1	distance < 10 m 1x SLP-275 V/2 (S)	
			distance > 10 m 1x SLP-275 V/2 (S)	
		with terminals to the equipment FLP-SG50 V(S)/1 + SLP-275 V/1 (S)	distance > 50 m 1x FLP-12,5 V/2 (S)	
			distance > 100 m FLP-B+C MAXI V(S)/2	

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

SPDs connected to LV power supply systems up to 1 000 V

Lightning Current Arresters SPDs Type 1 and Type 1 and 2



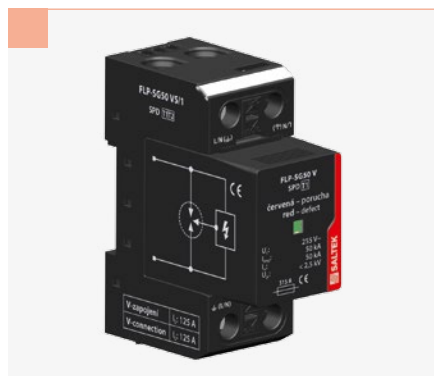
- Lightning current arresters, SPDs Type 1
- Combined lightning current and surge arresters, SPDs Type 1 and 2
- Installation mainly to main distribution boards, at the boundary of zones LPZ 0 and LPZ 1 or higher
- Line FLP-SG50 V
- Line FLP-25-T1-V
- Line FLP-B+C MAXI V
- Line FLP-12,5 V

FLP-SG50 V(S)/1

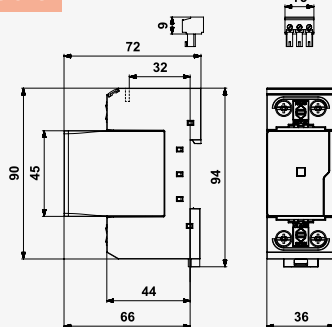
SPD type 1 – Lightning Current Arrester

pluggable module, visual fault signalling, module locking

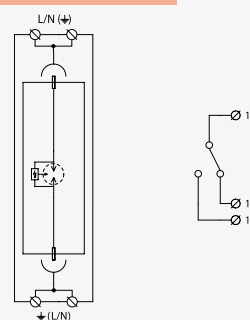
- encapsulated high-performance spark gap
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in the hardest application in heavy, chemical and energy industry
- coordination with SPD type 2 (SLP-275 V) even without surge separating inductors
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		FLP-SG50 V/1	FLP-SG50 VS/1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	255 V AC	255 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 μ s)	I_n	50 kA	50 kA
Voltage protection level	U_p	2,5 kV	2,5 kV
Ability to independently switch off the following current	I_i	50 kA	50 kA
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		315 A gL/gG	315 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		no	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1	EN 61643-11:2012, IEC 61643-11:2011 / T1
Ordering number		8595090540540	8595090540533

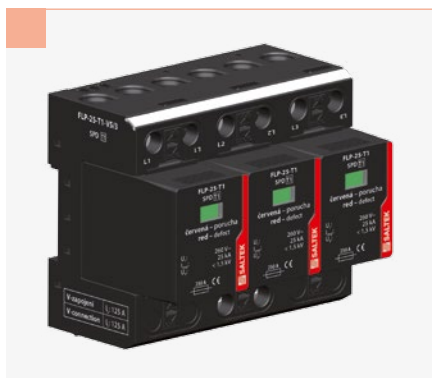
Spare module	FLP-SG50 V/0	FLP-SG50 VS/0
Ordering number	8595090542278	8595090541486

FLP-25-T1-V(S)/3

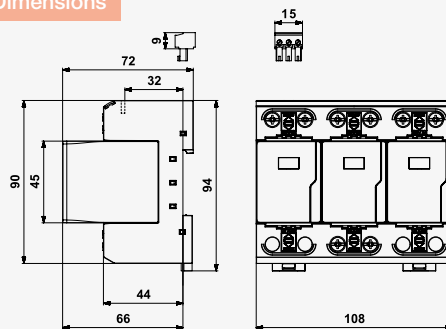
SPD type 1 – Lightning Current Arrester

pluggable module, visual fault signalling, module locking

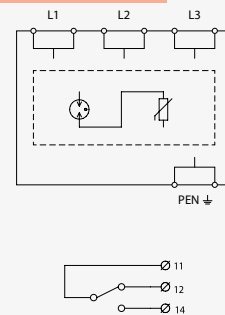
- three-pole high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office and industrial buildings
- coordination with SPD type 2 (SLP-275 V) even without surge separating inductors
- optional remote fault signalling (S)
- no follow current, no leakage current



Dimensions



Basic circuit diagram



Parameter/Type		FLP-25-T1-V/3	FLP-25-T1-VS/3
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		no	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1	EN 61643-11:2012, IEC 61643-11:2011 / T1
Ordering number		8595090553007	8595090553014

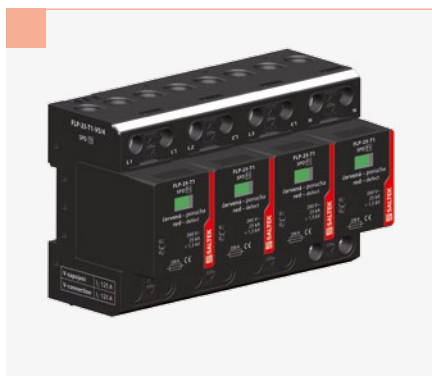
Spare module		FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number		8595090554530	8595090554530

FLP-25-T1-V(S)/4

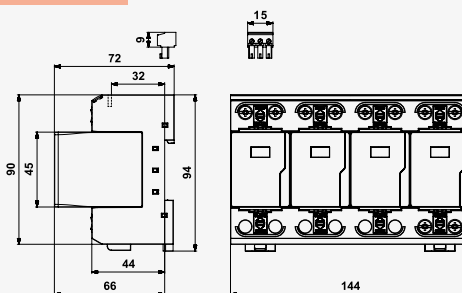
SPD type 1 – Lightning Current Arrester

pluggable module, visual fault signalling, module locking

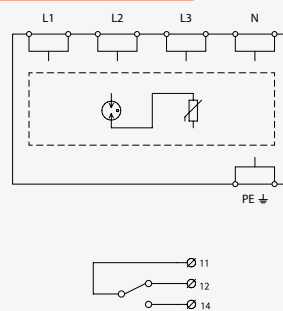
- four-pole high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office and industrial buildings
- coordination with SPD type 2 (SLP-275 V) even without surge separating inductors
- optional remote fault signalling (S)
- no follow current, no leakage current



Dimensions



Basic circuit diagram



Parameter/Type		FLP-25-T1-V/4	FLP-25-T1-VS/4
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1	EN 61643-11:2012, IEC 61643-11:2011 / T1
Ordering number		8595090553021	8595090553038

Spare module	FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number	8595090554530	8595090554530

FLP-25-T1-V(S)/3+1

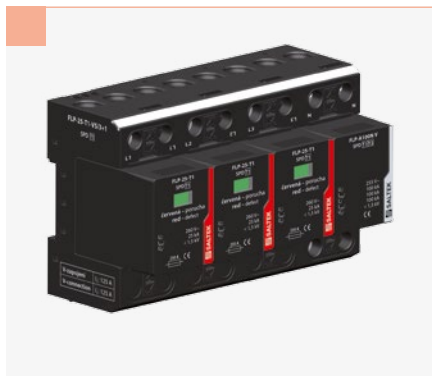
SPD type 1 – Lightning Current Arrester

pluggable module, visual fault signalling, module locking

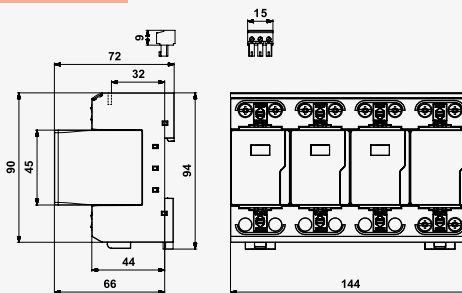
- combination of three-pole high performance lightning current arrester and encapsulated efficiency spark gap, connected in the 3+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to

- main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office and industrial buildings

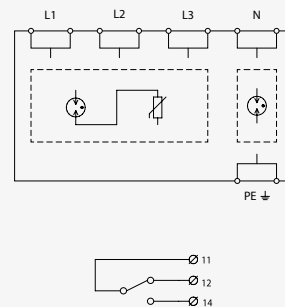
- coordination with SPD type 2 (SLP-275 V) even without surge separating inductors
- optional remote fault signalling (S)
- no leakage current



Dimensions



Basic circuit diagram



Parameter / Type		FLP-25-T1-V/3+1	FLP-25-T1-VS/3+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	260 V AC	260 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 μ s) N-PE	I_{imp}	100 kA	100 kA
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	2,2 kV	2,2 kV
Ability to independently switch off the following current N-PE	I_{fi}	0,1 kA	0,1 kA
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time L-N	t_a	100 ns	100 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250V/0,5A AC, 250V/0,1A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1	EN 61643-11:2012, IEC 61643-11:2011 / T1
Ordering number		8595090553045	8595090553052

Spare module	FLP-25-T1-V/0	FLP-A100N V/0	FLP-25-T1-V/0	FLP-A100N V/0
Ordering number	8595090554530	8595090535362	8595090554530	8595090535362

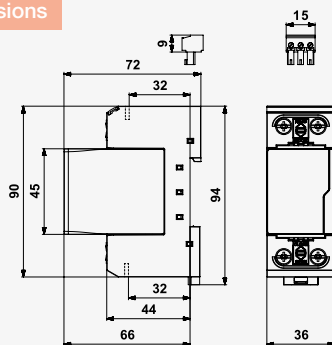
FLP-A...N VS/NPE

SPD type 1 – Lightning Current Arrester, Spark Gap for N-PE N-PE module, pluggable module

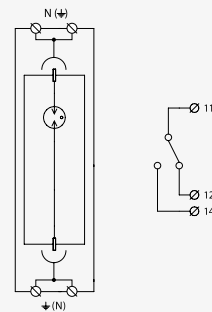
- for connection Type 1 SPDs in 1+1 and 3+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes



Dimensions



Basic circuit diagram



Parameter/ Type		FLP-A50N VS/NPE	FLP-A100N VS/NPE
Maximum operating voltage	U_c	255 V AC	255 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	50 kA	100 kA
Nominal discharge current (8/20 μ s)	I_n	50 kA	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA	100 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Ability to independently switch off the following current	I_{fi}	0,1 kA	0,1 kA
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		remote signalling of N-PE module shows the presence of the replaceable module	remote signalling of N-PE module shows the presence of the replaceable module
Remote indication		potential-free change-over contact	potential-free change-over contact
Remote indication contacts		250V/0,5A AC, 250V/0,1A DC	250V/0,5A AC, 250V/0,1A DC
Cross-section of remote indication conductors		1,5 mm ²	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1	EN 61643-11:2012, IEC 61643-11:2011 / T1
Ordering number		8595090535737	8595090535744

Spare module	FLP-A50N V/O	FLP-A100N V/O
Ordering number	8595090535379	8595090535362

FLP-B+C MAXI V(S)/1

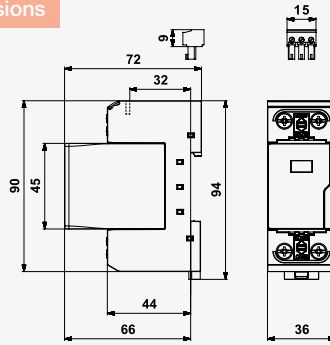
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

- high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no follow current, no leakage current

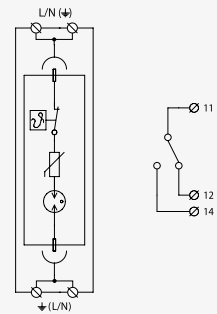
LV power systems
up to 1000 V



Dimensions



Basic circuit diagram



Parameter / Type		FLP-B+C MAXI V/1	FLP-B+C MAXI VS/1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550914	8595090535331

Spare module		FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number		8595090535355	8595090535355

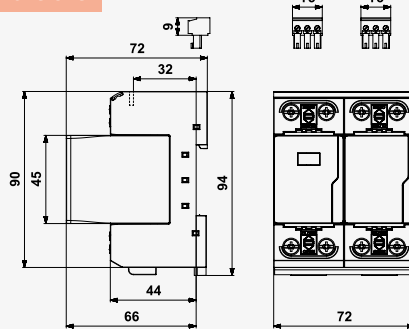
FLP-B+C MAXI V(S)/1+1

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

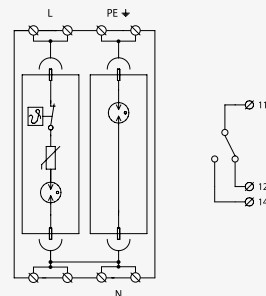
- combination of high performance lightning current arrester and encapsulated efficiency spark gap, connected in the 1+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to
 - main distribution boards
 - for protection against impact of direct or indirect lightning strikes in wide range of applications with single-phase networks, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no leakage current



Dimensions



Basic circuit diagram



Parameter/Type		FLP-B+C MAXI V/1+1	FLP-B+C MAXI VS/1+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	260 V AC	260 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 μ s) N-PE	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 μ s) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	50 kA	50 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	100 kA	100 kA
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	2,2 kV	2,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time L-N	t_a	100 ns	100 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550952	8595090537830

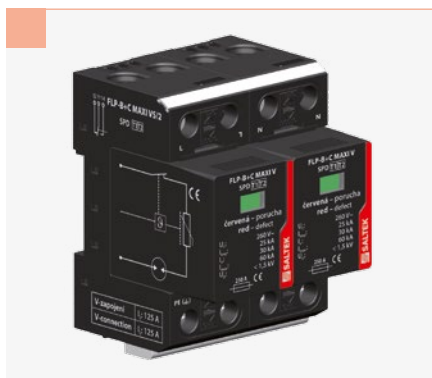
Spare module	FLP-B+C MAXI V/0	FLP-A50N V/0	FLP-B+C MAXI V/0	FLP-A50N V/0
Ordering number	8595090535355	8595090535379	8595090535355	8595090535379

FLP-B+C MAXI V(S)/2

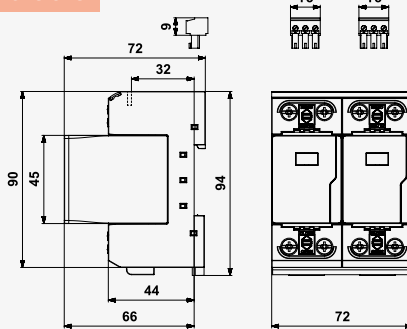
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester

pluggable module, visual fault signalling, module locking

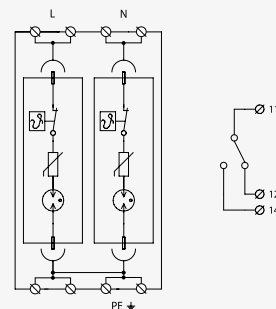
- high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no follow current, no leakage current



Dimensions



Basic circuit diagram



Parameter / Type		FLP-B+C MAXI V/2	FLP-B+C MAXI VS/2
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550921	8595090537847

Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	8595090535355	8595090535355

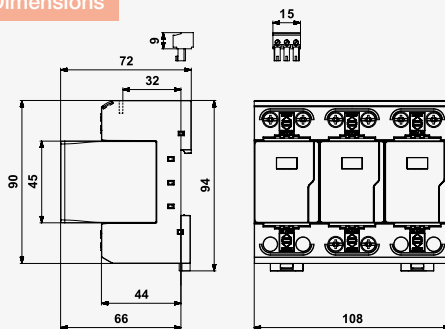
FLP-B+C MAXI V(S)/3

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

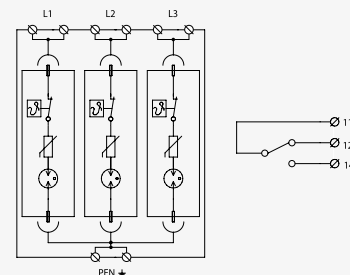
- three-pole high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no follow current, no leakage current



Dimensions



Basic circuit diagram



Parameter / Type		FLP-B+C MAXI V/3	FLP-B+C MAXI VS/3
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550938	8595090535706

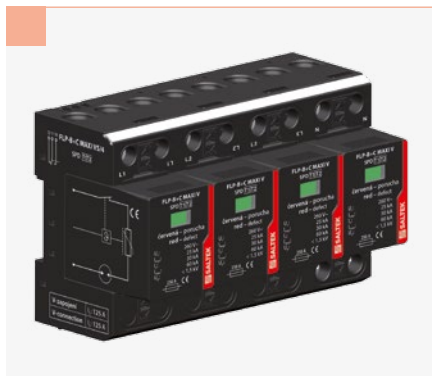
Spare module		FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number		8595090535355	8595090535355

FLP-B+C MAXI V(S)/4

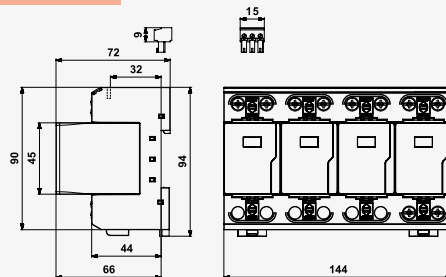
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester

pluggable module, visual fault signalling, module locking

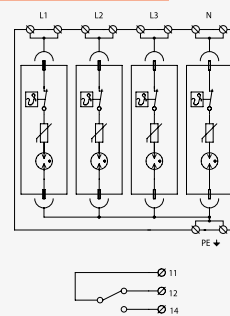
- four-pole high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no follow current, no leakage current



Dimensions



Basic circuit diagram



Parameter/Type		FLP-B+C MAXI V/4	FLP-B+C MAXI VS/4
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	260 V AC	260 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550945	8595090535713

Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	8595090535355	8595090535355

FLP-B+C MAXI V(S)/3+1

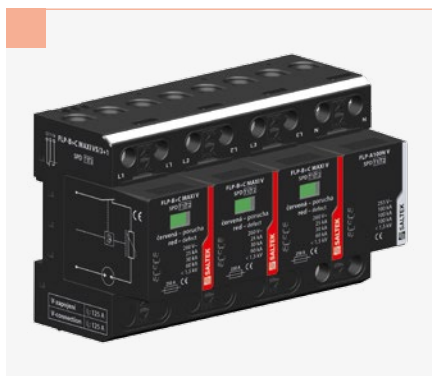
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

- combination of three-pole high performance lightning current arrester and encapsulated efficiency spark gap, connected in the 3+1 mode
- installation at the boundary of zones

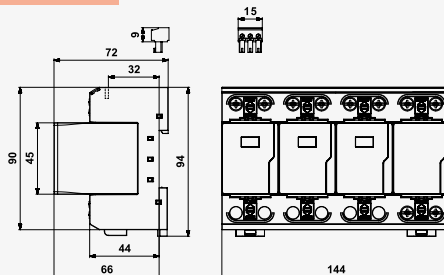
LPZ 0 and LPZ 1 or higher, mainly to main distribution boards

- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office

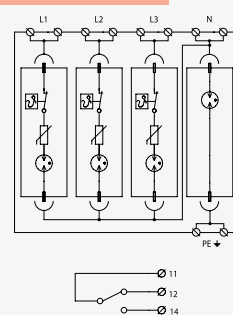
- or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no leakage current



Dimensions



Basic circuit diagram



Parameter / Type		FLP-B+C MAXI V/3+1	FLP-B+C MAXI VS/3+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	260 V AC	260 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 μ s) N-PE	I_{imp}	100 kA	100 kA
Nominal discharge current (8/20 μ s) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	100 kA	100 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	100 kA	100 kA
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	2,2 kV	2,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time L-N	t_a	100 ns	100 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090550969	8595090535720

Spare module	FLP-B+C MAXI V/0	FLP-A100N V/0	FLP-B+C MAXI V/0	FLP-A100N V/0
Ordering number	8595090535355	8595090535362	8595090535355	8595090535362

FLP-B+C MAXI150 V(S)/1

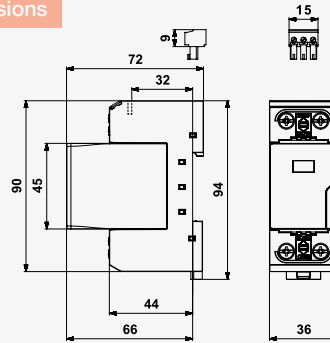
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

- high performance lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, mainly to main distribution boards
- for protection against impact of direct or indirect lightning strikes in wide range of applications – houses, office or industrial buildings, resp. to sub-distribution boards in large buildings
- optional remote fault signalling (S)
- no follow current, no leakage current

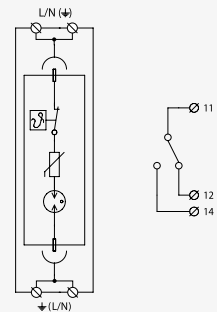
LV power systems
up to 1000 V



Dimensions



Basic circuit diagram



Parameter / Type		FLP-B+C MAXI150 V/1	FLP-B+C MAXI150 VS/1
Nominal voltage	U_n	120 V AC	120 V AC
Maximum operating voltage	U_c	150 V AC	150 V AC
Nominal load current for "V" connection	I_L	125 A	125 A
Lightning impulse current (10/350 μ s)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		250 A gL/gG	250 A gL/gG
Maximum overcurrent protection for "V" connection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090558347	8595090558354

Spare module	FLP-B+C MAXI150 V/0	FLP-B+C MAXI150 V/0
Ordering number	8595090558392	8595090558392

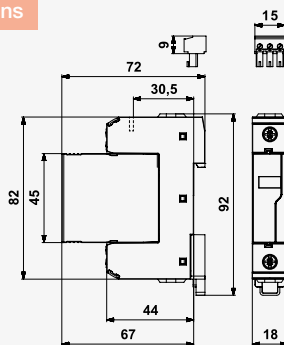
FLP-12,5 V/1 (S)

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling

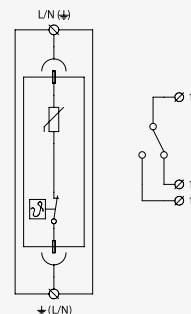
- varistor lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		FLP-12,5 V/1	FLP-12,5 V/1 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Lightning impulse current (10/350 μ s)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090534211	8595090534228

Spare module		FLP-12,5 V/0	FLP-12,5 V/0
Ordering number		8595090534310	8595090534310

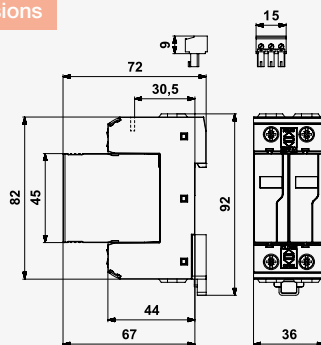
FLP-12,5 V/1(S)+1

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

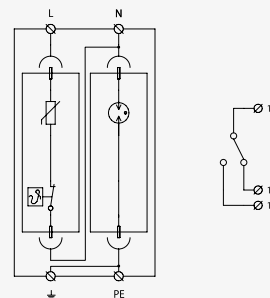
- combination of varistor lightning current arrester and encapsulated efficiency spark gap, connected in the 1+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



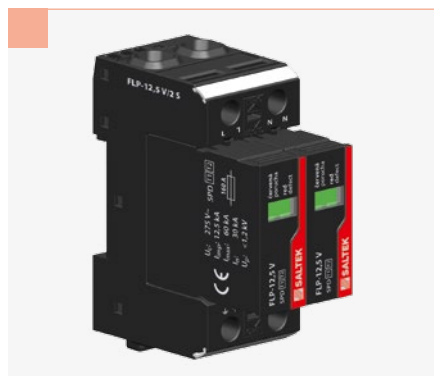
Parameter / Type		FLP-12,5 V/1+1	FLP-12,5 V/1S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Lightning impulse current (10/350 μ s) L-N	I_{imp}	12,5 kA	12,5 kA
Lightning impulse current (10/350 μ s) N-PE	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 μ s) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	60 kA	60 kA
Voltage protection level at 5 kA L-N	U_p	0,9 kV	0,9 kV
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090534235	8595090534242

Spare module	FLP-12,5 V/0	FLP-NPE 25 V/0	FLP-12,5 V/0	FLP-NPE 25 V/0
Ordering number	8595090534310	8595090534327	8595090534310	8595090534327

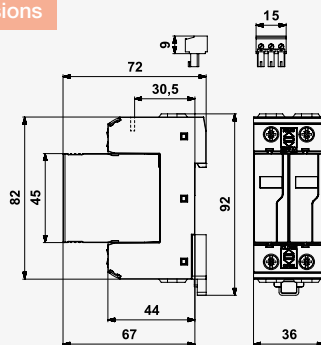
FLP-12,5 V/2 (S)

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

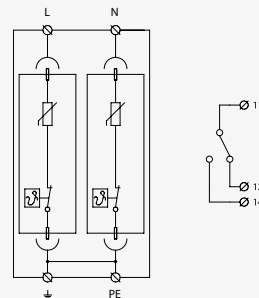
- two-pole varistor lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		FLP-12,5 V/2	FLP-12,5 V/2 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Lightning impulse current (10/350 μ s)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090538097	8595090551829

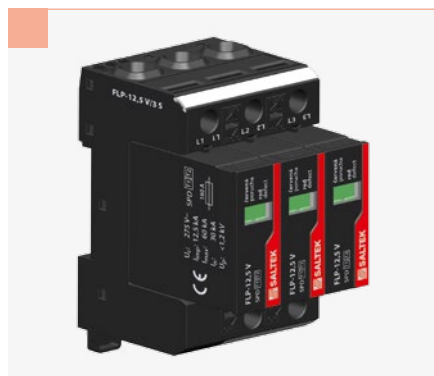
Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	8595090534310	8595090534310

FLP-12,5 V/3 (S)

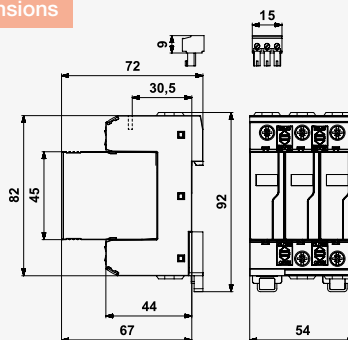
SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester

pluggable module, visual fault signalling, module locking

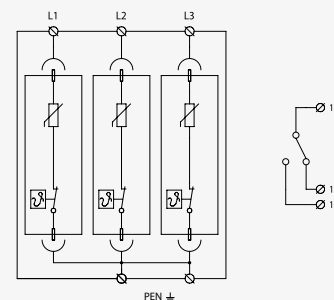
- three-pole varistor lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



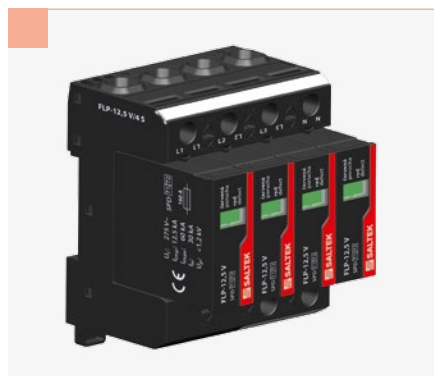
Parameter/Type		FLP-12,5 V/3	FLP-12,5 V/3 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Lightning impulse current (10/350 μ s)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090534259	8595090534266

Spare module		FLP-12,5 V/0	FLP-12,5 V/0
Ordering number		8595090534310	8595090534310

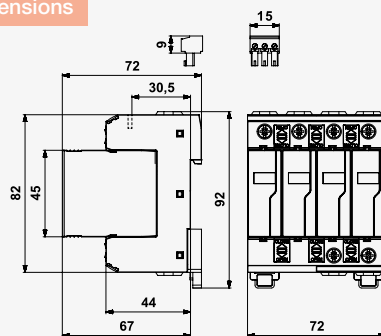
FLP-12,5 V/4 (S)

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

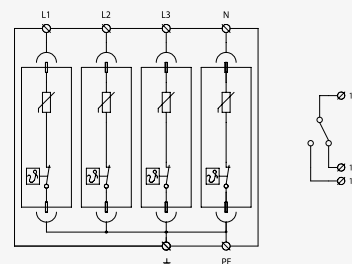
- four-pole varistor lightning current arrester
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		FLP-12,5 V/4	FLP-12,5 V/4 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Lightning impulse current (10/350 μ s)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090534297	8595090534303

Spare module		FLP-12,5 V/0	FLP-12,5 V/0
Ordering number		8595090534310	8595090534310

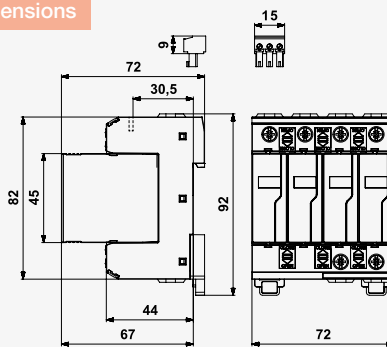
FLP-12,5 V/3(S)+1

SPD type 1 and type 2 – Lightning Current Arrester and Surge Arrester
pluggable module, visual fault signalling, module locking

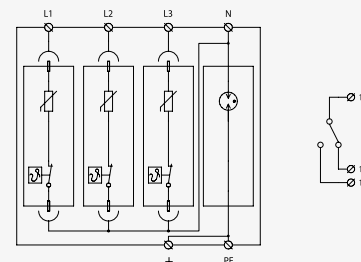
- combination of varistor lightning current arrester and encapsulated efficiency spark gap, connected in the 3+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher, for objects in LPL III and IV
- for protection against impact of partial lightning currents, induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		FLP-12,5 V/3+1	FLP-12,5 V/3S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Lightning impulse current (10/350 μ s) L-N	I_{imp}	12,5 kA	12,5 kA
Lightning impulse current (10/350 μ s) N-PE	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 μ s) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	50 kA	50 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	100 kA	100 kA
Voltage protection level at 5 kA L-N	U_p	0,9 kV	0,9 kV
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T1,T2	EN 61643-11:2012, IEC 61643-11:2011 / T1,T2
Ordering number		8595090534273	8595090534280

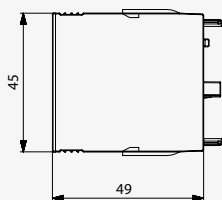
Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	8595090534310	8595090534310

FLP-...V/0

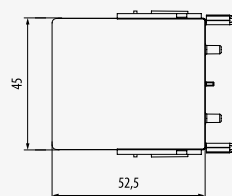
Spare modules for Lightning Current Arresters
SPDs Type 1 and Type 1 and 2



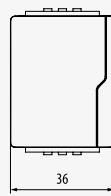
Dimensions



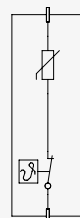
FLP-12.5 V/0
FLP-NPE 25 V/0



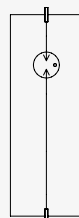
FLP-SG50 V/0
FLP-SG50 VS/0
FLP-25-T1-V/0
FLP-B+C MAXI V/0
FLP-B+C MAXI150 V/0
FLP-A50N V/0
FLP-A100N V/0



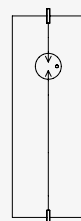
Basic circuit diagram



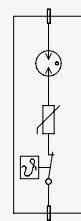
FLP-12,5 V/0



FLP-NPE 25 V/0



FLP-SG50 V/0
FLP-SG50 VS/0
FLP-A50N V/0
FLP-A100N V/0



FLP-25-T1-V/0
FLP-B+C MAXI V/0
FLP-B+C MAXI150 V/0

Type	Ordering number
FLP-SG50 V/0	8595090542278
FLP-SG50 VS/0	8595090541486
FLP-25-T1-V/0	8595090554530
FLP-A50N V/0	8595090535379
FLP-A100N V/0	8595090535362
FLP-B+C MAXI V/0	8595090535355
FLP-B+C MAXI150 V/0	8595090558392
FLP-12,5 V/0	8595090534310
FLP-NPE 25 V/0	8595090534327

SPDs connected to LV power supply systems up to 1 000 V

LV power systems
up to 1 000 V

Surge Arresters SPDs Type 2



- Surge Arresters, SPDs Type 2
- Suitable for TN, TT, IT networks
- Installation mainly to sub-distribution boards

- Line SLP-... V
- Line SLP-... VB

SLP-... V/1

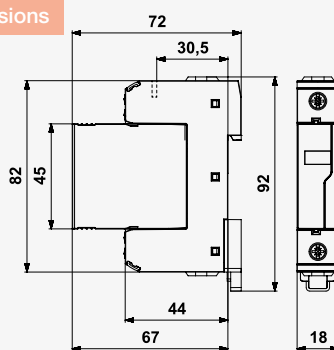
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling

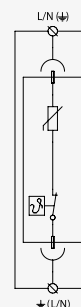
- varistor surge arrester
- installation to LV installations, especially to sub-distribution boards
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



Dimensions



Basic circuit diagram



Parameter/Type		SLP-075 V/1	SLP-150 V/1	SLP-275 V/1	SLP-385 V/1	SLP-440 V/1	SLP-600 V/1
Nominal voltage	U_n	60 V AC	120 V AC	230 V AC	-	400 V AC	-
Maximum operating voltage of varistor		-	-	-	-	-	880 V AC
Maximum operating voltage	U_c	75 V AC / 100 V DC	150 V AC / 200 V DC	275 V AC / 350 V DC	385 V AC / 500 V DC	440 V AC / 585 V DC	760 V AC
Nominal discharge current (8/20 μ s)	I_n	15 kA	15 kA	20 kA	20 kA	20 kA	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,3 kV	0,45 kV	0,9 kV	1,3 kV	1,5 kV	2,7 kV
Voltage protection level	U_p	0,4 kV	0,7 kV	1,35 kV	1,8 kV	1,9 kV	3,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA	50 kA	50 kA	25 kA	25 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG	160 A gL/gG	160 A gL/gG	125 A gL/gG	100 A gL/gG
Response time	t_a	25 ns	25 ns	25 ns	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field	red indication field	red indication field	red indication field
Degree of protection		IP 20	IP 20	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	-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	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090518150	8595090551850	8595090516170	8595090519553	8595090518174	8595090533016

Spare module	SLP-075 V/0	SLP-150 V/0	SLP-275 V/0	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	8595090518112	8595090551935	8595090523680	8595090519508	8595090518136	8595090533030

SLP-... V/1 S

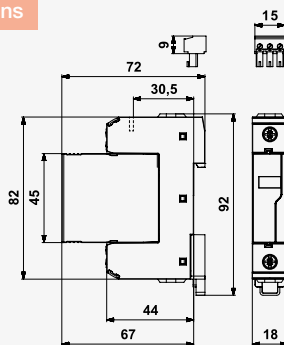
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, remote fault signalling

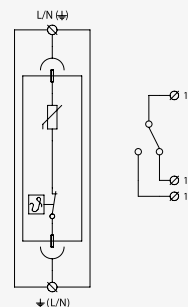
- varistor surge arrester
- installation to LV installations, especially to sub-distribution boards
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		SLP-075 V/1 S	SLP-150 V/1 S	SLP-275 V/1 S	SLP-385 V/1 S	SLP-440 V/1 S	SLP-600 V/1 S
Nominal voltage	U_n	60 V AC	120 V AC	230 V AC		400 V AC	
Maximum operating voltage of varistor							880 V AC
Maximum operating voltage	U_c	75 V AC / 100 V DC	150 V AC / 200 V DC	275 V AC / 350 V DC	385 V AC / 500 V DC	440 V AC / 585 V DC	760 V AC
Nominal discharge current (8/20 μ s)	I_n	15 kA	15 kA	20 kA	20 kA	20 kA	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,3 kV	0,45 kV	0,9 kV	1,3 kV	1,5 kV	2,7 kV
Voltage protection level	U_p	0,4 kV	0,7 kV	1,35 kV	1,8 kV	1,9 kV	3,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA	50 kA	50 kA	25 kA	25 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG	160 A gL/gG	160 A gL/gG	125 A gL/gG	100 A gL/gG
Response time	t_a	25 ns	25 ns	25 ns	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field	red indication field	red indication field	red indication field
Remote indication		potential-free change-over contact	potential-free change-over contact	potential-free change-over contact	potential-free change-over contact	potential-free change-over contact	potential-free change-over contact
Remote indication contacts		250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²
Degree of protection		IP 20	IP 20	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	-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	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090518235	8595090551867	8595090516187	8595090527718	8595090518259	8595090533023

Spare module	SLP-075 V/0	SLP-150 V/0	SLP-275 V/0	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	8595090518112	8595090551935	8595090523680	8595090519508	8595090518136	8595090533030

SLP-275 V/1(S)+1

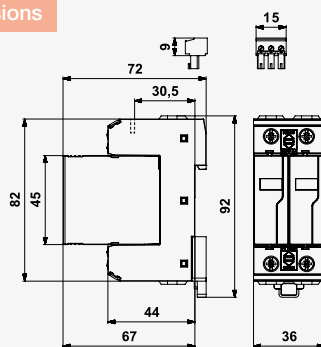
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

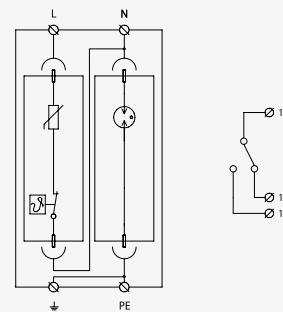
- combination of varistor surge arrester and encapsulated spark gap, connected in the 1+1 mode
- installation to LV installations, especially to sub-distribution boards in TT and also TN-S systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		SLP-275 V/1+1	SLP-275 V/1S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	40 kA	40 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA L-N	U_p	0,9 kV	0,9 kV
Voltage protection level mode L-N	U_p	1,35 kV	1,35 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Ability to independently switch off the following current N-PE	I_s	0,1 kA	0,1 kA
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090519485	8595090524915

Spare module	SLP-275 V/0	SLP-NPE V/0	SLP-275 V/0	SLP-NPE V/0
Ordering number	8595090523680	8595090537229	8595090523680	8595090537229

SLP-275 V/2 (S)

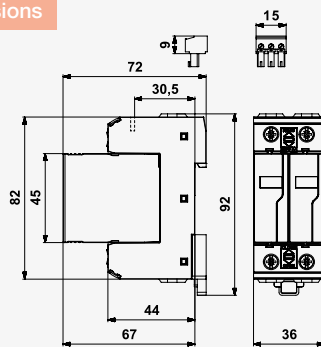
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

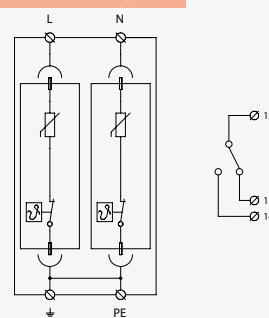
- two-pole varistor surge arrester
- installation to LV installations, especially to sub-distribution boards in TN-S systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		SLP-275 V/2	SLP-275 V/2 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 μ s)	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,35 kV	1,35 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090516194	8595090551836

Spare module	SLP-275 V/0	SLP-275 V/0
Ordering number	8595090523680	8595090523680

SLP-275 V/3 (S)

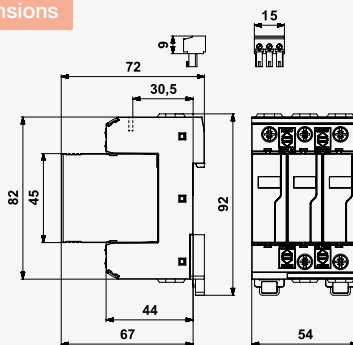
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

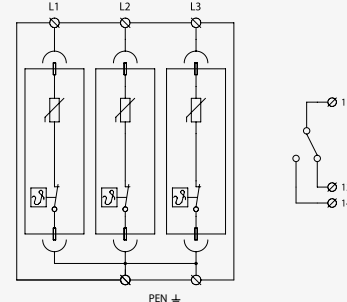
- three-pole varistor surge arrester
- installation to LV installations, especially to sub-distribution boards in TN-C systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/ Type		SLP-275 V/3	SLP-275 V/3 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 μ s)	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,35 kV	1,35 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090517603	8595090517610

Spare module		SLP-275 V/0	SLP-275 V/0
Ordering number		8595090523680	8595090523680

SLP-275 V/4 (S)

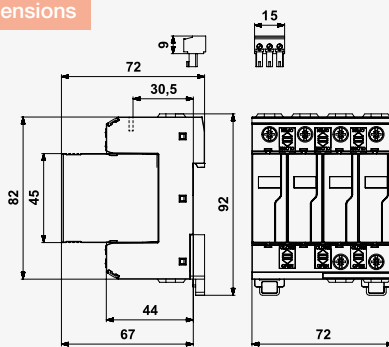
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

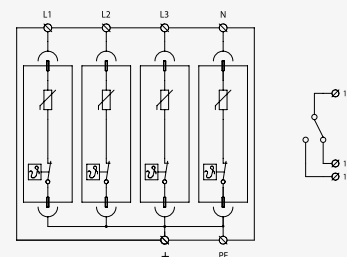
- four-pole varistor surge arrester
- installation to LV installations, especially to sub-distribution boards in TN-S systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		SLP-275 V/4	SLP-275 V/4 S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC / 350 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 μ s)	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,9 kV	0,9 kV
Voltage protection level	U_p	1,35 kV	1,35 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090517221	8595090517634

Spare module	SLP-275 V/0	SLP-275 V/0
Ordering number	8595090523680	8595090523680

SLP-275 V/3(S)+1

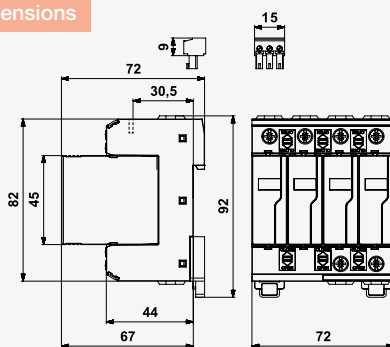
SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

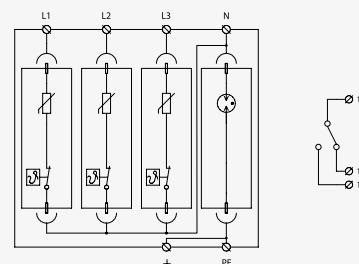
- combination of varistor surge arrester and encapsulated spark gap, connected in the 3+1 mode
- installation to LV installations, especially to sub-distribution boards in TT and also TN-S systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		SLP-275 V/3+1	SLP-275 V/3S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	40 kA	40 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA L-N	U_p	0,9 kV	0,9 kV
Voltage protection level mode L-N	U_p	1,35 kV	1,35 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Ability to independently switch off the following current N-PE	I_s	0,1 kA	0,1 kA
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090519461	8595090520023

Spare module	SLP-275 V/0	SLP-NPE V/0	SLP-275 V/0	SLP-NPE V/0
Ordering number	8595090523680	8595090537229	8595090523680	8595090537229

SLP-... VB/1

SPD type 2 – Surge Arrester

pluggable module, visual fault signalling

- combined type surge arrester (serial combination of varistor+GDT)
- installation to LV installations, especially to sub-distribution boards in areas with unstable grid voltage and where diesel

generators are used, suitable also for measuring circuits

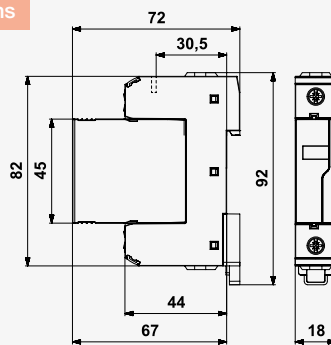
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike

in areas with higher storm activity or switching overvoltages or as the first stage of for protection for measuring circuits

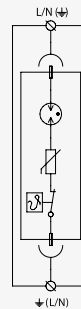
- no leakage current



Dimensions



Basic circuit diagram



Parameter / Type		SLP-075 VB/1	SLP-130 VB/1	SLP-275 VB/1
Nominal voltage	U_n	-	110 V AC	230 V AC
Maximum operating voltage	U_c	75 V AC / 100 V DC	135 V AC / 175 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 μ s)	I_n	15 kA	20 kA	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	25 kA	25 kA	25 kA
Voltage protection level	U_p	0,6 kV	0,7 kV	1,2 kV
Voltage protection level at 5 kA	U_p	0,3 kV	0,5 kV	0,9 kV
Short-circuit current rating	I_{SCCR}	35 kA	35 kA	35 kA
Maximum overcurrent protection		125 A gL/gG	125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field
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 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090521556	8595090521822	8595090519447

Spare module	SLP-075 VB/0	SLP-130 VB/0	SLP-275 VB/0
Ordering number	8595090533122	8595090533139	8595090533146

SLP-... VB/1 S

SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, remote fault signalling

- combined type surge arrester (serial combination of varistor+GDT)
- installation to LV installations, especially to sub-distribution boards in areas with unstable grid voltage and where diesel

generators are used, suitable also for measuring circuits

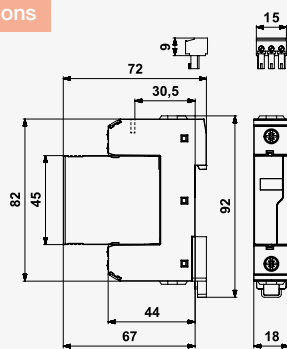
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike in

areas with higher storm activity or switching overvoltages or as the first stage of for protection for measuring circuits

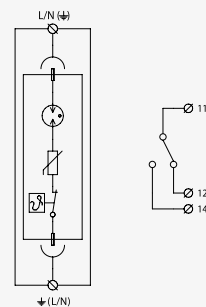
- no leakage current
- remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		SLP-075 VB/1 S	SLP-130 VB/1 S	SLP-275 VB/1 S
Nominal voltage	U_n	-	110 V AC	230 V AC
Maximum operating voltage	U_c	75 V AC / 100 V DC	135 V AC / 175 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 μ s)	I_n	15 kA	20 kA	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	25 kA	25 kA	25 kA
Voltage protection level	U_p	0,6 kV	0,7 kV	1,2 kV
Voltage protection level at 5 kA	U_p	0,3 kV	0,5 kV	0,9 kV
Short-circuit current rating	I_{SCCR}	35 kA	35 kA	35 kA
Maximum overcurrent protection		125 A gL/gG	125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field
Remote indication		potential-free change-over contact	potential-free change-over contact	potential-free change-over contact
Remote indication contacts		250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		1,5 mm ²	1,5 mm ²	1,5 mm ²
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 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090521563	8595090529965	8595090519454

Spare module	SLP-075 VB/0	SLP-130 VB/0	SLP-275 VB/0
Ordering number	8595090533122	8595090533139	8595090533146

SLP-275 VB/3(S)+1

SPD type 2 – Surge Arrester

pluggable module, visual fault signalling, module locking

- combination of combined type surge arrester (serial combination of varistor+GDT) and encapsulated spark gap, connected in the 3+1 mode
- installation to LV installations, especially to sub-distribution boards in areas with

unstable grid voltage and where diesel generators are used, suitable also for measuring circuits

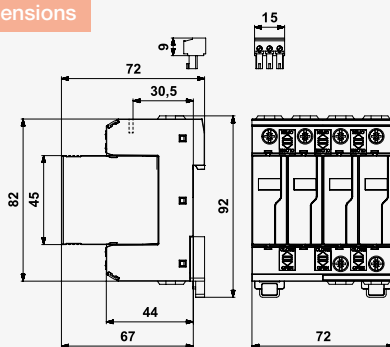
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike

in areas with higher storm activity or switching overvoltages or as the first stage of for protection for measuring circuits

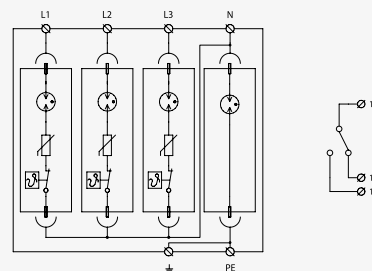
- no leakage current
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		SLP-275 VB/3+1	SLP-275 VB/3S+1
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 μ s) L-N	I_{max}	25 kA	25 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max}	40 kA	40 kA
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	2 kV	2 kV
Ability to independently switch off the following current N-PE	I_s	0,1 kA	0,1 kA
Short-circuit current rating	I_{SCCR}	35 kA	35 kA
Maximum overcurrent protection		125 A gL/gG	125 A gL/gG
Response time	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2	EN 61643-11:2012, IEC 61643-11:2011 / T2
Ordering number		8595090533108	8595090533115

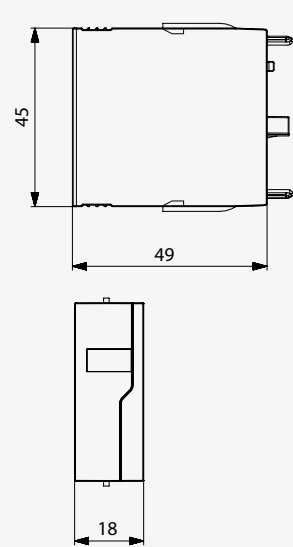
Spare module	SLP-275 VB/0	SLP-NPE V/0	SLP-275 VB/0	SLP-NPE V/0
Ordering number	8595090533146	8595090537229	8595090533146	8595090537229

SLP-... V/0

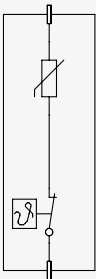
Spare modules for Surge Arresters
SPDs Type 2



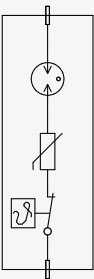
Dimensions



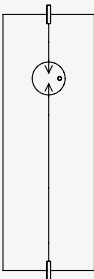
Basic circuit diagram



SLP-XXX V/0



SLP-XXX VB/0



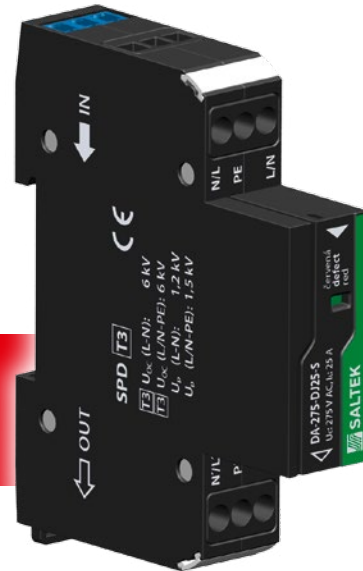
SLP-NPE V/0

Type	Ordering number
SLP-075 V/0	8595090518112
SLP-150 V/0	8595090551935
SLP-275 V/0	8595090523680
SLP-385 V/0	8595090519508
SLP-440 V/0	8595090518136
SLP-600 V/0	8595090533030
SLP-075 VB/0	8595090533122
SLP-130 VB/0	8595090533139
SLP-275 VB/0	8595090533146
SLP-NPE V/0	8595090537229

SPDs connected to LV power supply systems up to 1000 V

LV power systems
up to 1000 V

Surge Protections SPDs Type 3



- Surge Protections, SPDs Type 3
- Installation close to protected equipment
- On DIN rail 35 mm
- With integrated RFI filter
- Modules for additional installation
- Plug adapters
- For 19" RACK

DA-275 V/1(S)+1

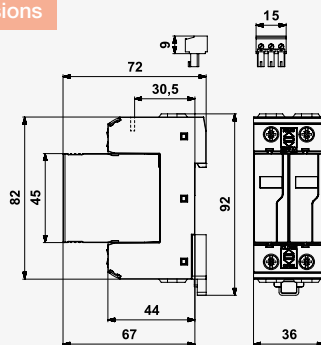
SPD type 3 – Surge Protection

pluggable module, visual fault signalling, module locking

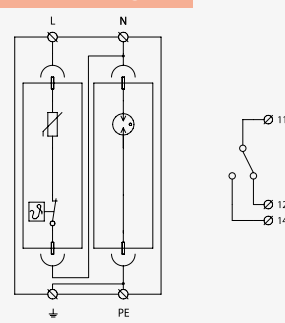
- combination of varistor SPD and encapsulated spark gap, connected in the 1+1 mode
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		DA-275 V/1+1	DA-275 V/1S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	5 kA	5 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	10 kA	10 kA
Test voltage L-N	U_{oc}	10 kV	10 kV
Test voltage N-PE	U_{oc}	20 kV	20 kV
Voltage protection level	U_p	1 kV	1 kV
Voltage protection level mode L-N	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Maximum overcurrent protection		63 A gL/gG or C 63 A	63 A gL/gG or C 63 A
Response time	t_a	25 ns	-
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090518723	8595090519751

Spare module	DA-275 V/0	DA-NPE V/0	DA-275 V/0	DA-NPE V/0
Ordering number	8595090535942	8595090530046	8595090535942	8595090530046

DA-275 V/3(S)+1

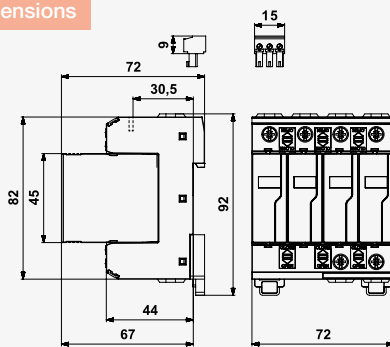
SPD type 3 – Surge Protection

pluggable module, visual fault signalling, module locking

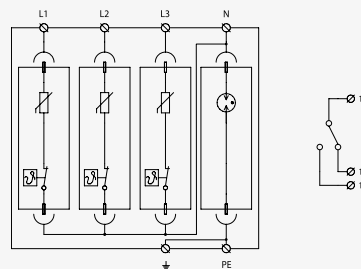
- combination of varistor SPD and encapsulated spark gap, connected in the 3+1 mode
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		DA-275 V/3+1	DA-275 V/3S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	5 kA	5 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	10 kA	10 kA
Test voltage L-N	U_{oc}	10 kV	10 kV
Test voltage N-PE	U_{oc}	20 kV	20 kV
Voltage protection level mode L-N	U_p	1 kV	1 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Maximum overcurrent protection		63 A gL/gG or C 63 A	63 A gL/gG or C 63 A
Response time	t_a	25 ns	-
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication L-N		red indication field	red indication field
Fault indication N-PE		no	no
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090518488	8595090518495

Spare module	DA-275 V/0	DA-NPE V/0	DA-275 V/0	DA-NPE V/0
Ordering number	8595090535942	8595090530046	8595090535942	8595090530046

DA-... V/0

Spare modules for Surge Protections
SPDs Type 3



Dimensions

Basic circuit diagram

The dimensions section shows a side view of the module with a height of 45 and a width of 49, and a front view with a width of 18. The basic circuit diagram section shows two diagrams: DA-275 V/0, which includes a surge protector symbol and a switch, and DA-NPE V/0, which includes a surge protector symbol and a diode symbol.

Type	Ordering number
DA-275 V/0	8595090535942
DA-NPE V/0	8595090530046

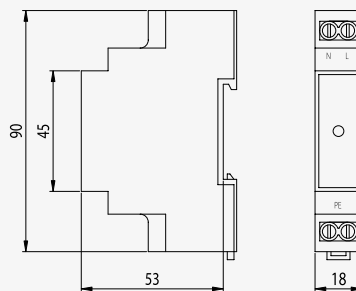
DA-... DJ

SPD type 3 – Surge Protection visual fault signalling

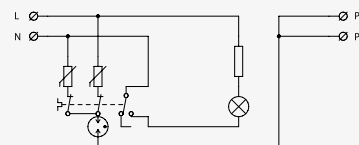
- universally applicable SPD for all types of LV electric and electronic equipments against surge voltage
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



Dimensions



Basic circuit diagram



Parameter/Type		DA-075 DJ	DA-130 DJ
Maximum operating voltage	U_c	75 V AC	135 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	2 kA	2,5 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	2 kA	2,5 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	4 kA	5 kA
Test voltage L-N	U_{oc}	4 kV	5 kV
Test voltage N-PE	U_{oc}	4 kV	5 kV
Test voltage L+N-PE	U_{oc}	8 kV	10 kV
Voltage protection level mode L-N	U_p	0,4 kV	0,6 kV
Voltage protection level mode N-PE	U_p	1,2 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,2 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA
Maximum overcurrent protection		16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (max)		6 mm ²	6 mm ²
Cross-section of connected conductors stranded (max)		4 mm ²	4 mm ²
Fault indication		red indicator	red indicator
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090533191	8595090521891

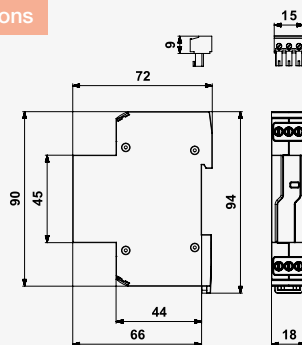
DA-275-DJ25-(S)

SPD type 3 – Surge Protection visual fault signalling

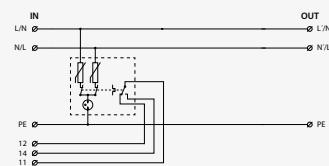
- universally applicable serially connected SPD for all types of LV electric and electronic equipments against surge voltage
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram

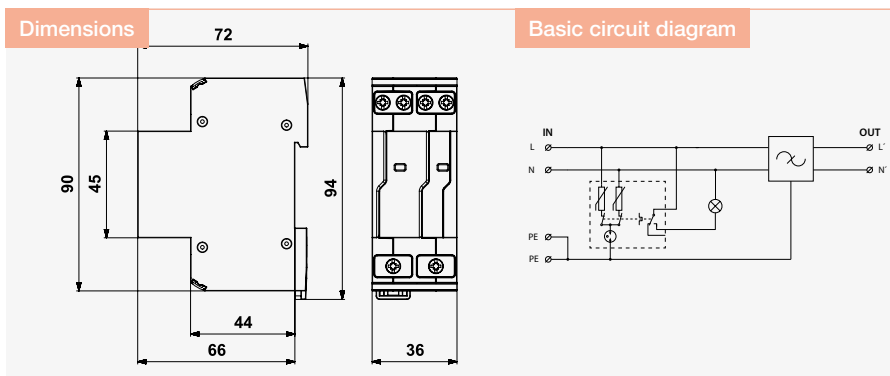


Parameter / Type		DA-275-DJ25	DA-275-DJ25-S
Nominal voltage	U_n	230 V AC	-
Maximum operating voltage	U_c	275 V AC	114 V AC
Nominal load current	I_L	25 A	25 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA
Maximum overcurrent protection		25 A gL/gG or C 25 A	25 A gL/gG or C 25 A
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Cross-section of connected conductors solid (max)		6 mm ²	-
Cross-section of connected conductors stranded (max)		4 mm ²	-
Fault indication		red indicator	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090557708	8595090557715

DA-275-DF..

SPD type 3 – Surge Protection with RFI filter visual fault signalling

- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance



Parameter / Type		DA-275-DF2	DA-275-DF6	DA-275-DF10	DA-275-DF16
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	2 A	6 A	10 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA	6 kA	6 kA
Maximum overcurrent protection		2 A gL/gG or C 2 A	6 A gL/gG or C 6 A	10 A gL/gG or C 10 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns	100 ns	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		30 dB	30 dB	30 dB	30 dB
Cross-section of connected conductors solid (max)		6 mm ²	6 mm ²	6 mm ²	6 mm ²
Cross-section of connected conductors stranded (max)		6 mm ²	6 mm ²	6 mm ²	6 mm ²
Fault indication		red indicator	red indicator	red indicator	red indicator
Cross-section of remote indication conductors solid (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²
Cross-section of remote indication conductors stranded (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²
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 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090557159	8595090557173	8595090557197	8595090557210

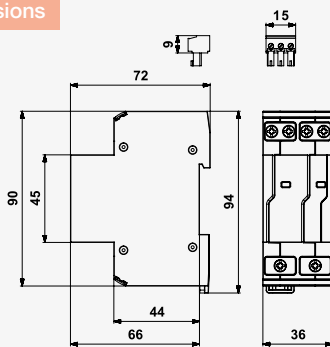
DA-275-DF..-S

SPD type 3 – Surge Protection with RFI filter visual and remote fault signalling

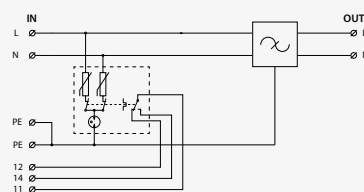
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance
- remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		DA-275-DF2-S	DA-275-DF6-S	DA-275-DF10-S	DA-275-DF16-S
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	2 A	6 A	10 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA	6 kA	6 kA
Maximum overcurrent protection		2 A gL/gG or C 2 A	6 A gL/gG or C 6 A	10 A gL/gG or C 10 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns	100 ns	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		30 dB	30 dB	30 dB	30 dB
Cross-section of connected conductors solid (max)		6 mm ²	6 mm ²	6 mm ²	6 mm ²
Cross-section of connected conductors stranded (max)		6 mm ²	6 mm ²	6 mm ²	6 mm ²
Fault indication		red indication field	red indication field	red indication field	red indication field
Remote indication		potential-free change-over contact	potential-free change-over contact	potential-free change-over contact	potential-free change-over contact
Remote indication contacts		250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors solid (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²
Cross-section of remote indication conductors stranded (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²	1,5 mm ²
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 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090557166	8595090557180	8595090557203	8595090557227

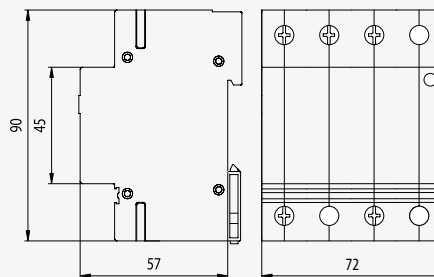
DA-275 DF 25

SPD type 3 – Surge Protection with RFI filter visual fault signalling

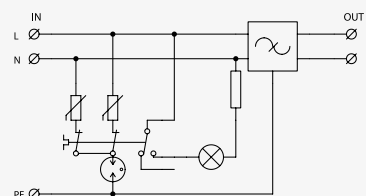
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance



Dimensions



Basic circuit diagram



Parameter / Type	DA-275 DF 25
Nominal voltage	U_n 230 V AC
Maximum operating voltage	U_c 275 V AC
Nominal load current	I_L 25 A
Nominal discharge current (8/20 μ s) L-N	I_n 3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n 3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n 5 kA
Test voltage L-N	U_{oc} 6 kV
Test voltage N-PE	U_{oc} 6 kV
Test voltage L+N-PE	U_{oc} 10 kV
Voltage protection level mode L-N	U_p 1,2 kV
Voltage protection level mode N-PE	U_p 1,5 kV
Voltage protection level mode L-PE	U_p 1,5 kV
Maximum overcurrent protection	25 A gL/gG or C 25 A
Response time L-N	t_a 25 ns
Response time N-PE	t_a 100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical	30 dB
Cross-section of connected conductors solid (min/max)	1 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)	1 mm ² / 35 mm ²
Fault indication	red indicator
Degree of protection	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C
Mounting	DIN rail 35 mm
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number	8595090537328

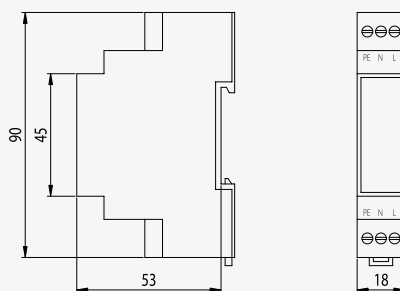
DA-275 DFI 1

SPD type 3 – Surge Protection with RFI filter fault signalling due to power supply interruption

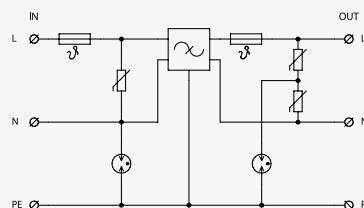
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance
- protection priority



Dimensions



Basic circuit diagram



Parameter/ Type	DA-275 DFI 1	
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	1 A
Nominal discharge current (8/20 μ s) L-N	I_n	1,5 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	1,5 kA
Test voltage L-N	U_{oc}	3 kV
Test voltage N-PE	U_{oc}	3 kV
Voltage protection level mode L-N	U_p	1,2 kV
Voltage protection level mode N-PE	U_p	1,2 kV
Maximum overcurrent protection		1 A gL/gG or C 1 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		50 dB
Cross-section of connected conductors solid (max)		4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²
Fault indication		supply interruption
Remote indication		no
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090512059

DA-275-DFi..

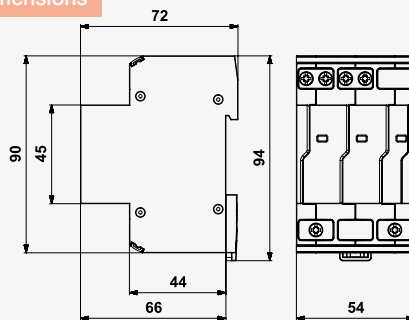
SPD type 3 – Surge Protection with RFI filter

fault signalling due to power supply interruption, visual fault signalling

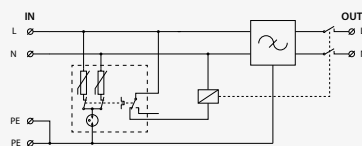
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance
- protection priority



Dimensions



Basic circuit diagram



Parameter / Type		DA-275-DFi6	DA-275-DFi10	DA-275-DFi16
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	6 A	10 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA	6 kA
Maximum overcurrent protection		6 A gL/gG or C 6 A	10 A gL/gG or C 10 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		30 dB	30 dB	30 dB
Cross-section of connected conductors solid (max)		6 mm ²	6 mm ²	6 mm ²
Cross-section of connected conductors stranded (max)		6 mm ²	6 mm ²	6 mm ²
Fault indication		red indication field, supply interruption	red indication field, supply interruption	red indication field, supply interruption
Cross-section of remote indication conductors solid (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²
Cross-section of remote indication conductors stranded (max)		1,5 mm ²	1,5 mm ²	1,5 mm ²
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
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090557234	8595090557241	8595090557258

DA-400 DF 16 (S)

SPD type 3 – Surge Protection with RFI filter visual fault signalling

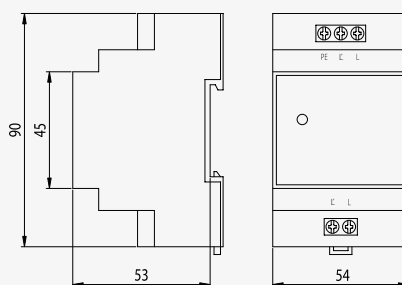
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection

systems, etc. against impact of surge voltage and RF disturbance

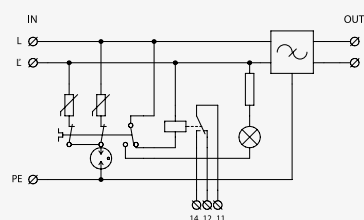
- for two-phase power supply, not for DC systems
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter/Type		DA-400 DF 16	DA-400 DF 16 S
Nominal voltage	U_n	400 V AC	400 V AC
Maximum operating voltage	U_c	440 V AC	440 V AC
Nominal load current	I_L	16 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,6 kV	1,6 kV
Voltage protection level mode N-PE	U_p	1,4 kV	1,4 kV
Voltage protection level mode L-PE	U_p	1,4 kV	1,4 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		30 dB	30 dB
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²
Fault indication		red indicator	red indicator
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors solid (max)		-	4 mm ²
Cross-section of remote indication conductors stranded (max)		-	2,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090515074	8595090525660

DA-275 BFG

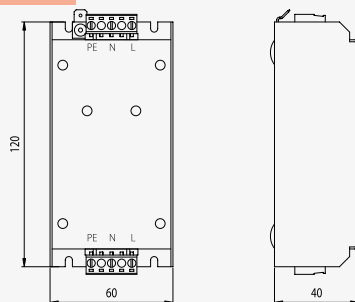
SPD type 3 – Surge Protection with RFI filter

visual fault signalling, grounding terminal, class I device

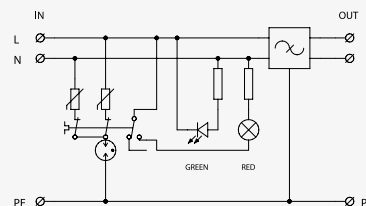
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of power lines of I&C, electronic security and fire detection systems, etc. against impact of surge voltage and RF disturbance



Dimensions



Basic circuit diagram



Parameter / Type		DA-275 BFG
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Test voltage L+N-PE	U_{oc}	10 kV
Voltage protection level mode L-N	U_p	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		30 dB
Cross-section of connected conductors solid (max)		2,5 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²
Fault indication		red indicator
Remote indication		no
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
Mounting		surface on the desk
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090506294

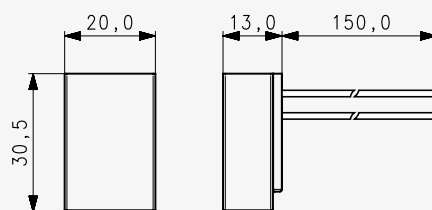
CZ-275-A

SPD type 3 – Module of Surge Protection acoustic fault signalling

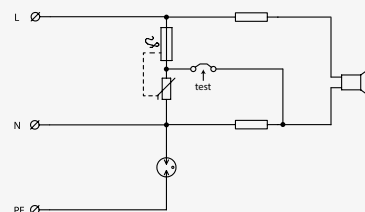
- SPD for additional installation to devices or equipments
- installation to LV installations, close to protected equipment
- for protection of all LV equipments against surge voltage
- non-symmetrical connection



Dimensions



Basic circuit diagram



Parameter / Type		CZ-275-A
Nominal voltage	U_n	230 V AC
Maximum operating voltage L-N	U_c	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,35 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	1,5 kA
Maximum overcurrent protection		B 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		acoustic signalling
Degree of protection		IP 20
Range of operating temperatures (min/max)		-20 °C / 70 °C
Mounting		installation box
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090559573

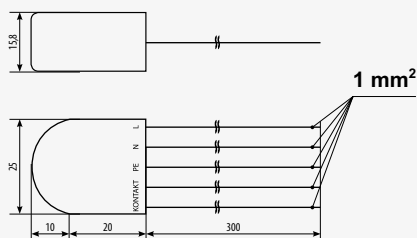
DA-275 CZS

SPD type 3 – Module of Surge Protection remote fault signalling

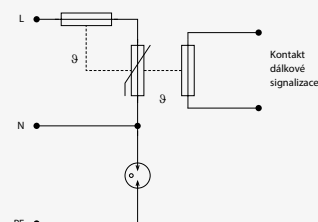
- SPD for additional installation to devices or equipments
- installation to LV installations, close to protected equipment
- for protection of all LV equipments against surge voltage
- non-symmetrical connection
- remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		DA-275 CZS
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,35 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	1,5 kA
Maximum overcurrent protection		B 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		open contact
Remote indication		potential-free open contact
Remote indication contacts		230 V / 0,5 A AC, 24 V / 0,5 A DC
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
Mounting		installation box
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090519164

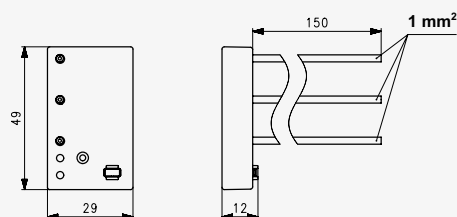
DA-275-A

SPD type 3 – Module of Surge Protection acoustic fault signalling

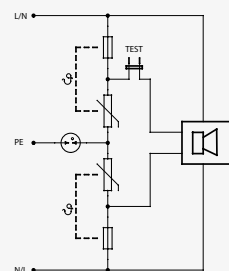
- SPD for additional installation to devices or equipments
- installation to LV installations, close to protected equipment
- for protection of all LV equipments against surge voltage
- can be used for single-phase power supply networks with isolation transformer, connection of L and N wires can be changed



Dimensions



Basic circuit diagram



Parameter / Type		DA-275-A
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	2 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	2 kA
Test voltage L-N	U_{oc}	4 kV
Test voltage N-PE	U_{oc}	4 kV
Test voltage L-PE	U_{oc}	4 kV
Voltage protection level mode L-N	U_p	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	1,5 kA
Maximum overcurrent protection		B 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		acoustic signalling
Degree of protection		IP 20
Range of operating temperatures (min/max)		-20 °C / 70 °C
Mounting		installation box
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090559580

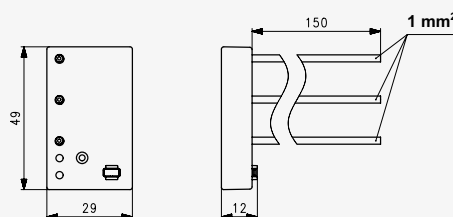
DA-275-S

SPD type 3 – Module of Surge Protection remote fault signalling

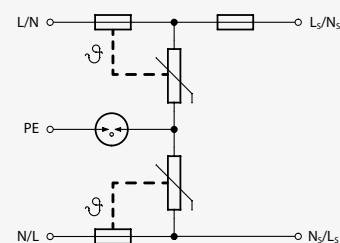
- SPD for additional installation to devices or equipments
- installation to LV installations, close to protected equipment
- for protection of all LV equipments against surge voltage
- can be used for single-phase power supply networks with isolation transformer, connection of L and N wires can be changed
- remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		DA-275-S
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	2 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	2 kA
Test voltage L-N	U_{oc}	4 kV
Test voltage N-PE	U_{oc}	4 kV
Test voltage L-PE	U_{oc}	4 kV
Voltage protection level mode L-N	U_p	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	1,5 kA
Maximum overcurrent protection		B 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		loss of voltage
Remote indication		potential open contact
Maximum current of signalling		1 A
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
Mounting		installation box
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090559597

PA-OVERDRIVE ...

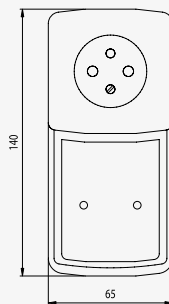
SPD type 3 – Plug adapter with Surge Protection

visual fault signalling

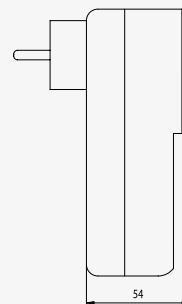
- plug adapter with integrated LV SPD (optionally with RFI filter)
- for protection of all LV equipments against surge voltage and RF disturbance
- SCHUKO version is available on request



Dimensions



Basic circuit diagram



Parameter / Type		PA-OVERDRIVE X16	PA-OVERDRIVE F6	PA-OVERDRIVE F16
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	16 A	6 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	2 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	2 kA	3 kA
Test voltage L-N	U_{oc}	6 kV	4 kV	6 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV	1,3 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-N	t_a	25 ns	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns	100 ns
Filter attenuation at 1 MHz (50 Ω /50 Ω) unsymmetrical		-	30 dB	30 dB
Fault indication		red indicator	red indicator	red indicator
Mounting		plug adaptor	plug adaptor	plug adaptor
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
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090510574	8595090510581	8595090510154

FAX-OVERDRIVE ...

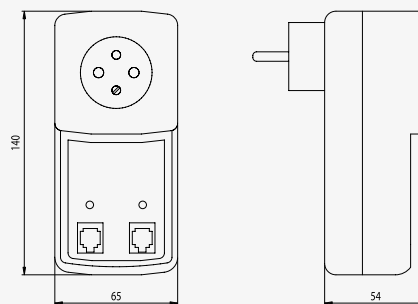
SPD type 3 – Plug adapter with Surge Protection

visual fault signalling

- plug adapter with integrated LV SPD (optionally with RFI filter) and protection of analog telephone line
- for protection of telecommunication equipments against surge voltage and RF disturbance, suitable also for ADSL and VDSL lines
- SCHUKO version is available on request



Dimensions



Parameter / Type		FAX-OVERDRIVE X16	FAX-OVERDRIVE F6	FAX-OVERDRIVE F16
power part	Nominal voltage U_n	230 V AC	230 V AC	230 V AC
	Maximum operating voltage U_c	275 V AC	275 V AC	275 V AC
	Nominal load current I_L	16 A	6 A	16 A
	Nominal discharge current (8/20 μ s) L-N I_n	3 kA	2 kA	3 kA
	Nominal discharge current (8/20 μ s) N-PE I_n	3 kA	2 kA	3 kA
	Test voltage L-N U_{oc}	6 kV	4 kV	6 kV
	Voltage protection level mode L-N U_p	1,2 kV	1,2 kV	1,3 kV
	Maximum overcurrent protection	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A	-
	Response time L-N t_a	25 ns	25 ns	25 ns
	Response time N-PE t_a	100 ns	100 ns	100 ns
	Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical	-	30 dB	30 dB
	Fault indication	red indicator	red indicator	red indicator
	Mounting	plug adaptor	plug adaptor	plug adaptor
line part	Maximum operating voltage U_c	240 V DC	240 V DC	240 V DC
	Nominal load current I_L	0,2 A	0,2 A	0,2 A
	C2 nominal discharge current (8/20 μ s) per core I_n	2,5 kA	2,5 kA	2,5 kA
	C2 voltage protection level mode core-core at I_n U_p	450 V	450 V	450 V
	C2 voltage protection level mode core-PE at I_n U_p	450 V	450 V	450 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	300 V	300 V	300 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	300 V	300 V	300 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 Ω	6,8 Ω	6,8 Ω
	Threshold frequency core-core f	40 MHz	40 MHz	40 MHz
	Insertion attenuation	0,6 dB	0,6 dB	0,6 dB
	Connection (input - output)	RJ 11	RJ 11	RJ 11
	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
	According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3
	Ordering number	8595090510635	8595090510659	8595090510642

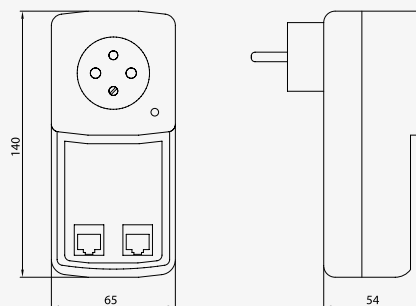
ISDN-OVERDRIVE X16

SPD type 3 – Plug adapter with Surge Protection visual fault signalling

- plug adapter with integrated LV SPD and protection of ISDN line
- for protection of telecommunication equipments against surge voltage, installation behind NT
- SCHUKO version is available on request



Dimensions



Parameter / Type		ISDN-OVERDRIVE X16
power part	Nominal voltage	U_n 230 V AC
	Maximum operating voltage	U_c 275 V AC
	Nominal load current	I_L 16 A
	Nominal discharge current (8/20 μ s) L-N	I_n 3 kA
	Nominal discharge current (8/20 μ s) N-PE	I_n 3 kA
	Test voltage L-N	U_{oc} 6 kV
	Voltage protection level mode L-N	U_p 1,2 kV
	Maximum overcurrent protection	16 A gL/gG or C 16 A
	Response time L-N	t_a 25 ns
	Response time N-PE	t_a 100 ns
line part	Fault indication	red indicator
	Mounting	plug adaptor
	Maximum operating voltage	U_c 38 V DC
	C2 nominal discharge current (8/20 μ s) per core	I_n 0,5 kA
	C2 voltage protection level mode core-core at I_n	U_p 120 V
	C2 voltage protection level mode core-PE at I_n	U_p 230 V
	Response time core-core	t_a 25 ns
	Response time core-PE	t_a 25 ns
	Threshold frequency core-core	f 1,4 MHz
	Connection (input - output)	RJ - 45
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 / T3
Ordering number		8595090519157

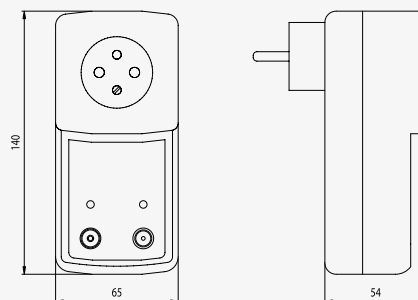
TV-OVERDRIVE ...

SPD type 3 – Plug adapter with Surge Protection visual fault signalling

- plug adapter with integrated LV SPD (optionally with RFI filter) and fine protection of TV
- for protection of TV receivers against surge voltage and RF disturbance
- SCHUKO version is available on request



Dimensions



Parameter / Type		TV-OVERDRIVE X16	TV-OVERDRIVE F6
power part	Nominal voltage U_n	230 V AC	230 V AC
	Maximum operating voltage U_c	275 V AC	275 V AC
	Nominal load current I_L	16 A	6 A
	Nominal discharge current (8/20 μ s) L-N I_n	3 kA	2 kA
	Nominal discharge current (8/20 μ s) N-PE I_n	3 kA	2 kA
	Test voltage L-N U_{oc}	6 kV	4 kV
	Voltage protection level mode L-N U_p	1,2 kV	1,2 kV
	Maximum overcurrent protection	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
	Response time L-N t_a	25 ns	25 ns
	Response time N-PE t_a	100 ns	100 ns
	Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical	-	30 dB
	Fault indication	red indicator	red indicator
	Mounting	plug adaptor	plug adaptor
line part	Maximum operating voltage U_c	50 V DC	50 V DC
	C2 nominal discharge current (8/20 μ s) per core I_n	5 kA	5 kA
	C2 nominal discharge current (8/20 μ s) core-PE I_n	5 kA	5 kA
	C2 voltage protection level mode core-core at I_n U_p	650 V	650 V
	C2 voltage protection level mode core-PE at I_n U_p	650 V	650 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	600 V	600 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	600 V	600 V
	Wave impedance Z	75 Ω	75 Ω
	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	862 MHz	862 MHz
	Insertion attenuation	0,7 dB	0,7 dB
	Connection (input - output)	IEC 75/IEC 75	IEC 75/IEC 75
	Degree of protection	IP 20	IP 20
	Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3
Ordering number		8595090510598	8595090510604

SAT-OVERDRIVE ...

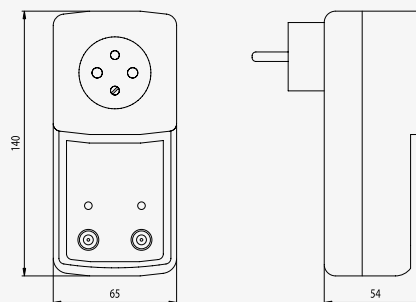
SPD type 3 – Plug adapter with Surge Protection

visual fault signalling

- plug adapter with integrated LV SPD (optionally with RFI filter) and fine protection of satellite or aerial line
- for protection of satellite receivers against surge voltage and RF disturbance
- SCHUKO version is available on request



Dimensions



Parameter / Type		SAT-OVERDRIVE X16	SAT-OVERDRIVE F6
power part	Nominal voltage U_n	230 V AC	230 V AC
	Maximum operating voltage U_c	275 V AC	275 V AC
	Nominal load current I_L	16 A	6 A
	Nominal discharge current (8/20 μ s) L-N I_n	3 kA	2 kA
	Nominal discharge current (8/20 μ s) N-PE I_n	3 kA	2 kA
	Test voltage L-N U_{oc}	6 kV	4 kV
	Voltage protection level mode L-N U_p	1,2 kV	1,2 kV
	Maximum overcurrent protection	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
	Response time L-N t_a	25 ns	25 ns
	Response time N-PE t_a	100 ns	100 ns
	Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical	-	30 dB
	Fault indication	red indicator	red indicator
	Mounting	plug adaptor	plug adaptor
line part	Maximum operating voltage U_c	50 V DC	50 V DC
	C2 nominal discharge current (8/20 μ s) per core I_n	5 kA	5 kA
	C2 nominal discharge current (8/20 μ s) core-PE I_n	5 kA	5 kA
	C2 voltage protection level mode core-core at I_n U_p	650 V	650 V
	C2 voltage protection level mode core-PE at I_n U_p	650 V	650 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	600 V	600 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	600 V	600 V
	Wave impedance Z	75 Ω	75 Ω
	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	2 150 MHz	2 150 MHz
	Insertion attenuation	1,8 dB	1,8 dB
	Connection (input - output)	female F75/female F75	female F75/female F75
	Degree of protection	IP 20	IP 20
	Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C
	According to standard	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3
Ordering number		8595090517146	8595090518952

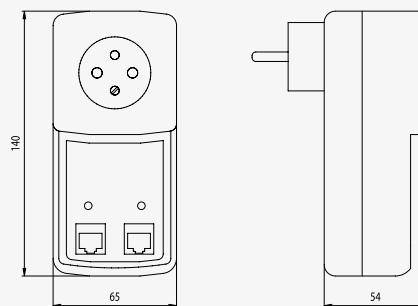
NET-OVERDRIVE ...

SPD type 3 – Plug adapter with Surge Protection visual fault signalling

- plug adapter with integrated LV SPD (optionally with RFI filter) and fine protection of Ethernet Cat. 5 line
- for protection of PC against surge voltage and RF disturbance
- SCHUKO version is available on request



Dimensions

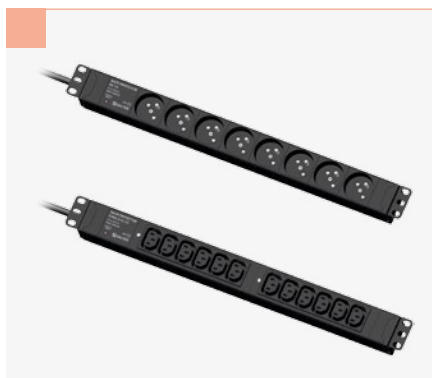


Parameter / Type			NET-OVERDRIVE X16	NET-OVERDRIVE F6
power part	Nominal voltage	U_n	230 V AC	230 V AC
	Maximum operating voltage	U_c	275 V AC	275 V AC
	Nominal load current	I_L	16 A	6 A
	Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	2 kA
	Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	2 kA
	Test voltage L-N	U_{oc}	6 kV	4 kV
	Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV
	Maximum overcurrent protection		16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
	Response time L-N	t_a	25 ns	25 ns
	Response time N-PE	t_a	100 ns	100 ns
	Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		-	30 dB
	Fault indication		red indicator	red indicator
	Mounting		plug adaptor	plug adaptor
line part	Maximum operating voltage	U_c	8,1 V DC	8,1 V DC
	Nominal load current	I_L	0,1 A	0,1 A
	C1 nominal discharge current (8/20 μ s) per core	I_n	200 A	200 A
	C1 total discharge current (8/20 μ s) cores-PE	I_{Total}	1,6 kA	1,6 kA
	C1 voltage protection level mode core-core at I_n	U_p	45 V	45 V
	C1 voltage protection level mode core-PE at I_n	U_p	-	350 V
	C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	-	40 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	-	350 V
	Response time core-core	t_a	1 ns	1 ns
	Response time core-PE	t_a	100 ns	100 ns
	Insertion attenuation at 100 MHz		1,2 dB	1,2 dB
	Connection (input - output)		RJ 45/RJ 45	RJ 45/RJ 45
	Degree of protection		IP 20	IP 20
	Range of operating temperatures (min/ max)		-40 °C / 80 °C	-40 °C / 80 °C
	According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / T3
Ordering number			8595090510611	8595090510628

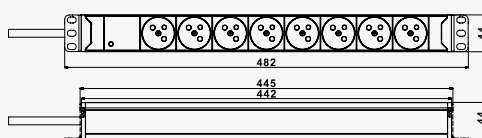
RACK-PROTECTOR-...-1U

SPD type 3 – Multiple Socket with Surge Protection for 19" RACK visual fault signalling

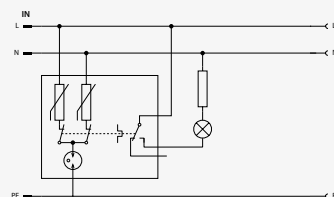
- variants with/without on/off switch and with/without RFI filter
- with French type (with earthing pin) and Euro type sockets
- for protection of information technology equipments against surge voltage
- mounting height 1U
- 3 m power supply cord, CEE 7/7 type plug
- X8: SPD type 3, 8 sockets
- VX7: SPD type 3, on/off switch, 7 sockets
- F6: SPD type 3, RFI filter, 6 sockets
- VF5: SPD type 3, RFI filter, on/off switch, 5 sockets
- EURO-X12: SPD type 3, 12 Euro sockets



Dimensions



Basic circuit diagram



Parameter / Type		RACK-PROTECTOR-X8-1U	RACK-PROTECTOR-VX7-1U	RACK-PROTECTOR-F6-1U	RACK-PROTECTOR-VF5-1U	RACK-PROTECTOR-EURO-X12-1U
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	16 A	16 A	16 A	16 A	16 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA	5 kA	5 kA	5 kA	5 kA
Test voltage L-N	U_{oc}	6 kV	6 kV	6 kV	6 kV	6 kV
Test voltage N-PE	U_{oc}	6 kV	6 kV	6 kV	6 kV	6 kV
Test voltage L+N-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,2 kV	1,2 kV	1,2 kV	1,2 kV	1,2 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV	1,5 kV	1,5 kV	1,5 kV
Short-circuit current rating	I_{SCCR}	6 kA	6 kA	6 kA	6 kA	6 kA
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	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns	25 ns	25 ns	25 ns	25 ns
Response time N-PE	t_a	100 ns	100 ns	100 ns	100 ns	100 ns
VF filter		-	-	yes	yes	-
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical		-	-	30 dB	30 dB	-
Fault indication		red indicator	red indicator	red indicator	red indicator	red indicator
Degree of protection		IP 40	IP 40	IP 40	IP 40	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		19" rack	19" rack	19" rack	19" rack	19" rack
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090558729	8595090558736	8595090558743	8595090558750	8595090559610

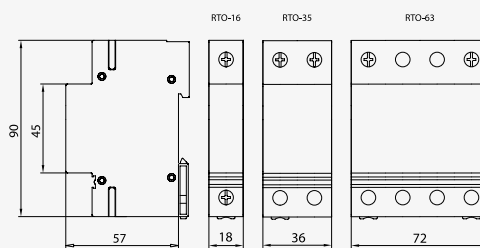
RTO-...

Surge separating inductor

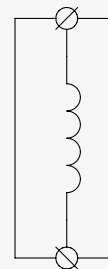
- coupling impedance
- for coordination of SPDs type 1 and 2 or type 2 and 3



Dimensions



Basic circuit diagram



Parameter/Type		RTO-16	RTO-35	RTO-63
Nominal voltage	U_n	500 V AC	500 V AC	500 V AC
Frequency	f	50 Hz	50 Hz	50 Hz
Nominal load current	I_L	16 A	35 A	63 A
Maximum overcurrent protection		16 A gL/gG or C 16 A	35 A gL/gG or C 35 A	63 A gL/gG or C 63 A
Resistance	R	5 mΩ	2,5 mΩ	2 mΩ
Inductance	L	10 μH	10 μH	10 μH
Power loss at I_L		1,28 W	3 W	8 W
Cross-section of connected conductors solid (min/max)		1 mm ² / 50 mm ²	1 mm ² / 50 mm ²	1 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
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
Ordering number		8595090514329	8595090514336	8595090514343

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

Surge Protective Devices for LED lights



- Lighting systems with LED technology
- Street lighting
- Traffic lights
- Lighting of industry facilities

- DA-320-LED
- SP-T2+T3-320-Y-CLT-LED

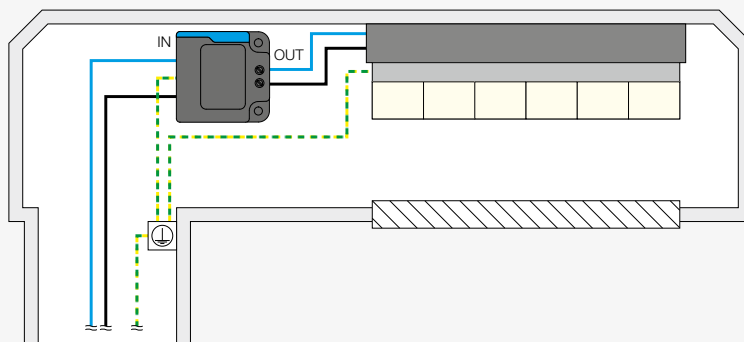
Protection of (street) lighting

Current requirements for the quality of lighting and energy efficiency bring frequent use of LED technology. Such technologies offer a long service life under standard operating conditions which corresponds to higher investment costs. Electronic control devices of LED lighting are considerably more sensitive to high voltage impulses than, for example, gas discharge tube lighting. Overvoltage in these installations is usually higher than the required withstand impulse voltage of electronic lighting equipment. Overvoltage protection is also necessary due to large-scale installations of street lighting and lighting in large industrial factories, which increase the risk particularly of induced overvoltage caused by lightning strikes, failures and switching in distribution and transmission networks.

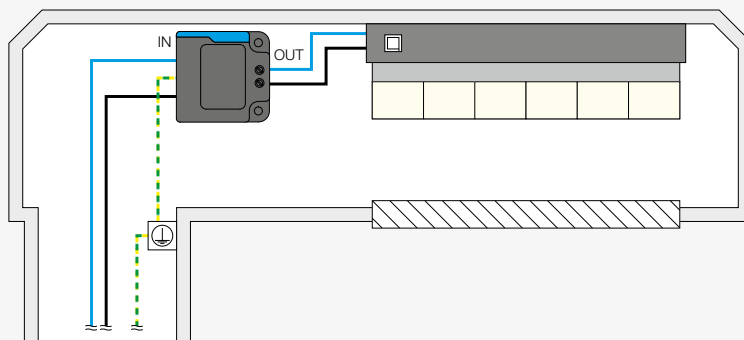
SPDs are recommended to be installed as close as possible to the light source. The **DA-320-LED** and **SP-T2+T3-320/Y-CLT-LED** types meet these requirements. Considering the risk and installation method it is also advisable to install FLP-12,5 V or SLP-275 arresters in supply distribution boards or at the bottom of the light pole. DA-320-LED and SP-T2+T3-320/Y-CLT-LED meet the requirements of the IEEE (ANSI) C62.41.2 standard concerning C location - outside a structure (building). These requirements are stipulated in this standard for situations where overvoltage protection is also provided at the entrance of the wiring, i.e., at the connecting point to the distribution system. If a light source class II equipment, SPDs are connected at the interface of the wiring and the electrical equipment. Also in this case, an SPD will be connected to protective earth (PE). These SPDs can also be used to protect other electrical equipment whose wiring is similar to lighting wiring.

The DA-320-LED and SP-T2+T3-320/Y-CLT-LED types are designed as transit modules with the priority placed on protection. If the SPD is damaged, the light source will be disconnected from the supply and not illuminate. This simple method makes it possible to locate the fault. These SPDs can also be connected in parallel to the protected circuit and the SPD output used to signal the SPD status.

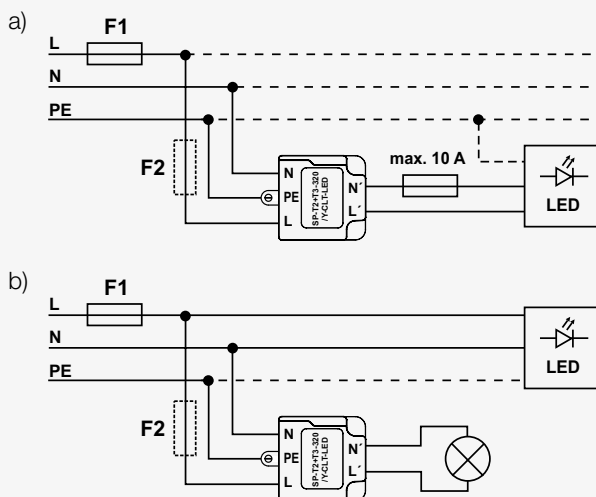
pic. 01 Wiring of SPD to Class I equipment



pic. 02 Wiring of SPD to Class II equipment



pic. 03 Wiring of SPD: a) transit (priority of protection), b) parallel (priority of supply)



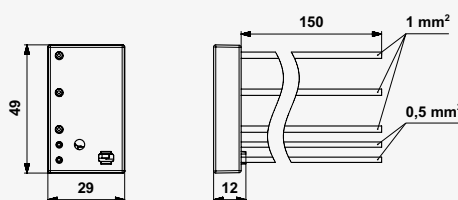
DA-320-LED

SPD type 3 – Module of Surge Protection for LED lights fault signalling by supply interruption

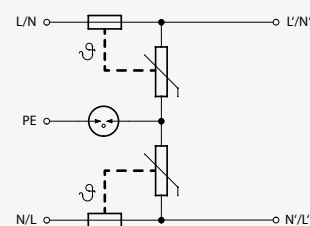
- surge protection especially for LED lights
- installation close to protected equipment in LV power circuits
- also for equipment in external part of building with low exposure level (according to IEEE C62.41.2)



Dimensions



Basic circuit diagram



Parameter / Type		DA-320-LED
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	320 V AC
Nominal load current	I_L	5 A
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Nominal discharge current (8/20 μ s) L+N-PE	I_n	5 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Test voltage L+N-PE	U_{oc}	10 kV
Test voltage L-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,65 kV
Voltage protection level mode N-PE	U_p	1,5 kV
Voltage protection level mode L-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	1,5 kA
Maximum overcurrent protection		16 A gL/gG or B 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		loss of voltage
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C
Mounting		installation box
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090558767

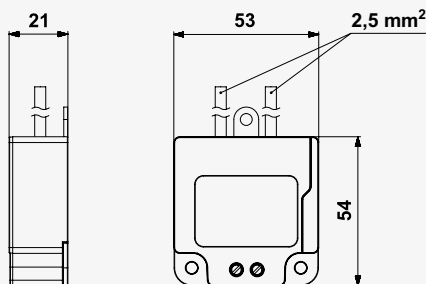
SP-T2+T3-320/Y-CLT-LED

SPD type 2 and type 3 – Module of Surge Arrester for LED lights
fault signalling by supply interruption

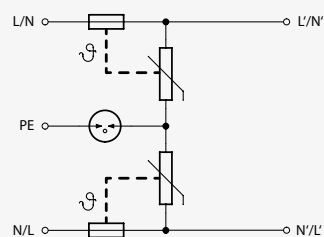
- surge arrester especially for LED lights
- installation close to protected equipment in LV power circuits
- also for equipment in external part of building with high exposure level (according to IEEE C62.41.2)



Dimensions



Basic circuit diagram



Parameter / Type	SP-T2+T3-320-Y-CLT-LED
Nominal voltage	U_n 230 V AC
Maximum operating voltage	U_c 320 V AC
Nominal load current	I_L 10 A
Nominal discharge current (8/20 μ s) L-N	I_n 5 kA
Nominal discharge current (8/20 μ s) N-PE	I_n 5 kA
Maximum discharge current (8/20 μ s) L-N	I_{max} 10 kA
Maximum discharge current (8/20 μ s) N-PE	I_{max} 10 kA
Test voltage L-N	U_{oc} 10 kV
Test voltage N-PE	U_{oc} 10 kV
Test voltage L-PE	U_{oc} 10 kV
Voltage protection level mode L-N	U_p 1,3 kV
Voltage protection level mode N-PE	U_p 1,5 kV
Voltage protection level mode L-PE	U_p 1,5 kV
Short-circuit current rating	I_{SCCR} 3 kA
Maximum overcurrent protection	32 A gL/gG or C 32 A
Response time L-N	t_a 25 ns
Response time N-PE	t_a 100 ns
Cross-section of connected conductors solid (max)	2,5 mm ²
Cross-section of connected conductors stranded (max)	1,5 mm ²
Fault indication	loss of voltage, dark grey indication field
Degree of protection	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T2,T3
Ordering number	8595090560449

Surge Protective Devices for photovoltaic systems



Photovoltaic systems



- Protection of PV inverters for photovoltaic systems
- PV solution for family houses
- PV plants
- Protection of off-grid solar inverters
- Protection of battery charges
- Lightning arrester PV Type 1 and 2 SPD
- Surge arrester PV Type 2 SPD

Protection of photovoltaic systems

Photovoltaic arrays are costly to install and demanding in terms of technology. Their service life must be measured in decades to see a return on the invested funds. Manufacturers usually provide about a twenty-year guarantee for photovoltaic systems.

To provide trouble-free technology throughout its service life, it is necessary to include comprehensive protection against atmospheric and induced overvoltage at the design stage to implement the technology into the project. Protection must be provided not only at the output side of the inverter, but also at the photovoltaic panels. Solar photovoltaic arrays are usually installed on rooftops, or on a "greenfield".

As for the anticipated risks (pursuant to EN 62305-2), direct or near lightning strikes are considered. Overvoltage or lightning strike can bring about financial loss, and for photovoltaic systems installed on rooftops where individuals could be working, injury should also be considered.

Photovoltaic system designs, including lightning and overvoltage suppression, shall comply with the HD 60364-7-712 standard (Electrical installations of buildings – Solar photovoltaic (PV) systems), technical specification CLC/TS 50539-12 (SPD for specific application including DC – Selection and application principles – SPDs connected to PV installations) and the group of EN 62305 standards (Lightning protection).

The core (key device) of the whole photovoltaic system is the inverter, so the lightning and overvoltage protection should be

focused on the inverter and, it should be incorporated into the whole lightning and overvoltage protection system. Furthermore, photovoltaic units and their bearing metal structures should be integrated into the grounding design.

SPD selection for DC side:

- U_{CPV} maximum continuous operating voltage
- $U_{OC\ STC}$ standardized test circuit voltage of PV String

$$U_{CPV} \geq 1,2 \times U_{OC\ STC}$$

- If separating spark-over distance "s" is kept
 - Type 2 SPD PV is installed
 - If distance "l" between PV modules and inverter is longer than 10m - SPD is installed on both sides of the DC line
- If separating spark-over distance "s" is not kept
 - Type 1 and 2 SPD PV is installed
 - It is always necessary to install SPD PV on both sides of the DC line

All surge protections SALTEK® for photovoltaic systems are tested according to EN 50539-11.

General circuit diagram of solar photovoltaic systems

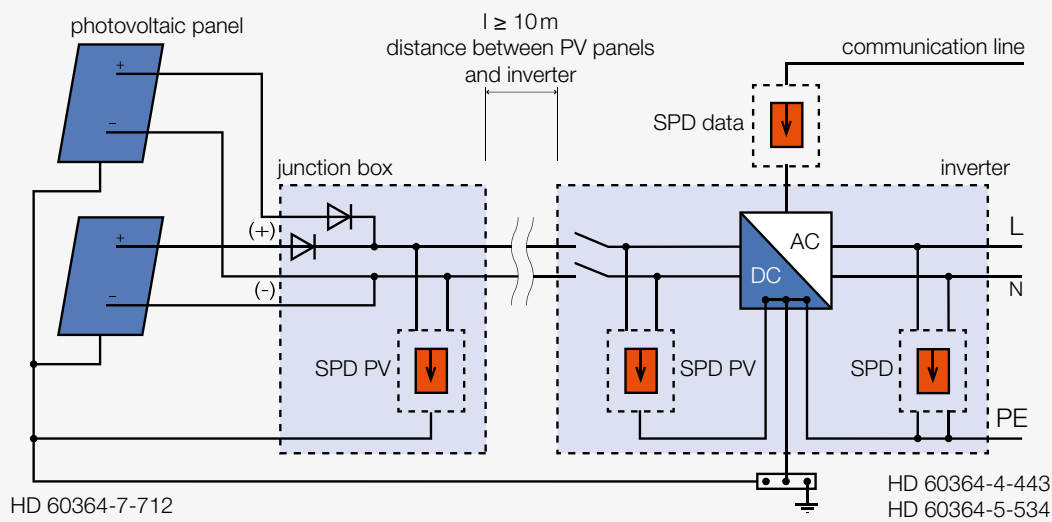


Fig. 1

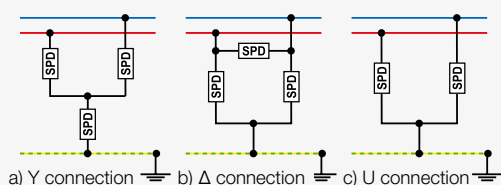
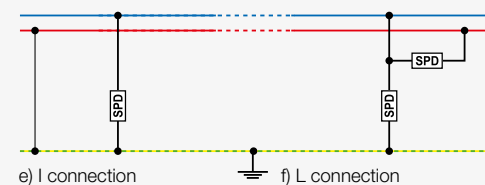


Fig. 2



The DC side of the PV system can either be unearthed (insulated) or with one pole earthed. Figures 1 and 2 (see CLC/TS 50 539-12) show how SPDs on the DC side must be connected.

When mounting an SPD, the necessary length of the connecting conductors should be complied with HD 60364-5-534 (IEC 60364-5-53, chapter 534), clause 534.2.9.

FLP-PV550 V/U (S)

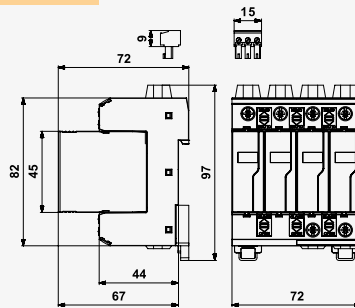
SPD PV type 1 and type 2 – Lightning Current Arrester and Surge Arrester for PV systems

pluggable module, visual fault signalling, module locking

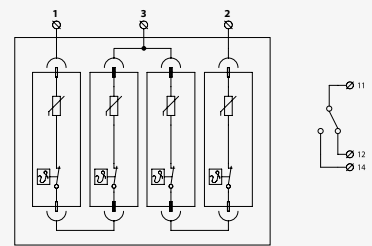
- varistor lightning current arrester and surge arrester in 'U' connection
- for protection of PV systems on the roofs, where the separating spark-over distance is not kept (connection to LPS)
- maximum continuous operating voltage for PV application: $U_{CPV} \geq 1.2 \times U_{OC\ STC}$
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		FLP-PV550 V/U	FLP-PV550 V/U S
Maximum operating voltage mode 1/2 I-connection	U_{CPV}	1 120 V DC	1 120 V DC
Maximum operating voltage mode 1/3, 2/3	U_{CPV}	560 V DC	560 V DC
Total discharge current (10/350 μ s)	I_{Total}	25 kA	25 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA	60 kA
Voltage protection level mode 1/2	U_p	4,8 kV	4,8 kV
Voltage protection level mode 1/3, 2/3	U_p	2,4 kV	2,4 kV
Short-circuit current rating	I_{SCP}	1 000 A DC	1 000 A DC
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 50539-11:2013 / PV T1, PV T2	EN 50539-11:2013 / PV T1, PV T2
Ordering number		8595090561453	8595090561460

Spare module	FLP-PV275U V/U	FLP-PV275U V/U
Ordering number	8595090561477	8595090561477

FLP-PV1000 V(S)/Y

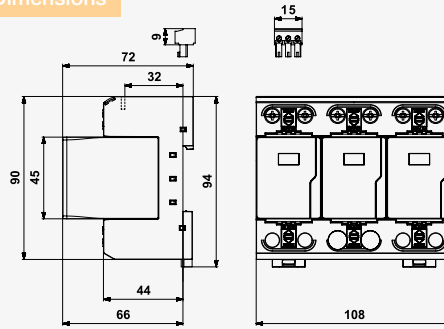
SPD PV type 1 and type 2 – Lightning Current Arrester and Surge Arrester for PV systems

pluggable module, visual fault signalling, module locking

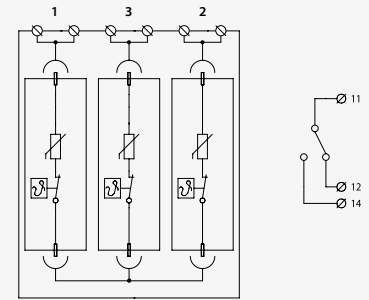
- varistor lightning current arrester and surge arrester in 'Y' connection
- for protection of PV systems on the roofs, where the separating spark-over distance is not kept (connection to LPS)
- maximum continuous operating voltage for PV application: $U_{CPV} \geq 1.2 \times U_{OC\ STC}$
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type	FLP-PV1000 V/Y	FLP-PV1000 VS/Y
Maximum operating voltage mode 1/3, 2/3	U_{CPV}	1 000 V DC
Lightning impulse current (10/350 μ s)	I_{imp}	12,5 kA
Nominal discharge current (8/20 μ s)	I_n	30 kA
Maximum discharge current (8/20 μ s)	I_{max}	60 kA
Voltage protection level mode 1/2	U_p	3,6 kV
Voltage protection level mode 1/3, 2/3	U_p	3,6 kV
Short-circuit current rating	I_{SCPV}	1 000 A DC
Response time	t_a	25 ns
Cross-section of connected conductors solid (min/max)	2,5 mm ² / 50 mm ²	2,5 mm ² / 50 mm ²
Cross-section of connected conductors stranded (min/max)	2,5 mm ² / 35 mm ²	2,5 mm ² / 35 mm ²
Fault indication	red indication field	red indication field
Remote indication	-	potential-free change-over contact
Remote indication contacts	-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors	-	1,5 mm ²
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °C
Mounting	DIN rail 35 mm	-
According to standard	EN 50539-11:2013 / PV T1, PV T2	EN 50539-11:2013 / PV T1, PV T2
Ordering number	8595090540595	8595090540588

Spare module	FLP-PV500Y V/O	FLP-PV500Y V/O
Ordering number	8595090542117	8595090542117

SLP-PV... V/U (S)

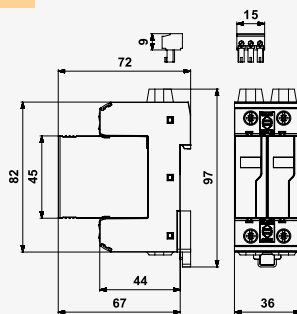
SPD PV type 2 – Surge Arrester for PV systems

pluggable module, visual fault signalling, module locking

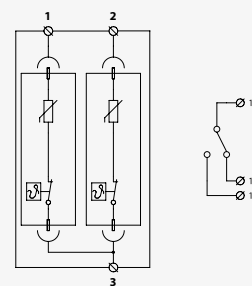
- varistor surge arrester in 'U' connection
- for protection of PV systems where the separating spark-over distance is kept or without LPS
- maximum continuous operating voltage for PV application: $U_{CPV} \geq 1.2 \times U_{OC\ STC}$
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



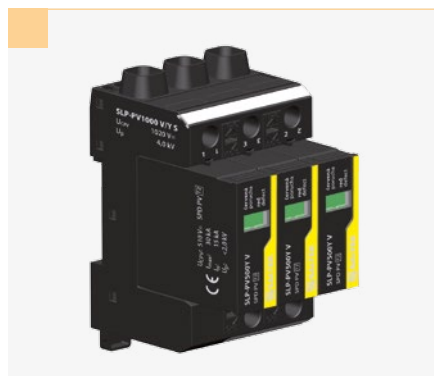
Parameter / Type		SLP-PV170 V/U	SLP-PV170 V/U S	SLP-PV500 V/U	SLP-PV500 V/U S
Maximum operating voltage mode 1/2 I-connection	U_{CPV}	340 V DC	340 V DC	1 020 V DC	1 020 V DC
Maximum operating voltage mode 1/3, 2/3	U_{CPV}	170 V DC	170 V DC	510 V DC	510 V DC
Nominal discharge current (8/20 μ s)	I_n	15 kA	15 kA	15 kA	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA	30 kA	30 kA
Voltage protection level mode 1/2	U_p	1,2 kV	1,2 kV	4 kV	4 kV
Voltage protection level mode 1/3, 2/3	U_p	0,6 kV	0,6 kV	2 kV	2 kV
Short-circuit current rating	I_{SCP}	1 000 A DC	1 000 A DC	1 000 A DC	1 000 A DC
Response time	t_a	25 ns	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field	red indication field
Remote indication		-	potential-free change-over contact	-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC	-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²	-	1,5 mm ²
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 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2
Ordering number		8595090536628	8595090536635	8595090536642	8595090536659

Spare module	SLP-PV170U V/U	SLP-PV170U V/U	SLP-PV500U V/U	SLP-PV500U V/U
Ordering number	8595090536925	8595090536925	8595090536949	8595090536949

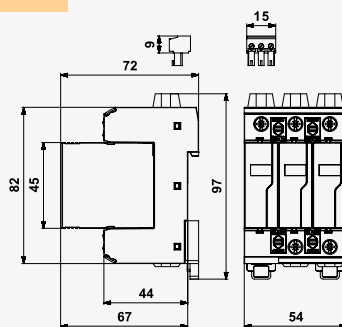
SLP-PV... V/Y (S)

SPD PV type 2 – Surge Arrester for PV systems pluggable module, visual fault signalling, module locking

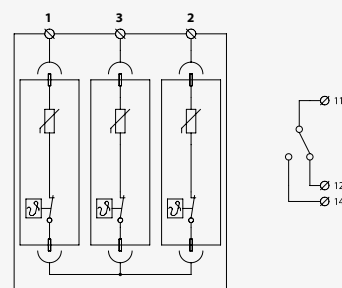
- varistor surge arrester in ,Y' connection
- for protection of PV systems where the separating spark-over distance is kept or without LPS
- maximum continuous operating voltage for PV application: $U_{CPV} \geq 1.2 \times U_{OC\ STC}$
- optional remote fault signalling (S)



Dimensions



Basic circuit diagram



Parameter / Type		SLP-PV700 V/Y	SLP-PV700 V/Y S	SLP-PV1000 V/Y	SLP-PV1000 V/Y S	SLP-PV1500 V/Y	SLP-PV1500 V/Y S
Maximum operating voltage mode 1/3, 2/3	U_{CPV}	750 V DC	750 V DC	1 020 V DC	1 020 V DC	1 500 V DC	1 500 V DC
Nominal discharge current (8/20 μ s)	I_n	20 kA	20 kA	15 kA	15 kA	15 kA	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA	40 kA	30 kA	30 kA	30 kA	30 kA
Voltage protection level mode 1/2	U_p	3,6 kV	3,6 kV	4 kV	4 kV	6,4 kV	6,4 kV
Voltage protection level mode 1/3, 2/3	U_p	3,6 kV	3,6 kV	4 kV	4 kV	6,4 kV	6,4 kV
Short-circuit current rating	I_{SCP}	1 000 A DC	1 000 A DC	1 000 A DC	1 000 A DC	1 000 A DC	1 000 A DC
Response time	t_a	25 ns	25 ns	25 ns	25 ns	25 ns	25 ns
Residual current mode 1/3, 2/3	I_{PE}	-	-	-	-	0,15 mA AC	0,15 mA AC
Residual current mode 1/3, 2/4	I_{PE}	-	-	-	-	0,0008 mA DC	0,0008 mA DC
Cross-section of connected conductors solid (min/max)		1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²	1 mm ² / 35 mm ²
Cross-section of connected conductors stranded (min/max)		1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²	1 mm ² / 25 mm ²
Fault indication		red indication field	red indication field	red indication field	red indication field	red indication field	red indication field
Remote indication		-	potential-free change-over contact	-	potential-free change-over contact	-	potential-free change-over contact
Remote indication contacts		-	250 V / 0,5 A AC, 250 V / 0,1 A DC	-	250 V / 0,5 A AC, 250 V / 0,1 A DC	-	250 V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm ²	-	1,5 mm ²	-	1,5 mm ²
Degree of protection		IP 20	IP 20	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	-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	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2	EN 50539-11:2013 / PV T2
Ordering number		8595090536680	8595090536697	8595090536703	8595090536710	8595090560364	8595090560371

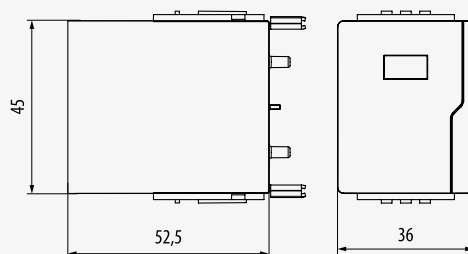
Spare module	SLP-PV350Y V/O	SLP-PV350Y V/O	SLP-PV500Y V/O	SLP-PV500Y V/O	SLP-PV750Y V/O	SLP-PV750Y V/O
Ordering number	8595090537441	8595090537441	8595090537366	8595090537366	8595090560401	8595090560401

FLP-PV... V/0, SLP-PV... V/0

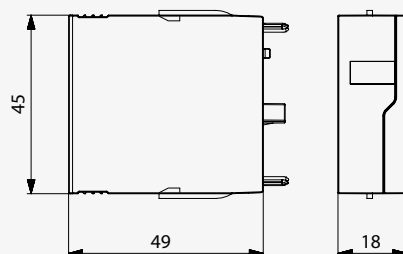
Spare modules for SPDs PV Type 1+2 and Type 2



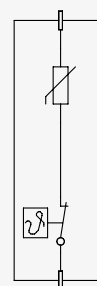
Dimensions



FLP-PV500Y V/0



Basic circuit diagram



Type	Ordering number
FLP-PV275U V/0	8595090561477
FLP-PV500Y V/0	8595090542117
SLP-PV170U V/0	8595090536925
SLP-PV500U V/0	8595090536949
SLP-PV350Y V/0	8595090537441
SLP-PV500Y V/0	8595090537366
SLP-PV750Y V/0	8595090560401

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 ST1, ST1+2+3
- Surge Arresters ST2+3, ST3

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 in 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 relative 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 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 link 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 link 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-R1	combined lightning and surge currents arrester	ST1+2+3
DM-024-V/1-R2	combined overvoltage protection	ST2+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

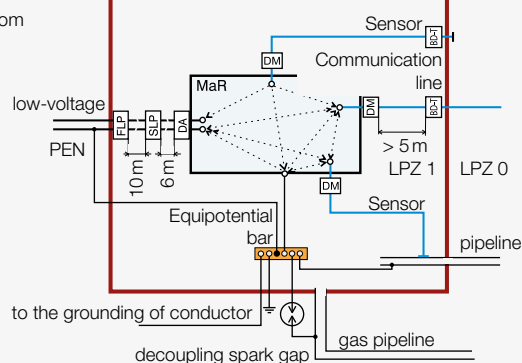


Fig. 2 Links between input and output line and earth connection

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

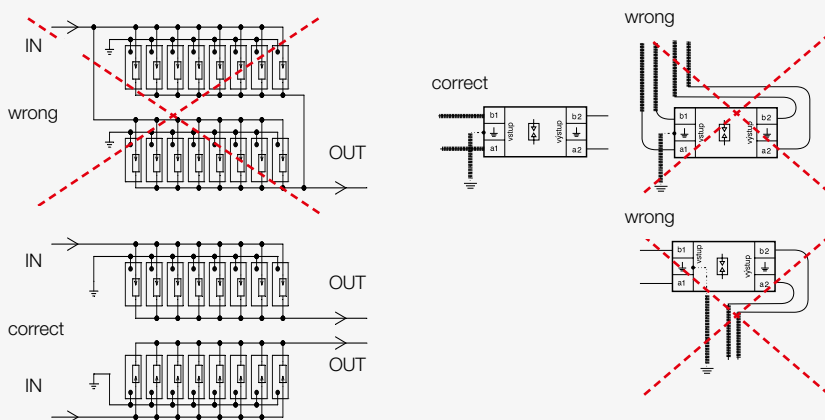
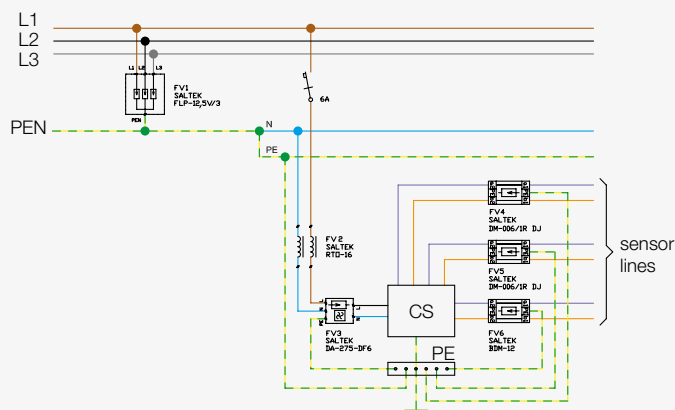


Fig. 3 Principle of the protection of control systems



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 EN 61643-21 + A1, A2 and 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 protection devices

Overvoltage protection devices from SALTEK do not require maintenance during its lifetime. 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.

Fig. 4 Coordination distance

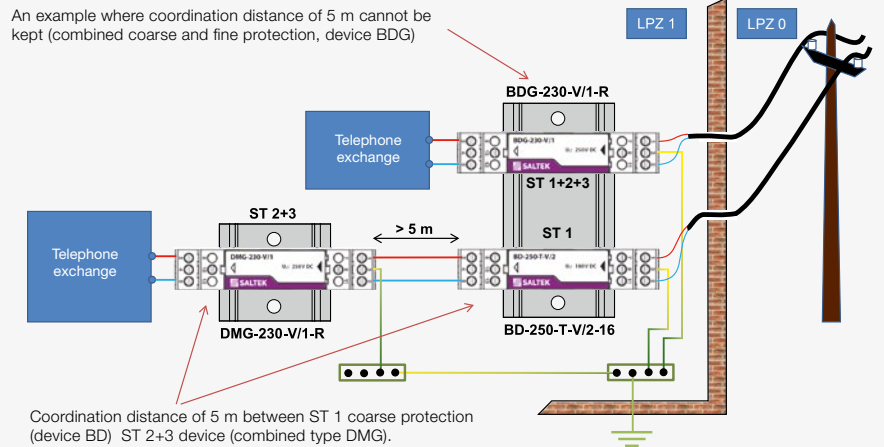


Fig. 5 Protection of electronic security system

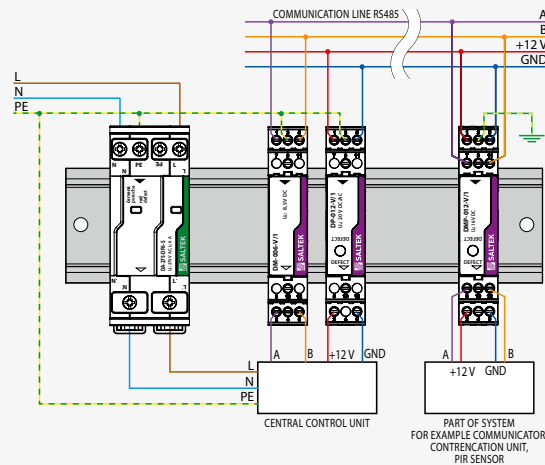
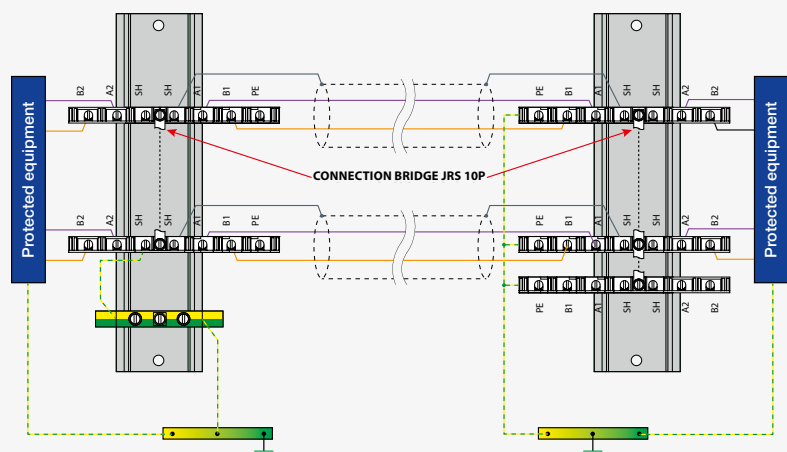


Fig. 6 Grounding of the shielding



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	For mounting on	Notes
			10/350 µs	8/20 µs			
Current loop 0 ÷ 20mA, 4 ÷ 20mA	2	12/24	x	10 kA	DM-xx/1R DJ	DIN 35	
			x	10 kA	DM-xx/1-Ry*	DIN 35	
	2	12/24	x	10 kA	DM-xx-V/1-R1	DIN 35	
	2	12/24	x	10 kA	CLSA-xx	LSA plus	disconnection
	2	12/24	5 kA	x	BDM-xx-V/1-R1	DIN 35	
			x	10 kA	DM-xx-V/2-R1	DIN 35	
	4	12/24	x	10 kA	DM-xx-V/2-FR1	DIN 35	floating ground
			x	10 kA	2ks DM-xx/1 R DJ	DIN 35	
	2	12/24	x	10 kA	DMG-xx-V/1-R1	DIN 35	isolated signal ground
	2	12/24	x	10 kA	DMG-xx/1-Ry*	DIN 35	isolated signal ground
Binary signals	2	12/24	x	10 kA	DMG-xx/1R DJ	DIN 35	isolated signal ground
			5 kA	x	BDG-xx-V/1-R1	DIN 35	isolated signal ground
	2	24	x	10 kA	DMLF-024/1-Ry*	DIN 35	
			x	10 kA	DM-xx-V/1-R1	DIN 35	
			x	10 kA	DM-xx-V/1-FR1	DIN 35	floating ground
			x	10 kA	CLSA-xx	LSA plus	disconnection
			x	10 kA	DM-xx/1R DJ	DIN 35	
	2	6 ÷ 60	5 kA	x	BDM-xx-V/1-R1	DIN 35	
			x	10 kA	DM-xx-V/1-R1	DIN 35	
	2	15/48	x	10 kA	DM-xx-V/1-FR1	DIN 35	floating ground
BLN Building Level Network			x	10 kA	DM-xx/1R DJ	DIN 35	
TTL	2	12	x	10 kA	DM-012-V/1-R1	DIN 35	
			x	10 kA	DM-012-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-012/1R DJ	DIN 35	
RS-485 up to 1.5 Mbit/s	2	12	5 kA	x	BDM-012-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-006/1R DJ	DIN 35	
	3	5	x	10 kA	DM-006/3R DJ	DIN 35	
	3/4	5	x	10 kA	DMG-006-V/1-4R1	DIN 35	isolated signal ground
	3/4	5	x	10 kA	DMG-006-V/1-4FR1	DIN 35	floating ground
	4	5	x	10 kA	DM-006/4R DJ	DIN 35	
	2	5	5 kA	x	BDM-006-V/1-R1	DIN 35	
			x	10 kA	DMP-012-V/1-R1	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	floating ground
			24	x	DMP-024-V/1-R1	DIN 35	
			x	10 kA	DMP-024-V/1-FR1	DIN 35	floating ground
	2	5	x	10 kA	DM-006-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-006/1R DJ	DIN 35	
	4	5	x	10 kA	DMG-006-V/1-4R1	DIN 35	isolated signal ground
			x	10 kA	DMG-006-V/1-4FR1	DIN 35	floating ground
			x	10 kA	DM-006/4R DJ	DIN 35	
	2	5	5 kA	x	BDM-xx-V/1-R1	DIN 35	
RS-422	2	6 ÷ 48	x	10 kA	DM-xx/1- R DJ	DIN 35	
			x	10 kA	DM-xx/1- L DJ	DIN 35	
	2	6 ÷ 48	x	10 kA	CLSA-xx	LSA plus	disconnection
			6 ÷ 110	x	DM-xx/1-Ry*	DIN 35	
			6 ÷ 110	x	DMG-xx/1-Ry*	DIN 35	
			24	x	DMLF-024/1-Ry*	DIN 35	
			x	10 kA	DM-xx-V/1-R1	DIN 35	
			x	10 kA	DM-xx-V/1-FR1	DIN 35	floating ground
			x	10 kA	DMG-xx-V/1-R1	DIN 35	isolated signal ground
			x	10 kA	DMG-xx-V/1-FR1	DIN 35	floating ground
Analog signals	2	6 ÷ 230	x	10 kA	DMG-xx-V/1-FR1	DIN 35	floating ground
			5 kA	x	BDM-xx-V/1-R1	DIN 35	
			5 kA	x	BDG-xx-V/1-R1	DIN 35	isolated signal ground
			5 kA	x	BDM-xx-V/1-FR1	DIN 35	floating ground
			5 kA	x	BDG-xx-V/1-FR1	DIN 35	floating ground
	2	6 ÷ 48	x	10 kA	DM-xx/1- L2 DJ	DIN 35	
			x	10 kA	DM-xx-V/1-R2	DIN 35	
			x	10 kA	DM-xx-V/1-FR2	DIN 35	floating ground
			x	10 kA	DMG-xx-V/1-R2	DIN 35	isolated signal ground
			x	10 kA	DMG-xx-V/1-FR2	DIN 35	floating ground
Multipurpose coarse protection	2	70	5 kA	x	BD-090-T-V/1-16	DIN 35	
			5 kA	x	BD-090-T-V/1-F16	DIN 35	floating ground
	2	15	x	10 kA	DM-012-V/1-R1	DIN 35	
			x	10 kA	DM-012-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-012/1R DJ	DIN 35	
	2	15	5 kA	x	BDM-012-V/1-R1	DIN 35	
	2	up to 6	x	10 kA	CLSA-006	LSA plus	disconnection
			x	10 kA	DM-006-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-FR1	DIN 35	floating ground
			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	x	10 kA	DMG-006-V/1-4R1	DIN 35	isolated signal ground
	3/4	up to 6	x	10 kA	DMG-006-V/1-4FR1	DIN 35	floating ground
	4	up to 6	x	10 kA	DM-006/4R DJ	DIN 35	
	2	up to 6	5 kA	x	BDM-xx-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-R1	DIN 35	
			x	10 kA	DM-006-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-xx/1R DJ	DIN 35	
	2	6 ÷ 24	x	10 kA	DM-006-V/1-FR1	DIN 35	floating ground
			x	10 kA	DM-xx/1R DJ	DIN 35	
Optron protocol	2	6 ÷ 60	5 kA	x	BDM-xx-V/1-R1	DIN 35	

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

MEASURING AND CONTROL TECHNOLOGY AND BUS SYSTEMS

Interface / Signal		Protected lines	U (DC) (V)	Discharge current per core		SPD xx – corresponding voltage	For mounting on	Notes
				10/350 µs	8/20 µs			
DC power supply	I = 2 A	2	6 ÷ 60	x	10 kA	DM-xx-V/1-R2	DIN 35	floating ground
				x	10 kA	DM-xx-V/1-FR2	DIN 35	
				x	10 kA	DM-xx/1 L2 DJ	DIN 35	
	I = 16 A	2	12 ÷ 60	x	2 kA	DP-xx	DIN 35	floating ground
				x	2 kA	DP-xx-V/1-16	DIN 35	
				x	2 kA	DP-xx-V/1-F16	DIN 35	
	I = 2 A	2	6 ÷ 60	x	10 kA	DMG-xx-V/1-R2	DIN 35	isolated signal ground
				x	10 kA	DMG-xx-V/1-FR2	DIN 35	floating ground
	I = 1 A	2	6 ÷ 60	5 kA	x	BDM-xx-V/1-R1	DIN 35	floating ground
				5 kA	x	BDM-xx-V/1-FR1	DIN 35	
	I = 1 A	2	6 ÷ 60	5 kA	x	BDG-xx-V/1-R1	DIN 35	isolated signal ground
				5 kA	x	BDG-xx-V/1-FR1	DIN 35	floating ground
EIB	2	24	24	x	1 kA	DPF-24	DIN 35	RFI filter
				x	10 kA	DM-024-V/1-R1	DIN 35	
				x	10 kA	DM-024-V/1-FR1	DIN 35	
	2	24	24	5 kA	x	DM-024/1R DJ	DIN 35	floating ground
M-Bus	2	48	48	x	10 kA	BDM-024-V/1-R1	DIN 35	
				x	10 kA	DM-048-V/1-R1	DIN 35	
	2	48	48	5 kA	x	DM-048/1R DJ	DIN 35	
CAN-Bus communication max. 1.5 Mbit/s	2	6	6	x	10 kA	BDM-048-V/1-R1	DIN 35	
				x	10 kA	DM-006-V/1-R1	DIN 35	
	2	6	6	5 kA	x	DM-006/1R DJ	DIN 35	
Device Net communication 500 kbit/s	I = 2 A	2	24	x	10 kA	BDM-006-V/1-R1	DIN 35	
				x	10 kA	DM-024-V/1-R2	DIN 35	
	I = 2 A	2	5	x	10 kA	DM-024/1 L2 DJ	DIN 35	
				x	10 kA	DM-006-V/1-R2	DIN 35	
	I = 1 A	2	24	x	10 kA	DM-006/1L2 DJ	DIN 35	
				5 kA	x	BDM-024-V/1-R1	DIN 35	
C-Bus	2	5	5	5 kA	x	BDM-006-V/1-R1	DIN 35	
Honeywell				x	10 kA	DM-006-V/1-R1	DIN 35	
communication max. 0.9 Mbit/s	2	5	5	5 kA	x	DM-006/1R DJ	DIN 35	
Dupline	2	15	15	5 kA	x	BDM-006-V/1-R1	DIN 35	
E-Bus (Honeywell)	2	48	48	5 kA	x	BDG-012-V/1-R1	DIN 35	isolated signal ground
Fieldbus Foundation	2	30	30	5 kA	x	BDG-048-V/1-R1	DIN 35	isolated signal ground
Genius I/O Bus	2	12	12	5 kA	x	BDG-048-V/1-R1	DIN 35	isolated signal ground
FIPIO/FIPWAY	2	30	30	5 kA	x	BDG-012-V/1-R1	DIN 35	isolated signal ground
INTERBUS INLINE	2	48	48	5 kA	x	BDG-048-V/1-R1	DIN 35	isolated signal ground
K-Bus	2	24	24	5 kA	x	BDG-048-V/1-R1	DIN 35	isolated signal ground
LUXMATE-Bus	2	24	24	5 kA	x	BDG-024-V/1-R1	DIN 35	isolated signal ground
Procontic CS31 (RS-232)	2	15	15	5 kA	x	BDG-024-V/1-R1	DIN 35	isolated signal ground
Profibus-DP/FMS high-speed lines	up to 1.5 Mbit/s	2	6	x	10 kA	BDM-024-V/1-R1	DIN 35	
				x	10 kA	DM-006-V/1-R1	DIN 35	
				5 kA	x	DM-006/1R DJ	DIN 35	
	up to 20 Mbit/s	9	18	x	150 A	BDM-006-V/1-R1	DIN 35	
				x	10 kA	DL-RS DD9	Canon	
				x	10 kA	DM-PROFIBUS 5V	DIN 35	
	up to 50 Mbit/s	2	6/15	x	10 kA	DMHF-xx/1-Ry*	DIN 35	
				x	10 kA	DMHF-xx-V/1-4R1	DIN 35	
				x	10 kA	DMHF-xx-V/1-4FR1	DIN 35	
		3/4	6/24	x	10 kA	DMHF-xx-V/1-4R1	DIN 35	floating ground
				x	10 kA	DMHF-xx-V/1-4FR1	DIN 35	
				x	10 kA	DMHF-xx-V/1-R1	DIN 35	
		2	6/24	x	10 kA	DMHF-xx-V/1-FR1	DIN 35	floating ground
				x	10 kA	DMHF-xx-V/1-FR1	DIN 35	
				x	10 kA	DMHF-xx-V/1-FR1	DIN 35	
	2+2	2	6 ÷ 24	x	10 kA	DMGHF-xx-V/1-R1	DIN 35	isolated signal ground
				x	10 kA	DMGHF-xx-V/1-R1	DIN 35	
				x	10 kA	DMGHF-xx-V/1-FR1	DIN 35	
R-Bus	2	6	6	x	10 kA	DMGHF-xx-V/2-R1	DIN 35	isolated signal ground
				x	10 kA	DMGHF-xx-V/2-FR1	DIN 35	
				x	10 kA	DMGHF-xx-V/2-FR1	DIN 35	
SDLS	2	6	6	5 kA	x	BDG-006-V/1-R1	DIN 35	isolated signal ground
Securilan-LON-Bus	2	6	6	5 kA	x	CLSA-6	Krone LSA+	
SIGMA SYS	2	48	48	5 kA	x	BDG-006-V/1-R1	DIN 35	isolated signal ground
(Siemens EPS)	2	48	48	5 kA	x	BDG-048-V/1-R1	DIN 35	isolated signal ground
SS97 SINIS (RS-232)	2	15	15	5 kA	x	BDM-048-V/1-R1	DIN 35	
SUCONET	2	6	6	5 kA	x	BDM-024-V/1-R1	DIN 35	isolated signal ground
TELEPERM M analog input	2	12	24	5 kA	x	BDG-006-V/1-R1	DIN 35	
				x	10 kA	BDM-012-V/1-R1	DIN 35	
				x	10 kA	BDM-024-V/1-R1	DIN 35	
TELEPERM M binary I/O	2	48	48	x	5 kA	CLSA-12	Krone LSA+	
				x	5 kA	CLSA-24	Krone LSA+	
				x	10 kA	DM-048-V/1-R1	DIN 35	
TELEPERM M ES100K	2	12	12	x	10 kA	DM-048/1L DJ	DIN 35	
				x	10 kA	DM-012-V/1-R1	DIN 35	
				x	10 kA	DM-012/1L DJ	DIN 35	
TELEPERM MFM100	2	12	12	5 kA	x	BDG-012-V/1-R1	DIN 35	isolated signal ground
				5 kA	x	BDG-012-V/1-FR1	DIN 35	
				x	10 kA	DM-xxx-V/1-R1	DIN 35	
TTY	2	6 ÷ 24	6 ÷ 24	x	10 kA	DM-xxx/1R DJ	DIN 35	
				5 kA	x	BDM-xxx-V/1-R1	DIN 35	
				x	10 kA	DMJ-xx/2-Ry*	DIN 35	
Potential-free (isolated) contacts	1	6 ÷ 110	6 ÷ 110	x	10 kA	DM-xx-V/2-JR1	DIN 35	floating ground
				x	10 kA	DM-xx-V/2-JR2	DIN 35	
				x	10 kA	DM-xx-V/2-JFR1	DIN 35	
				x	10 kA	DM-xx-V/2-JFR2	DIN 35	
				x	10 kA	DM-xx-V/4-JFR1	DIN 35	
				x	10 kA	DM-xx-V/4-JFR1	DIN 35	
				x	10 kA	DM-xx-V/4-JFR1	DIN 35	
Protection against power crossing of lines up to 400 V	2	24/48	24/48	x	5 kA	DMS-xx	DIN 35	

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	For mounting on	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	10 kA	DL-TLF-HF	DIN 35	RJ11
			5k A	x	BDG-230-V/1-R1	DIN 35	isolated signal ground
			5 kA	x	BDG-230-V/1-FR1	DIN 35	floating ground
			5 kA	x	BD-250-T-V/1-16	DIN 35	
Analog telephone line	2	170	x	5 kA	CLSA -TLF	LSA plus	disconnection
			x	10 kA	DL-TLF-HF	DIN 35	RJ11
			5 kA	x	BDG-230-V/1-R1	DIN 35	isolated signal ground
			5 kA	x	BDG-230-V/1-FR1	DIN 35	floating ground
		90	5 kA	x	BD-250-T-V/1-16	DIN 35	
			5 kA	x	BD-250-T-V/1-16	DIN 35	
DATEX-P	2	24	x	10 kA	CLSA-24	LSA plus	disconnection
			x	10 kA	DMG-024/1-Ry*	DIN 35	
			x	10 kA	DMG-024-V/1-R1	DIN 35	isolated signal ground
			x	10 kA	DMG-024-V/1-FR1	DIN 35	floating ground
			5 kA	x	BDG-024-V/1-R1	DIN 35	isolated signal ground
			5 kA	x	BDG-024-V/1-FR1	DIN 35	floating ground
ISDN U _{ko}	2	170	x	2,5 kA	DL-ISDN RJ45	DIN 35	
			x	10 kA	DL-ISDN SV	DIN 35	
Modem M1	2	170	x	5 kA	CLSA-ISDN	LSA plus	disconnection
	2	15	x	10 kA	CLSL-24	LSA plus	disconnection
			x	10 kA	DMG-024/1R-Ry*	DIN 35	isolated signal ground
			x	10 kA	DMG-024-V/1-R1	DIN 35	isolated signal ground
			x	10 kA	DMG-024-V/1-FR1	DIN 35	floating ground
			5 kA	x	BDG-024-V/1-R1	DIN 35	isolated signal ground
			5 kA	x	BDG-024-V/1-FR1	DIN 35	floating ground
			5 kA	x	BDM-24-V/1-R1	DIN 35	
					BDM-24-V/1-FR1	DIN 35	floating ground
Telephony systems (eg. Siemens, HICOM, ALCATEL)	2	170	x	5 kA	CLSA TLF	LSA plus	disconnection
			x	10 kA	DL-TLF-HF	DIN 35	RJ11
		90	5 kA	x	BD-250-T-V/1-16	DIN 35	
T-DSL	2	170	x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	10 kA	DL-TLF-HF	DIN 35	RJ11
			x	10 kA	DMGHF-230-V/1-R	DIN 35	
	2+2	170	x	10 kA	DMGHF-230-V/1-FR	DIN 35	floating ground
			x	10 kA	DMGHF-230-V/2-R	DIN 35	
			x	10 kA	DMGHF-230-V/2-FR	DIN 35	floating ground
	2	180	5 kA	x	BD-250-T-V/1-16	DIN 35	
Multipurpose coarse protection	2	180	5 kA	x	BD-250-T-V/1-16	DIN 35	
				x	BD-250-T-V/1-F16	DIN 35	floating ground
		70	5 kA	x	BD-090-T-V/1-16	DIN 35	
				x	BD-090-T-V/1-F16	DIN 35	floating ground
		180	5 kA	x	BD-250-T	DIN 35	
VDSL/VDSL2	2	170	70	5 kA	BD-090-T	DIN 35	
			x	2,5 kA	FAX-OVERDRIVE ...		
			x	5 kA	CLS-DSL	LSA plus	disconnection
			x	10 kA	DL-TLF-HF	DIN 35	
			5 kA	20 kA	BD-250-T-V/1-16	DIN 35	

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

DATA LINES NETWORK							
Interface / Signal	Protected lines	U (DC) (V)	Discharge current per core		SPD xx – corresponding voltage	For mounting on	Notes
			10/350 µs	8/20 µs			
ETHERNET 10/100/1 000 10 Base T	8	6/60	2	150 A	DL-10G-RJ45-PoE-AB	DIN 35	RJ45
			2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
		6	x	200 A	DL-Cat.5e	DIN 35	RJ45
			x	200 A	DL-Cat.6	DIN 35	RJ45
FDDI, CDDI	8	6/60	2	150 A	DL-10G-RJ45-PoE-AB	DIN 35	RJ45
			2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
		6	x	200 A	DL-Cat.5e	DIN 35	RJ45
			x	200 A	DL-Cat.6	DIN 35	RJ45
	2	6	x	5k A	CLSA-06	LSA plus	disconnection
			2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
Industrial Ethernet	8	6	x	200 A	DL-Cat.5e	DIN 35	RJ45
			x	200 A	DL-Cat.6	DIN 35	RJ45
			x	200 A	DL-Cat.5e 8 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.5e 16 PATCH PANEL	19" RACK	LSA/RJ45
	8 x 8 16 x 8 24 x 8 8 x 8 16 x 8 24 x 8	6	x	200 A	DL-Cat.5e 24 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 16 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 24 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 16 RACK PANEL	19" RACK	RJ45
Token Ring	8	6	2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
			x	200 A	DL-Cat.5e	DIN 35	RJ45
			x	200 A	DL-Cat.6	DIN 35	RJ45
			x	200 A	DL-Cat.6 8 PATCH PANEL	19" RACK	LSA/RJ45
	8 x 8 16 x 8 24 x 8 8 x 8 16 x 8 24 x 8	6	x	200 A	DL-Cat.6 16 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.6 24 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 16 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 24 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
VG-Any LAN	8	6	2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
			x	200 A	DL-Cat.5e	DIN 35	RJ45
			x	200 A	DL-Cat.6	DIN 35	RJ45
			x	200 A	DL-Cat.6 8 PATCH PANEL	19" RACK	LSA/RJ45
	8 x 8 16 x 8 24 x 8 8 x 8 16 x 8 24 x 8	6	x	200 A	DL-Cat.6 16 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.6 24 PATCH PANEL	19" RACK	LSA/RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 16 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 24 RACK PANEL	19" RACK	RJ45
			x	200 A	DL-Cat.5e 8 RACK PANEL	19" RACK	RJ45
VoIP (Voice over IP)	8	60	x	200 A	DL-Cat.6-60V	DIN 35	RJ45 male
POE (power over ethernet)	4	6/48	x	5 kA/1 kA	DL-100 POE 48	box	SV/RJ45
	4	6/48	x	1,5/1 kA	DL-Cat.5e POE plus	DIN 35	SV/RJ45
	8	6/60	2	150 A	DL-1G-RJ45-PoE-AB	DIN 35	RJ45
		6/60	2	150 A	DL-10G-RJ45-PoE-AB	DIN 35	RJ45

SALTEK® SPD applications in data / signalling / telecommunication systems

ANTENNAS, TRANSMITTERS, RECIEVERS, BROADBAND SYSTEM, CCTV

Interface / Signal	Protected lines	U (DC) (V)	Discharge current per core		SPD xx – corresponding voltage	For mounting on	Notes
			10/350 µs	8/20 µs			
AMPS, NADAC 824 ÷ 894 MHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F	N50	I _N = 6A 3.5 GHz
		70	2.5 kA	10 kA	HX-90 N50 F/M	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/M	N50	I _N = 6A 3.5 GHz
DCS 1800 B162 1710 ÷ 1880 MHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F	N50	I _N = 6A 3.5 GHz
Transmitters		70	2.5 kA	20 kA	HX-90 N50 F/F	N50	I _N = 6A 3.5 GHz
		70	2.5 kA	20 kA	HX-90 N50 F/M	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	20 kA	HX-230 N50 F/F	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	20 kA	HX-230 N50 F/M	N50	I _N = 6A 3.5 GHz
GSM 900, GSMR	1	70	2.5 kA	10 kA	HX-90 N50 F/F	N50	I _N = 6A 3.5 GHz
		70	2.5 kA	10 kA	HX-90 N50 F/M	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/M	N50	I _N = 6A 3.5 GHz
GPS 1565 ÷ 1585 MHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F	N50	I _N = 6A 3.5 GHz
		70	2.5 kA	10 kA	HX-90 N50 F/M	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/M	N50	I _N = 6A 3.5 GHz
GSM 1800	1	70	2.5 kA	10 kA	HX-90 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
PCS 1900 1850 ÷ 1990 MHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
TETRA, NMT 450 380 ÷ 512 MHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
Terrestrial TV	1		x	1.5 kA	SX-90 F75 F/F	F connector	I _N =4A 2 GHz
			x	1.5 kA	SX-90 B75 F/F	BNC	I _N =4A 2 GHz
			2.5 kA	10 kA	FX-90 F75 F/F	F connector	I _N =4A 2 GHz
			2.5 kA	10 kA	FX-90 B75 F/F	BNC	I _N =4A 2 GHz
UMTS	1	70	2.5 kA	10 kA	HX-90 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
WLAN band 2.4 GHz	1	70	2.5 kA	10 kA	HX-90 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
		170	2.5 kA	10 kA	HX-230 N50 F/F (F/M)	N50	I _N = 6A 3.5 GHz
VIDEO	coax	1		x	10 kA	VL-B75 F/F	DIN 35 BNC
	2-wire	2		x	10 kA	VL-SV	DIN 35 screw terminals
	IP	8	5	x	200	DL-Cat 5e	DIN 35 RJ45
		8	5	x	200	DL-Cat 6	DIN 35 RJ45
		4	6/76	x	1	DL-100 POE-048	box SV/RJ45
		4	6/76	x	1	DL-Cat. 5e POE plus	DIN 35 RJ45
		8	6/60	2	150	DL-1G-RJ45-PoE-AB	DIN 35 RJ45
		8	6/60	2	150	DL-10G-RJ45-PoE-AB	DIN 35 RJ45
WLAN Twist Pair		2		x	10 kA	VL-SV	DIN 35 screw terminals

SPDs for data/signalling/telecommunication networks

Devices with pluggable module



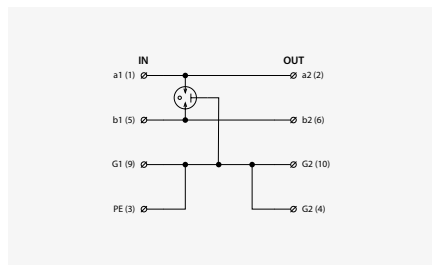
- SPDs with coarse and fine protection
- Pluggable modules for easy replacement
- For 1 up to 4-core lines
- Multiple core lines save the space
- All variants available in "F" version with separated line and protective earth

- Line BD – lightning current arresters
- Line DM – for 2/3/4-core communication lines
- Line DMG – with separated signal ground and protective earth
- Line DMHF – 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

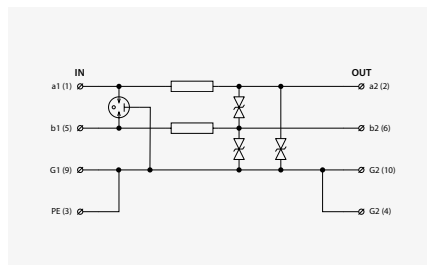
Devices with pluggable module

BD-...-T...



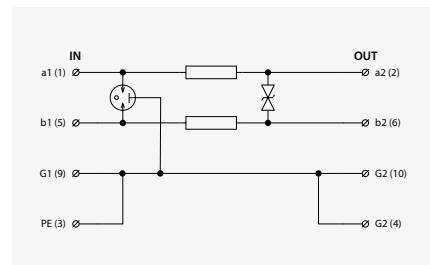
2 core line incoming from LPZ 0 to structure.
See page: 98–99

BDM-...



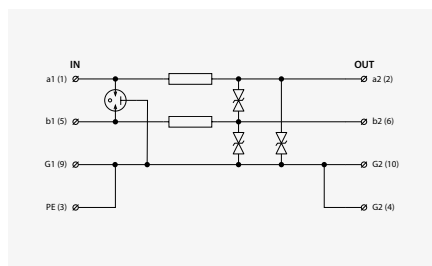
2-3 core line incoming from LPZ 0 to structure with one-pole connected with ground.
See page: 100–101

BDG-...



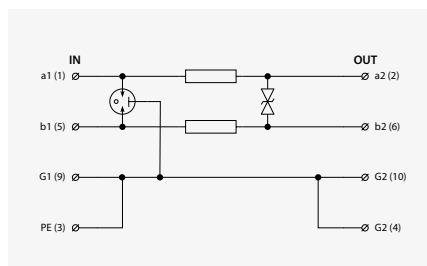
2 core floating line incoming from LPZ 0 to structure.
See page: 102–103

DM-...



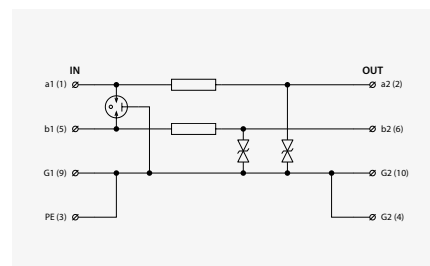
2-3 core line(s) with one-pole connected with ground.
See page: 104–113

DMG-...



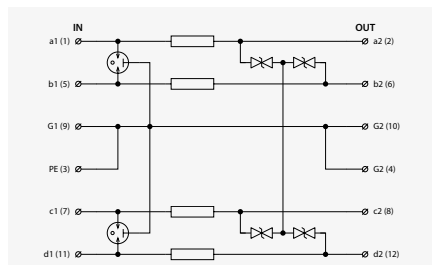
2 core floating line(s).
See page: 114–123

DM-...-J...



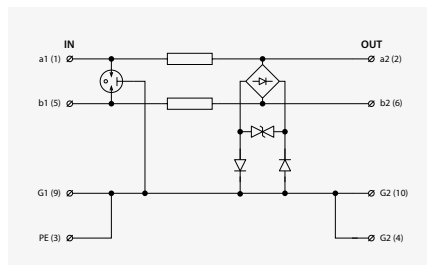
Single core lines.
See page: 124–129

DMG-...-4...



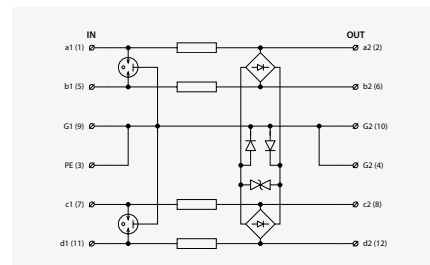
3-4 core floating line.
See page: 130–131

DMHF-...



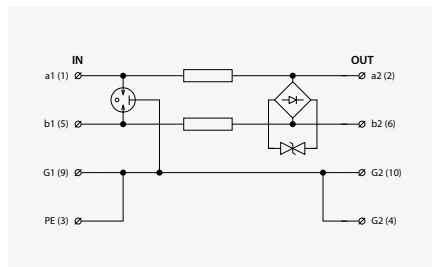
2 core high-speed line.
See page: 132

DMHF-...-4...



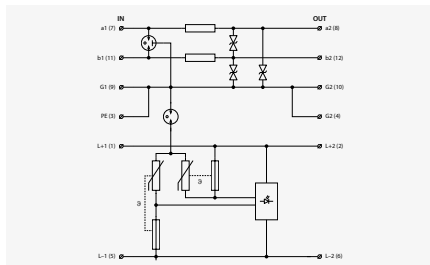
3-4 core high-speed line.
See page: 133

DMGHF-...



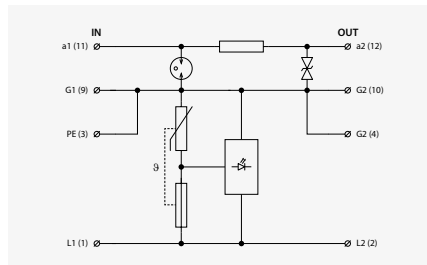
2 core high-speed floating line.
See page: 134–137

DMP-...



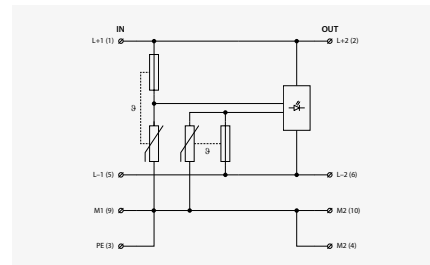
2 core line combined with power supply.
See page: 138–139

DMP-...-J...



Single core line combined with power supply.
See page: 140–141

DP-...-16

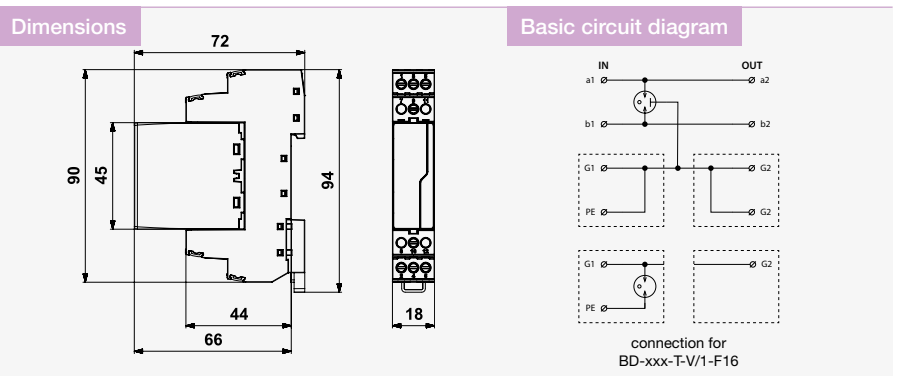


Power supply 12, 24, 48, 60 V up to 16 A.
See page: 142–143

BD-...-T-V/1-(F)16

Lightning Current Arrester pluggable module

- 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
- in "F" version is the line separated from protective earth via GDT



Parameter / Type		BD-090-T-V/1-16	BD-250-T-V/1-16	BD-090-T-V/1-F16	BD-250-T-V/1-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 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	-	-	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	550 V	550 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090554172	8595090554189	8595090555520	8595090555537

Spare module	BD-090-T-V/1-0	BD-250-T-V/1-0	BD-090-T-V/1-0	BD-250-T-V/1-0
Ordering number	8595090553885	8595090553892	8595090553885	8595090553892

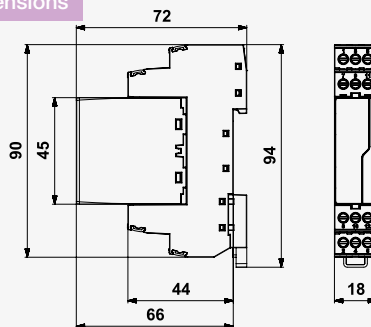
BD-...-T-V/2-(F)16

Lightning Current Arrester pluggable module

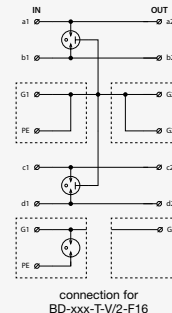
- lightning current arrester of two 2-core signalling lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- mainly for protection of telecommunication lines against surge voltage
- in "F" version is the line separated from protective earth via GDT



Dimensions



Basic circuit diagram



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 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	-	-	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	550 V	550 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090555506	8595090555513	8595090555544	8595090555551

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	8595090553908	8595090553915	8595090553908	8595090553915

BDM-...-V/1-R.

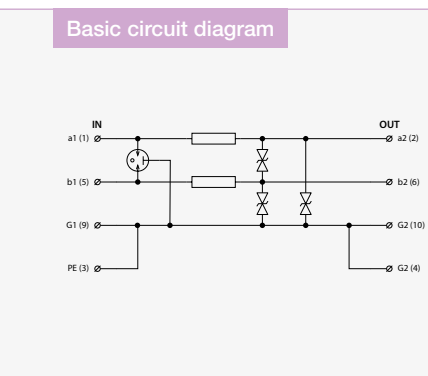
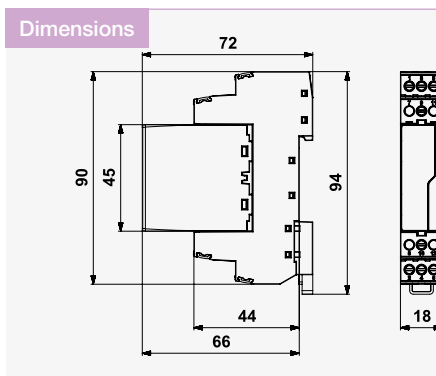
Lightning Current Arrester

pluggable module, coupling impedance (R – resistance)

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



Parameter / Type	BDM-006-V/1-R1	BDM-012-V/1-R1	BDM-024-V/1-R1	BDM-048-V/1-R1	BDM-230-V/1-R
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	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	177 V AC / 250 V DC
Nominal load current	I_L 1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n 10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total} 20 kA	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp} 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total} 5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p 12 V	22 V	46 V	65 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p 12 V	22 V	46 V	65 V	350 V
Response time core-core	t_a 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
Serial resistance per core	R 0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f 0,8 MHz	2 MHz	4 MHz	5 MHz	11 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number	8595090554240	8595090554257	8595090554264	8595090554271	8595090554288

Spare module	BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0	BDM-230-V/1-0
Ordering number	8595090555018	8595090555025	8595090555032	8595090555049	8595090555056

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

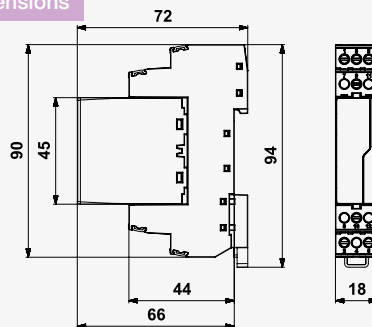
Lightning Current Arrester

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

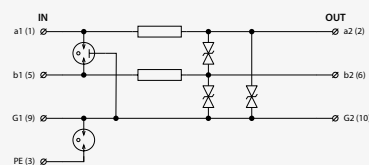
- coarse and fine surge protection of 2/3-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDM-230) and communication interfaces of I&C, electronic security and fire 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)



Dimensions



Basic circuit diagram



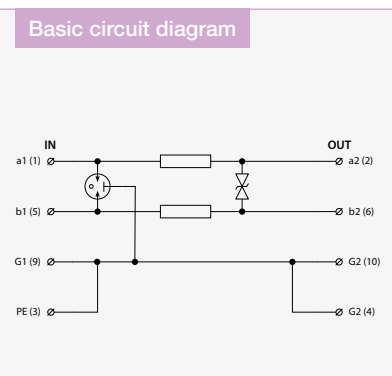
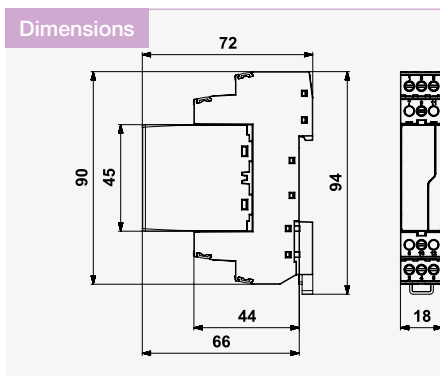
Parameter / Type		BDM-006-V/1-FR1	BDM-012-V/1-FR1	BDM-024-V/1-FR1	BDM-048-V/1-FR1	BDM-230-V/1-FR
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC	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	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V	350 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	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	0,8 MHz	2 MHz	4 MHz	5 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090557098	8595090557104	8595090557111	8595090557128	8595090557135
Spare module		BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0	BDM-230-V/1-0
Ordering number		8595090555018	8595090555025	8595090555032	8595090555049	8595090555056

BDG-...-V/1-R.

Lightning Current Arrester

pluggable module, coupling impedance (R – resistance)

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



Parameter / Type		BDG-006-V/1-R1	BDG-012-V/1-R1	BDG-024-V/1-R1	BDG-048-V/1-R1	BDG-230-V/1-R
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	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	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	500 V	550 V	550 V	550 V	550 V
Response time core-core	t_a	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
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	1,2 MHz	3 MHz	6 MHz	7 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090554196	8595090554202	8595090554219	8595090554226	8595090554233

Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0	BDG-230-V/1-0
Ordering number	8595090553991	8595090554004	8595090554011	8595090554028	8595090554035

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

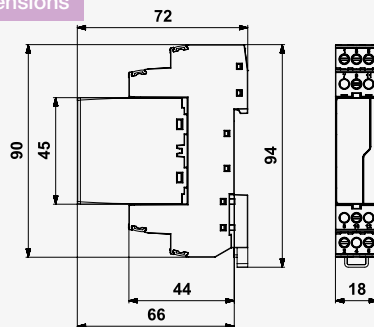
Lightning Current Arrester

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

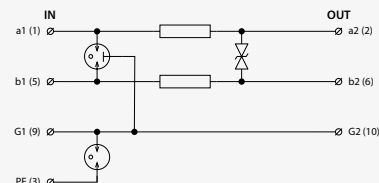
- coarse and fine surge protection of shielded 2-core telecommunication, data and other lines
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of telecommunication lines (version BDG-230) and communication interfaces of I&C, electronic security 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)



Dimensions



Basic circuit diagram



Parameter / Type	BDG-006-V/1-FR1	BDG-012-V/1-FR1	BDG-024-V/1-FR1	BDG-048-V/1-FR1	BDG-230-V/1-FR
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	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	177 V AC / 250 V DC
Nominal load current	I_L 1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n 10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n 10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total} 20 kA	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp} 2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total} 5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p 12 V	22 V	46 V	65 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p 550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p 550 V	550 V	550 V	550 V	550 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 100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R 0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f 1,2 MHz	3 MHz	6 MHz	7 MHz	16 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number	8595090557043	8595090557050	8595090557067	8595090557074	8595090557081
Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0	BDG-230-V/1-0
Ordering number	8595090553991	8595090554004	8595090554011	8595090554028	8595090554035

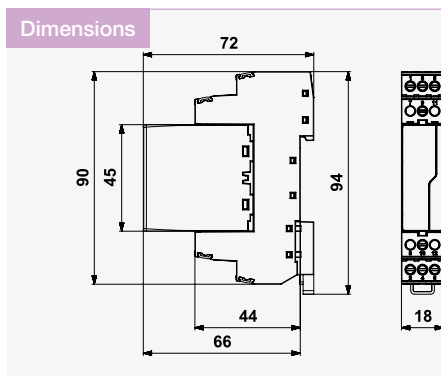
DM-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

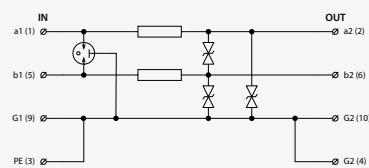
- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security

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)



Basic circuit diagram



Parameter / Type	DM-006-V/1-R1	DM-006-V/1-R2	DM-012-V/1-R1	DM-012-V/1-R2	DM-024-V/1-R1	DM-024-V/1-R2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current	I_L 1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n 10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ 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/ μ s	U_p 12 V	12 V	22 V	22 V	46 V	46 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p 12 V	12 V	22 V	22 V	46 V	46 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 0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	f 0,8 MHz	0,8 MHz	2 MHz	2 MHz	4 MHz	4 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090554295	8595090554370	8595090554301	8595090554387	8595090554318	8595090554394

Spare module	DM-006-V/1-0	DM-006-V/1-0	DM-012-V/1-0	DM-012-V/1-0	DM-024-V/1-0	DM-024-V/1-0
Ordering number	8595090555063	8595090555063	8595090555070	8595090555070	8595090555087	8595090555087

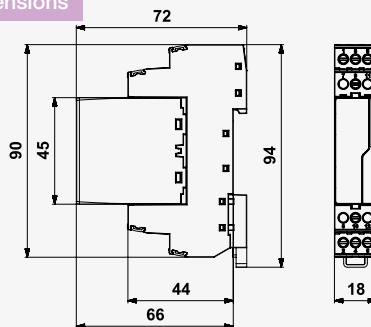
DM-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

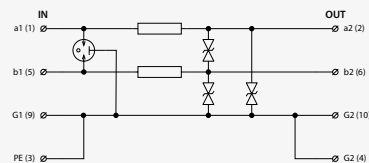
- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



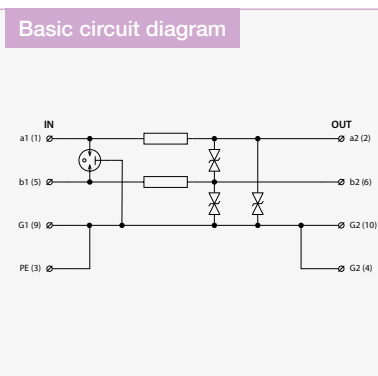
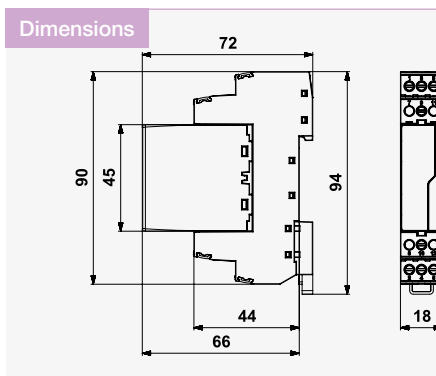
Parameter / Type		DM-048-V/1-R1	DM-048-V/1-R2	DM-060-V/1-R1	DM-060-V/1-R2
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	48 V DC	48 V DC	60 V DC	60 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	45 V AC / 64 V DC
Nominal load current	I_L	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V	65 V	85 V	85 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	65 V	65 V	85 V	85 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	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	f	5 MHz	5 MHz	6,5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090554325	8595090554400	8595090555988	8595090556183

Spare module	DM-048-V/1-0	DM-048-V/1-0	DM-060-V/1-0	DM-060-V/1-0
Ordering number	8595090555094	8595090555094	8595090555100	8595090555100

DM-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection for 2-core signalling 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 common mode (core – PE)



Parameter / Type		DM-110-V/1-R	DM-110-V/1-R1	DM-230-V/1-R	DM-230-V/1-R1
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	110 V DC	110 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	85 V AC / 120 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	0,5 A	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	170 V	170 V	350 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	170 V	170 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	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	3,3 Ω	1,6 Ω	3,3 Ω	1,6 Ω
Threshold frequency core-core	f	10 MHz	10 MHz	11 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555995	8595090556190	8595090556008	8595090556206

Spare module	DM-110-V/1-0	DM-110-V/1-0	DM-230-V/1-0	DM-230-V/1-0
Ordering number	8595090555117	8595090555117	8595090556688	8595090556688

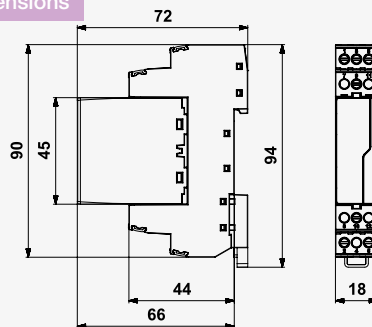
DM-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

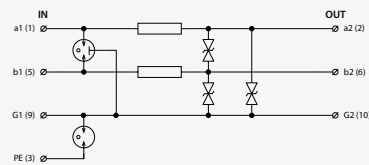
- coarse and fine surge protection for 2/3-core signalling lines
 - installation close to protected equipment
 - for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Dimensions



Basic circuit diagram



Parameter / Type	DM-006-V/1-FR1	DM-006-V/1-FR2	DM-012-V/1-FR1	DM-012-V/1-FR2	DM-024-V/1-FR1	DM-024-V/1-FR2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current I_L	1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ 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/ μ s U_p	12 V	12 V	22 V	22 V	46 V	46 V
C3 voltage protection level mode GND-PE at 1 kV/ μ 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/ μ s U_p	12 V	12 V	22 V	22 V	46 V	46 V
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	1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core R	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core f	0,8 MHz	0,8 MHz	2 MHz	2 MHz	4 MHz	4 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090556015	8595090556213	8595090556022	8595090556220	8595090556039	8595090556237

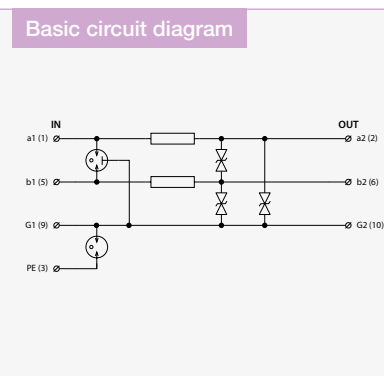
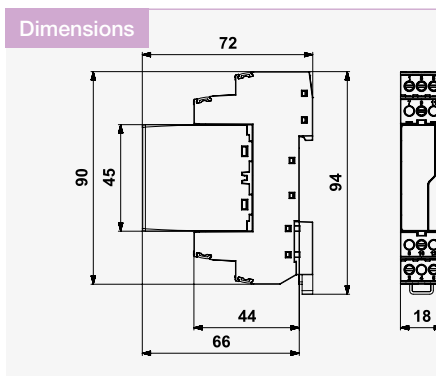
Spare module	DM-006-V/1-0	DM-006-V/1-0	DM-012-V/1-0	DM-012-V/1-0	DM-024-V/1-0	DM-024-V/1-0
Ordering number	8595090555063	8595090555063	8595090555070	8595090555070	8595090555087	8595090555087

DM-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection for 2/3-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 (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Parameter / Type		DM-048-V/1-FR1	DM-048-V/1-FR2	DM-060-V/1-FR1	DM-060-V/1-FR2
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	48 V DC	48 V DC	60 V DC	60 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	45 V AC / 64 V DC
Nominal load current	I_L	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V	65 V	85 V	85 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	65 V	65 V	85 V	85 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 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	f	5 MHz	5 MHz	6,5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556046	8595090556244	8595090556053	8595090556251

Spare module	DM-048-V/1-0	DM-048-V/1-0	DM-060-V/1-0	DM-060-V/1-0
Ordering number	8595090555094	8595090555094	8595090555100	8595090555100

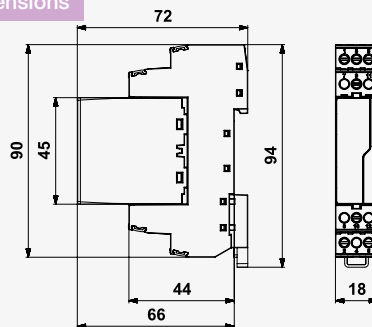
DM-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

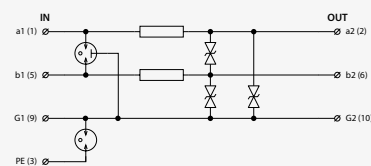
- coarse and fine surge protection for 2/3-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines against impact of surge voltage
- coarse and fine surge protection (core – core, GND) in differential mode and coarse surge protection in common mode (line – PE)



Dimensions



Basic circuit diagram



Parameter / Type		DM-110-V/1-FR	DM-110-V/1-FR1	DM-230-V/1-FR	DM-230-V/1-FR1
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	110 V DC	110 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	85 V AC / 120 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	0,5 A	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	170 V	170 V	350 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	170 V	170 V	350 V	350 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	3,3 Ω	1,6 Ω	3,3 Ω	1,6 Ω
Threshold frequency core-core	f	10 MHz	10 MHz	11 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556060	8595090556268	8595090556077	8595090556275

Spare module	DM-110-V/1-0	DM-110-V/1-0	DM-230-V/1-0	DM-230-V/1-0
Ordering number	8595090555117	8595090555117	8595090556688	8595090556688

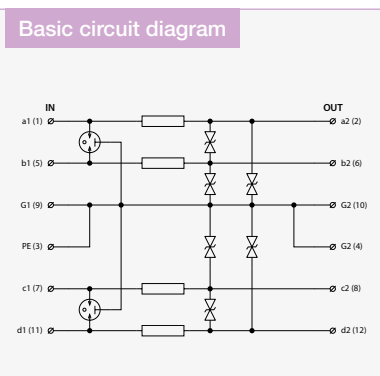
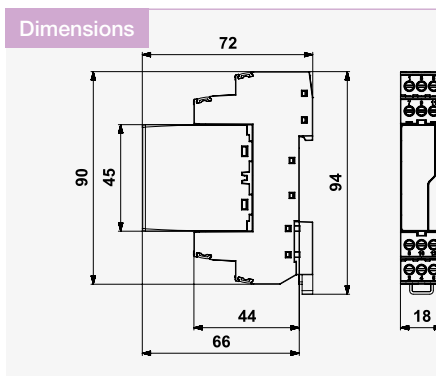
DM-...-V/2-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection for two 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-V/2-R1	DM-012-V/2-R1	DM-024-V/2-R1	DM-048-V/2-R1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	22 V	46 V	65 V
C3 voltage protection level mode core-PE at 1 kV/µs	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 core-PE	t_a	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090554332	8595090554349	8595090554356	8595090554363

Spare module	DM-006-V/2-0	DM-012-V/2-0	DM-024-V/2-0	DM-048-V/2-0
Ordering number	8595090556695	8595090556701	8595090556718	8595090556725

DM-...-V/2-R.

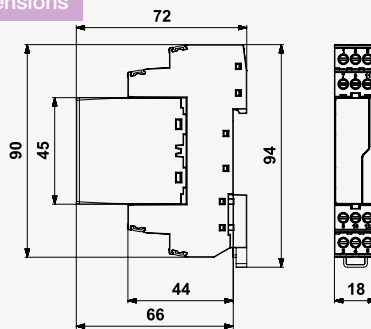
Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection for two 2-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DM-110 and DM-230) and communication interfaces of I&C,

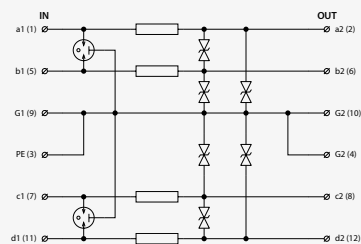
- electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Dimensions



Basic circuit diagram



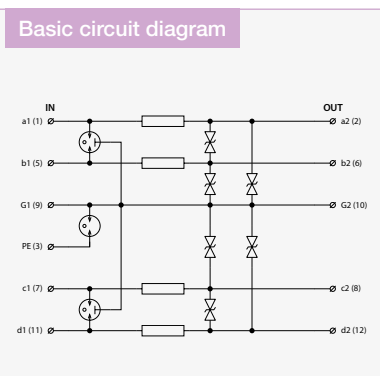
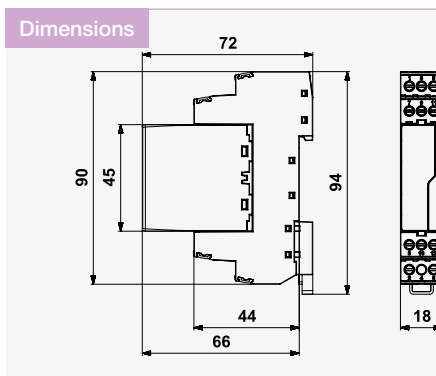
Parameter / Type	DM-060-V/2-R1	DM-110-V/2-R	DM-230-V/2-R
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3
Nominal voltage U_n	60 V DC	110 V DC	230 V DC
Maximum operating voltage U_c	45 V AC / 64 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC
Nominal load current I_L	1 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s U_p	85 V	170 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	85 V	170 V	350 V
Response time core-core t_a	1 ns	1 ns	1 ns
Response time core-PE t_a	1 ns	1 ns	1 ns
Serial resistance per core R	0,8 Ω	3,3 Ω	3,3 Ω
Threshold frequency core-core f	6,5 MHz	10 MHz	11 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090556084	8595090556091	8595090556107

Spare module	DM-060-V/2-0	DM-110-V/2-0	DM-230-V/2-0
Ordering number	8595090556732	8595090556749	8595090556756

DM-...-V/2-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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



Parameter / Type		DM-006-V/2-FR1	DM-012-V/2-FR1	DM-024-V/2-FR1	DM-048-V/2-FR1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556114	8595090556121	8595090556138	8595090556145

Spare module	DM-006-V/2-0	DM-012-V/2-0	DM-024-V/2-0	DM-048-V/2-0
Ordering number	8595090556695	8595090556701	8595090556718	8595090556725

DM-...-V/2-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection for two 2-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DM-110 and DM-230)

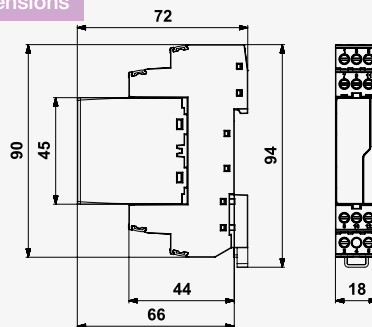
and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage

- coarse and fine surge protection (core – core, GND) in differential mode and

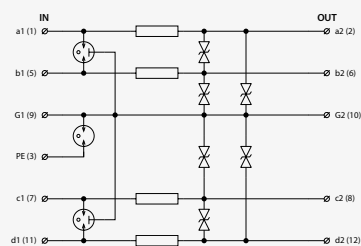
coarse surge protection in common mode (line – PE)



Dimensions



Basic circuit diagram



Parameter / Type		DM-060-V/2-FR1	DM-110-V/2-FR	DM-230-V/2-FR
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	60 V DC	110 V DC	230 V DC
Maximum operating voltage	U_c	45 V AC / 64 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	85 V	170 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	85 V	170 V	350 V
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 Ω	3,3 Ω	3,3 Ω
Threshold frequency core-core	f	6,5 MHz	10 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556152	8595090556169	8595090556176

Spare module	DM-060-V/2-0	DM-110-V/2-0	DM-230-V/2-0
Ordering number	8595090556732	8595090556749	8595090556756

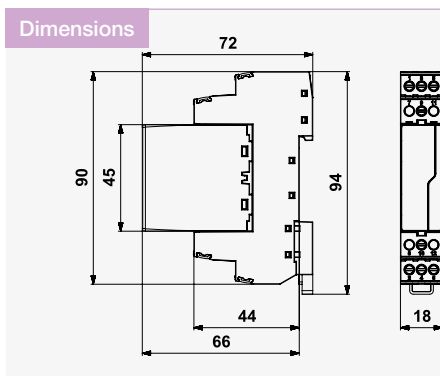
DMG-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

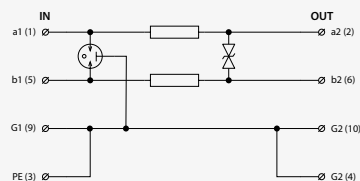
- coarse and fine surge protection of 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly

the measuring circuits) against impact of surge voltage

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



Basic circuit diagram



Parameter / Type	DMG-006-V/1-R1	DMG-006-V/1-R2	DMG-012-V/1-R1	DMG-012-V/1-R2	DMG-024-V/1-R1	DMG-024-V/1-R2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current I_L	1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ 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/ μ s U_p	12 V	12 V	22 V	22 V	46 V	46 V
C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	550 V	550 V	550 V	550 V	550 V	550 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	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core f	1,2 MHz	1,2 MHz	3 MHz	3 MHz	6 MHz	6 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090555704	8595090555568	8595090555711	8595090555575	8595090555728	8595090555582

Spare module	DMG-006-V/1-0	DMG-006-V/1-0	DMG-012-V/1-0	DMG-012-V/1-0	DMG-024-V/1-0	DMG-024-V/1-0
Ordering number	8595090553922	8595090553922	8595090553939	8595090553939	8595090553946	8595090553946

DMG-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

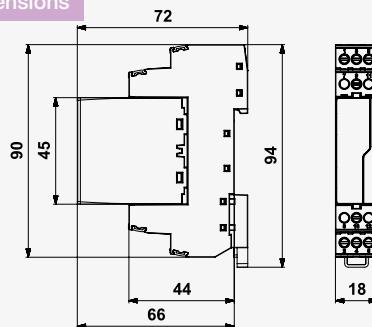
- coarse and fine surge protection of 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly

the measuring circuits) against impact of surge voltage

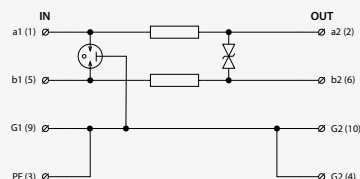
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



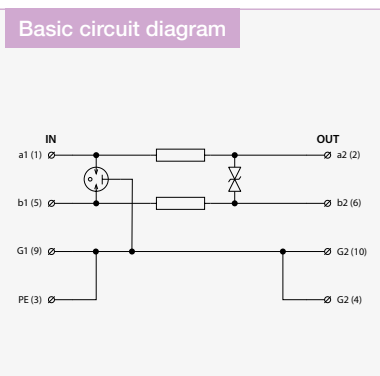
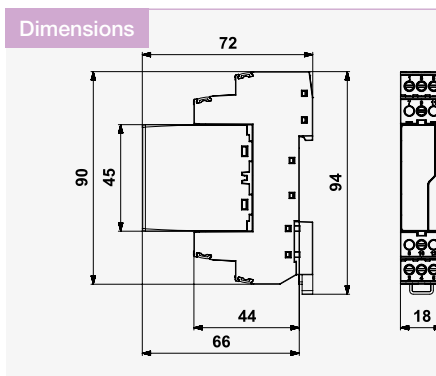
Parameter / Type		DMG-048-V/1-R1	DMG-048-V/1-R2	DMG-060-V/1-R1	DMG-060-V/1-R2
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	48 V DC	48 V DC	60 V DC	60 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	45 V AC / 64 V DC
Nominal load current	I_L	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	65 V	65 V	85 V	85 V
C3 voltage protection level mode core-PE at 1 kV/µs	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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	f	7 MHz	7 MHz	10 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555735	8595090555599	8595090555742	8595090555605

Spare module	DMG-048-V/1-0	DMG-048-V/1-0	DMG-060-V/1-0	DMG-060-V/1-0
Ordering number	8595090553953	8595090553953	8595090553960	8595090553960

DMG-...-V/1-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of 2-core signalling 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		DMG-110-V/1-R	DMG-110-V/1-R1	DMG-230-V/1-R	DMG-230-V/1-R1
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	110 V DC	110 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	85 V AC / 120 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	0,5 A	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	170 V	170 V	350 V	350 V
C3 voltage protection level mode core-PE at 1 kV/µs	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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	3,3 Ω	1,6 Ω	3,3 Ω	1,6 Ω
Threshold frequency core-core	f	14 MHz	14 MHz	16 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555759	8595090555612	8595090555766	8595090555629

Spare module	DMG-110-V/1-0	DMG-110-V/1-0	DMG-230-V/1-0	DMG-230-V/1-0
Ordering number	8595090553977	8595090553977	8595090553984	8595090553984

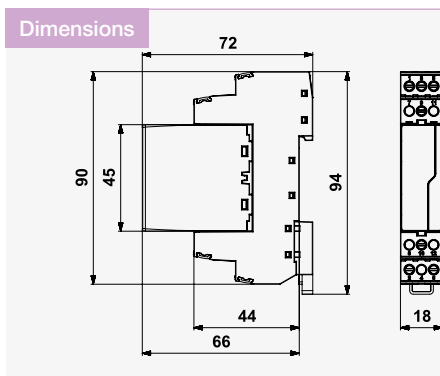
DMG-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

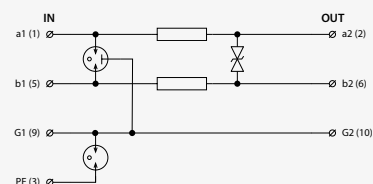
- coarse and fine surge protection of 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly

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)



Basic circuit diagram



Parameter / Type	DMG-006-V/1-FR1	DMG-006-V/1-FR2	DMG-012-V/1-FR1	DMG-012-V/1-FR2	DMG-024-V/1-FR1	DMG-024-V/1-FR2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current I_L	1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ 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/ μ s U_p	12 V	12 V	22 V	22 V	46 V	46 V
C3 voltage protection level mode GND-PE at 1 kV/ μ 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/ μ s U_p	550 V	550 V	550 V	550 V	550 V	550 V
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 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core f	1,2 MHz	1,2 MHz	3 MHz	3 MHz	6 MHz	6 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090555773	8595090555636	8595090555780	8595090555643	8595090555797	8595090555650

Spare module	DMG-006-V/1-0	DMG-006-V/1-0	DMG-012-V/1-0	DMG-012-V/1-0	DMG-024-V/1-0	DMG-024-V/1-0
Ordering number	8595090553922	8595090553922	8595090553939	8595090553939	8595090553946	8595090553946

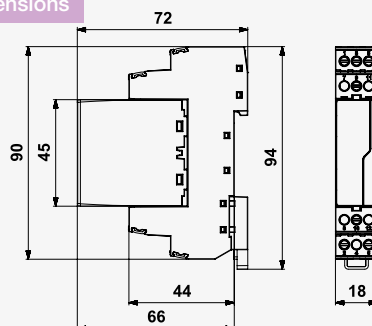
DMG-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

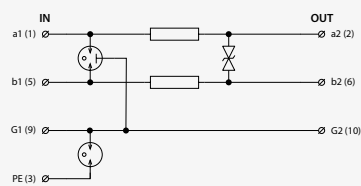
- coarse and fine surge protection of 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



Parameter / Type		DMG-048-V/1-FR1	DMG-048-V/1-FR2	DMG-060-V/1-FR1	DMG-060-V/1-FR2
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	48 V DC	48 V DC	60 V DC	60 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	45 V AC / 64 V DC
Nominal load current	I_L	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V	65 V	85 V	85 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	f	7 MHz	7 MHz	10 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555803	8595090555667	8595090555810	8595090555674

Spare module	DMG-048-V/1-0	DMG-048-V/1-0	DMG-060-V/1-0	DMG-060-V/1-0
Ordering number	8595090553953	8595090553953	8595090553960	8595090553960

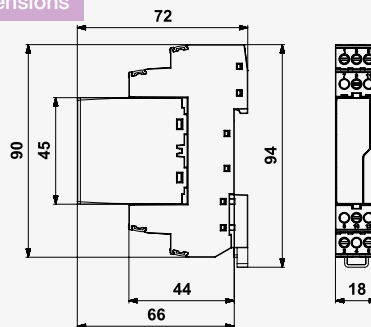
DMG-...-V/1-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

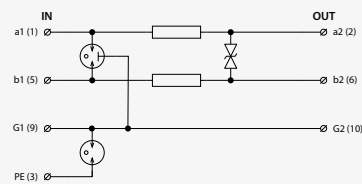
- coarse and fine surge protection of 2-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines against impact of surge voltage
- coarse and fine surge protection (core – core) and coarse protection (core – GND) in differential mode, coarse surge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



Dimensions



Basic circuit diagram



Parameter / Type		DMG-110-V/1-FR1	DMG-110-V/1-FR	DMG-230-V/1-FR1	DMG-230-V/1-FR
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	110 V DC	110 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	85 V AC / 120 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	170 V	170 V	350 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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	1,6 Ω	3,3 Ω	1,6 Ω	3,3 Ω
Threshold frequency core-core	f	14 MHz	14 MHz	16 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555681	8595090555827	8595090555698	8595090555834

Spare module	DMG-110-V/1-0	DMG-110-V/1-0	DMG-230-V/1-0	DMG-230-V/1-0
Ordering number	8595090553977	8595090553977	8595090553984	8595090553984

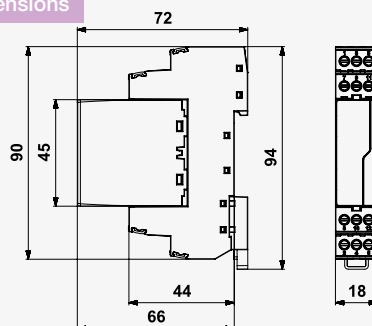
DMG-...-V/2-R.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

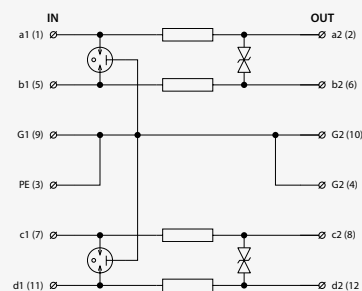
- coarse and fine surge protection of two 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage
- coarse and fine surge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



Dimensions



Basic circuit diagram



Parameter / Type		DMG-006-V/2-R1	DMG-012-V/2-R1	DMG-024-V/2-R1	DMG-048-V/2-R1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555841	8595090555858	8595090555865	8595090555872

Spare module	DMG-006-V/2-0	DMG-012-V/2-0	DMG-024-V/2-0	DMG-048-V/2-0
Ordering number	8595090554042	8595090554059	8595090554066	8595090554073

DMG-...-V/2-R.

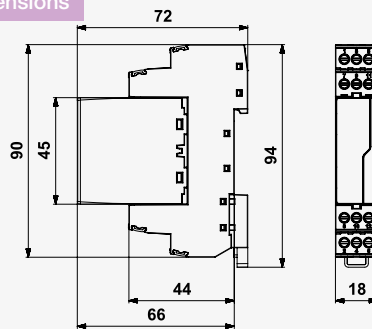
Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of two 2-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMG-110 and DMG-230) and communication interfaces of I&C,

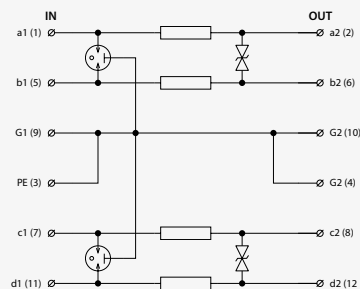
- electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter / Type		DMG-060-V/2-R1	DMG-110-V/2-R	DMG-230-V/2-R
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	60 V DC	110 V DC	230 V DC
Maximum operating voltage	U_c	45 V AC / 64 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	85 V	170 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	550 V	550 V	550 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	0,8 Ω	3,3 Ω	3,3 Ω
Threshold frequency core-core	f	10 MHz	14 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555889	8595090555896	8595090555902

Spare module	DMG-060-V/2-0	DMG-110-V/2-0	DMG-230-V/2-0
Ordering number	8595090554981	8595090554998	8595090555001

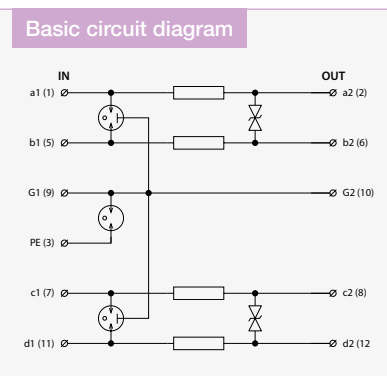
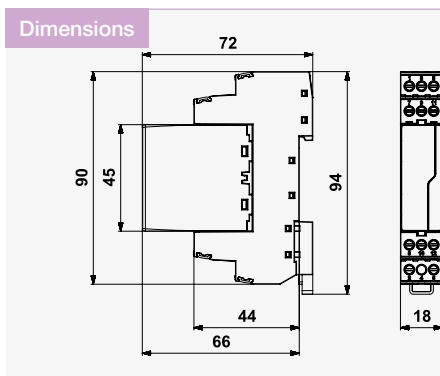
DMG-...-V/2-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of two 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

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		DMG-006-V/2-FR1	DMG-012-V/2-FR1	DMG-024-V/2-FR1	DMG-048-V/2-FR1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555919	8595090555926	8595090555933	8595090555940

Spare module	DMG-006-V/2-0	DMG-012-V/2-0	DMG-024-V/2-0	DMG-048-V/2-0
Ordering number	8595090554042	8595090554059	8595090554066	8595090554073

DMG-...-V/2-FR.

Combination of coarse and fine surge protection for telecommunication and signalling networks

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

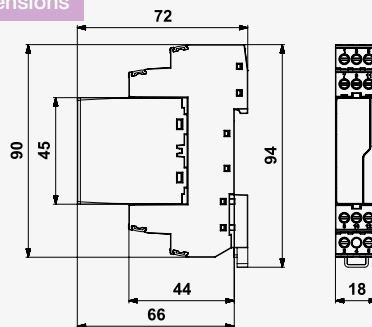
- coarse and fine surge protection of two 2-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMG-110 and DMG-230)

and communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the measuring circuits) against impact of surge voltage

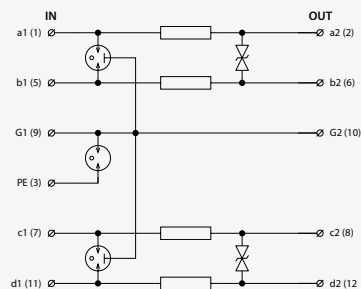
- coarse and fine surge protection (core – core) and coarse protection (core – GND) in differential mode, coarse surge protection in common mode (line – PE)



Dimensions



Basic circuit diagram



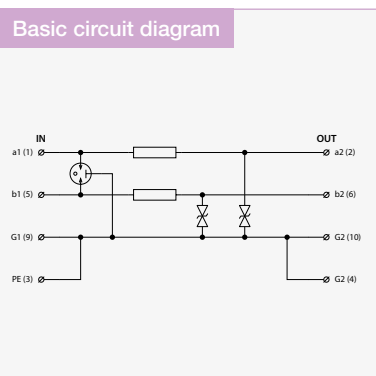
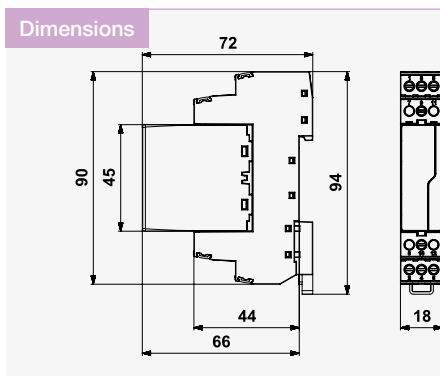
Parameter / Type		DMG-060-V/2-FR1	DMG-110-V/2-FR	DMG-230-V/2-FR
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	60 V DC	110 V DC	230 V DC
Maximum operating voltage	U_c	45 V AC / 64 V DC	85 V AC / 120 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	85 V	170 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	550 V	550 V	550 V
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 Ω	3,3 Ω	3,3 Ω
Threshold frequency core-core	f	10 MHz	14 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090555957	8595090555964	8595090555971

Spare module	DMG-060-V/2-0	DMG-110-V/2-0	DMG-230-V/2-0
Ordering number	8595090554981	8595090554998	8595090555001

DM-...-V/2-JR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

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



Parameter / Type		DM-006-V/2-JR1	DM-006-V/2-JR2	DM-012-V/2-JR1	DM-012-V/2-JR2	DM-024-V/2-JR1	DM-024-V/2-JR2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current	I_L	1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	12 V	12 V	22 V	22 V	46 V	46 V
Response time core-PE	t_a	1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core		0,8 MHz	0,8 MHz	2 MHz	2 MHz	4 MHz	4 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556329	8595090556527	8595090556336	8595090556534	8595090556343	8595090556541

Spare module	DM-006-V/2-J-0	DM-006-V/2-J-0	DM-012-V/2-J-0	DM-012-V/2-J-0	DM-024-V/2-J-0	DM-024-V/2-J-0
Ordering number	8595090556800	8595090556800	8595090556817	8595090556817	8595090556824	8595090556824

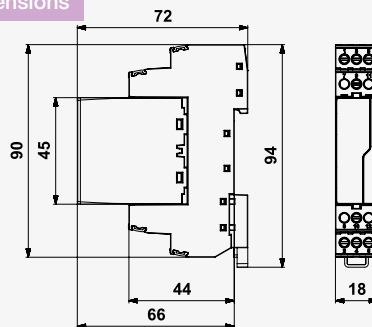
DM-...-V/2-JR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

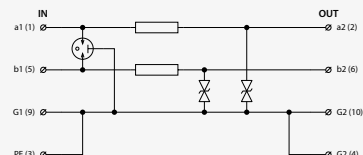
- coarse and fine surge protection for two 1-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the control circuits) against impact of surge voltage
- coarse and fine surge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



Dimensions



Basic circuit diagram



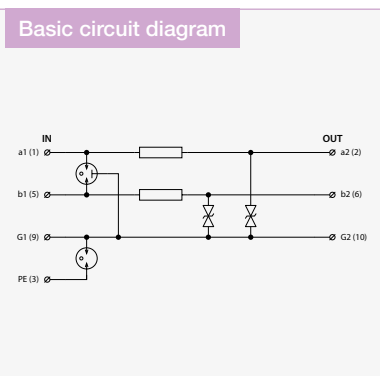
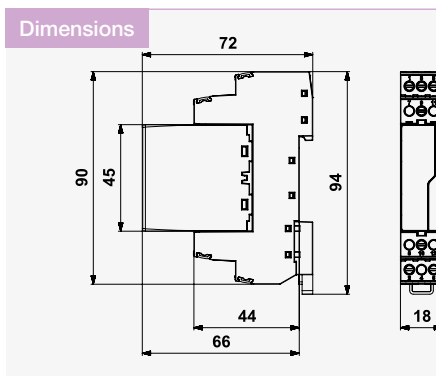
Parameter / Type		DM-048-V/2-JR1	DM-048-V/2-JR2	DM-110-V/2-JR1	DM-110-V/2-JR
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	48 V DC	48 V DC	110 V DC	110 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	85 V AC / 120 V DC	85 V AC / 120 V DC
Nominal load current	I_L	1 A	2 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	65 V	65 V	170 V	170 V
Response time core-PE	t_a	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,4 Ω	1,6 Ω	3,3 Ω
Threshold frequency core-core		5 MHz	5 MHz	10 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556350	8595090556558	8595090556565	8595090556367

Spare module	DM-048-V/2-J-0	DM-048-V/2-J-0	DM-110-V/2-J-0	DM-110-V/2-J-0
Ordering number	8595090556831	8595090556831	8595090556848	8595090556848

DM-...-V/2-JFR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection for two 1-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly the control circuits) 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	DM-006-V/2-JFR1	DM-006-V/2-JFR2	DM-012-V/2-JFR1	DM-012-V/2-JFR2	DM-024-V/2-JFR1	DM-024-V/2-JFR2
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	6 V DC	12 V DC	12 V DC	24 V DC	24 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	25 V AC / 36 V DC	25 V AC / 36 V DC
Nominal load current I_L	1 A	2 A	1 A	2 A	1 A	2 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode GND-PE at 1 kV/ μ 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/ μ s U_p	12 V	12 V	22 V	22 V	46 V	46 V
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 Ω	0,4 Ω	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Threshold frequency core-core	0,8 MHz	0,8 MHz	2 MHz	2 MHz	4 MHz	4 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090556374	8595090556572	8595090556381	8595090556589	8595090556398	8595090556596

Spare module	DM-006-V/2-J-0	DM-006-V/2-J-0	DM-012-V/2-J-0	DM-012-V/2-J-0	DM-024-V/2-J-0	DM-024-V/2-J-0
Ordering number	8595090556800	8595090556800	8595090556817	8595090556817	8595090556824	8595090556824

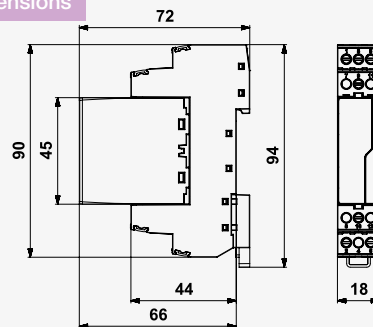
DM-...-V/2-JFR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

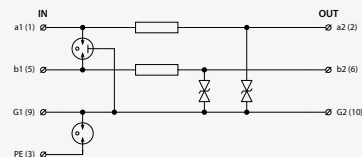
- coarse and fine surge protection for two 1-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.
- (mainly the control circuits) against impact of surge voltage
- coarse and fine surge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



Dimensions



Basic circuit diagram



Parameter / Type		DM-048-V/2-JFR1	DM-048-V/2-JFR2	DM-110-V/2-JFR1	DM-110-V/2-JFR
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	48 V DC	48 V DC	110 V DC	110 V DC
Maximum operating voltage	U_c	36 V AC / 51 V DC	36 V AC / 51 V DC	85 V AC / 120 V DC	85 V AC / 120 V DC
Nominal load current	I_L	1 A	2 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	65 V	65 V	170 V	170 V
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 Ω	0,4 Ω	1,6 Ω	3,3 Ω
Threshold frequency core-core		5 MHz	5 MHz	10 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556404	8595090556602	8595090556619	8595090556411

Spare module	DM-048-V/2-J-0	DM-048-V/2-J-0	DM-110-V/2-J-0	DM-110-V/2-J-0
Ordering number	8595090556831	8595090556831	8595090556848	8595090556848

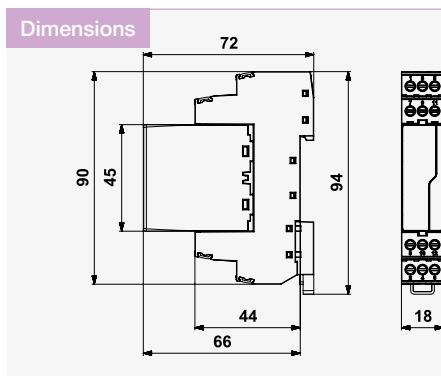
DM-...-V/4-JR.

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

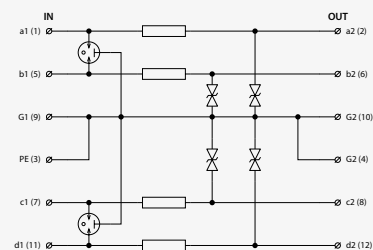
- coarse and fine surge protection for four 1-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DM-110) and communication interfaces of I&C, electronic

security and fire detection systems, etc. (mainly the control circuits) against impact of surge voltage

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



Basic circuit diagram



Parameter / Type		DM-006-V/4-JR1	DM-012-V/4-JR1	DM-024-V/4-JR1	DM-048-V/4-JR1	DM-110-V/4-JR
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	6 V DC	12 V DC	24 V DC	48 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	85 V AC / 120 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	12 V	22 V	46 V	65 V	170 V
Response time core-PE	t_a	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core		0,8 MHz	2 MHz	4 MHz	5 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556428	8595090556435	8595090556442	8595090556459	8595090556466

Spare module	DM-006-V/4-J-0	DM-012-V/4-J-0	DM-024-V/4-J-0	DM-048-V/4-J-0	DM-110-V/4-J-0
Ordering number	8595090556855	8595090556862	8595090556879	8595090556886	8595090556893

DM-...-V/4-JFR.

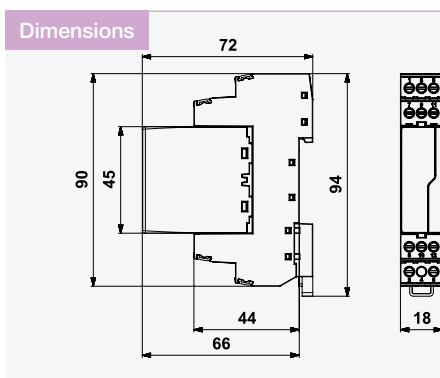
Combination of coarse and fine surge protection for telecommunication and signalling networks

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

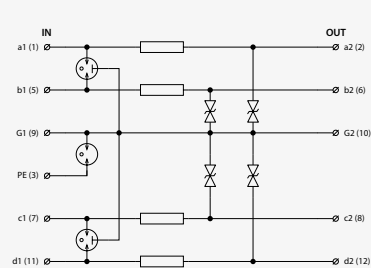
- coarse and fine surge protection for four 1-core signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DM-110) and commu-

nication interfaces of I&C, electronic security and fire detection systems, etc. (mainly the control circuits) against impact of surge voltage

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



Basic circuit diagram



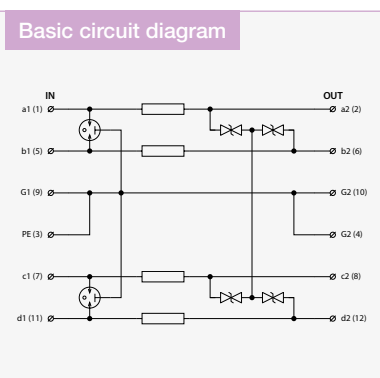
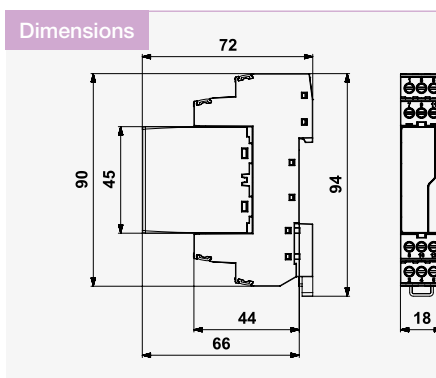
Parameter / Type	DM-006-V/4-JFR1	DM-012-V/4-JFR1	DM-024-V/4-JFR1	DM-048-V/4-JFR1	DM-110-V/4-JFR
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n 6 V DC	12 V DC	24 V DC	48 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	85 V AC / 120 V DC
Nominal load current	I_L 1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n 10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n 10 kA	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total} 20 kA	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p 550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p 12 V	22 V	46 V	65 V	170 V
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 0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	0,8 MHz	2 MHz	4 MHz	5 MHz	10 MHz
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090556473	8595090556480	8595090556497	8595090556503	8595090556510

Spare module	DM-006-V/4-J-0	DM-012-V/4-J-0	DM-024-V/4-J-0	DM-048-V/4-J-0	DM-110-V/4-J-0
Ordering number	8595090556855	8595090556862	8595090556879	8595090556886	8595090556893

DMG-...-V/1-4R1

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of 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		DMG-006-V/1-4R1	DMG-012-V/1-4R1	DMG-024-V/1-4R1	DMG-048-V/1-4R1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	18 V	24 V	46 V	90 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090554417	8595090554424	8595090554431	8595090554448

Spare module	DMG-006-V/1-4-0	DMG-012-V/1-4-0	DMG-024-V/1-4-0	DMG-048-V/1-4-0
Ordering number	8595090556763	8595090556770	8595090556787	8595090556794

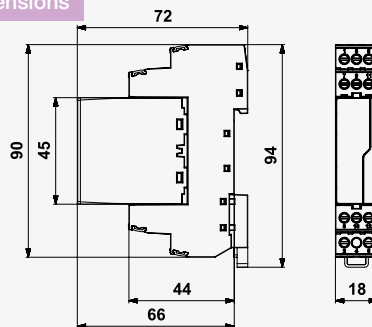
DMG-...-V/1-4FR1

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

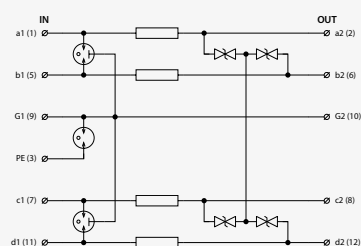
- coarse and fine surge protection of 4-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



Parameter / Type		DMG-006-V/1-4FR1	DMG-012-V/1-4FR1	DMG-024-V/1-4FR1	DMG-048-V/1-4FR1
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	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_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	18 V	24 V	46 V	90 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,8 Ω	0,8 Ω	0,8 Ω
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 ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090556282	8595090556299	8595090556305	8595090556312

Spare module	DMG-006-V/1-4-0	DMG-012-V/1-4-0	DMG-024-V/1-4-0	DMG-048-V/1-4-0
Ordering number	8595090556763	8595090556770	8595090556787	8595090556794

DMHF-...-V/1-(F)R1

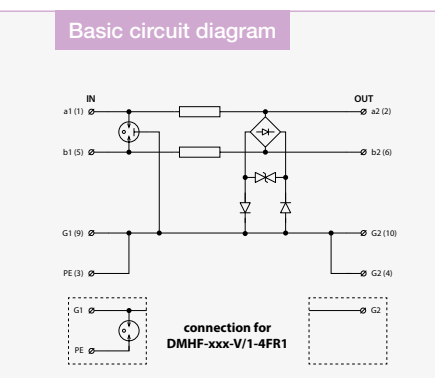
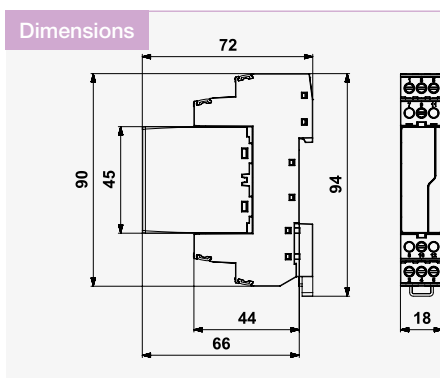
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance)

- 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 and

PROFIBUS 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)

- in "F" version is the line separated from protective earth via GDT



Parameter / Type		DMHF-006-V/1-R1	DMHF-024-V/1-R1	DMHF-006-V/1-FR1	DMHF-024-V/1-FR1
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	24 V DC	6 V DC	24 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	25 V AC / 36 V DC	6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	-	-	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	14 V	48 V	14 V	48 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	14 V	48 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	-	-	550 V	550 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	-	-
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 Ω	0,8 Ω	0,8 Ω	0,8 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557920	8595090557937	8595090557944	8595090557951

Spare module	DMHF-006-V/1-0	DMHF-024-V/1-0	DMHF-006-V/1-0	DMHF-024-V/1-0
Ordering number	8595090558125	8595090558132	8595090558125	8595090558132

DMHF-...-V/1-4(F)R1

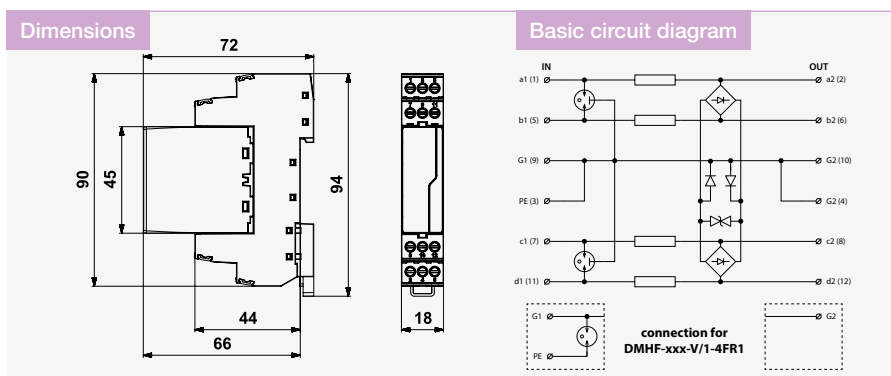
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of 4-core high-speed signalling lines
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 and

PROFIBUS 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)

- in "F" version is the line separated from protective earth via GDT



Parameter / Type		DMHF-006-V/1-4R1	DMHF-024-V/1-4R1	DMHF-006-V/1-4FR1	DMHF-024-V/1-4FR1
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	24 V DC	6 V DC	24 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	25 V AC / 36 V DC	6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	-	-	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	16 V	48 V	16 V	48 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	16 V	48 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ s	U_p	-	-	16 V	48 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	-	-
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 Ω	0,8 Ω	0,8 Ω	0,8 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090554455	8595090554462	8595090556626	8595090556633

Spare module	DMHF-006-V/1-4-0	DMHF-024-V/1-4-0	DMHF-006-V/1-4-0	DMHF-024-V/1-4-0
Ordering number	8595090556909	8595090556916	8595090556909	8595090556916

DMGHF-...-V/1-R.

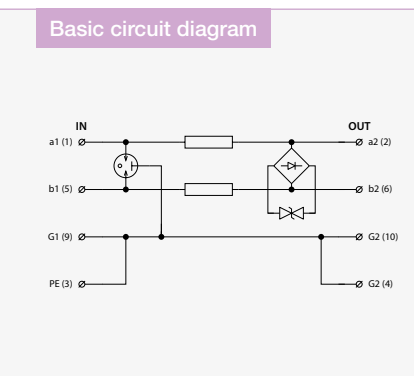
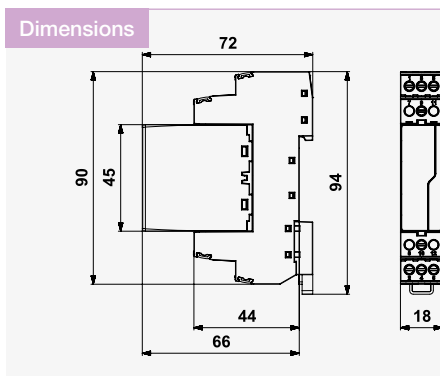
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMGHF-230) and

interfaces of I&C, 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		DMGHF-006-V/1-R1	DMGHF-012-V/1-R1	DMGHF-024-V/1-R1	DMGHF-230-V/1-R
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	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_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	14 V	24 V	48 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557760	8595090557777	8595090557784	8595090557791

Spare module	DMGHF-006-V/1-0	DMGHF-012-V/1-0	DMGHF-024-V/1-0	DMGHF-230-V/1-0
Ordering number	8595090558040	8595090558057	8595090558064	8595090558071

DMGHF-...-V/1-FR.

Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMGHF-230) and

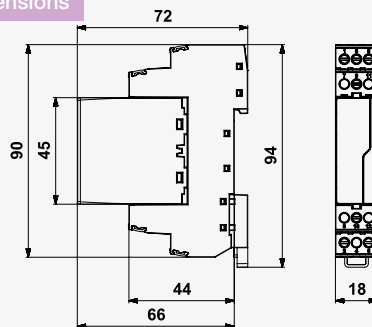
interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485, PROFIBUS interfaces) against surge voltage

- coarse and fine surge protection (core – core) and coarse protection (core –

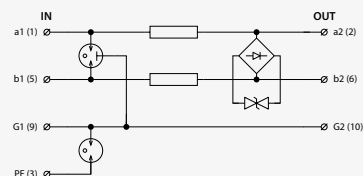
GND) in differential mode, coarse surge protection in common mode (line – PE)



Dimensions



Basic circuit diagram



Parameter / Type		DMGHF-006-V/1-FR1	DMGHF-012-V/1-FR1	DMGHF-024-V/1-FR1	DMGHF-230-V/1-FR
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	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_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557807	8595090557814	8595090557821	8595090557838

Spare module	DMGHF-006-V/1-0	DMGHF-012-V/1-0	DMGHF-024-V/1-0	DMGHF-230-V/1-0
Ordering number	8595090558040	8595090558057	8595090558064	8595090558071

DMGHF-...-V/2-R.

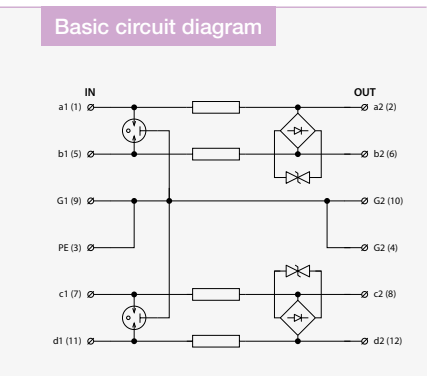
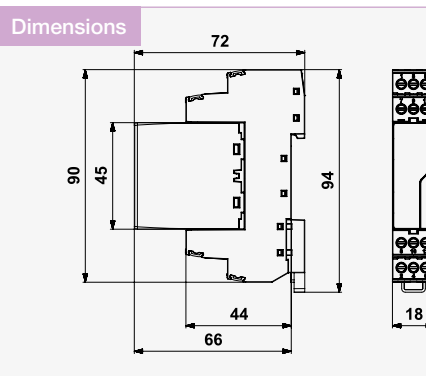
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance)

- coarse and fine surge protection of two 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMGHF-230) and

interfaces of I&C, 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		DMGHF-006-V/2-R1	DMGHF-012-V/2-R1	DMGHF-024-V/2-R1	DMGHF-230-V/2-R
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	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_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	14 V	24 V	48 V	350 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557845	8595090557852	8595090557869	8595090557876

Spare module	DMGHF-006-V/2-0	DMGHF-012-V/2-0	DMGHF-024-V/2-0	DMGHF-230-V/2-0
Ordering number	8595090558088	8595090558095	8595090558101	8595090558118

DMGHF-...-V/2-FR.

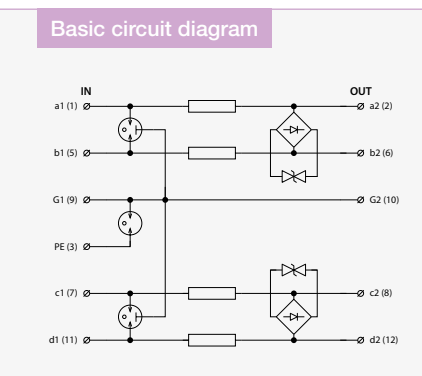
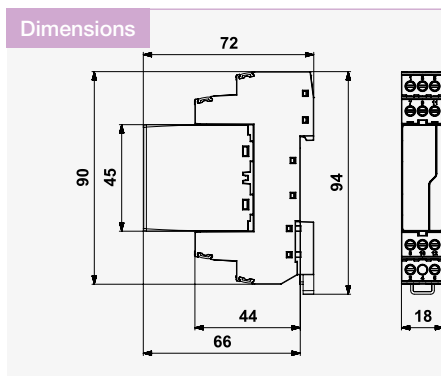
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

- coarse and fine surge protection of two 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of telecommunication lines (version DMGHF-230) and

interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485, PROFIBUS interfaces) against 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		DMGHF-006-V/2-FR1	DMGHF-012-V/2-FR1	DMGHF-024-V/2-FR1	DMGHF-230-V/2-FR
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	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_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE	I_n	10 kA	10 kA	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/ μ s	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/ μ 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 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Threshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557883	8595090557890	8595090557906	8595090557913

Spare module	DMGHF-006-V/2-0	DMGHF-012-V/2-0	DMGHF-024-V/2-0	DMGHF-230-V/2-0
Ordering number	8595090558088	8595090558095	8595090558101	8595090558118

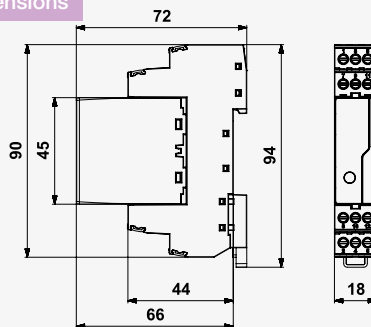
DMP-...-V/1-R1

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance) in part of data

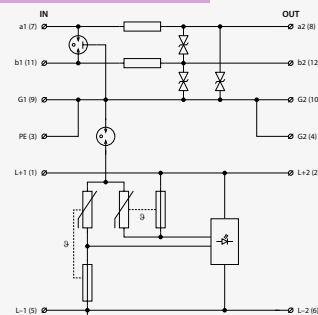
- combination of two-stage surge protection of 2-core signalling line in data part and surge protection for ELV in supply part
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection systems, etc., mainly for measuring circuits and sensors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



Dimensions



Basic circuit diagram



Parameter / Type		DMP-012-V/1-R1	DMP-024-V/1-R1
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
Nominal load current	I_L	1 A	1 A
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	22 V	46 V
Response time core-core	t_a	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω
Threshold frequency core-core	f	2 MHz	4 MHz
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	0,23 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-		25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication		red indicator	red indicator
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557968	8595090557975

Spare module	8595090557968	8595090557975
Ordering number	DMP-012-V/1-0	DMP-024-V/1-0

DMP-...-V/1-FR1

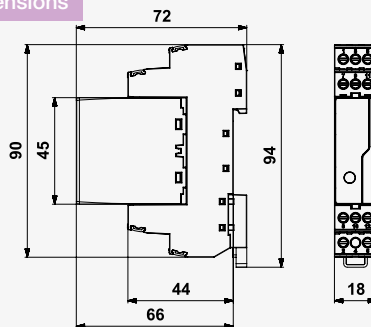
Combination of coarse and fine surge protection for telecommunication and signalling networks

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

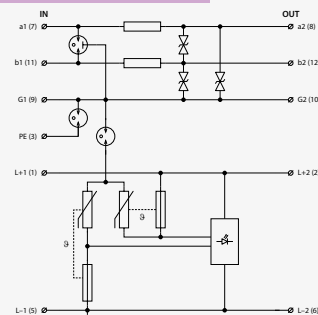
- combination of two-stage surge protection of 2-core signalling line in data part and surge protection for ELV in supply part
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection systems, etc., mainly for measuring circuits and sensors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



Dimensions



Basic circuit diagram



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
Nominal load current	I_L	1 A	1 A
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	22 V	46 V
C3 voltage protection level mode GND-PE at 1 kV/ μ 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 Ω	0,8 Ω
Threshold frequency core-core	f	2 MHz	4 MHz
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-		25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication		red indicator	red indicator
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090557982	8595090557999

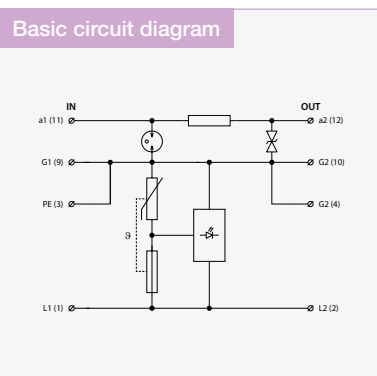
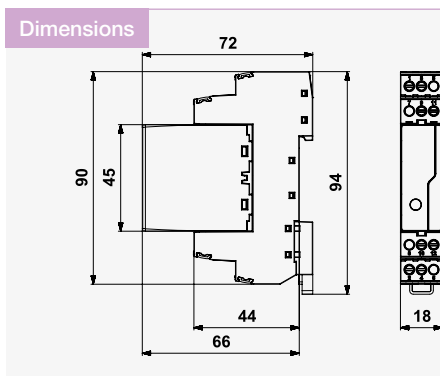
Spare module	8595090557982	8595090557999
Ordering number	DMP-012-V/1-0	DMP-024-V/1-0

DMP-...-V/1-JR1

Combination of coarse and fine surge protection for telecommunication and signalling networks
pluggable module, coupling impedance (R – resistance) in part of data

- 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-JR1	DMP-024-V/1-JR1
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
Nominal load current	I_L	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	22 V	46 V
Response time core-PE	t_a	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω
Threshold frequency core-core	f	2 MHz	4 MHz
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-)-PE	U_p	0,14 kV	0,21 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		25 ns	25 ns
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication		red indicator	red indicator
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090558002	8595090558019

Spare module	8595090558002	8595090558019
Ordering number	DMP-012-V/1-J-0	DMP-024-V/1-J-0

DMP-...-V/1-JFR1

Combination of coarse and fine surge protection for telecommunication and signalling networks

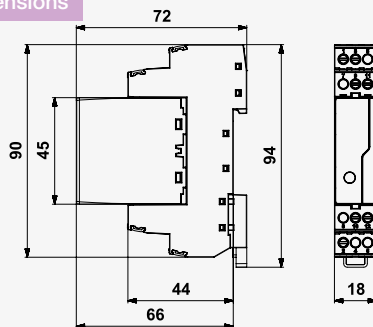
pluggable module, coupling impedance (R – resistance) in part of data, line separated from protective earth via GDT

- 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

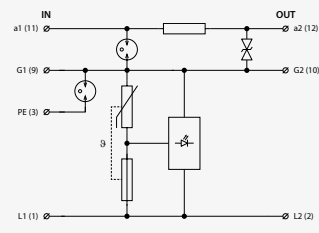
- systems, etc., mainly for measuring circuits and sensors where signal and supply are transmitted in one cable, against surge voltage
- single common wire for power supply and signal transmission



Dimensions



Basic circuit diagram



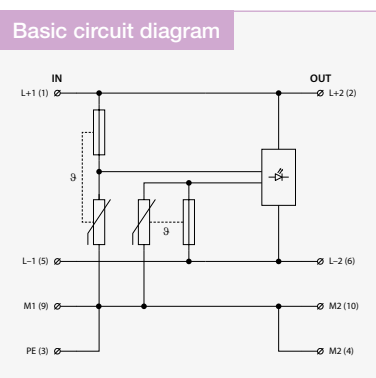
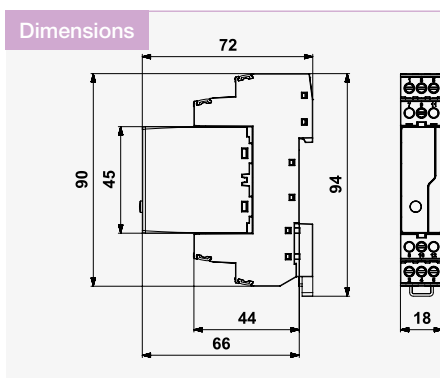
Parameter / Type	DMP-012-V/1-JFR1	DMP-024-V/1-JFR1
Connection (input - output)	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3
Nominal voltage U_n	12 V DC	24 V DC
Maximum operating voltage U_c	11 V AC / 16 V DC	25 V AC / 36 V DC
Nominal load current I_L	1 A	1 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) GND-PE I_n	10 kA	10 kA
C3 voltage protection level mode GND-PE at 1 kV/ μ 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 Ω	0,8 Ω
Threshold frequency core-core f	2 MHz	4 MHz
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-)-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
Cross-section of connected conductors solid (min/max)	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication	red indicator	red indicator
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number	8595090558026	8595090558033

Spare module	8595090558026	8595090558033
Ordering number	DMP-012-V/1-J-0	DMP-024-V/1-J-0

DP-...-V/1-16

Surge Arrester for installations with extra low voltage
pluggable module, visual fault signalling

- 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
- can be used for protection of center tap power supply and power networks with one non-grounded pole against surge voltage



Parameter / Type		DP-012-V/1-16	DP-024-V/1-16	DP-048-V/1-16	DP-060-V/1-16
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2	ST 2
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC	60 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	75 V AC / 75 V DC
Nominal load current	I_L	16 A	16 A	16 A	16 A
C2 nominal discharge current (8/20 μ s) per core	I_n	2 kA	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at In	U_p	180 V	230 V	370 V	390 V
C2 voltage protection level mode core-PE at In	U_p	110 V	150 V	200 V	210 V
Test voltage L+ - L-		4 kV	4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,18 kV	0,23 kV	0,37 kV	0,39 kV
Voltage protection level L+(L-)-PE		0,11 kV	0,15 kV	0,2 kV	0,21 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	16 A gL/gG or B 16 A
Response time L+ - L-		25 ns	25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication		red indicator	red indicator	red indicator	red indicator
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, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2
Ordering number		8595090554479	8595090554486	8595090554493	8595090554509

Spare module	DP-012-V/1-0	DP-024-V/1-0	DP-048-V/1-0	DP-060-V/1-0
Ordering number	8595090556923	8595090556930	8595090556947	8595090556954

DP-...-V/1-F16

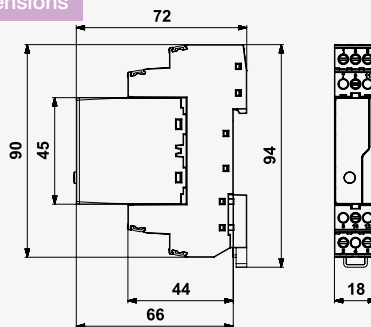
Surge Arrester for installations with extra low voltage

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

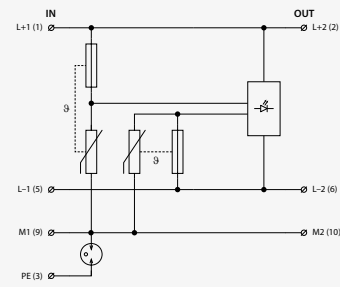
- surge protection for all types of LV electric and electronic equipments against surge voltage
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



Dimensions



Basic circuit diagram



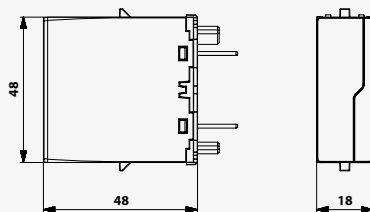
Parameter / Type		DP-012-V/1-F16	DP-024-V/1-F16	DP-048-V/1-F16	DP-060-V/1-F16
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2	ST 2
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC	60 V AC
Maximum operating voltage	U_c	20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC	75 V AC / 75 V DC
Nominal load current	I_L	16 A	16 A	16 A	16 A
C2 nominal discharge current (8/20 μ s) per core	I_n	2 kA	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at In	U_p	180 V	230 V	370 V	390 V
C2 voltage protection level mode core-PE at In	U_p	750 V	750 V	750 V	750 V
C2 voltage protection level mode core-PE at In		750 V	750 V	750 V	750 V
Test voltage L+ - L-		4 kV	4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV	4 kV
Test voltage M-PE		4 kV	4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,18 kV	0,23 kV	0,37 kV	0,39 kV
Voltage protection level L+(L-)-PE		0,75 kV	0,75 kV	0,75 kV	0,75 kV
Voltage protection level M-PE		0,75 kV	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	16 A gL/gG or B 16 A
Response time L+ - L-		25 ns	25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns	100 ns
Response time M-PE		100 ns	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
Fault indication		red indicator	red indicator	red indicator	red indicator
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, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2
Ordering number		8595090556640	8595090556657	8595090556664	8595090556671
Spare module		DP-012-V/1-0	DP-024-V/1-0	DP-048-V/1-0	DP-060-V/1-0
Ordering number		8595090556923	8595090556930	8595090556947	8595090556954

BD/BDM/BDG/DM/DMG/DMHF/DMGHF/DMP/DP-...-V/-0

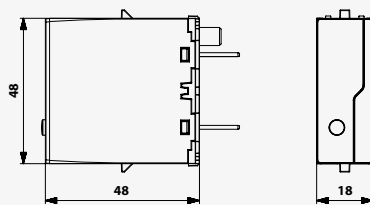
Spare modules for SPDs for data/signalling/telecommunication networks



Dimensions



DM-..., DMG-..., BD-..., BDG-...



DMP-..., DP-...

Basic circuit diagram

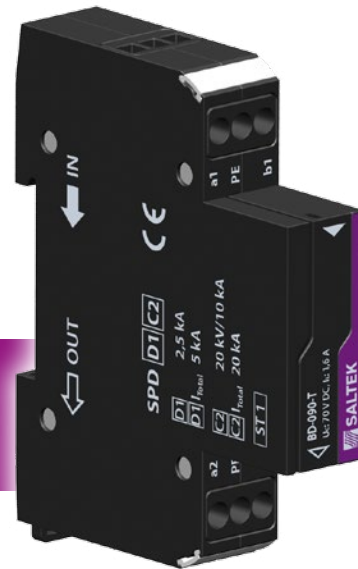
Type	Ordering number
BD-090-T-V/1-0	8595090553885
BD-250-T-V/1-0	8595090553892
BD-090-T-V/2-0	8595090553908
BD-250-T-V/2-0	8595090553915
BDM-006-V/1-0	8595090555018
BDM-012-V/1-0	8595090555025
BDM-024-V/1-0	8595090555032
BDM-048-V/1-0	8595090555049
BDM-230-V/1-0	8595090555056
BDG-006-V/1-0	8595090553991
BDG-012-V/1-0	8595090554004
BDG-024-V/1-0	8595090554011
BDG-048-V/1-0	8595090554028
BDG-230-V/1-0	8595090554035
DM-006-V/1-0	8595090555063
DM-012-V/1-0	8595090555070
DM-024-V/1-0	8595090555087
DM-048-V/1-0	8595090555094
DM-060-V/1-0	8595090555100
DM-110-V/1-0	8595090555117
DM-230-V/1-0	8595090556688
DM-006-V/2-0	8595090556695
DM-012-V/2-0	8595090556701
DM-024-V/2-0	8595090556718
DM-048-V/2-0	8595090556725
DM-060-V/2-0	8595090556732
DM-110-V/2-0	8595090556749
DM-230-V/2-0	8595090556756
DMG-006-V/1-0	8595090553922

Type	Ordering number
DMG-012-V/1-0	8595090553939
DMG-024-V/1-0	8595090553946
DMG-048-V/1-0	8595090553953
DMG-060-V/1-0	8595090553960
DMG-110-V/1-0	8595090553977
DMG-230-V/1-0	8595090553984
DMG-006-V/2-0	8595090554042
DMG-012-V/2-0	8595090554059
DMG-024-V/2-0	8595090554066
DMG-048-V/2-0	8595090554073
DMG-060-V/2-0	8595090554981
DMG-110-V/2-0	8595090554998
DMG-230-V/2-0	8595090555001
DM-006-V/2-J-0	8595090556800
DM-012-V/2-J-0	8595090556817
DM-024-V/2-J-0	8595090556824
DM-048-V/2-J-0	8595090556831
DM-110-V/2-J-0	8595090556848
DM-006-V/4-J-0	8595090556855
DM-012-V/4-J-0	8595090556862
DM-024-V/4-J-0	8595090556879
DM-048-V/4-J-0	8595090556886
DM-110-V/4-J-0	8595090556893
DMG-006-V/1-4-0	8595090556763
DMG-012-V/1-4-0	8595090556770
DMG-024-V/1-4-0	8595090556787
DMG-048-V/1-4-0	8595090556794
DMHF-006-V/1-0	8595090558125
DMHF-024-V/1-0	8595090558132

Type	Ordering number
DMHF-006-V/1-4-0	8595090556909
DMHF-024-V/1-4-0	8595090556916
DMGHF-006-V/1-0	8595090558040
DMGHF-012-V/1-0	8595090558057
DMGHF-024-V/1-0	8595090558064
DMGHF-230-V/1-0	8595090558071
DMGHF-006-V/2-0	8595090558088
DMGHF-012-V/2-0	8595090558095
DMGHF-024-V/2-0	8595090558101
DMGHF-230-V/2-0	8595090558118
DMP-012-V/1-0	8595090558149
DMP-024-V/1-0	8595090558156
DMP-012-V/1-J-0	8595090558163
DMP-024-V/1-J-0	8595090558170
DP-012-V/1-0	8595090556923
DP-024-V/1-0	8595090556930
DP-048-V/1-0	8595090556947
DP-060-V/1-0	8595090556954

SPDs for data/signalling/telecommunication networks

Compact devices



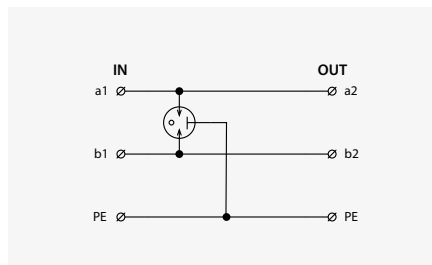
- SPDs with coarse and fine protection
- For 1 up to 4-core lines
- Multiple core lines save the space

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

Overview of SPDs for data/signalling/telecommunication networks

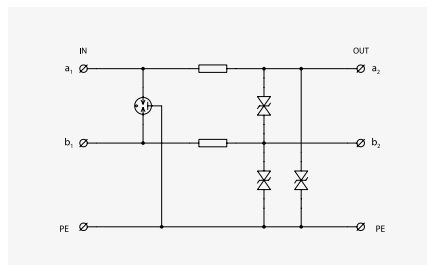
Compact devices

BD-...T



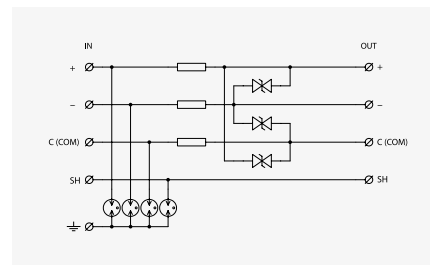
2 core line incoming from LPZ 0 to structure.
See page: 147

DM-...



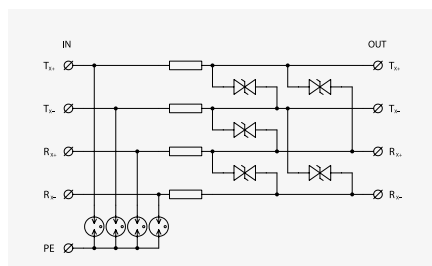
2-3 cores line incoming from LPZ 0 to structure with one-pole connected with ground.
See page: 148-150

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



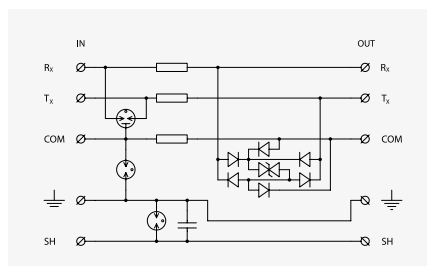
3 core floating line with shielding.
See page: 151-152

DM- .../1 4R DJ



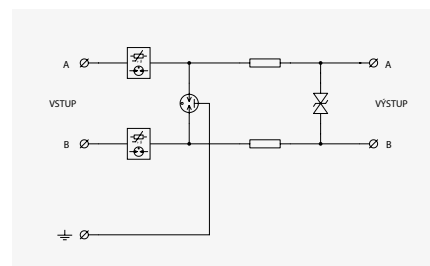
4 core floating line.
See page: 153

DM-PROFIBUS ...V



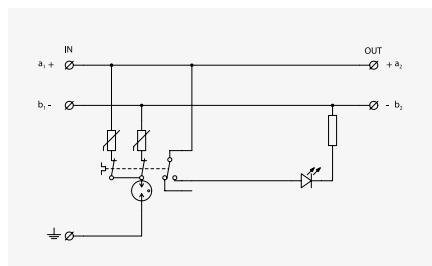
3 core high-speed floating line.
See page: 154

DMS-...



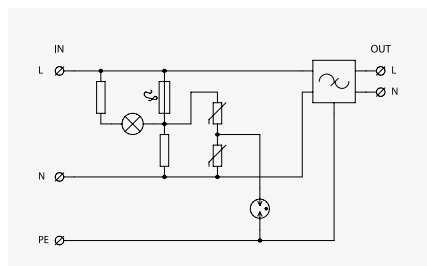
2 core line with current limiting function.
See page: 155

DP-...



Power supply 12, 24, 48, 60 V up to 16 A.
See page: 156

DPF-024

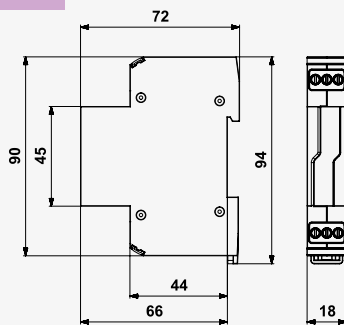
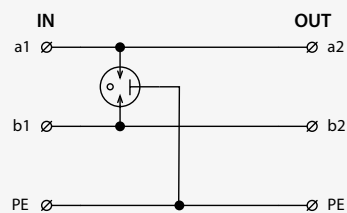


Power supply 24 V up to 6 A with integrated RFI filter.
See page: 157

BD-...-T

Lightning Current Arrester 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


Dimensions

Basic circuit diagram


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 μ s) per core	I_n	10 kA	10 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	20 kA	20 kA
D1 impulse discharge current (10/350 μ s) core-core	I_{imp}	2,5 kA	2,5 kA
D1 total discharge current (10/350 μ s) cores-PE	I_{Total}	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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
Cross-section of connected conductors solid (min/max)		0,14 mm ² / 4 mm ²	0,14 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,14 mm ² / 2,5 mm ²	0,14 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090558217	8595090558224

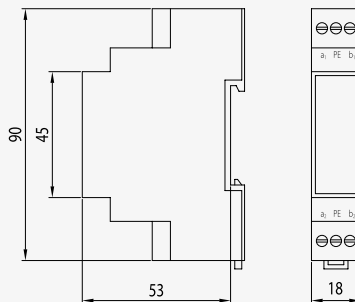
DM-.../1 R DJ

Combination of coarse and fine surge protection for telecommunication and signalling networks
coupling impedance (R – resistance)

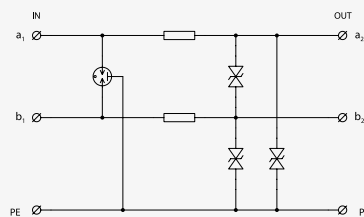
- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



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_L	0,06 A	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	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/ μ s	U_p	12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	6,8 Ω	6,8 Ω	6,8 Ω
Threshold frequency core-core	f	1 MHz	1,7 MHz	3,4 MHz	7 MHz
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090509301	8595090509318	8595090509325	8595090509332

DM-.../1 L DJ

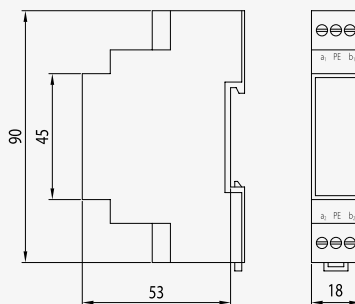
Combination of coarse and fine surge protection for telecommunication and signalling networks

coupling impedance (L – inductance)

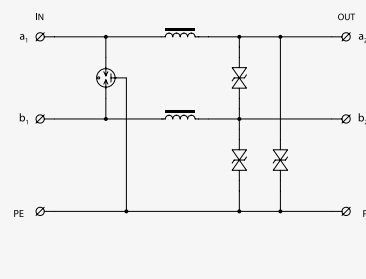
- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



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_L	0,37 A	0,37 A	0,37 A	0,37 A
C2 nominal discharge current (8/20 μ s) per core	I_n	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/ μ s	U_p	12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 μ H	100 μ H	100 μ H	100 μ 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 ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090515579	8595090513520	8595090512370	8595090513537

DM-.../1 L2 DJ

Combination of coarse and fine surge protection for telecommunication and signalling networks

coupling impedance (L – inductance)

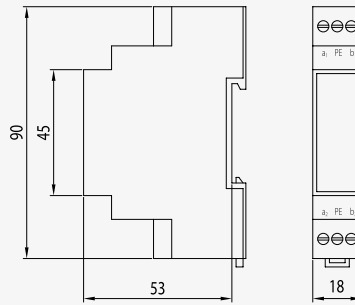
- coarse and fine surge protection for 2-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security

and fire detection systems, etc. (mainly for RS-485 interfaces) against impact of surge voltage

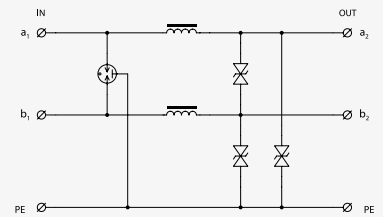
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Dimensions



Basic circuit diagram



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_L	2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 μ s) per core	I_n	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/ μ s	U_p	12 V	20 V	40 V	70 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 μ H	25 μ H	25 μ H	25 μ 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 ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090513322	8595090513315	8595090513339	8595090513346

DM-.../1 3R DJ

Combination of coarse and fine surge protection for telecommunication and signalling networks
coupling impedance (R – resistance)

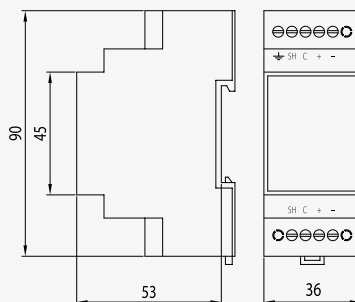
- coarse and fine surge protection for 3-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.

(mainly for RS-485 interfaces) against impact of surge voltage

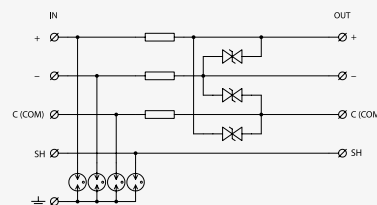
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter/Type		DM-006/1 3R DJ	DM-012/1 3R DJ	DM-024/1 3R DJ	DM-048/1 3R 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_L	0,06 A	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	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	350 V	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	20 V	40 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	650 V	650 V	650 V	650 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	6,8 Ω	6,8 Ω	6,8 Ω	6,8 Ω
Threshold frequency core-core	f	1 MHz	1,7 MHz	3,4 MHz	7 MHz
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090513506	8595090513490	8595090512349	8595090513483

DM-.../1 3L DJ

Combination of coarse and fine surge protection for telecommunication and signalling networks

coupling impedance (L – inductance)

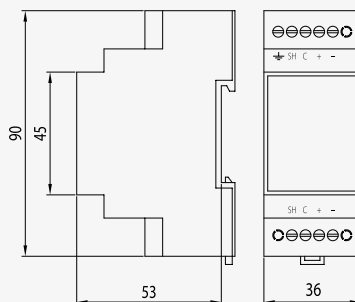
- coarse and fine surge protection for 3-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.

(mainly for RS-485 interfaces) against impact of surge voltage

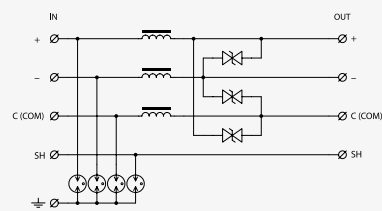
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter/Type		DM-006/1 3L DJ	DM-012/1 3L DJ	DM-024/1 3L DJ	DM-048/1 3L 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_L	0,37 A	0,37 A	0,37 A	0,37 A
C2 nominal discharge current (8/20 μ s) per core	I_n	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	350 V	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	20 V	40 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	650 V	650 V	650 V	650 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 inductance per core	L	100 μ H	100 μ H	100 μ H	100 μ 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 ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090514022	8595090520948	8595090515197	8595090516484

DM-.../1 4R DJ

Combination of coarse and fine surge protection for telecommunication and signalling networks
coupling impedance (R – resistance)

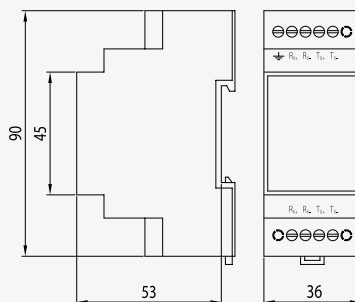
- coarse and fine surge protection for 4-core signalling lines
- installation close to protected equipment
- for protection of communication interfaces of I&C, electronic security and fire detection systems, etc.

(mainly for RS-485 interfaces) against impact of surge voltage

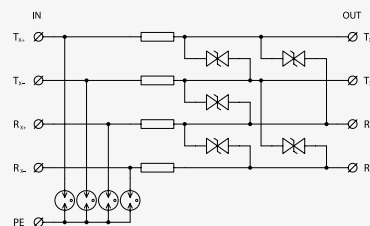
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter/Type		DM-006/1 4R DJ	DM-012/1 4R DJ	DM-024/1 4R DJ	DM-048/1 4R 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_L	0,06 A	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at In	U_p	25 V	35 V	50 V	80 V
C2 voltage protection level mode core-PE at In	U_p	350 V	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	12 V	20 V	40 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	650 V	650 V	650 V	650 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	6,8 Ω	6,8 Ω	6,8 Ω	6,8 Ω
Threshold frequency core-core	f	1 MHz	1,7 MHz	3,4 MHz	7 MHz
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090516750	8595090516897	8595090513575	8595090519775

DM-PROFIBUS ...

Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
coupling impedance (resistance)

- coarse and fine surge protection for protection of line and communication interfaces of the PROFIBUS industrial bus-bar system
- installation close to protected equipment
- for protection of communication

interfaces, mainly the RS-485 and PROFIBUS 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

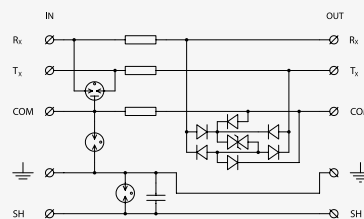
coarse surge protection in common mode (line – PE), also cable shielding is protected



Dimensions



Basic circuit diagram



Parameter / Type	DM-PROFIBUS 5 V	DM-PROFIBUS 24 V
Connection (input - output)	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3
Nominal voltage U_n	5 V DC	24 V DC
Maximum operating voltage U_c	5,7 V AC / 8,1 V DC	20,6 V AC / 29,1 V DC
Nominal load current I_L	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) per core I_n	10 kA	10 kA
C2 voltage protection level mode core-core at I_n U_p	150 V	300 V
C2 voltage protection level mode core-COM at I_n U_p	150 V	300 V
C2 voltage protection level mode COM-PE at I_n U_p	350 V	350 V
C2 voltage protection level mode SH-PE at I_n U_p	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s U_p	40 V	40 V
C3 voltage protection level mode core-COM at 1 kV/ μ s U_p	40 V	40 V
C3 voltage protection level mode COM-PE at 1 kV/ μ s U_p	650 V	650 V
C3 voltage protection level mode SH-PE at 1 kV/ μ s U_p	650 V	650 V
Response time core-core t_a	1 ns	1 ns
Response time core COM t_a	1 ns	1 ns
Response time COM-PE t_a	100 ns	100 ns
Response time SH-PE t_a	100 ns	100 ns
Serial resistance per core R	1 Ω	1 Ω
Threshold frequency core-core f	100 MHz	100 MHz
Cross-section of connected conductors solid (max)	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)	2,5 mm ²	2,5 mm ²
Degree of protection	IP 20	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number	8595090515319	8595090516736

Caution: for 2-core bus, where there is shielding used as a common wire (COM), it must be connected to both terminals COM and SH.

DMS-...

Special Surge Arrester with current limiting coupling impedance (resistance)

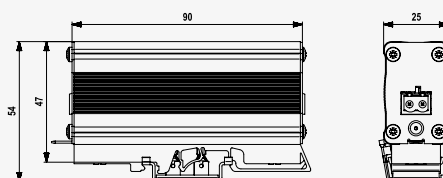
- special two-stage surge protection of 2-core signalling line with current limiting
- installation close to protected equipment
- for protection of communication interfaces, mainly the measuring loops,

of I&C, electronic security and fire detection systems, etc. against surge voltage where are long parallel lines with power network

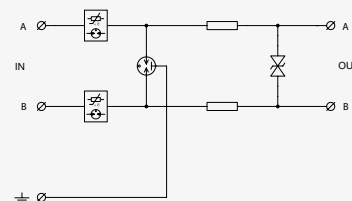
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



Dimensions



Basic circuit diagram



Parameter / Type		DMS-24	DMS-48
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	23 V AC / 33 V DC	39 V AC / 56 V DC
Nominal load current	I_L	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-core at In	U_p	55 V	90 V
C2 voltage protection level mode core-PE at In	U_p	450 V	450 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	8 Ω	8 Ω
Threshold frequency core-core	f	1,8 MHz	2,2 MHz
Cross-section of connected conductors solid (max)		2,5 mm ²	2,5 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		8595090541189	8595090555452

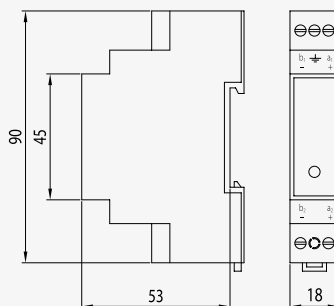
DP-...

Surge Arrester for installations with extra low voltage visual fault signalling

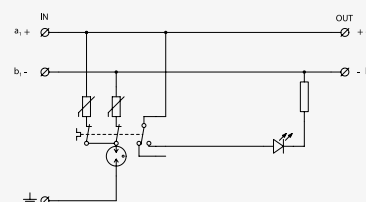
- surge protection for all types of LV electric and electronic equipments against surge voltage
- installation to LV installations, close to protected equipment
- for protection of the equipments against impact of induced overvoltages during a lightning strike or switching overvoltages



Dimensions



Basic circuit diagram



Parameter / Type		DP-012	DP-024	DP-048	DP-060
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2	ST 2
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC	60 V AC
Maximum operating voltage	U_c	22 V AC / 28 V DC	34 V AC / 44 V DC	70 V AC / 90 V DC	80 V AC / 112 V DC
Nominal load current	I_L	16 A	16 A	16 A	16 A
C2 nominal discharge current (8/20 μ s) per core	I_n	2 kA	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at In	U_p	160 V	200 V	360 V	390 V
C2 voltage protection level mode core-PE at In	U_p	530 V	530 V	550 V	550 V
Nominal discharge current (8/20 μ s) a-b	I_n	2 000 A	2 000 A	2 000 A	2 000 A
Nominal discharge current (8/20 μ s) a(b)-PE	I_n	2 000 A	2 000 A	2 000 A	2 000 A
Test voltage a-b	U_{oc}	4 kV	4 kV	4 kV	4 kV
Test voltage a(b)-PE	U_{oc}	4 kV	4 kV	4 kV	4 kV
Voltage protection level a-b	U_p	0,16 kV	0,2 kV	0,36 kV	0,39 kV
Voltage protection level a(b)-PE	U_p	0,53 kV	0,53 kV	0,55 kV	0,53 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	16 A gL/gG or C 16 A
Response time a-b	t_a	25 ns	25 ns	25 ns	25 ns
Response time a(b)-PE	t_a	100 ns	100 ns	100 ns	100 ns
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
Fault indication		red indicator	red indicator	red indicator	red indicator
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, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2
Ordering number		8595090521877	8595090516040	8595090521884	8595090521907

DPF-024

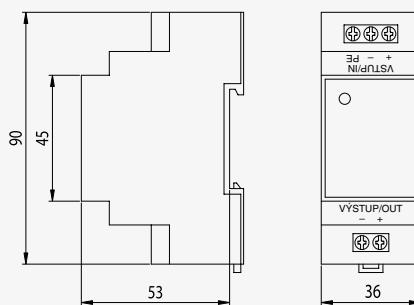
Surge Arrester for installations with extra low voltage

visual fault signalling

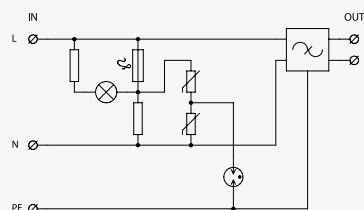
- surge protection with integrated RFI filter
- installation to LV installations, close to protected equipment
- for protection of control systems, electronic security and fire systems against impact of transient overvoltage and RF disturbance



Dimensions



Basic circuit diagram

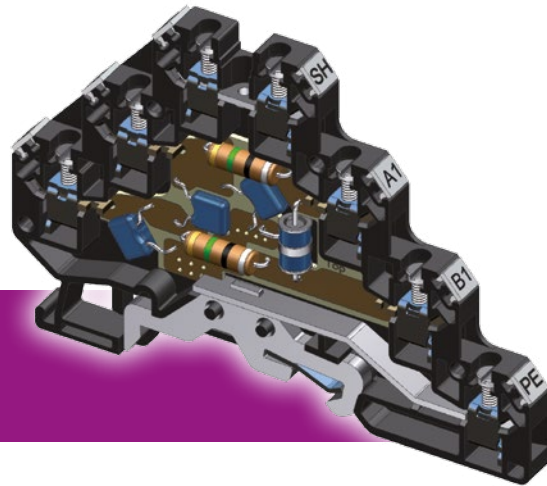


Parameter / Type	DPF-024
Connection (input - output)	terminals-terminals
Nominal voltage U_n	24 V AC
Maximum operating voltage U_c	40 V AC / 50 V DC
Nominal load current I_L	6 A
C2 nominal discharge current (8/20 μ s) per core I_n	0,5 kA
Test voltage L-N U_{oc}	1 kV
Test voltage L/N-PE U_{oc}	1 kV
Voltage protection level L-N U_p	0,2 kV
Voltage protection level L/N-PE U_p	0,55 kV
Maximum overcurrent protection	6 A gL/gG or C 6 A
Response time L-N t_a	25 ns
Response time L/N-PE t_a	100 ns
RFI filter	yes
Filter attenuation at 1MHz (50 Ω /50 Ω) unsymmetrical	30 dB
Cross-section of connected conductors solid (max)	4 mm ²
Cross-section of connected conductors stranded (max)	2,5 mm ²
Fault indication	red indicator
Degree of protection	IP 20
Range of operating temperatures (min/max)	-40 °C / 80 °C
Mounting	DIN rail 35 mm
According to standard	EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number	8595090530503

Notes

SPDs for data/signalling/telecommunication networks

Terminal blocks with screw terminals



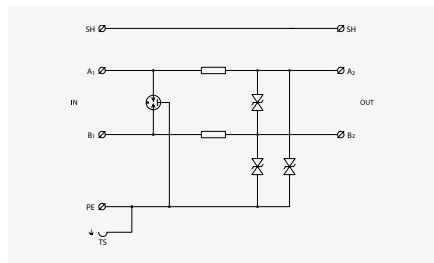
- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Direct grounding via DIN rail clip

- 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

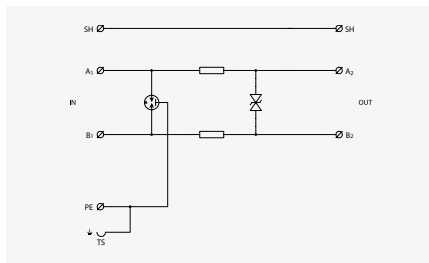
Terminal blocks with screw terminals

DM-.../1-RS



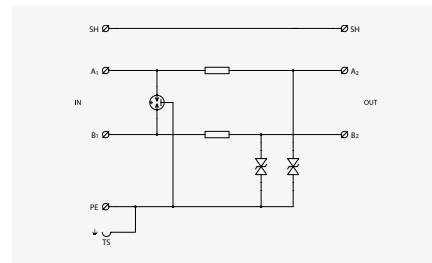
2/3-core line with one pole connected to common ground.
See page: 161

DMG-.../1-RS



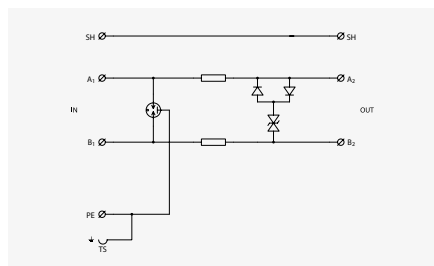
2-core floating line.
See page: 162

DMJ-.../2-RS



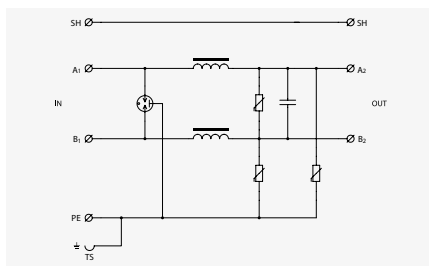
Two single-core lines with common ground.
See page: 163

DMHF-.../1-RS



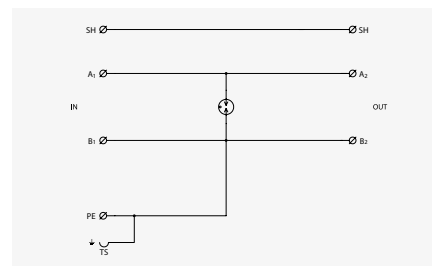
2-core high-speed floating line.
See page: 164

DMLF-.../1-RS



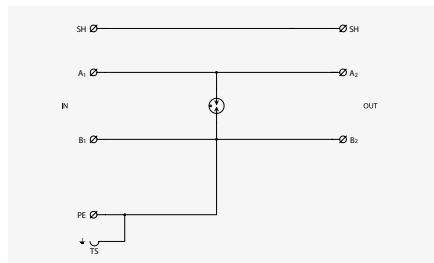
2-core low-frequency line.
See page: 165

DS-B-...-RS



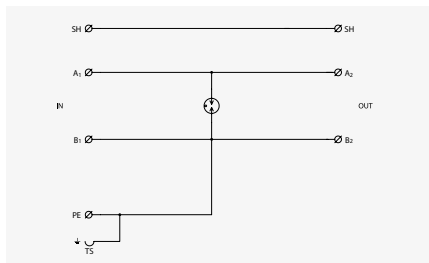
Single stage protection of 2-core line.
See page: 166

DS-D-...-RS



Single stage protection of 2-core line.
See page: 166

DS-V-...-RS

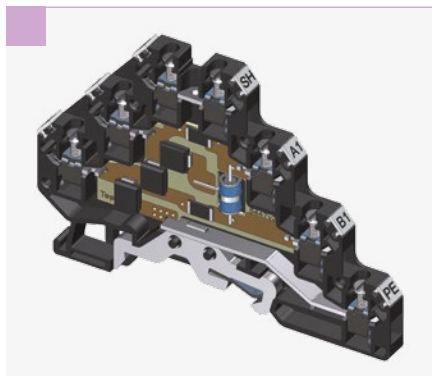


Single stage protection of 2-core line.
See page: 166

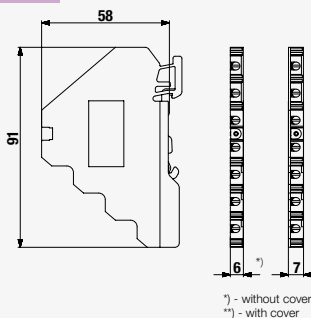
DM-.../1-RS

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screw terminals

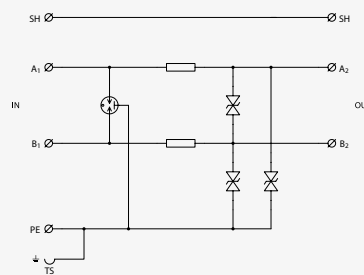
- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines,
- of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA	10 kA	10 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/ μ 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/ μ 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 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω
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 ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551409	8595090551416	8595090551423	8595090551430	8595090551294	8595090551300

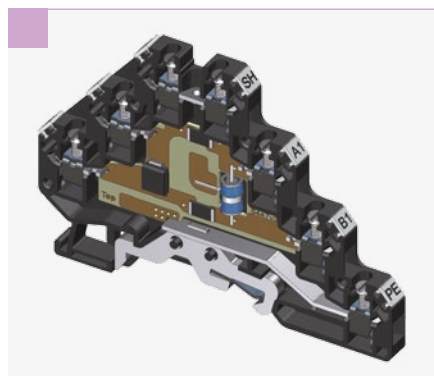
DMG-.../1-RS

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screw terminals

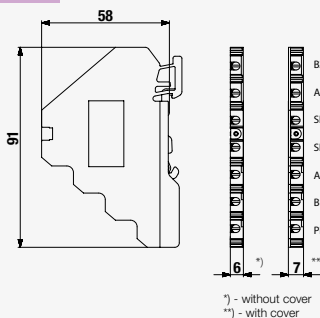
- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection

systems, etc. against impact of surge voltage

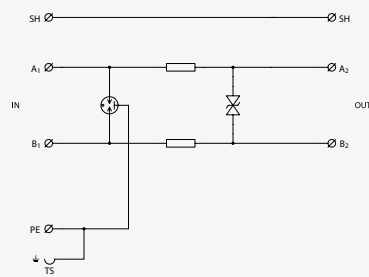
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram

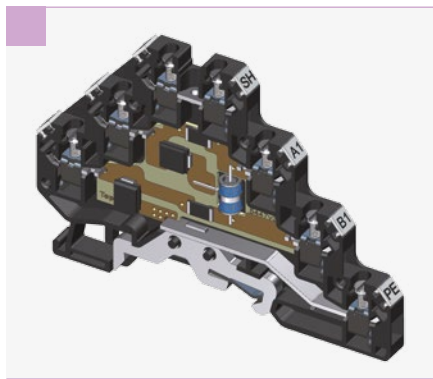


Parameter / Type	DMG-006/1-RS	DMG-012/1-RS	DMG-024/1-RS	DMG-048/1-RS	DMG-060/1-RS	DMG-110/1-RS
Connection (input - output)	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3	ST 2+3
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_L 0,5 A	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n 5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total} 10 kA	10 kA	10 kA	10 kA	10 kA	10 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/ μ 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/ μ 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 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω
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 ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number	8595090551324	8595090551331	8595090551348	8595090551355	8595090551362	8595090551379

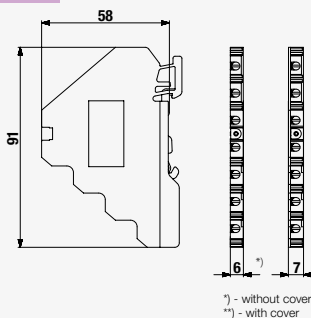
DMJ-.../2-RS

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screw terminals

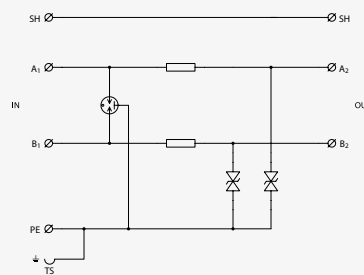
- coarse and fine surge protection for two 1-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and control circuits of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA	10 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/ μ 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 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω
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 ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551447	8595090551454	8595090551317	8595090551461	8595090551478

DMHF-.../1-RS

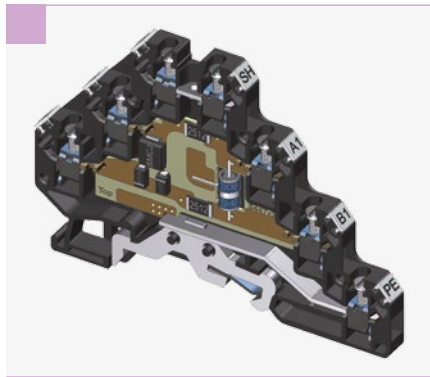
Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)

coupling impedance (resistance), screw terminals

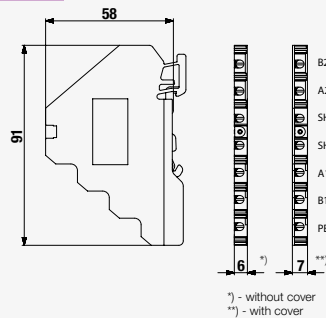
- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire

detection systems, etc. against impact of surge voltage

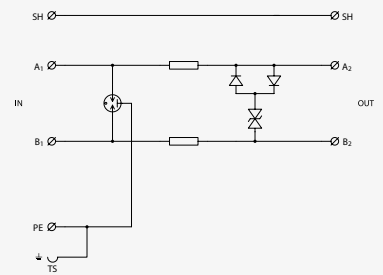
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



Dimensions



Basic circuit diagram

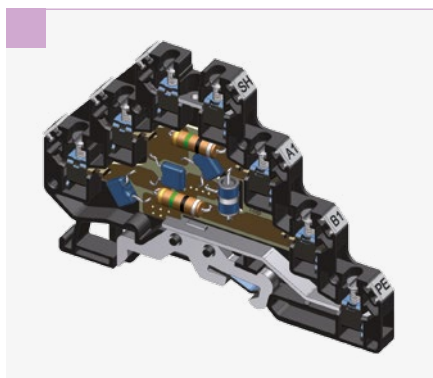


Parameter / Type	DMHF-006/1-RS	DMHF-015/1-RS
Connection (input - output)	terminals-terminals	terminals-terminals
Location of SPD	ST 2+3	ST 2+3
Nominal voltage U_n	6 V DC	15 V DC
Maximum operating voltage U_c	6 V AC / 8,5 V DC	15 V AC / 22 V DC
Nominal load current I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core I_n	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA	10 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/ μ s U_p	14 V	28 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω
Threshold frequency core-core f	70 MHz	70 MHz
Cross-section of connected conductors solid (max)	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number	8595090551386	8595090551393

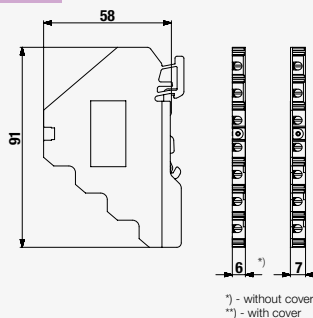
DMLF-.../1-RS

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (inductance), screw terminals

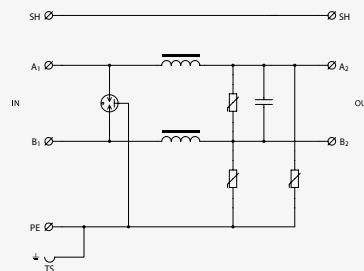
- coarse and fine surge protection for low-frequency 2-core signalling networks
- installation close to protected equipment
- for protection of analogue measuring lines in the areas with RF disturbance
- coarse and fine surge protection in differential mode (core – core) and common mode (core – PE)



Dimensions



Basic circuit diagram



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_L	0,1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 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/ μ s	U_p	55 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 ²	
Cross-section of connected conductors stranded (max)	2,5 mm ²	
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	8595090553335	

DS-...-RS

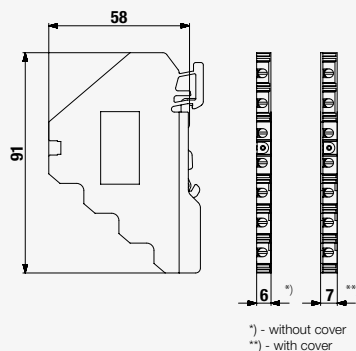
Single stage surge arrester in terminal block

B – Gas Discharge Tube, V – varistors, D – fast suppressor diodes, 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



Rozměry

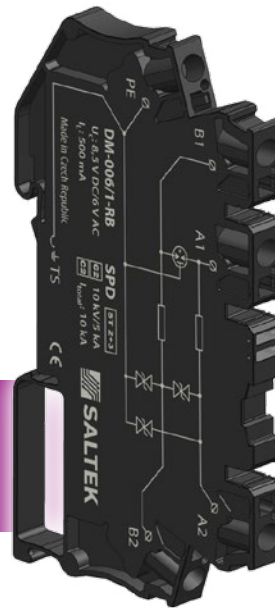


Parameter / Type		DS-B090-RS	DS-B240-RS	DS-D024-RS	DS-V130-RS
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 3	ST 2
Maximum operating voltage	U_c	50 V AC / 70 V DC	127 V AC / 180 V DC	20,6 V AC / 29,1 V DC	140 V AC / 180 V DC
Nominal load current	I_L	16 A	16 A	16 A	16 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA	10 kA	0,3 kA	6 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/ μ s	U_p	550 V	600 V	-	-
Response time core-PE	t_a	100 ns	100 ns	1 ns	25 ns
Cross-section of connected conductors solid (max)		4 mm ²	4 mm ²	4 mm ²	4 mm ²
Cross-section of connected conductors stranded (max)		2,5 mm ²	2,5 mm ²	2,5 mm ²	2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551485	8595090551492	8595090551539	8595090551515

SPDs for data/signalling/telecommunication networks

NEW

Terminal blocks with screwless terminals

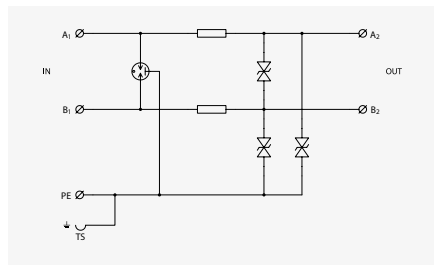


- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Screwless terminals for easy connection
- Line DM – for 2/3/4-core communication lines
- Line DMG – with separated signal ground and protective earth
- Line DMJ – for 1-core lines 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

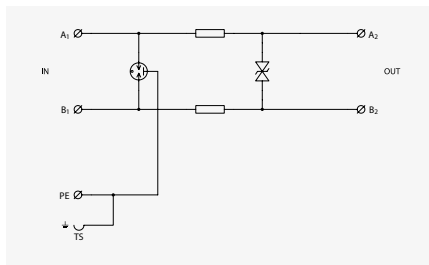
Terminal blocks with screwless terminals

DM-.../1-RB



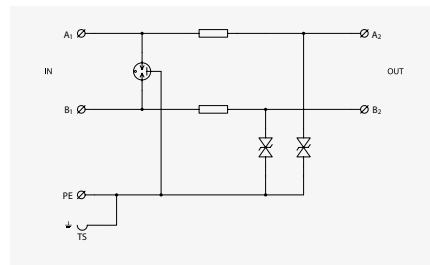
2-core line with one pole connected to common ground.
See page: 169

DMG-.../1-RB



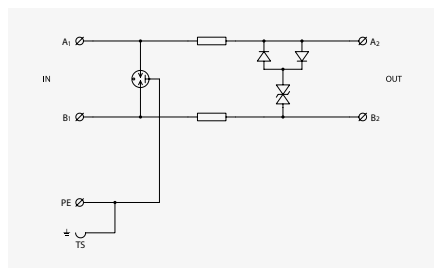
2-core floating line.
See page: 170

DMJ-.../2-RB



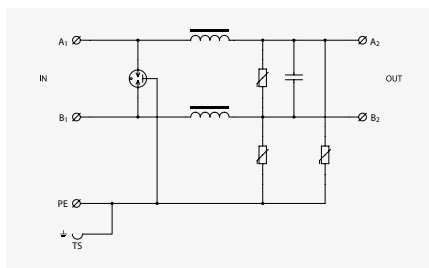
Two single-core lines with common ground.
See page: 171

DMHF-006/1-RB



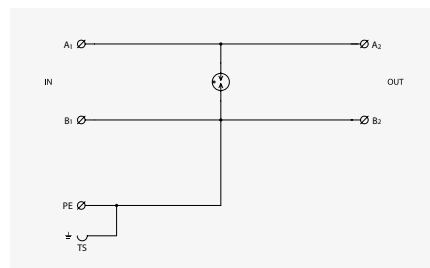
2-core high-speed floating line.
See page: 172

DMLF-024/1-RB



2-core low-frequency line.
See page: 173

DS-B090-RB



Single stage protection of 2-core line.
See page: 174

DM-.../1-RB

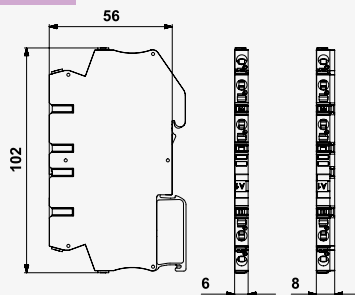
NEW

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screwless terminals

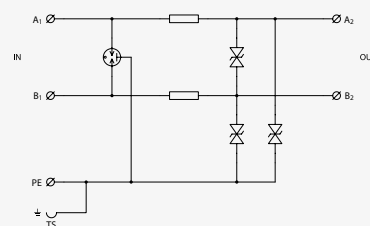
- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection 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_L	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core I_n	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA	10 kA	10 kA	10 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/ μ s U_p	12 V	20 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω	1,6 Ω	1,6 Ω
Threshold frequency core-core f	1 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number	8595090560579	8595090560586	8595090560593	8595090560609

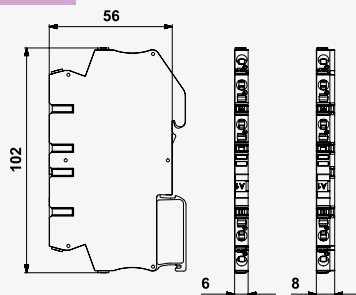
Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screwless terminals

- 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

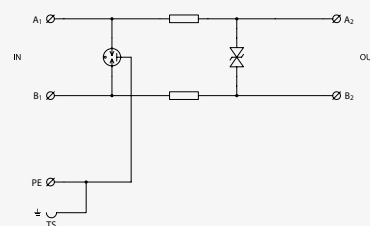
- systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA	10 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/ μ s	U_p	12 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω	1,6 Ω
Threshold frequency core-core	f	1 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)		0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090560616	8595090560623	8595090560630

DMJ-.../2-RB

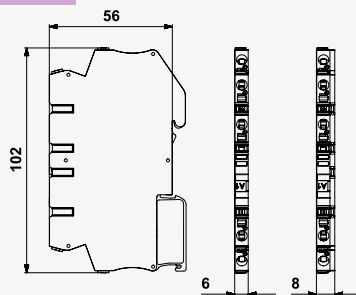
NEW

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
coupling impedance (resistance), screwless terminals

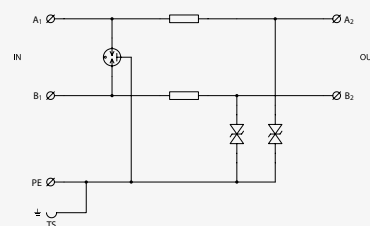
- coarse and fine surge protection for two 1-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces and control circuits of I&C, electronic security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection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



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core I_n	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA	10 kA	10 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/ μ 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 Ω	1,6 Ω	1,6 Ω
Threshold frequency core-core f	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²	0,08 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²	0,08 mm ² / 2,5 mm ²
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number	8595090560654	8595090560661	8595090560678

Combination of coarse and fine surge protection for industrial bus-bar system (for example PROFIBUS)
coupling impedance (resistance), screwless terminals

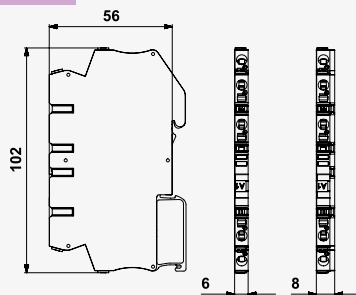
- coarse and fine surge protection of 2-core high-speed signalling lines
- installation close to protected equipment
- for protection of communication interfaces, mainly the RS-485 lines, of I&C, electronic security and fire

detection systems, etc. against impact of surge voltage

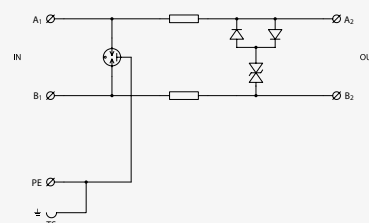
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)



Dimensions



Basic circuit diagram



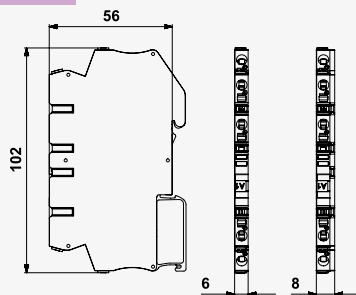
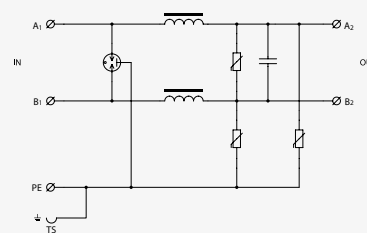
Parameter / Type	DMHF-006/1-RB
Connection (input - output)	screwless terminals
Location of SPD	ST 2+3
Nominal voltage U_n	6 V DC
Maximum operating voltage U_c	6 V AC / 8,5 V DC
Nominal load current I_L	0,5 A
C2 nominal discharge current (8/20 μ s) per core I_n	5 kA
C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA
C2 voltage protection level mode core-core at I_n U_p	26 V
C2 voltage protection level mode core-PE at I_n U_p	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s U_p	14 V
C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	500 V
Response time core-core t_a	1 ns
Response time core-PE t_a	100 ns
Serial resistance per core R	1,6 Ω
Threshold frequency core-core f	70 MHz
Cross-section of connected conductors solid (min/max)	0,08 mm ² / 4 mm ²
Cross-section of connected conductors stranded (min/max)	0,08 mm ² / 2,5 mm ²
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	8595090560647

DMLF-024/1-RB

NEW

Combination of coarse and fine surge protection for telecommunication and signalling networks in terminal block
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)


Dimensions

Basic circuit diagram


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_L	0,1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 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/ μ s	U_p	55 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 ² / 4 mm ²	
Cross-section of connected conductors stranded (min/max)	0,08 mm ² / 2,5 mm ²	
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	8595090560692	

DS-B090-RB

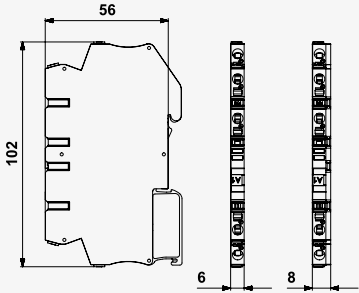
NEW

Single stage surge arrester in terminal block
B – Gas Discharge Tube, screwless terminal

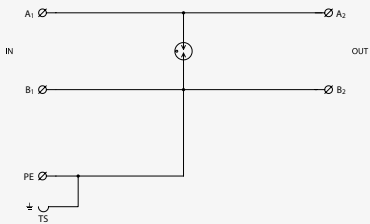
- coarse single stage surge arrester
- for protection of signalling, data and other lines against impact of surge voltage
- usable mainly for the separation of shielding from the protective earth



Dimensions



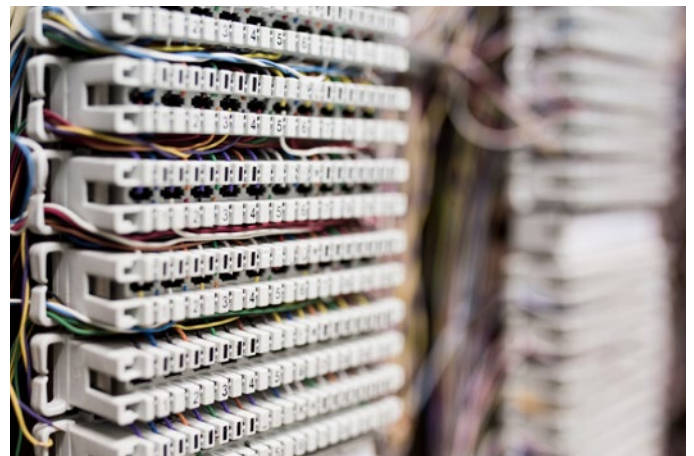
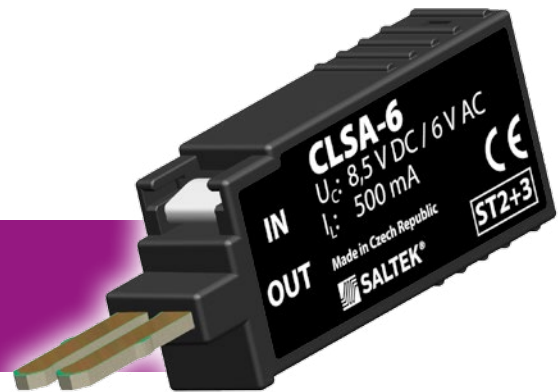
Basic circuit diagram



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 μ s) per core	I_n	10 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	550 V
Response time core-PE	t_a	100 ns
Cross-section of connected conductors solid (min/max)	0,08 mm ² / 4 mm ²	
Cross-section of connected conductors stranded (min/max)	0,08 mm ² / 2,5 mm ²	
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	8595090560708	

SPDs for data/signalling/telecommunication network

SPDs for LSA-PLUS strips



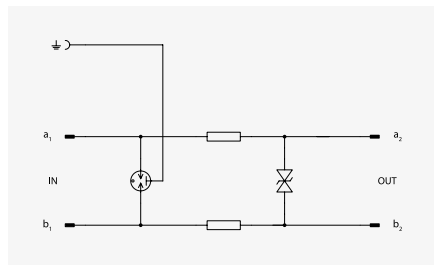
- Coarse and fine surge protection
- Easy connections to separating LSA-PLUS strips
- For 2-core signal lines in I&C, electronic security, fire detection and telecommunication systems

- Line CLSA - surge arresters

Overview of SPDs for data/signalling/telecommunication networks

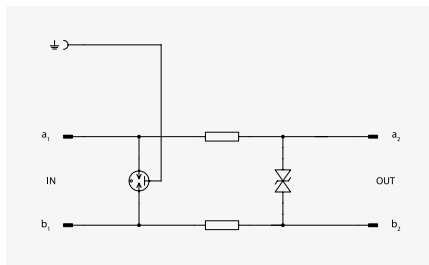
For LSA-PLUS strips

CLSA-6, 12, 24, 48



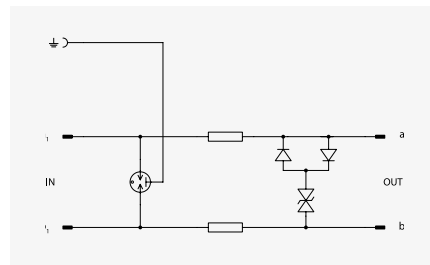
2-core floating line.
See page: 177

CLSA-ISDN, CLSA-TLF



2-core floating phone line.
See page: 178

CLSA-HF6, CLSA-DSL



2-core high-speed floating line.
See page: 179

CLSA-...

Surge Arrester for telecommunication and signalling networks for LSA-PLUS strips
for LSA-PLUS separating strips

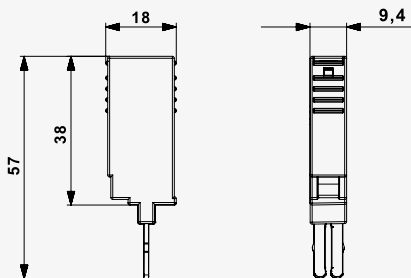
- combination of coarse and fine protection of data and I&C lines
- installation close to protected equipment
- for protection of communication interfaces and measuring lines of I&C, electronic security and fire detection

systems, etc. against impact of surge voltage

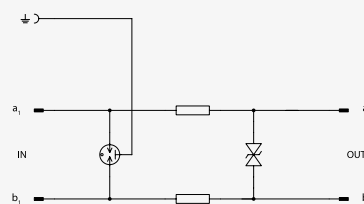
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 μ 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/ μ s	U_p	13 V	21 V	48 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω	1,6 Ω	1,6 Ω
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 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551690	8595090551706	8595090551713	8595090551720

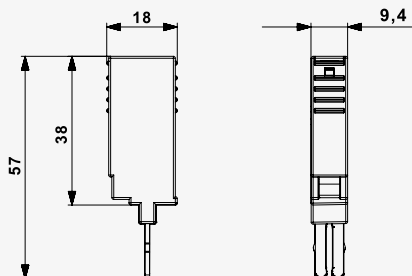
CLSA-...

Surge Arrester for telecommunication and signalling networks for LSA-PLUS strips for LSA-PLUS separating strips

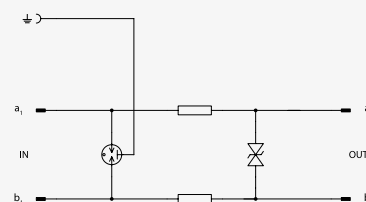
- combination of coarse and fine protection of 2-core telecommunication lines
- installation close to protected equipment
- for protection of telecommunication lines against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode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



Dimensions



Basic circuit diagram



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_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-core at In	U_p	220 V	310 V
C2 voltage protection level mode core-PE at In	U_p	400 V	400 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	170 V	230 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω
Treshold 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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551744	8595090551737

CLSA-...

Surge Arrester for telecommunication and signalling networks for LSA-PLUS strips
for LSA-PLUS separating strips

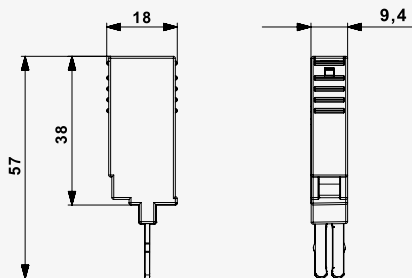
- combination of coarse and fine protection of 2-core high-speed telecommunication lines including ADSL
- installation close to protected equipment

- 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

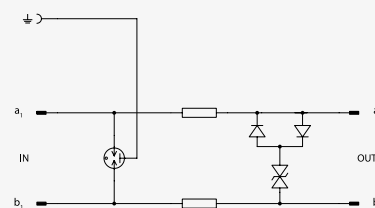
- security and fire detection systems, etc. against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode (core – PE)



Dimensions



Basic circuit diagram



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_c	6 V AC / 8,5 V DC	120 V AC / 170 V DC
Nominal load current	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-core at In	U_p	32 V	280 V
C2 voltage protection level mode core-PE at In	U_p	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	15 V	230 V
C3 voltage protection level mode core-PE at 1 kV/ μ 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 Ω	1,6 Ω
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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090551751	8595090551768

Notes

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

SPDs for data/signalling/telecommunication network

SPDs for phone lines



- Coarse and fine protection SPDs
- For protection of one-pair of telecommunication lines
- Versions with connectors or terminals

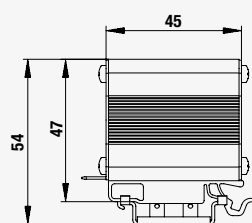
- Line DL-TLF-HF - surge arrester
- Line DL-ISDN - surge arresters

Surge Arrester for phone line RJ11 sockets

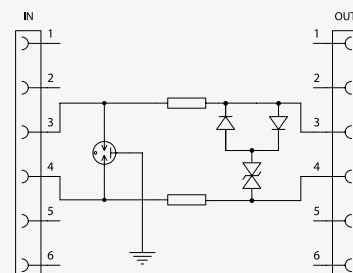
- combination of coarse and fine protection
- for protection of one pair of high-speed analogue line in telecommunication equipment (e.g. VDSL2)
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type	DL-TLF-HF	
Location of SPD	ST 2+3	
Maximum operating voltage	U_c	114 V AC / 162 V DC
Nominal load current	I_L	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	2,5 kA
C2 voltage protection level mode core-core at I_n	U_p	260 V
C2 voltage protection level mode core-PE at I_n	U_p	300 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	240 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	400 V
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Serial resistance per core	R	6,8 Ω
Threshold frequency core-core	f	40 MHz
Connection (input - output)	RJ11/RJ11	
Degree of protection	IP 20	
Range of operating temperatures (min/max)	-40 °C / 80 °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	8595090561507	

DL-ISDN SV

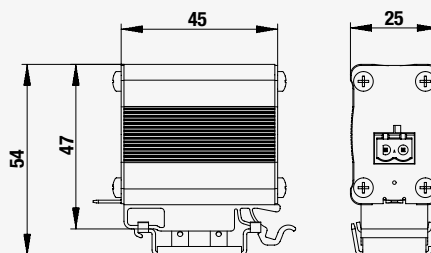
Surge Arrester for phone line screw terminals

- combination of coarse and fine protection for ISDN lines
- installation in front of NT
- for protection of one pair of ISDN line in telecommunication equipment

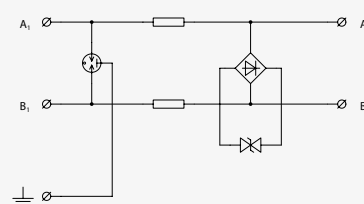
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		DL-ISDN SV
Location of SPD		ST 2+3
Maximum operating voltage	U_c	85 V AC / 120 V DC
Nominal load current	I_L	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	10 kA
C2 voltage protection level mode core-core at I_n	U_p	260 V
C2 voltage protection level mode core-PE at I_n	U_p	150 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	180 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	500 V
Response time core-core	t_a	1 ns
Response time core-PE	t_a	1 ns
Serial resistance per core	R	6,8 Ω
Threshold frequency core-core	f	50 MHz
Cross-section of connected conductors stranded (max)		2,5 mm ²
Connection (input - output)		terminals
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °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		8595090533818

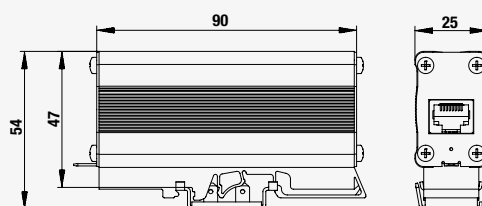
DL-ISDN RJ45

Surge Arrester for phone line RJ45 sockets

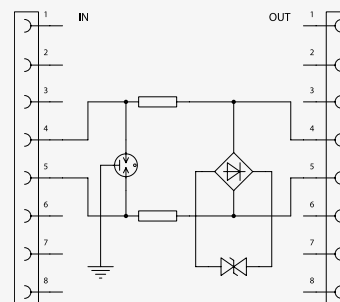
- combination of coarse and fine protection for ISDN lines
- for protection of one pair of ISDN line in telecommunication equipment
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



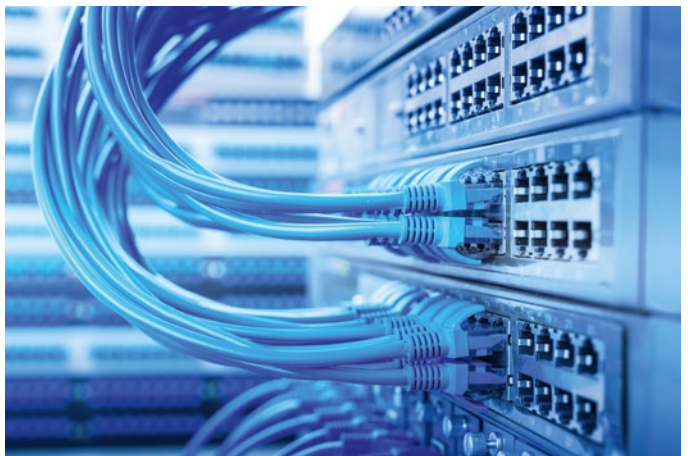
Basic circuit diagram



Parameter / Type	DL-ISDN RJ45	
Location of SPD	ST 2+3	
Maximum operating voltage	U_c	86 V AC / 121 V DC
Nominal load current	I_L	0,06 A
C2 nominal discharge current (8/20 μ s) per core	I_n	2,5 kA
C2 voltage protection level mode core-core at I_n	U_p	270 V
C2 voltage protection level mode core-PE at I_n	U_p	300 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	180 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	400 V
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Serial resistance per core	R	6,8 Ω
Threshold frequency core-core	f	80 MHz
Connection (input - output)	RJ 45/RJ 45	
Degree of protection	IP 20	
Range of operating temperatures (min/max)	-40 °C / 80 °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	8595090533825	

SPDs for data/signalling/telecommunication networks

SPDs for Ethernet and other data lines

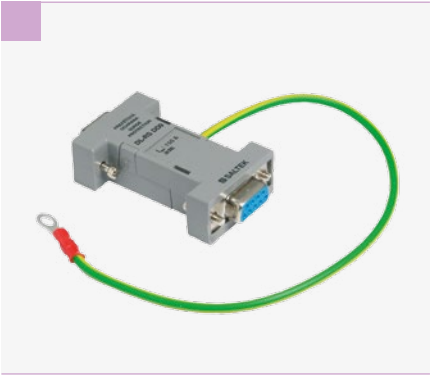


- SPDs for protection of Ethernet up to 10G standard
- Variants for lines combined with Power over Ethernet (PoE)
- Available versions suitable for 19" RACK
- Line DL-RS DD9 – surge arresters for RS interface
- Line DL-Cat. 5e and DL-Cat. 6 – surge arresters
- Line DL-1G a DL-10G – surge arresters

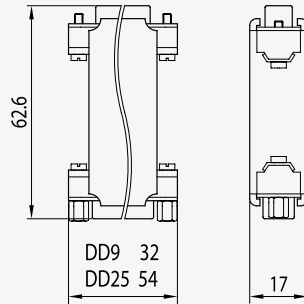
DL-RS DD9

Surge Arrester for RS interface (wih connector DSUB)
DSUB 9 connectors

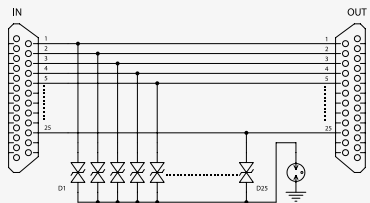
- fine protection
- for protection of serial ports of computers and control systems of I&C, electronic security and fire detection systems, etc. against impact of surge voltage



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 μ 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/ μ s	U_p	50 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	980 V
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Treshold 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		8595090509684

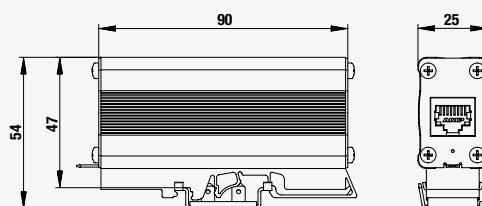
DL-Cat. 5e

Surge Arrester for Ethernet RJ45 sockets

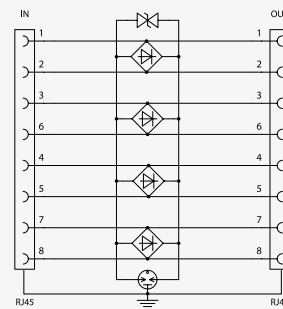
- fine surge protection of Ethernet line
- installation close to protected equipment
- for protection of Ethernet line Cat. 5e against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type	DL-Cat. 5e	
Location of SPD	ST 3	
Maximum operating voltage	U_c	6 V AC / 8,5 V DC
Nominal load current	I_L	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	0,2 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	1,6 kA
C2 voltage protection level mode core-core at I_n	U_p	40 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	350 V
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Insertion attenuation at 100 MHz		1,2 dB
Connection (input - output)	RJ45/RJ45	
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 / C2,C3	
Ordering number	8595090533757	

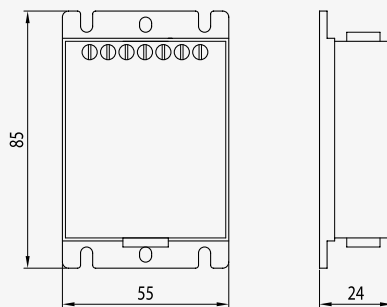
DL-100 POE-048

Surge Arrester for Power over Ethernet Cat. 5x
terminals / RJ45 socket

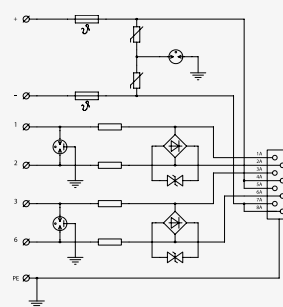
- combination of coarse and fine protection of Ethernet line with PoE
- installation close to protected equipment
- for protection of WiFi equipment, IP cameras, etc., installed even outside building, against surge voltage



Dimensions



Basic circuit diagram



Parameter / Type		DL-100 POE-048
line part	Location of SPD	ST 2+3
	Maximum operating voltage U_c	5,7 V AC / 8,1 V DC
	Nominal load current I_L	0,1 A
	C2 nominal discharge current (8/20 μ s) per core I_n	5 kA
	C2 voltage protection level mode core-core at I_n U_p	300 V
	C2 voltage protection level mode core-PE at I_n U_p	340 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	55 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	530 V
	Response time core-core t_a	1 ns
	Response time core-PE t_a	100 ns
	Insertion attenuation at 100 MHz	1,5 dB
	Serial resistance per core R	1 Ω
power part	Nominal voltage U_n	48 V DC
	Maximum operating voltage U_c	60 V AC / 76 V DC
	Nominal load current I_L	1 A
	C2 nominal discharge current (8/20 μ s) core-core I_n	1 kA
	C2 voltage protection level mode (POE) at I_n	280 V
	C2 voltage protection level mode core-PE at I_n U_p	690 V
	Response time core-core t_a	25 ns
	Response time core-PE t_a	100 ns
	Cross-section of connected conductors solid (max)	4 mm ²
	Cross-section of connected conductors stranded (max)	2,5 mm ²
	Connection (input - output)	terminals/RJ 45
	Degree of protection	IP 20
	Range of operating temperatures (min/max)	-40 °C / 80 °C
	Mounting	surface on the desk
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090531357

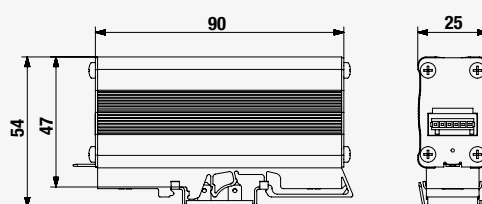
DL-Cat. 5e POE plus

Surge Arrester for Power over Ethernet Cat. 5x
screwless terminals / RJ45 socket

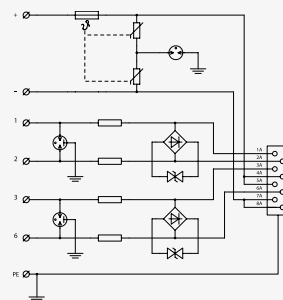
- combination of coarse and fine protection of Ethernet line with PoE
- installation at the entry of the line into building and close to protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of WiFi equipment, IP cameras, etc., installed even outside building, against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		DL-Cat. 5e POE plus
line part	Location of SPD	ST 2+3
	Maximum operating voltage U_c	6 V AC / 8,5 V DC
	Nominal load current I_L	0,1 A
	C2 nominal discharge current (8/20 μ s) per core I_n	1,5 kA
	C2 voltage protection level mode core-core at I_n U_p	180 V
	C2 voltage protection level mode core-PE at I_n U_p	490 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	60 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	560 V
	Response time core-core t_a	1 ns
	Response time core-PE t_a	100 ns
	Insertion attenuation at 100 MHz	1,5 dB
	Serial resistance per core R	0,27 Ω
power part	Nominal voltage U_n	48 V DC
	Maximum operating voltage U_c	40 V AC / 76 V DC
	Nominal load current I_L	1 A
	Maximum load current	48,9 W
	C2 nominal discharge current (8/20 μ s) core-core I_n	1 kA
	C2 voltage protection level mode (POE) at I_n	280 V
	C2 voltage protection level mode core-PE at I_n U_p	780 V
	Response time core-core t_a	25 ns
	Response time core-PE t_a	100 ns
	Connection (input - output)	screwless terminals/RJ 45
	Degree of protection	IP 20
	Range of operating temperatures (min/max)	-40 °C / 80 °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		8595090538066

DL-Cat. 5e ... RACK PANEL

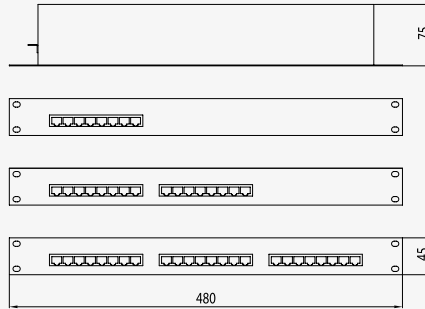
Surge Arrester for Ethernet

RJ45 sockets

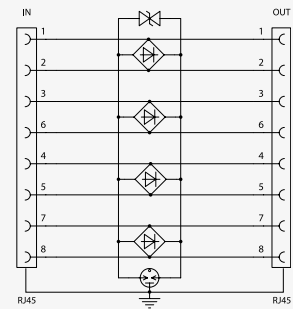
- fine surge protection of Ethernet lines for 19" RACK
- installation close to protected equipment
- for protection of 8, 16 or 24 Cat. 5e Ethernet lines against surge voltage



Dimensions



Basic circuit diagram



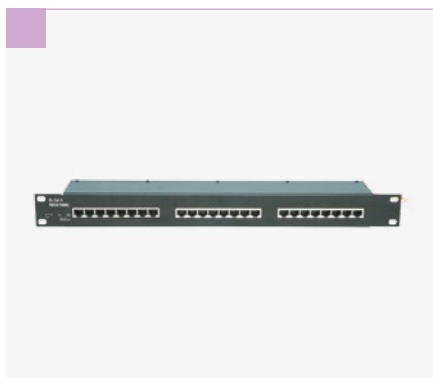
Parameter/ Type		DL-Cat. 5e 8 RACK PANEL	DL-Cat. 5e 16 RACK PANEL	DL-Cat. 5e 24 RACK PANEL
Location of SPD		ST 3	ST 3	ST 3
Maximum operating voltage	U_c	5,7 V AC / 8,1 V DC	5,7 V AC / 8,1 V DC	5,7 V AC / 8,1 V DC
Nominal load current	I_L	0,1 A	0,1 A	0,1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	0,2 kA	0,2 kA	0,2 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	1,6 kA	1,6 kA	1,6 kA
C2 voltage protection level mode core-core at I_n	U_p	40 V	40 V	40 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/ μ s	U_p	65 V	65 V	65 V
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	350 V	350 V	350 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
Insertion attenuation at 100 MHz		1,5 dB	1,5 dB	1,5 dB
Connection (input - output)		RJ 45/RJ 45	RJ 45/RJ 45	RJ 45/RJ 45
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 60 °C	-40 °C / 60 °C	-40 °C / 60 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090529309	8595090529316	8595090529323

DL-Cat. 6 ... PATCH PANEL

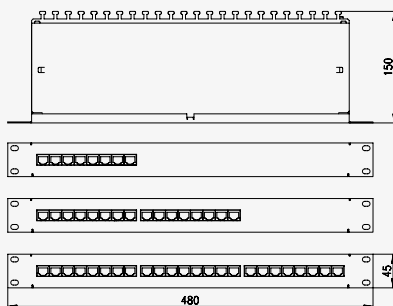
Surge Arrester for Ethernet

LSA connectors / RJ45 sockets

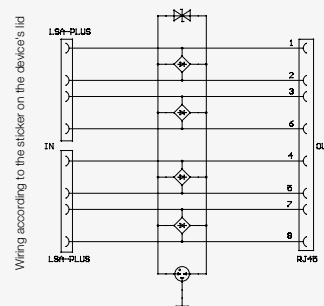
- fine surge protection of Ethernet lines for 19" RACK
- installation close to protected equipment
- for protection of 8, 16 or 24 Cat. 6 Ethernet lines against surge voltage



Dimensions



Basic circuit diagram



Parameter/Type		DL-Cat. 6 8 PATCH PANEL	DL-Cat. 6 16 PATCH PANEL	DL-Cat. 6 24 PATCH PANEL
Location of SPD		ST 3	ST 3	ST 3
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC
Nominal load current	I_L	0,1 A	0,1 A	0,1 A
C2 nominal discharge current (8/20 μ s) per core	I_n	0,2 kA	0,2 kA	0,2 kA
C2 nominal discharge current (8/20 μ s) core-PE	I_n	1,6 kA	1,6 kA	1,6 kA
C2 voltage protection level mode core-core at I_n	U_p	40 V	40 V	40 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V	65 V	65 V
Response time core-core	t_a	1 ns	1 ns	1 ns
Insertion attenuation at 250 MHz		2 dB	2 dB	2 dB
Connection (input - output)		LSA connector/RJ 45	LSA connector/RJ 45	LSA connector/RJ 45
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 60 °C	-40 °C / 60 °C	-40 °C / 60 °C
Mounting		19" rack	19" rack	19" rack
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012
Ordering number		8595090536048	8595090536055	8595090536062

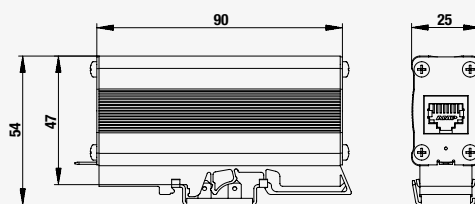
DL-Cat. 6

Surge Arrester for Ethernet RJ45 sockets

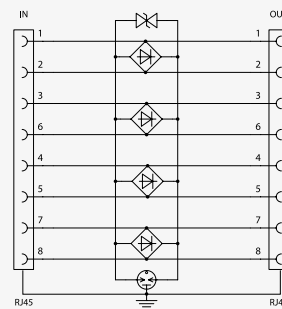
- fine surge protection of Ethernet line
- installation close to protected equipment
- for protection of Ethernet line Cat. 6 against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



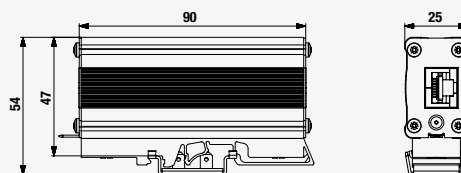
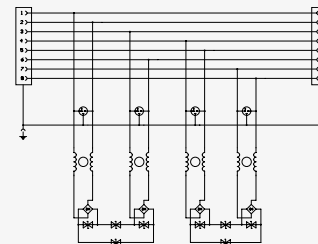
Parameter / Type		DL-Cat. 6	DL-Cat. 6-60V
Location of SPD		ST 3	ST 3
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	-
Maximum operating voltage	U_c	8,5 V DC / 6 V DC	60 V DC
Nominal load current	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 μ s) per core	I_n	0,2 kA	0,2 kA
C2 total discharge current (8/20 μ s) cores-PE	I_{Total}	1,6 kA	1,6 kA
C2 voltage protection level mode core-core at In	U_p	40 V	130 V
C2 voltage protection level mode core-PE at In	U_p	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/ μ s	U_p	65 V	130 V
Response time core-core	t_a	1 ns	1 ns
Insertion attenuation at 250 MHz		2 dB	2 dB
Connection (input - output)		RJ 45/RJ 45	RJ 45/RJ 45
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 60 °C	-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090536031	8595090538080

DL-...-RJ45-PoE-AB

NEW

Surge Arrester for Power over Ethernet RJ45 sockets

- combination of coarse and fine protection of Ethernet line with PoE
- installation at the entry of the line into building and close to protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line Cat. 6(A) with PoE (Power over ethernet) Mode A, B against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder


Dimensions

Basic circuit diagram


Parameter / Type		DL-1G-RJ45-PoE-AB	DL-10G-RJ45-PoE-AB
line part	Location of SPD	ST 1+2+3	ST 1+2+3
	Maximum operating voltage U_c	8,5 V DC	8,5 V DC
	Nominal load current I_L	0,5 A	0,5 A
	C2 nominal discharge current (8/20 μ s) per core I_n	0,15 kA	0,15 kA
	C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA	10 kA
	C2 voltage protection level mode core-core at I_n U_p	60 V	60 V
	C3 voltage protection level mode core-core at 1 kV/ μ s U_p	22 V	22 V
	C3 voltage protection level mode core-PE at 1 kV/ μ s U_p	500 V	500 V
	D1 total discharge current (10/350 μ s) cores-PE I_{Total}	2 kA	2 kA
	Response time core-core t_a	1 ns	1 ns
	Response time core-PE t_a	100 ns	100 ns
	Insertion attenuation at 250 MHz	1,2 dB	-
	Insertion attenuation at 500 MHz	-	1,8 dB
power part	Maximum operating voltage U_c	58 V DC	58 V DC
	Nominal load current I_L	1,5 A	1,5 A
	C2 nominal discharge current (8/20 μ s) core-core I_n	0,15 kA	0,15 kA
	C2 total discharge current (8/20 μ s) cores-PE I_{Total}	10 kA	10 kA
	C2 voltage protection level mode (POE) at I_n	90 V	90 V
	C3 voltage protection level mode (POE) at 1 kV/ μ s	80 V	80 V
	C3 voltage protection level mode core-PE at 1 kV/ μ 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
	Connection (input - output)	RJ 45/RJ 45	RJ 45/RJ 45
	Degree of protection	IP 20	IP 20
	Range of operating temperatures (min/max)	-40 °C / 80 °C	-40 °C / 80 °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, C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2, C3
Ordering number		8595090561484	8595090561491

Notes



SPDs for data/signalling/telecommunication networks

SPDs for video and coaxial lines



- Protection of video circuits or data transmission over twisted pair cable
- Radio or telecommunication lines
- TV systems and cameras

- Line VL – surge arrester for video lines
- Line HX and FX – Lightning Current Arresters
- Line SX – Surge Arresters

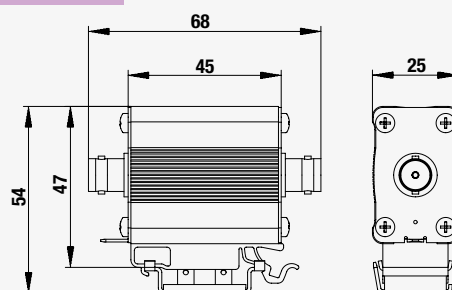
VL-...

Surge Arrester for video circuits terminals or BNC connectors, 75 Ω

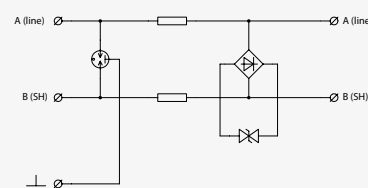
- combination of coarse and fine protection for video circuits
- installation close to protected equipment
- for protection of video systems, CCTV, etc. against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		VL-B75 F/F	VL-SV
Location of SPD		ST 2+3	ST 2+3
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC
Nominal load current	I_L	0,06 A	0,06 A
C2 nominal discharge current (8/20 μ s) core-SH	I_n	5 kA	5 kA
C2 nominal discharge current (8/20 μ s) SH-PE	I_n	5 kA	5 kA
C2 voltage protection level mode core-SH at I_n	U_p	150 V	150 V
C2 voltage protection level mode SH-PE at I_n	U_p	350 V	350 V
C3 voltage protection level mode core-SH at 1 kV/ μ s	U_p	35 V	35 V
C3 voltage protection level mode SH-PE at 1 kV/ μ s	U_p	350 V	350 V
Response time core-SH	t_a	1 ns	1 ns
Response time SH-PE	t_a	100 ns	100 ns
Serial resistance per core	R	0,27 Ω	0,27 Ω
Threshold frequency core-SH	f	150 MHz	150 MHz
Connection (input - output)		BNC 75	terminals
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 $^{\circ}$ C / 80 $^{\circ}$ C	-40 $^{\circ}$ C / 80 $^{\circ}$ 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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		8595090533764	8595090533795

HX-... N50 F/.

Lightning Current Arrester for coaxial line
N connectors, 50 Ω

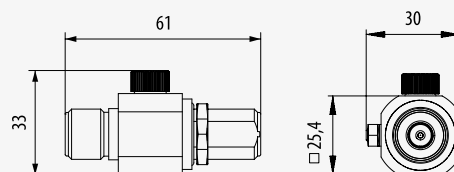
- lightning current arrester for coaxial line
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of coaxial lines and telecommunication equipment against

impact of direct or indirect lightning strike

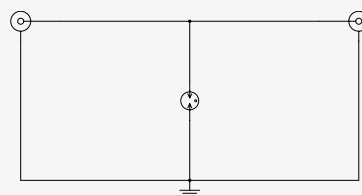
- suitable for the combined signal and power supply installations



Dimensions



Basic circuit diagram



Parameter / Type		HX-090 N50 F/F	HX-090 N50 F/M	HX-230 N50 F/F	HX-230 N50 F/M
Location of SPD		ST 1+2	ST 1+2	ST 1+2	ST 1+2
Maximum operating voltage	U_c	70 V DC	70 V DC	180 V DC	180 V DC
Nominal load current	I_L	6 A	6 A	6 A	6 A
C2 nominal discharge current (8/20 μ s) core-PE	I_n	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 μ s) core-PE	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-PE at 1 kV/ μ s	U_p	600 V	600 V	650 V	650 V
Response time core-PE	t_g	100 ns	100 ns	100 ns	100 ns
Power	P	95 W	95 W	640 W	640 W
Wave impedance	Z	50 Ω	50 Ω	50 Ω	50 Ω
Bandwidth - min	f	0 MHz	0 MHz	0 MHz	0 MHz
Bandwidth - max	f	3 500 MHz	3 500 MHz	3 500 MHz	3 500 MHz
Insertion attenuation		0,1 dB	0,1 dB	0,1 dB	0,1 dB
SWR	SWR	1,2	1,2	1,2	1,2
Connection (input - output)		N 50	N 50	N 50	N 50
Degree of protection		IP 66	IP 66	IP 66	IP 66
Range of operating temperatures (min/max)		-40 $^{\circ}$ C / 80 $^{\circ}$ C	-40 $^{\circ}$ C / 80 $^{\circ}$ C	-40 $^{\circ}$ C / 80 $^{\circ}$ C	-40 $^{\circ}$ C / 80 $^{\circ}$ C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2,C3	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090534051	8595090533467	8595090535119	8595090535102

FX-... B75 T F/F

Lightning Current Arrester for coaxial line
BNC connectors, 75 Ω

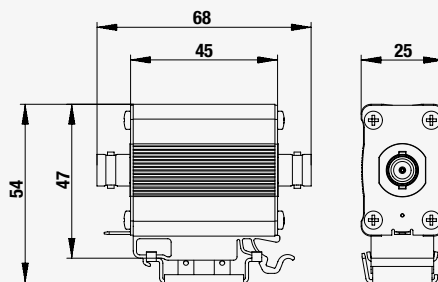
- lightning current arrested with floating shielding (separated with GDT)
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of coaxial lines of TV and CCTV systems, suitable as the 1st level

of surge for protection in coordination with the SX type

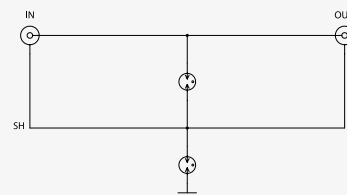
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram

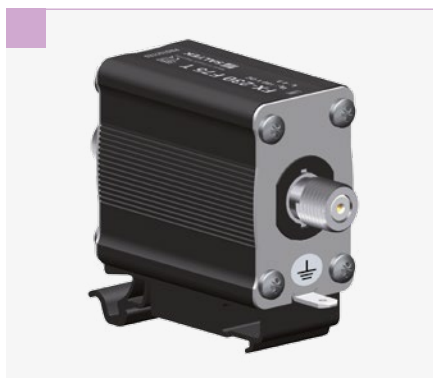


Parameter / Type		FX-090 B75 T F/F	FX-230 B75 T F/F
Location of SPD		ST 1	ST 1
Maximum operating voltage	U_c	70 V DC	180 V DC
Nominal load current	I_L	4 A	4 A
C2 nominal discharge current (8/20 μs) core-SH	I_n	10 kA	10 kA
C2 nominal discharge current (8/20 μs) SH-PE	I_n	10 kA	10 kA
D1 impulse discharge current (10/350 μs) core-SH	I_{imp}	2,5 kA	2,5 kA
D1 impulse discharge current (10/350 μs) SH-PE	I_{imp}	2,5 kA	2,5 kA
C3 voltage protection level mode core-SH at 1 kV/μs	U_p	600 V	660 V
C3 voltage protection level mode SH-PE at 1 kV/μs	U_p	600 V	660 V
Wave impedance	Z	75 Ω	75 Ω
Insertion attenuation		0,6 dB	0,6 dB
SWR	SWR	1,2	1,2
Bandwidth - min	f	0 MHz	0 MHz
Bandwidth - max	f	2 150 MHz	2 150 MHz
Response time core-SH	t_a	100 ns	100 ns
Response time SH-PE	t_a	100 ns	100 ns
Connection (input - output)		BNC 75	BNC 75
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090533856	8595090533900

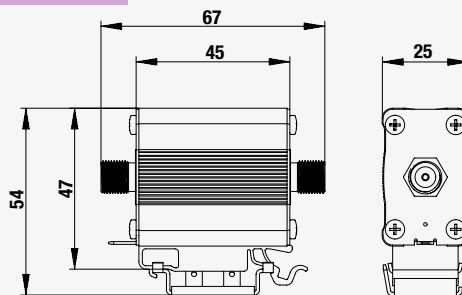
FX-... F75 T F/F

Lightning Current Arrester for coaxial line
F connectors, 75 Ω

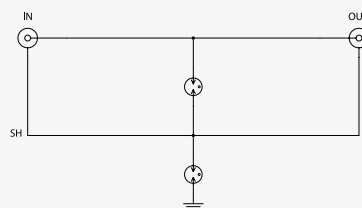
- lightning current arrested with floating shielding (separated with GDT)
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of coaxial lines of TV and CCTV systems, suitable as the 1st level of surge for protection in coordination with the SX type
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		FX-090 F75 T F/F	FX-230 F75 T F/F
Location of SPD		ST 1	ST 1
Maximum operating voltage	U_c	70 V DC	180 V DC
Nominal load current	I_L	4 A	4 A
C2 nominal discharge current (8/20 μ s) core-SH	I_n	10 kA	10 kA
C2 nominal discharge current (8/20 μ s) SH-PE	I_n	10 kA	10 kA
D1 impulse discharge current (10/350 μ s) core-SH	I_{imp}	2,5 kA	2,5 kA
D1 impulse discharge current (10/350 μ s) SH-PE	I_{imp}	2,5 kA	2,5 kA
C3 voltage protection level mode core-SH at 1 kV/ μ s	U_p	600 V	660 V
C3 voltage protection level mode SH-PE at 1 kV/ μ s	U_p	600 V	660 V
Wave impedance	Z	75 Ω	75 Ω
Insertion attenuation		0,2 dB	0,2 dB
SWR	SWR	1,3	1,3
Bandwidth - min	f	0 MHz	0 MHz
Bandwidth - max	f	2 150 MHz	2 150 MHz
Response time core-SH	t_a	100 ns	100 ns
Response time SH-PE	t_a	100 ns	100 ns
Connection (input - output)		F 75	F 75
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 $^{\circ}$ C / 80 $^{\circ}$ C	-40 $^{\circ}$ C / 80 $^{\circ}$ 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	EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1,C2
Ordering number		8595090533870	8595090533924

SX-090 B75 F/F

Surge Arrester for coaxial line
BNC connectors, 75 Ω

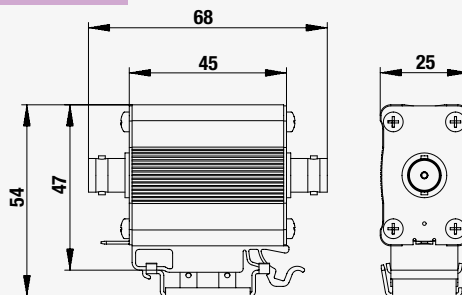
- surge arrester, shielding connected to protective grounding
- installation close to protected equipment
- for fine protection of coaxial inputs of TV and CCTV systems against surge

voltage, suitable as the 2nd level of surge protection in coordination with the FX type

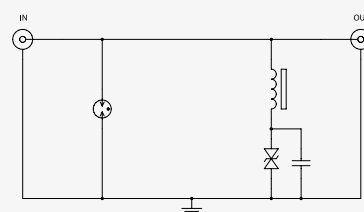
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		SX-090 B75 F/F
Location of SPD		ST 2+3
Maximum operating voltage	U_c	29,1 V DC
Nominal load current	I_L	4 A
C2 nominal discharge current (8/20 μs) core-PE	I_n	1,5 kA
C3 voltage protection level mode core-PE at 1 kV/μs	U_p	80 V
Wave impedance	Z	75 Ω
Insertion attenuation		1 dB
SWR	SWR	1,7
Bandwidth - min	f	1 MHz
Bandwidth - max	f	2 150 MHz
Response time core-PE	t_a	1 ns
Connection (input - output)		BNC 75
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °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		8595090533955

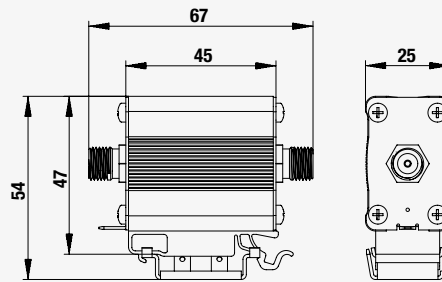
SX-090 F75 F/F

Surge Arrester for coaxial line
F connectors, 75 Ω

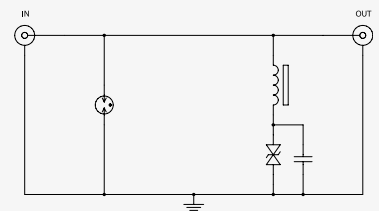
- surge arrester, shielding connected to protective grounding
- installation close to protected equipment
- for fine protection of coaxial inputs of TV and CCTV systems against surge voltage, suitable as the 2nd level
- of surge protection in coordination with the FX type
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder



Dimensions



Basic circuit diagram



Parameter / Type		SX-090 F75 F/F
Location of SPD		ST 2+3
Maximum operating voltage	U_c	29,1 V DC
Nominal load current	I_L	4 A
C2 nominal discharge current (8/20 μs) core-PE	I_n	1,5 kA
C3 voltage protection level mode core-PE at 1 kV/μs	U_p	80 V
Wave impedance	Z	75 Ω
Insertion attenuation		1 dB
SWR	SWR	1,7
Bandwidth - min	f	1 MHz
Bandwidth - max	f	2 150 MHz
Response time core-PE	t_a	1 ns
Connection (input - output)		F 75
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °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		8595090533979

Accessories for SPDs for data/signalling/telecommunication networks

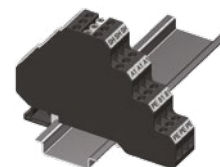
Accessories for terminal blocks with screw terminals (-RS)

Product	Ordering number
Connection bridge JRS 10P	C41175

Image

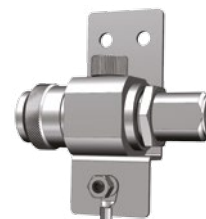


Example of use



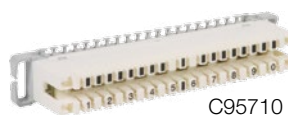
Accessories for HX

Product	Ordering number
Holder	C09720



Accessories for LSA technologies

Product	Ordering number
Comb earthing rail	C95712
Universal disconnection rail LSA 2/10	C95710
Mounting frame – 1 position	C95711



Accessories for data line SPDs with pluggable modules

Product	Ordering number
Short-circuiting module DMZ-V-0	8589090558186



Example of use



Voltage guards



- Protection of air conditioning units
- Protection of heat pumps
- Protection of steam cabins and saunas
- Protection of technologies sensitive on voltage fluctuation



- 1 and 3-phase voltage guards
- Voltage guard with integrated SPD - plug adapter

Voltage guards

Description and usage

Voltage guards are used to protect electrical and electronic equipment against damage from surges and voltage fluctuations beyond the tolerance band. They should be used for protection of the technology in all areas where there is unstable power supply voltage. Mainly, they are suitable for protecting of the equipment such as air conditioning units, heat pumps, refrigeration units, steam boxes etc. It contains intelligent detection circuit which disconnects the connected technology in case that voltage is out of the tolerance. Voltage guards are offered in single and three-phase versions.

The single-phase voltage guards are produced either as a plug adapter that is suitable for any portable device such as humidifier or air purifier in households, or in the design of modular DIN rail mounted device for installation to distribution boards. Three-phase version is produced only in the modular design device.

The big advantage of the plug adapter HN-OVERDRIVE X16 is a very simple installation. Just plug it into any outlet in the room and the protected device to socket located on the adapter. The maximum allowed load current is 16 A.

The DIN rail mounted versions are equipped with 16 A contact, which is designed to control a coil of contactor which can be operated fully automatically based on the relay signal or, with connection through its auxiliary contacts, will wait for manual switching. The 3-phase version is equipped with function of Neutral conductor state monitoring.

Function

Normal state – the voltage is within the tolerance and the technology is connected to the power grid.

Fault condition – the voltage is out of the tolerance, device starts counting down the response time. If after the expiry of response time the voltage doesn't returns to the tolerance band, technology is disconnected from the power supply.

Transition state – if during the fault condition the voltage returns to the tolerance band, voltage guard starts counting down the latency time and the technology remains disconnected. If after the expiry of latency time is the voltage level still in the tolerance band, device will return to the normal state and restore the power supply.

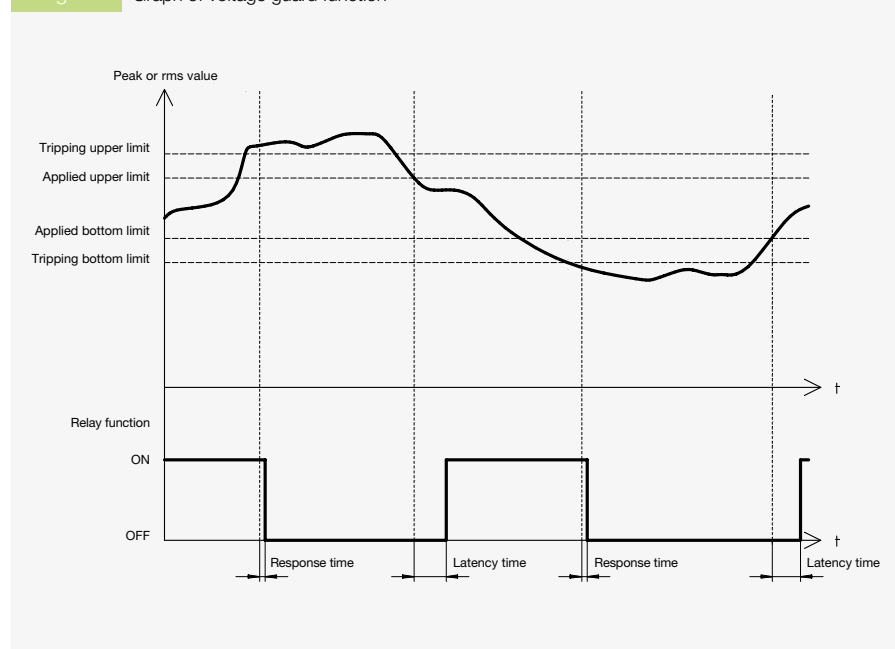
Neutral conductor disconnecting state (only in 3-phase version) – in case of disconnection (interruption) of Neutral conductor, the device reacts as a fail on all three phases and disconnects the technology from the power supply. This conditions does not harm the voltage guard.

Basic parameters:

Tripping upper limit	260 V AC
Applied upper limit	250 V AC
Applied bottom limit	200 V AC
Tripping bottom limit	190 V AC
Response time	0,5 s
Latency time	3 s

All parameters can be changed, when agreed with the manufacturer.

Fig. 1 Graph of voltage guard function



HN-OVERDRIVE X16 CZ

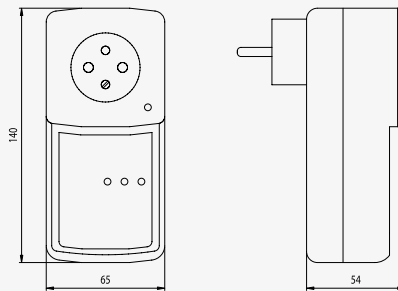
Voltage guard

visual status signalling

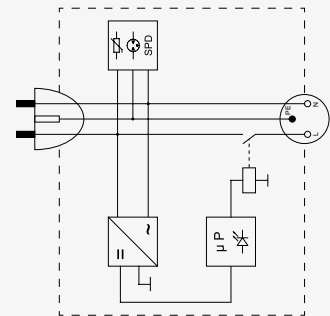
- plug adapter with integrated SPD and voltage guard
- suitable for TN, TT and IT networks
- suitable as protection of heat pumps and air condition units against voltage fluctuation and surge voltage



Dimensions



Basic circuit diagram



Parameter / Type		HN-OVERDRIVE X16 CZ
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,3 kV
Voltage protection level mode N-PE	U_p	1,4 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		red indicator
Nominal voltage	U_n	230 V AC
Nominal load current	I_L	16 A
Tripping upper limit		260 V AC
Applied upper limit		250 V AC
Applied bottom limit		200 V AC
Tripping bottom limit		190 V AC
Response time		0,5 s
Latency time		3 s
Degree of protection		IP 20
Range of operating temperatures (min/max)		0 °C / 70 °C
Humidity		5 %
Humidity		95 %
Mounting		plug adaptor
According to standard		EN 61643-11 ed.2, EN 61010-1 / T3
Ordering number		8595090519409

HN-230-16 DJ

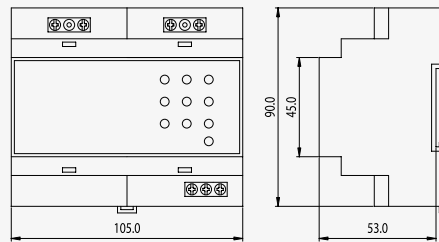
Voltage guard

visual status signalling

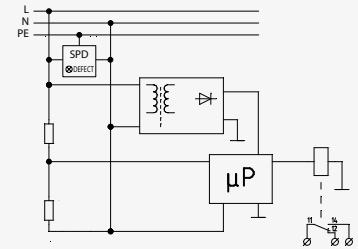
- voltage guard for 1 phase systems
TN-C and TN-S for mounting on DIN rail
- suitable for TN, TT and IT networks
- suitable as protection of heat pumps
and air condition units against voltage
fluctuation



Dimensions



Basic circuit diagram



Parameter / Type		HN-230-16 DJ
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 μ s) L-N	I_n	3 kA
Nominal discharge current (8/20 μ s) N-PE	I_n	3 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,3 kV
Voltage protection level mode N-PE	U_p	1,4 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A
Response time L-N	t_a	25 ns
Response time N-PE	t_a	100 ns
Fault indication		red indicator
Nominal voltage	U_n	230 V AC
Nominal load current	I_L	16 A
Tripping upper limit		260 V AC
Applied upper limit		250 V AC
Applied bottom limit		200 V AC
Tripping bottom limit		190 V AC
Response time		0,5 s
Latency time		3 s
Degree of protection		IP 20
Range of operating temperatures (min/max)		0 °C / 70 °C
Humidity		5 %
Humidity		95 %
Mounting		DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3
Ordering number		8595090519805

HN-400-16 DJ

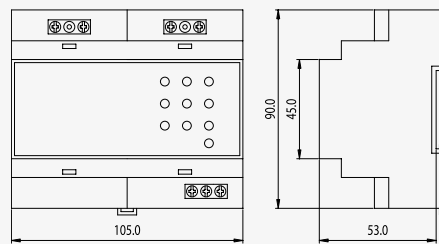
Voltage guard

visual status signalling

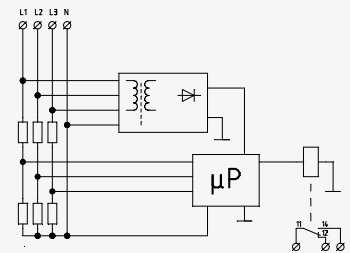
- voltage guard for 3 phase systems
TN-C and TN-S for mounting on DIN rail
- suitable for TN, TT and IT networks
- suitable as protection of heat pumps
and air condition units against voltage
fluctuation



Dimensions



Basic circuit diagram



Parameter / Type		HN-400-16 DJ
Nominal voltage	U_n	400 V AC
Nominal load current	I_L	16 A
Tripping upper limit		260 V AC
Applied upper limit		250 V AC
Applied bottom limit		200 V AC
Tripping bottom limit		190 V AC
Response time		0,5 s
Latency time		3 s
Degree of protection		IP 20
Range of operating temperatures (min/max)		0 °C / 70 °C
Humidity		5 %
Humidity		95 %
According to standard		EN 61010-1
Ordering number		8595090524922

Notes

Voltage guards

Isolating Spark Gaps ISG and ISG EX



- Earth termination systems of power installations
- Earth termination systems of telecommunication systems
- Auxiliary earth electrodes of voltage operated earth fault circuit breakers
- Rail earth electrode of AC and DC railways
- Measuring earth electrode for laboratories
- Installations with cathodic protection and stray current systems
- Service entry masts for low-voltage overhead cables
- Bypassing insulated flanges and insulated couplings of pipelines.
- Ex types for ATEX:
 - III2G Ex mb IIC T6 Gb
 - II2D Ex tb IIIC T80 °C Db
- Classes:
 - N – normal duty
 - H – heavy duty
- ISG-... EX
- ISGC-... EX
- ISGT-... EX
- ISGO-...H EX

Isolating spark gaps

A series of isolating spark gaps for usual ISG environments, extended by the **ISG-... Ex**, versions specified for safe installations in explosion hazard areas (Ex), i.e., Zone 1 (- gas) or 21 (- dust). They were certified by the EZÚ Praha and FTZÚ Radvanice electro-technical testing institutes according to the latest Czech and European standards.

The series offers a vast variety of types with a withstand voltage scope from 50 up to 500 V DC. The variability of connections via flat lead-in wires, screws, cables and their combination which come with IP67 protection, enables the installation method to be optimized and the cost of protection reduced.

ISG-... Ex are, according to individual types, capable of withstanding a load caused by a lightning strike current of 50 to 100 kA and represent classes N and H.

They are suitable particularly for solutions that need an indirect connection between the external lightning protection system and other close metal parts, where a direct connection is not allowed for operating reasons. If a different potential between these parts occurs, the isolating spark gap will temporarily provide a conductive connection which will eliminate the dangerous potential difference.

Places it can be used comprise for example bridging of isolated flanges and isolated piping connections, earthing systems of heavy-current installations and telecommunications systems, auxiliary earth electrodes of earth short-circuit disconnect switches triggered by voltage, measuring earth electrodes for laboratories, rail AC and DC earth electrodes of railroad lines, cathodic protection and stray current elimination systems, etc.

The unique design of SALTEK® isolating spark gaps and a withstand voltage of 50 V DC enables even the most challenging requirements for protection and safety to be met.




**Physical Technical Testing Institute
Ostrava – Radvanice**

(13) **Schedule**

(14) **EC-Type Examination Certificate N° FTZÚ 14 ATEX 0155X**

(15) **Description of Equipment or Protective System:**
 The isolating spark gap type ISG(-...) Ex are installed into the stainless steel housing. The enclosure is encapsulated with compound.
 For installation of isolating spark gap series ISG(-...) Ex are intended two bolts M8.
 For installation of isolating spark gap series ISGC(-...) Ex are intended two stranded cables conductors (25 mm²), length 2.0 m.
 For installation of isolating spark gap series ISGT(-...) Ex are intended two flat terminals.
 For installation of isolating spark gap series ISGO Ex-500 is intended one bolt M8 and one stranded conductor (25 mm²), length 0.2 m
Technical specification: see Annex No. 1

(16) Report No.: 14/0155

(17) Special conditions for safe use:
 T_{amb}: -40°C to +80°C

(18) **Essential Health and Safety Requirements:**
 Essential health and safety requirement of Directive 94/9/EC are covered by the standard mentioned in (9), according which the product was verified and in the manufacturer's instruction for use.

Responsible person:

 Dipl. Ing. Lukáš Martinák
 Head of Certification Body



Date of issue: 31.03.2015

 Page: 2/3
 Annex: 1 (1 sheet)

This certificate is granted subject to the general conditions of the FTZÚ, s.p.
 This certificate may only be reproduced in its entirety and without any change, schedule included.
 FTZÚ, s.p., Píkavská 1337/7, 716 07 Ostrava-Radvanice, Czech Republic,
 tel +420 595 223 111, fax +420 596 232 672, ftzu@ftzu.cz, www.ftzu.cz

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV


ELEKTROTECHNICKÝ ZKUSOBNÍ ÚSTAV - CZECH REPUBLIC
 ELEKTROTECHNICKÝ PRŮVĚRNÝ ÚSTAV - SLOVENSKÁ REPUBLIKA
 INSTITUT ELECTROTECHNIQUE DESSAIS - REPUBLIQUE TCHÉQUE
 ELEKTROTECHNICKÝ ZKUSOBNÍ ÚSTAV - REPUBLIKA SLOVENSKO

Pod Lisem 129, 171 02 Praha 8 - Troja

CERTIFICATE

No.: 1150450

Product: Isolating spark gaps

Type: ISG-50 (Ex), ISG-100 (Ex), ISG-250 (Ex), ISG-500 (Ex)
 ISGC-50 (Ex), ISGC-100 (Ex), ISGC-250 (Ex), ISGC-500 (Ex)
 ISGT-50 Ex, ISGT-100 Ex, ISGT-250 Ex
 ISGO-500 (Ex)

Rating:	ISG-50	U _{max} = 35 V
	ISG-100	U _{max} = 70 V
	ISG-250	U _{max} = 250 V
	ISG-500	U _{max} = 350 V

Ordering firm: SALTEK s.r.o.
 Dřáběnská 561/85, 400 07 Ústí nad Labem, Czech Republic

Manufacturer: SALTEK s.r.o.
 Dřáběnská 561/85, 400 07 Ústí nad Labem, Czech Republic

Trade mark:

The test results are stated in the test-report No.: 502141-01/01 of: 16.06.2015, 403072-01/01 of: 23.02.2015

A sample of the product was found to be in conformity with:
 CSN EN 62561-3-12 of: 5.9, 6.2.1, 6.2.2, 6.2.3, 6.2.4 (A.2, A.3), 6.2.5, 6.2.6, 6.2.7, 6.3.

The validity of the certificate is limited to: 30.6.2018

23.6.2015
 Proge:

 Miroslav Šedáček
 Head of Certification Body



Stamp



502141-01

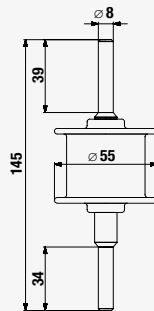
ISG-A100

Isolating Spark Gap connecting pins

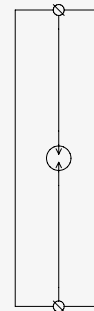
- encapsulated high-performance isolating spark gap
- for indirect connection (earthing) of isolated conductive parts under lightning conditions, where direct connection is not allowed



Dimensions



Basic circuit diagram



Parameter / Type		ISG-A100
Lightning impulse current	I_{imp}	100 kA
Rated impulse sparkover voltage	U_{rimp}	5 kV
Rated power frequency withstand voltage	U_{WAC}	2,5 kV
Isolation resistance		100 MΩ
Classification		class H - heavy duty
Degree of protection		IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012
Ordering number		8595090535904

ISG-...

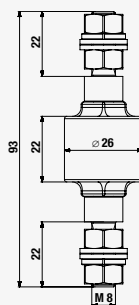
Isolating Spark Gap

two M8 bolts with nuts

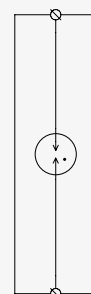
- encapsulated high-performance isolating spark gap
- for indirect connection (earthing) of isolated conductive parts under lightning conditions, where direct connection is not allowed



Dimensions



Basic circuit diagram



Parameter / Type		ISG-50	ISG-100	ISG-250	ISG-500
Lightning impulse current	I_{imp}	50 kA	50 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rmp}	0,9 kV	0,95 kV	1,4 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,25 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,375 kV	0,5 kV
Isolation resistance		100 MΩ	100 MΩ	100 MΩ	100 MΩ
Classification		class N - normal duty	class N - normal duty	class H - heavy duty	class H - heavy duty
Degree of protection		IP 67	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012
Ordering number		8595090540861	8595090540786	8595090541301	8595090541271

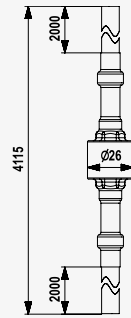
ISGC-...

Isolating Spark Gap connecting cables

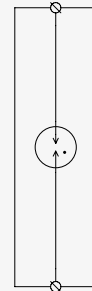
- encapsulated high-performance isolating spark gap
- for indirect connection (earthing) of isolated conductive parts under lightning conditions, where direct connection is not allowed



Dimensions



Basic circuit diagram



Parameter / Type		ISGC-50	ISGC-100	ISGC-250	ISGC-500
Lightning impulse current	I_{imp}	50 kA	50 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,4 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,25 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,375 kV	0,5 kV
Isolation resistance		100 MΩ	100 MΩ	100 MΩ	100 MΩ
Classification		class N - normal duty	class N - normal duty	class H - heavy duty	class H - heavy duty
Degree of protection		IP 67	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012	EN 62561-3:2012, IEC 62561-3:2012
Ordering number		8595090553656	8595090553663	8595090553670	8595090553687

ISGO-500

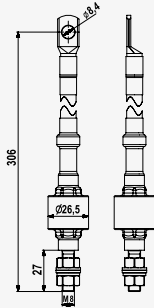
Isolating Spark Gap

connecting cable and M8 bolt with nut

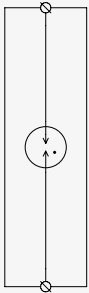
- encapsulated high-performance isolating spark gap
- for indirect connection (earthing) of isolated conductive parts under lightning conditions, where direct connection is not allowed



Dimensions



Basic circuit diagram



Parameter / Type		ISGO-500
Lightning impulse current	I_{imp}	100 kA
Rated impulse sparkover voltage	U_{rimp}	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,5 kV
Isolation resistance		100 MΩ
Classification		class H - heavy duty
Degree of protection		IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012
Ordering number		8595090555186

ISG-...H Ex

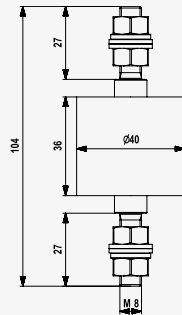
Isolating Spark Gap

two M8 bolts with nuts, stainless steel enclosure

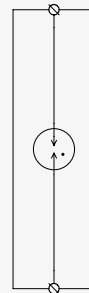
- heavy duty encapsulated isolating spark gap for use in Hazardous (Ex) Areas
- for indirect connection (earthing) of isolated conductive parts under lightning conditions
- for safe installation in Ex zone



Dimensions



Basic circuit diagram



Parameter / Type	ISG-50H Ex	ISG-100H Ex	ISG-250H Ex	ISG-500H Ex
Lightning impulse current I_{imp}	100 kA	100 kA	100 kA	100 kA
Rated impulse sparkover voltage U_{rmp}	0,9 kV	0,95 kV	1,4 kV	1,5 kV
Rated power frequency withstand voltage U_{WAC}	0,035 kV	0,07 kV	0,25 kV	0,35 kV
Rated DC withstand voltage U_{WDC}	0,05 kV	0,1 kV	0,375 kV	0,5 kV
Isolation resistance	100 MΩ	100 MΩ	100 MΩ	100 MΩ
Classification	class H - heavy duty	class H - heavy duty	class H - heavy duty	class H - heavy duty
Degree of protection	IP 67	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C
According to standard	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31
Ordering number	8595090541318	8595090541325	8595090541226	8595090541097

ISGC-...H Ex

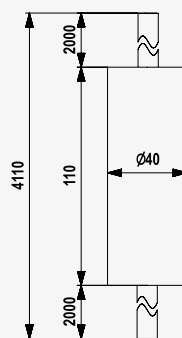
Isolating Spark Gap

connecting cables, stainless steel enclosure

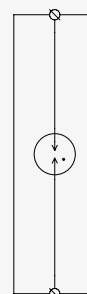
- heavy duty encapsulated isolating spark gap for use in Hazardous (Ex) Areas
- for indirect connection (earthing) of isolated conductive parts under lightning conditions
- for safe installation in Ex zone



Dimensions



Basic circuit diagram



Parameter / Type	ISGC-50H Ex	ISGC-100H Ex	ISGC-250H Ex	ISGC-500H Ex
Lightning impulse current I_{imp}	100 kA	100 kA	100 kA	100 kA
Rated impulse sparkover voltage U_{rmp}	0,9 kV	0,95 kV	1,4 kV	1,5 kV
Rated power frequency withstand voltage U_{WAC}	0,035 kV	0,07 kV	0,25 kV	0,35 kV
Rated DC withstand voltage U_{WDC}	0,05 kV	0,1 kV	0,375 kV	0,5 kV
Isolation resistance	100 MΩ	100 MΩ	100 MΩ	100 MΩ
Classification	class H - heavy duty	class H - heavy duty	class H - heavy duty	class H - heavy duty
Degree of protection	IP 67	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C
According to standard	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31
Ordering number	8595090541288	8595090541295	8595090540380	8595090541202

ISGT-...H Ex

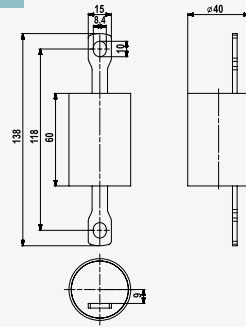
Isolating Spark Gap

flat connecting brackets, stainless steel enclosure

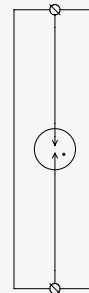
- heavy duty encapsulated isolating spark gap for use in Hazardous (Ex) Areas
- for indirect connection (earthing) of isolated conductive parts under lightning conditions
- for safe installation in Ex zone



Dimensions



Basic circuit diagram



Parameter / Type	ISGT-50H Ex	ISGT-100H Ex	ISGT-250H Ex
Lightning impulse current I_{imp}	100 kA	100 kA	100 kA
Rated impulse sparkover voltage U_{rimp}	0,9 kV	0,95 kV	1,4 kV
Rated power frequency withstand voltage U_{WAC}	0,035 kV	0,07 kV	0,25 kV
Rated DC withstand voltage U_{WDC}	0,05 kV	0,1 kV	0,375 kV
Isolation resistance	100 MΩ	100 MΩ	100 MΩ
Classification	class H - heavy duty	class H - heavy duty	class H - heavy duty
Degree of protection	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C
According to standard	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31
Ordering number	8595090555155	8595090555179	8595090555162

ISGO-...H Ex

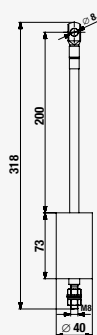
Isolating Spark Gap

connecting cable and M8 bolt with nut, stainless steel enclosure

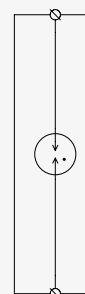
- heavy duty encapsulated isolating spark gap for use in Hazardous (Ex) Areas
- for indirect connection (earthing) of isolated conductive parts under lightning conditions
- for safe installation in Ex zone



Dimensions



Basic circuit diagram



Parameter / Type	ISGO-50H Ex	ISGO-100H Ex	ISGO-250H Ex	ISGO-500H Ex
Lightning impulse current	I_{imp} 100 kA	100 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rmp} 0,9 kV	0,95 kV	1,4 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC} 0,035 kV	0,07 kV	0,25 kV	0,35 kV
Rated DC withstand voltage	U_{WDC} 0,05 kV	0,1 kV	0,375 kV	0,5 kV
Isolation resistance	100 MΩ	100 MΩ	100 MΩ	100 MΩ
Classification	class H - heavy duty	class H - heavy duty	class H - heavy duty	class H - heavy duty
Degree of protection	IP 67	IP 67	IP 67	IP 67
Range of operating temperatures (min/max)	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C	-40 °C / 50 °C
According to standard	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31	EN 62561-3, EN 60079-0, EN 60079-18, EN 60079-31
Ordering number	8595090561422	8595090561439	8595090561446	8595090555148

Index of SALTEK® products

Type	Page	Type	Page	Type	Page	Type	Page
BD-090-T	147	DL-Cat. 6-60V	192	DM-048-V/2-JFR2	127	DMG-110-V/1-FR	119
BD-090-T-V/1-16	98	DL-ISDN RJ45	184	DM-048-V/2-JR1	125	DMG-110-V/1-FR1	119
BD-090-T-V/1-F16	98	DL-ISDN SV	183	DM-048-V/2-JR2	125	DMG-110-V/1-R	116
BD-090-T-V/2-16	99	DL-RS DD9	186	DM-048-V/2-R1	110	DMG-110-V/1-R1	116
BD-090-T-V/2-F16	99	DL-TLF-HF	182	DM-048-V/4-JFR1	129	DMG-110-V/2-FR	123
BD-250-T	147	DM-006/1 3L DJ	152	DM-048-V/4-JR1	128	DMG-110-V/2-R	121
BD-250-T-V/1-16	98	DM-006/1 3R DJ	151	DM-060/1-RS	161	DMG-230-V/1-FR	119
BD-250-T-V/1-F16	98	DM-006/1 4R DJ	153	DM-060-V/1-FR1	108	DMG-230-V/1-FR1	119
BD-250-T-V/2-16	99	DM-006/1 L2 DJ	150	DM-060-V/1-FR2	108	DMG-230-V/1-R	116
BD-250-T-V/2-F16	99	DM-006/1 L DJ	149	DM-060-V/1-R1	105	DMG-230-V/1-R1	116
BDG-006-V/1-FR1	103	DM-006/1-RB	169	DM-060-V/1-R2	105	DMG-230-V/2-FR	123
BDG-006-V/1-R1	102	DM-006/1 R DJ	148	DM-060-V/2-FR1	113	DMG-230-V/2-R	121
BDG-012-V/1-FR1	103	DM-006/1-RS	161	DM-060-V/2-R1	111	DMGHF-006-V/1-FR1	135
BDG-012-V/1-R1	102	DM-006-V/1-FR1	107	DM-110/1-RS	161	DMGHF-006-V/1-R1	134
BDG-024-V/1-FR1	103	DM-006-V/1-FR2	107	DM-110-V/1-FR	109	DMGHF-006-V/2-FR1	137
BDG-024-V/1-R1	102	DM-006-V/1-R1	104	DM-110-V/1-FR1	109	DMGHF-006-V/2-R1	136
BDG-048-V/1-FR1	103	DM-006-V/1-R2	104	DM-110-V/1-R	106	DMGHF-012-V/1-FR1	135
BDG-048-V/1-R1	102	DM-006-V/2-FR1	112	DM-110-V/1-R1	106	DMGHF-012-V/1-R1	134
BDG-230-V/1-FR	103	DM-006-V/2-JFR1	126	DM-110-V/2-FR	113	DMGHF-012-V/2-FR1	137
BDG-230-V/1-R	102	DM-006-V/2-JFR2	126	DM-110-V/2-JFR	127	DMGHF-012-V/2-R1	136
BDM-006-V/1-FR1	101	DM-006-V/2-JR1	124	DM-110-V/2-JFR1	127	DMGHF-024-V/1-FR1	135
BDM-006-V/1-R1	100	DM-006-V/2-JR2	124	DM-110-V/2-JR1	125	DMGHF-024-V/1-R1	134
BDM-012-V/1-FR1	101	DM-006-V/2-R1	110	DM-110-V/2-JR1	125	DMGHF-024-V/2-FR1	137
BDM-012-V/1-R1	100	DM-006-V/4-JFR1	129	DM-110-V/2-R	111	DMGHF-024-V/2-R1	136
BDM-024-V/1-FR1	101	DM-006-V/4-JR1	128	DM-110-V/4-JFR	129	DMGHF-230-V/1-FR	135
BDM-024-V/1-R1	100	DM-012/1 3L DJ	152	DM-110-V/4-JR1	128	DMGHF-230-V/1-R	134
BDM-048-V/1-FR1	101	DM-012/1 3R DJ	151	DM-230-V/1-FR	109	DMGHF-230-V/2-FR	137
BDM-048-V/1-R1	100	DM-012/1 4R DJ	153	DM-230-V/1-FR1	109	DMGHF-230-V/2-R	136
BDM-230-V/1-FR	101	DM-012/1 L2 DJ	150	DM-230-V/1-R	106	DMHF-006/1-RB	172
BDM-230-V/1-R	100	DM-012/1 L DJ	149	DM-230-V/1-R1	106	DMHF-006/1-RS	164
CLSA-6	177	DM-012/1-RB	169	DM-230-V/2-FR	113	DMHF-006-V/1-4FR1	133
CLSA-12	177	DM-012/1 R DJ	148	DM-230-V/2-R	111	DMHF-006-V/1-4R1	133
CLSA-24	177	DM-012/1-RS	161	DMG-006/1-RB	170	DMHF-006-V/1-FR1	132
CLSA-48	177	DM-012-V/1-FR1	107	DMG-006/1-RS	162	DMHF-006-V/1-R1	132
CLSA-DSL	179	DM-012-V/1-FR2	107	DMG-006-V/1-4FR1	131	DMHF-015/1-RS	164
CLSA-HF6	179	DM-012-V/1-R1	104	DMG-006-V/1-4R1	130	DMHF-024-V/1-4FR1	133
CLSA-ISDN	178	DM-012-V/1-R2	104	DMG-006-V/1-FR1	117	DMHF-024-V/1-4R1	133
CLSA-TLF	178	DM-012-V/2-FR1	112	DMG-006-V/1-FR2	117	DMHF-024-V/1-FR1	132
CZ-275-A	62	DM-012-V/2-JFR1	126	DMG-006-V/1-R1	114	DMHF-024-V/1-R1	132
DA-075 DJ	53	DM-012-V/2-JFR2	126	DMG-006-V/1-R2	114	DMJ-012/2-RB	171
DA-130 DJ	53	DM-012-V/2-JR1	124	DMG-006-V/2-FR1	122	DMJ-012/2-RS	163
DA-275-A	64	DM-012-V/2-JR2	124	DMG-006-V/2-R1	120	DMJ-024/2-RB	171
DA-275 BFG	61	DM-012-V/2-R1	110	DMG-012/1-RS	162	DMJ-024/2-RS	163
DA-275 CZS	63	DM-012-V/4-JFR1	129	DMG-012-V/1-4FR1	131	DMJ-048/2-RB	171
DA-275-DF2	55	DM-012-V/4-JR1	128	DMG-012-V/1-4R1	130	DMJ-048/2-RS	163
DA-275-DF2-S	56	DM-024/1 3L DJ	152	DMG-012-V/1-FR1	117	DMJ-060/2-RS	163
DA-275-DF6	55	DM-024/1 3R DJ	151	DMG-012-V/1-FR2	117	DMJ-110/2-RS	163
DA-275-DF6-S	56	DM-024/1 4R DJ	153	DMG-012-V/1-R1	114	DMLF-024/1-RB	173
DA-275-DF10	55	DM-024/1 L2 DJ	150	DMG-012-V/1-R2	114	DMLF-024/1-RS	165
DA-275-DF10-S	56	DM-024/1 L DJ	149	DMG-012-V/2-FR1	122	DMP-012-V/1-FR1	139
DA-275-DF16	55	DM-024/1-RB	169	DMG-012-V/2-R1	120	DMP-012-V/1-JFR1	141
DA-275-DF16-S	56	DM-024/1 R DJ	148	DMG-024/1-RB	170	DMP-012-V/1-JR1	140
DA-275 DF 25	57	DM-024/1-RS	161	DMG-024/1-RS	162	DMP-012-V/1-R1	138
DA-275 DFI 1	58	DM-024-V/1-FR1	107	DMG-024-V/1-4FR1	131	DMP-024-V/1-FR1	139
DA-275-DF16	59	DM-024-V/1-FR2	107	DMG-024-V/1-4R1	130	DMP-024-V/1-JFR1	141
DA-275-DF10	59	DM-024-V/1-R1	104	DMG-024-V/1-FR1	117	DMP-024-V/1-JR1	140
DA-275-DF16	59	DM-024-V/1-R2	104	DMG-024-V/1-FR2	117	DMP-024-V/1-R1	138
DA-275-DJ25	54	DM-024-V/2-FR1	112	DMG-024-V/1-R1	114	DM-PROFIBUS 5 V	154
DA-275-DJ25-S	54	DM-024-V/2-JFR1	126	DMG-024-V/1-R2	114	DM-PROFIBUS 24 V	154
DA-275-S	65	DM-024-V/2-JFR2	126	DMG-024-V/2-FR1	122	DMS-24	155
DA-275 V/1+1	50	DM-024-V/2-JR1	124	DMG-024-V/2-R1	120	DMS-48	155
DA-275 V/1S+1	50	DM-024-V/2-JR2	124	DMG-048/1-RB	170	DP-012	156
DA-275 V/3+1	51	DM-024-V/2-R1	110	DMG-048/1-RS	162	DP-012-V/1-16	142
DA-275 V/3S+1	51	DM-024-V/4-JFR1	129	DMG-048-V/1-4FR1	131	DP-012-V/1-F16	143
DA-320-LED	77	DM-024-V/4-JR1	128	DMG-048-V/1-4R1	130	DP-024	156
DA-400 DF 16	60	DM-048/1 3L DJ	152	DMG-048-V/1-FR1	118	DP-024-V/1-16	142
DA-400 DF 16 S	60	DM-048/1 3R DJ	151	DMG-048-V/1-FR2	118	DP-024-V/1-F16	143
DL-1G-RJ45-PoE-AB	193	DM-048/1 4R DJ	153	DMG-048-V/1-R1	115	DP-048	156
DL-10G-RJ45-PoE-AB	193	DM-048/1 L2 DJ	150	DMG-048-V/1-R2	115	DP-048-V/1-16	142
DL-100 POE-048	188	DM-048/1 L DJ	149	DMG-048-V/2-FR1	122	DP-048-V/1-F16	143
DL-Cat. 5e	187	DM-048/1-RB	169	DMG-048-V/2-R1	120	DP-060	156
DL-Cat. 5e 8 RACK PANEL	190	DM-048/1 R DJ	148	DMG-060/1-RS	162	DP-060-V/1-16	142
DL-Cat. 5e 16 RACK PANEL	190	DM-048/1-RS	161	DMG-060-V/1-FR1	118	DP-060-V/1-F16	143
DL-Cat. 5e 24 RACK PANEL	190	DM-048-V/1-FR1	108	DMG-060-V/1-FR2	118	DPF-024	157
DL-Cat. 5e POE plus	189	DM-048-V/1-FR2	108	DMG-060-V/1-R1	115	DS-B090-RB	174
DL-Cat. 6	192	DM-048-V/1-R1	105	DMG-060-V/1-R2	115	DS-B090-RS	166
DL-Cat. 6 8 PATCH PANEL	191	DM-048-V/1-R2	105	DMG-060-V/2-FR1	123	DS-B240-RS	166
DL-Cat. 6 16 PATCH PANEL	191	DM-048-V/2-FR1	112	DMG-060-V/2-R1	121	DS-D024-RS	166
DL-Cat. 6 24 PATCH PANEL	191	DM-048-V/2-JFR1	127	DMG-110/1-RS	162	DS-V130-RS	166

Index of SALTEK® products

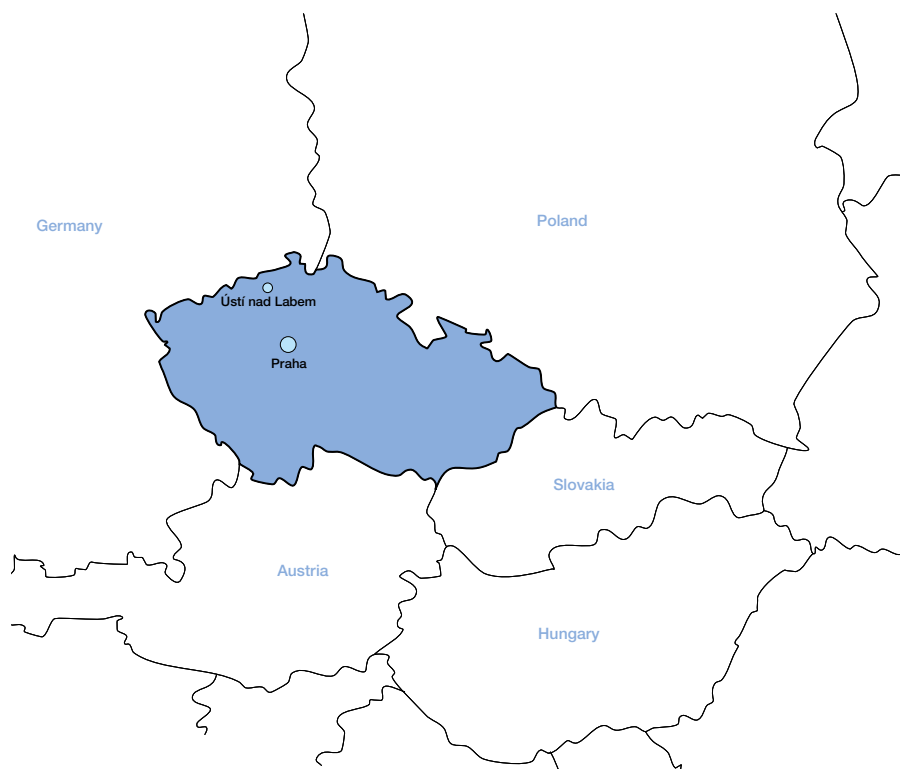
Type	Page	Type	Page
FAX-OVERDRIVE F6	67	ISGT-250H Ex	217
FAX-OVERDRIVE F16	67	NET-OVERDRIVE F6	71
FAX-OVERDRIVE X16	67	NET-OVERDRIVE X16	71
FLP-12,5 V/1	30	PA-OVERDRIVE F6	66
FLP-12,5 V/1+1	31	PA-OVERDRIVE F16	66
FLP-12,5 V/1 S	30	PA-OVERDRIVE X16	66
FLP-12,5 V/1S+1	31	RACK-PROTECTOR- EURO-X12-1U	72
FLP-12,5 V/2	32	RACK-PROTECTOR-F6-1U	72
FLP-12,5 V/2 S	32	RACK-PROTECTOR-VF5-1U	72
FLP-12,5 V/3	33	RACK-PROTECTOR-VX7-1U	72
FLP-12,5 V/3+1	35	RACK-PROTECTOR-X8-1U	72
FLP-12,5 V/3 S	33	RTO-16	73
FLP-12,5 V/3S+1	35	RTO-35	73
FLP-12,5 V/4	34	RTO-63	73
FLP-12,5 V/4 S	34	SAT-OVERDRIVE F6	70
FLP-25-T1-V/3	19	SAT-OVERDRIVE X16	70
FLP-25-T1-V/3+1	21	SLP-075 V/1	38
FLP-25-T1-V/4	20	SLP-075 V/1 S	39
FLP-25-T1-VS/3	19	SLP-075 VB/1	45
FLP-25-T1-VS/3+1	21	SLP-075 VB/1 S	46
FLP-25-T1-VS/4	20	SLP-130 VB/1	45
FLP-A50N VS/NPE	22	SLP-130 VB/1 S	46
FLP-A100N VS/NPE	22	SLP-150 V/1	38
FLP-B+C MAXI150 V/1	29	SLP-150 V/1 S	39
FLP-B+C MAXI150 VS/1	29	SLP-275 V/1	38
FLP-B+C MAXI V/1	23	SLP-275 V/1+1	40
FLP-B+C MAXI V/1+1	24	SLP-275 V/1 S	39
FLP-B+C MAXI V/2	25	SLP-275 V/1S+1	40
FLP-B+C MAXI V/3	26	SLP-275 V/2	41
FLP-B+C MAXI V/3+1	28	SLP-275 V/2 S	41
FLP-B+C MAXI V/4	27	SLP-275 V/3	42
FLP-B+C MAXI VS/1	23	SLP-275 V/3+1	44
FLP-B+C MAXI VS/1+1	24	SLP-275 V/3 S	42
FLP-B+C MAXI VS/2	25	SLP-275 V/3S+1	44
FLP-B+C MAXI VS/3	26	SLP-275 V/4	43
FLP-B+C MAXI VS/3+1	28	SLP-275 V/4 S	43
FLP-B+C MAXI VS/4	27	SLP-275 VB/1	45
FLP-PV550 V/U	81	SLP-275 VB/1 S	46
FLP-PV550 V/U S	81	SLP-275 VB/3+1	47
FLP-PV1000 VS/Y	82	SLP-275 VB/3S+1	47
FLP-PV1000 V/Y	82	SLP-385 V/1	38
FLP-SG50 V/1	18	SLP-385 V/1 S	39
FLP-SG50 VS/1	18	SLP-440 V/1	38
FX-090 B75 T F/F	198	SLP-440 V/1 S	39
FX-090 F75 T F/F	199	SLP-600 V/1	38
FX-230 B75 T F/F	198	SLP-600 V/1 S	39
FX-230 F75 T F/F	199	SLP-PV170 V/U	83
HN-230-16 DJ	206	SLP-PV170 V/U S	83
HN-400-16 DJ	207	SLP-PV500 V/U	83
HN-OVERDRIVE X16 CZ	205	SLP-PV500 V/U S	83
HX-090 N50 F/F	197	SLP-PV700 V/Y	84
HX-090 N50 F/M	197	SLP-PV700 V/Y S	84
HX-230 N50 F/F	197	SLP-PV1000 V/Y	84
HX-230 N50 F/M	197	SLP-PV1000 V/Y S	84
ISDN-OVERDRIVE X16	68	SLP-PV1500 V/Y	84
ISG-50	212	SLP-PV1500 V/Y S	84
ISG-50H Ex	215	SP-T2+T3-320-Y-CLT-LED	78
ISG-100	212	SX-090 B75 F/F	200
ISG-100H Ex	215	SX-090 F75 F/F	201
ISG-250	212	TV-OVERDRIVE F6	69
ISG-250H Ex	215	TV-OVERDRIVE X16	69
ISG-500	212	VL-B75 F/F	196
ISG-500H Ex	215	VL-SV	196
ISG-A100	211		
ISGC-50	213		
ISGC-50H Ex	216		
ISGC-100	213		
ISGC-100H Ex	216		
ISGC-250	213		
ISGC-250H Ex	216		
ISGC-500	213		
ISGC-500H Ex	216		
ISGO-50H Ex	218		
ISGO-100H Ex	218		
ISGO-250H Ex	218		
ISGO-500	214		
ISGO-500H Ex	218		
ISGT-50H Ex	217		
ISGT-100H Ex	217		

Manufacture and headquarter:**SALTEK s.r.o.**

Drážďanská 85
 400 07 Ústí nad Labem
 Czech Republic
 GPS: 50°39'58.1"N 14°04'15.5"E
 Phone: +420 475 655 511
 Fax: +420 475 622 213
 E-mail: info@saltek.cz

Sales and technical support:**SALTEK TRADE s.r.o.**

Vodňanská 1419/226
 198 00 Praha 9 - Kyje
 Czech Republic
 GPS: N 50°6.48713', E 14°33.80742'
 Phone: +420 272 942 470
 Fax: +420 267 913 411
 E-mail: trade@saltek.cz
www.saltek.eu/en



Notes

Notes

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form a uniform pattern of small squares across the entire surface. There are no margins, text, or other markings on the paper.

Notes



Sales and technical support:

SALTEK TRADE s.r.o.

Vodňanská 1419/226

198 00 Praha 9 - Kyje

Czech Republic

Phone: +420 272 942 470

Fax: +420 267 913 411

E-mail: trade@saltek.cz

www.saltek.eu/en

Manufacture and headquarter:

SALTEK s.r.o.

Drážďanská 85

400 07 Ústí nad Labem

Czech Republic

Phone: +420 475 655 511

Fax: +420 475 622 213

E-mail: info@saltek.cz

www.saltek.eu

Distributor:

