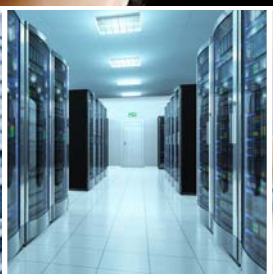
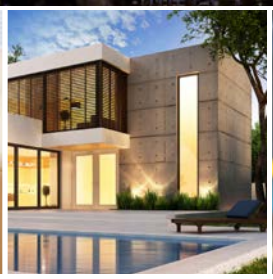
SALTEK®

Overvoltage controlled. ANYWHERE.

Catalogue
Surge Protective Devices

2022

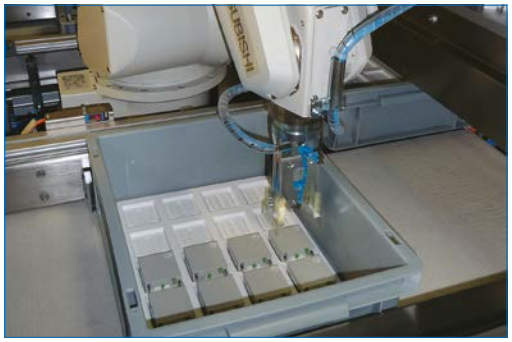


Content

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 25 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 ■ ISO 45001

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 signalling 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 signalling lines

Telecommunications

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 and DC powering
- Protection of receivers, transmitters and electronic control systems
- Protection of data networks

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, signalling and communication lines
- Protection of pipelines against induced voltage

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.

Data centers

In the era of information technologies, data centers and server rooms have become an inevitable part of life and collected data are of vital importance. Inaccessibility or complete losses of data can have catastrophic consequences in both industrial areas and everyday life. SALTEK® products can protect them and prevent technical problems and financial losses.

- Protection of 230/400 V power system and DC powering
- Protection of data and communication technology

Electromobility

Developing electromobility needs a wide network of charging stations with a safe and reliable operation. Considering the location of charging stations, the surge protection by SALTEK® products is required to ensure the operation.

- Protection of 230/400 V power system
- Protection of measuring and control systems
- Protection of communication lines

Electrical energy storage

Together with the development of renewable energy sources and smart grids, the demand on efficient accumulation of electrical energy is growing. The accumulation can be partially accomplished by a storage of power. Storage systems need to be protected against surges.

- Protection of 230/400 V power system
- Protection of signalling and communication lines

LED public lighting systems

Installations of public lighting are extensive, and length of cables reaches up to hundreds of meters. The risk of induced overvoltage from lightning, disturbances and switching in distribution networks is high. Due to the posts of public lighting, the probability of a direct lightning strike is not negligible. Hence, the surge protection is important in case of sensitive LED technology, especially.

- Protection of 230/400 V power system
- LED lighting protection
- Protection of control circuits

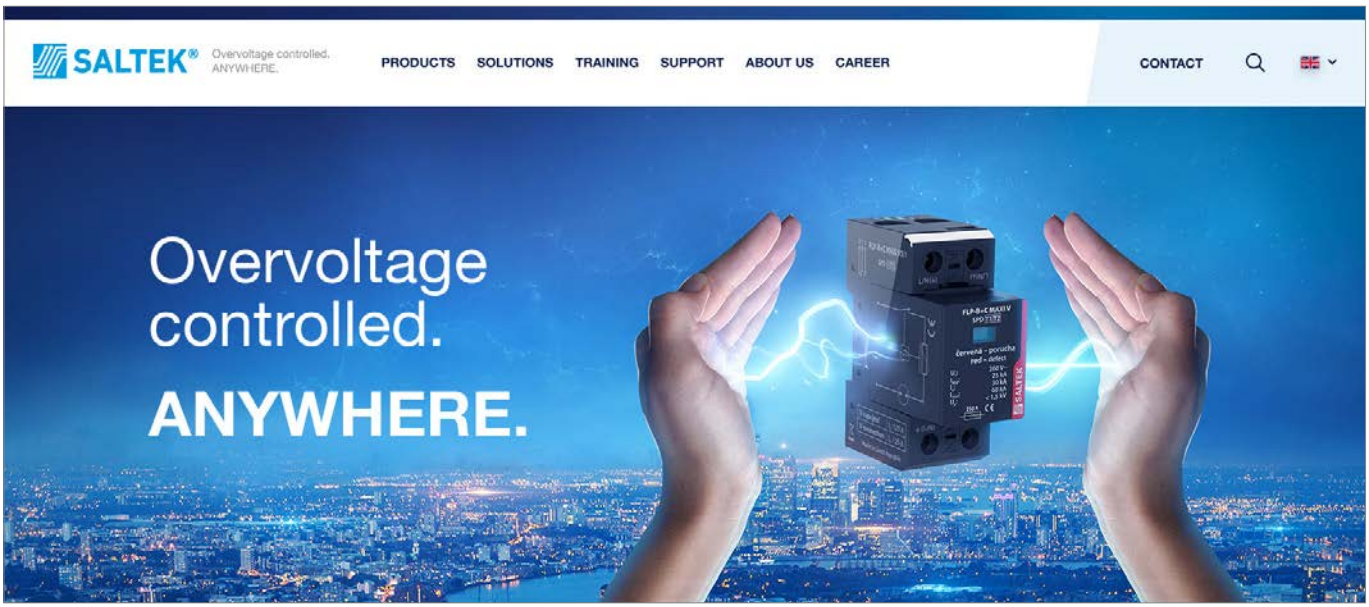
Wind-power plants

Wind-power plants are modern sources of green energy. Due to its construction and location, plants are exposed to overvoltage or indirect lightning strikes. The surge protection is necessary.

- Generator protection
- Protection of the control system and the inverter
- Protection of signalling and communication lines

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.



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

On-line catalogue

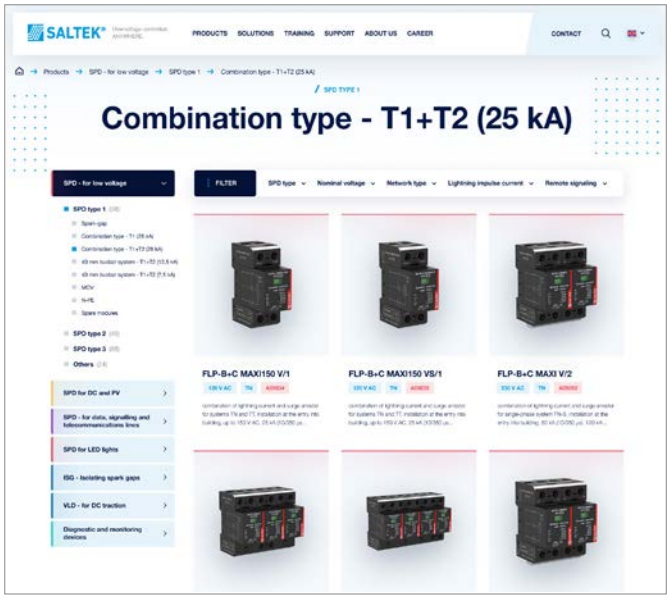
- The latest information about the SALTEK® SPDs
- Generating of the product data sheet for a specific product in PDF format for you to print out or save
- Complete technical data
- Dimension drawings and wiring
- Instruction manuals
- Declaration of conformity

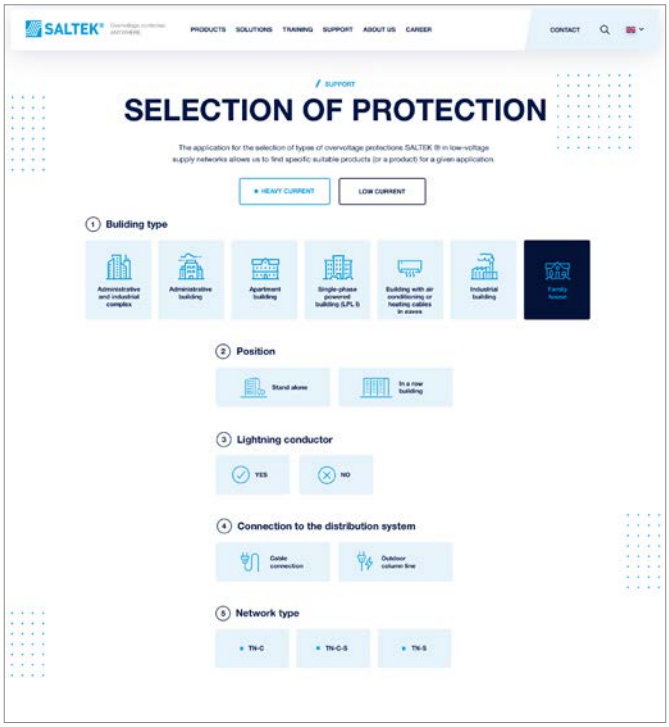
Technical support

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.

Applications for the selection of suitable SPDs

- Selector of SPDs for low-voltage systems
- Selector of SPDs for data/signalling/telecommunication lines





News 2022

FLP-EV12,5-VBH/1S+1 and FLP-EV12,5-VBH/3S+1

- Type 1 and Type 2 SPDs suitable for the protection of technological equipment located in the LPZ 0 zone
- Combined lightning arrester designed to protect voltage converters mounted e.g. in electric vehicle charging stations
- Designed for single-phase (1+1) or three-phase (3+1) TN-S or TT power supply systems
- With remote indication of the SPD status

See page: 38

FLP-12,5-075-VH/1 (S) and FLP-12,5-075-VH/2 (S)

- SPD type 1, type 2, for low voltages, suitable for installation in main switchboards or next to the protected equipment located outside a building in the LPZ 0 zone
- To protect power supply technologies with both 48 and 60 V AC or DC
- Single-pole design (FLP-12.5-075-VH/1(S)) and 2+0 circuit version (FLP-12.5-075/2(S))
- Used e.g. to protect equipment installed in “5G” telecommunication networks

See page: 40, 43

SLP-075 V/2 (S)

- SPD type 2 for low voltages, for mounting in sub distribution boards or next to the protected equipment
- To protect 48 and 60 V AC (single-phase TN-S) or DC power supply technologies
- Used e.g. to protect equipment installed in “5G” telecommunication networks

See page: 53

DM-.../1-...-DJ

- Compact SPD with coarse and fine protection of two-wire lines with 6, 12, 24 or 48 V DC
- ST 2+3 location with 0.5 A (R) or 2A (L2) peak current throughput
- To protect the interfaces of M&C systems, intrusiond etection systems (IDS), fire alarm systems (FAS), etc., including tne RS-485 interfaces against pulse overvoltage
- The L2 version, among other things, limits also high-frequency interferences

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DL-TLF-UHF

- Two-stage protection of analog telephone lines combined with xDSL
- Extended frequency range for the xDSL applications
- Installation location at the entrance of a metal cable into the building or next to a DSL splitter

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News 2022

DL-VDSL3

- Two-stage protection for ADSL2, VDSL2 and VDSL3 high-speed lines (including the 35b profile)
- Linear transmission design with high cut-off frequency for minimum impact onto xDSL signalsl
- Installation at the entrance of the metallic cable into the building or close to the xDSL modem

See page: 169

DL-Cat.6A-60V

- Fine protection of metallic Ethernet networks with PoE and up to 10 Gbps
- Fine protection of general structured cabling
- Additional protection of technological equipment installed in LPZ1 and higher zones
- Protection of technological equipment against industrial overvoltages
- ST2+3 – installation as close as possible to the protected indoor equipment or at the interface of LPZ 1 and higher zones
- Not intended for use on outdoor mounted lines

See page: 173

DL-10G-PoE-IP66

- Two-stage protection for PoE-powered Ethernet endpoints (up to 10 Gbps)
- Supports all PoE/PoE+/PoE++ formats
- To provide protection to IP cameras, WLAN, radio communication technology (MW links), outdoor sensors, etc.
- IP66 protection degree to cope with outdoor installation requirements
- Easy cable connection (RJ45) thanks to the possibility of opening the protection cabinet
- Easy installation on surfaces and on poles
- ST1+2+3 – installation next to the outdoor protected device or at the LPZ 0 - LPZ 1 interface

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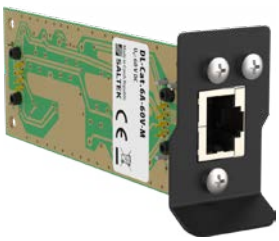
DL-..G-60V-PoE

- Two-stage protection for general structured cabling networks (including Ethernet networks with PoE)
- Supports all PoE/PoE+/PoE++ formats
- Increased Uc level (< 60 V) to ensure protection of all twisted pair signals (RS-485, KNX,...)
- ST1+2+3 – installation on lines entering from external environment at the LPZ 0 - LPZ 1 interface

See page: 176

DL-Cat.6A-60V-M (-R-M), DL-..G-60V-PoE-M



- Plug-in modules of DL-Cat.6A-60V and DL-..G-60V-PoE protections, for installation in the DL-PL-RACK-1U multichannel box
- Easy “Hot Plug&Play” installation
- Any combination of up to 16 modules in a box for combined networks and protection flexibility
- Saves space, cabling and time during installation or reconfiguration

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Our offer of supporting materials

Catalogue and Company Profile

Catalogue 2022

Catalogue Voltage Limiting Devices

Company Profile

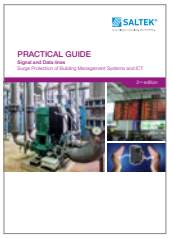
Practical Guides

Commercial receiving systems

Inspection

DC railways applications

Surge protection of LV power systems



Signal and Data lines

Solutions

Railway stations and railways

Telecommunications

Photovoltaic systems

Electromobility

Electrical energy storage

Wind power plant

Pipelines and catodic protection stations

Electronic Fire Security Systems

Emergency lights/ Evacuation routes

Public address systems

CCTV and IPTV cameras

LED street lighting systems

To download or order at **www.saltek.eu/en**

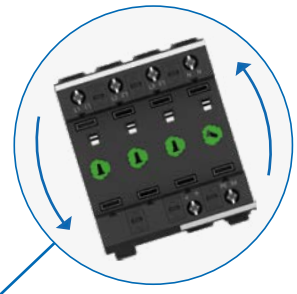
Features of SALTEK® surge arresters

Example: SLP-275 V/3S+1

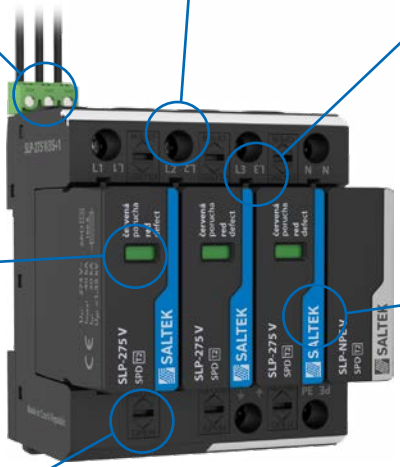
Remote signalling

Biconnect terminals

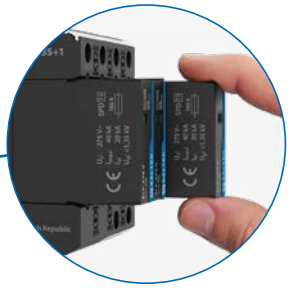
Reversible installation



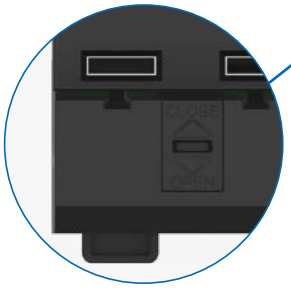
Optical lifetime status indication



Pluggable modules

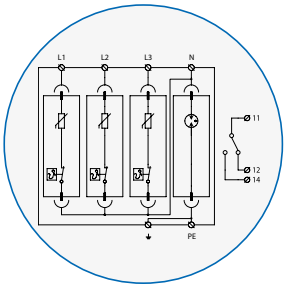


Lock system for fixing of modules



Mechanical coding

Safety thermodynamic disconnector



SALTEK

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

SALTEK

PV SPD Type 2. SLP series
for photovoltaic applications

SALTEK

SPD Type 2. SLP series

SALTEK

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

SALTEK

SPD Type 3, e.g., DA series

SALTEK

SPD for data/signal/
telecommunication networks

SALTEK

“N-PE” modules

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.

Information
Safety, ecology, legislation

Safety notice

The products operate with life-threatening electrical voltages. Only a person with appropriate electrical qualification may install the devices. Before installation, the relevant electrical circuit must be disconnected from all sources of electrical power.

Environmental warnings

Products marked with graphic symbol of a crossed-out underlined bin are e-waste within the meaning of the EU Regulation (2012/19/EU). The product must be disposed of in an environmentally sound manner within the framework of take-back (withdrawal), i.e. it must be disposed of at a designated place. The materials and technological procedures used are in compliance with the requirements of Directive 2011/65/EU of the European Parliament and of the Council (RoHS) and Regulation 1907/2006/EC of the European Parliament and of the Council (REACH) in their latest valid version.

Legal notice

FLP, FLP-B+C MAXI, SLP, HX, SX, FX are trademarks of SALTEK s.r.o.
Subject to change. The current offer and product parameters can be found at www.saltek.eu in the “Products” section.

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

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

- SPD Type 1 – Lightning Current Arresters
- SPD Type 1 and 2 – Lightning Current Arresters
- SPD Type 2 – Surge Arresters
- SPD 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. 4., IEC (EN) 60364-5-54, IEC (EN) 60364-4-41**

- Lightning protection is specified in the standard **IEC (EN) 62305**, harmonised with European standards. **IEC (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.

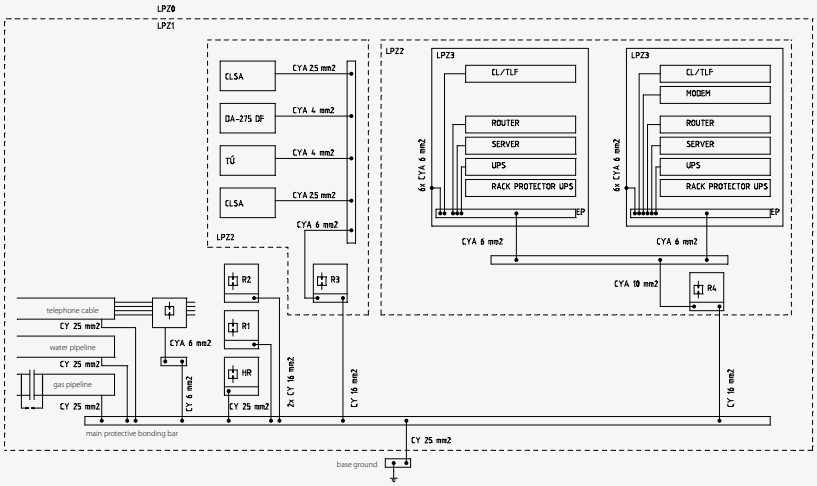
IEC (EN) 62305-3 – deals with the proposal for external lightning protection (lightning conductor).

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 **IEC (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 **IEC (EN) 60664-1**

Example of main and additional bonding



Lightning protection zones

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

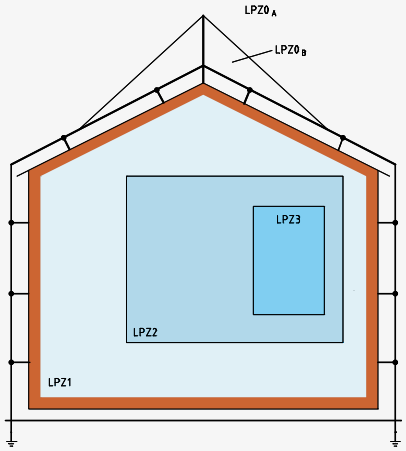
LPZ 0_A – free area (possibility of a direct lightning strike, non-attenuated LEMP)

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

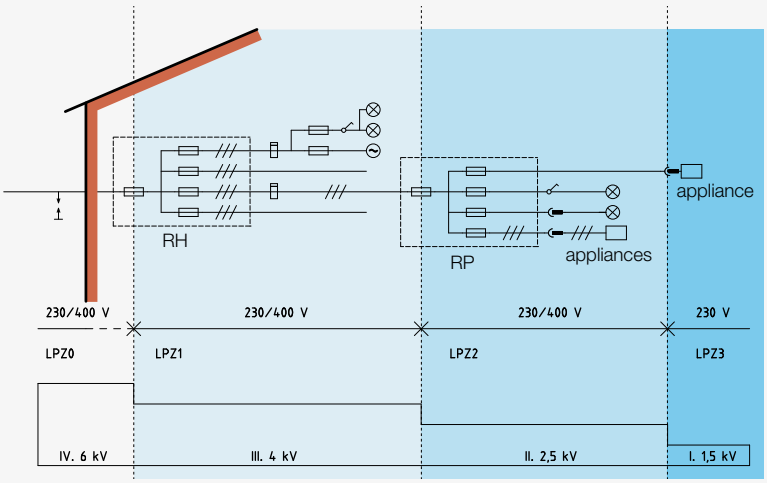
LPZ 1 – inside a building (direct lightning strike is eliminated, attenuated LEMP – depending upon shielding)

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)

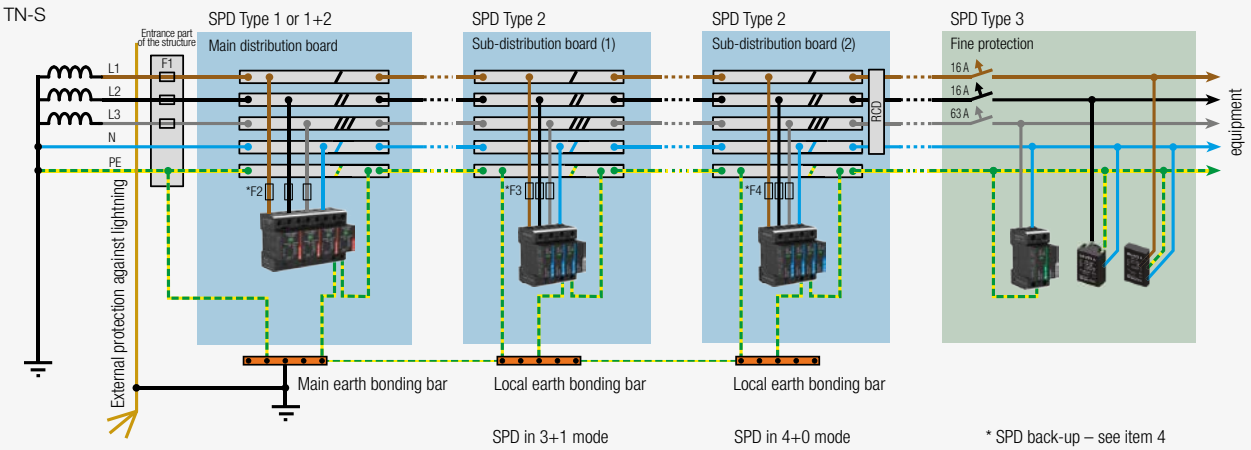


Rated impulse for equipment (acc. to IEC (EN) 60664-1) or Impulse-withstand voltage.

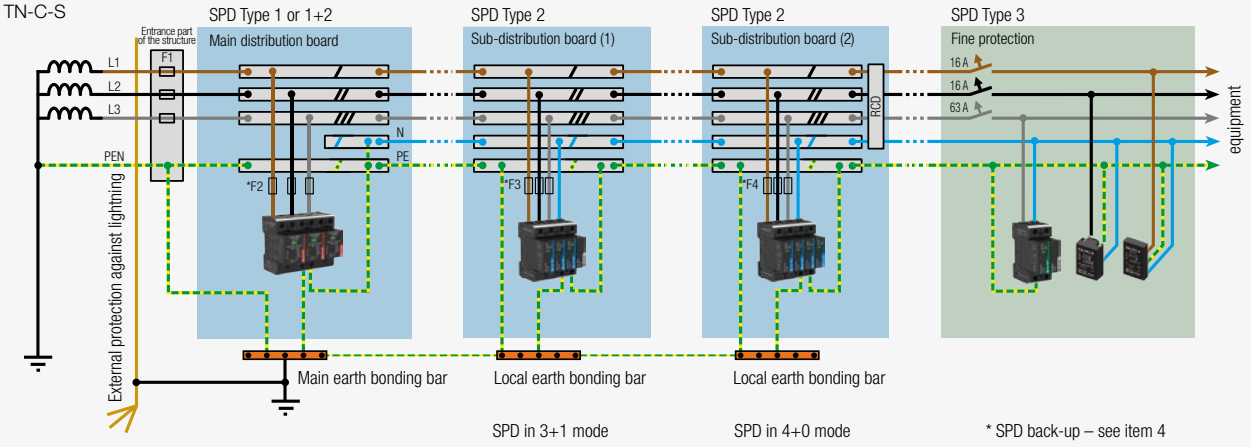


2. Connection of surge protective devices in networks

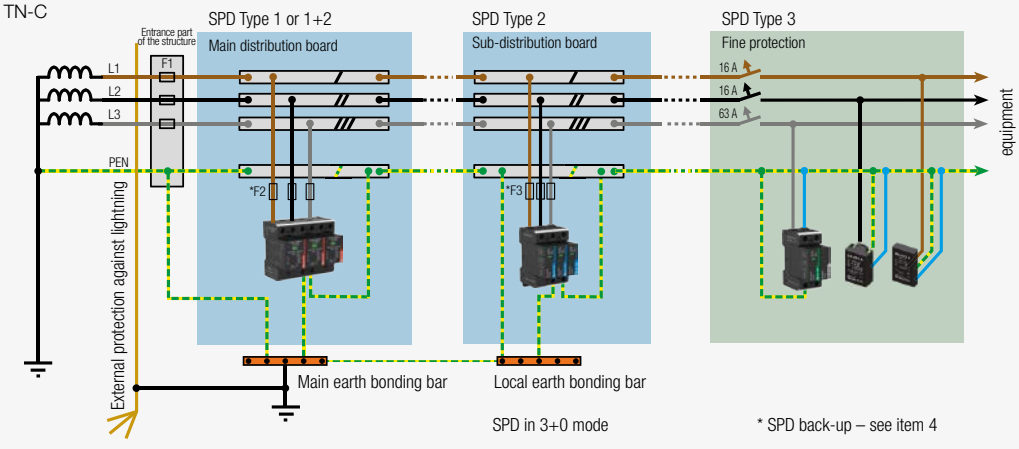
TN-S



TN-C-S



TN-C



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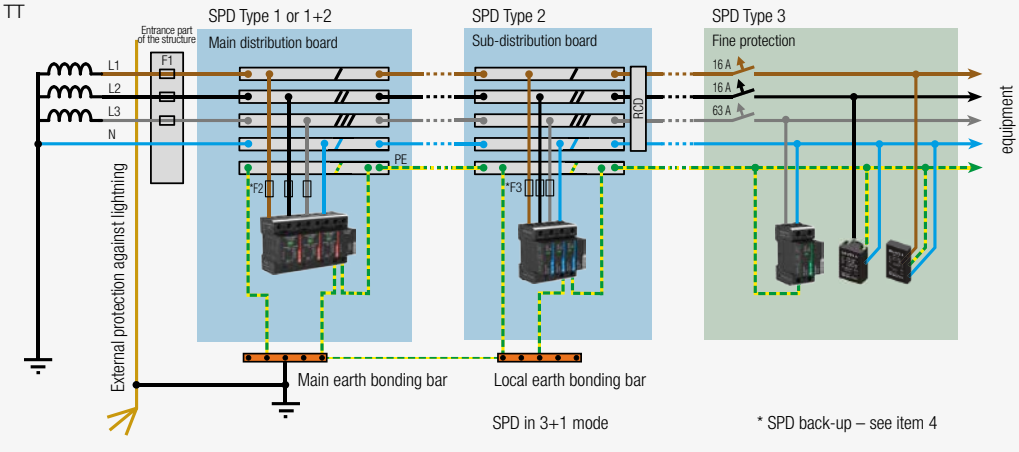


3. SPD dimensioning and their application

Sizing SPD Type 1 IEC (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 IEC (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) FLP-25-T1-V(S)	- administrative structures - civic amenities - family houses - near transformer stations	
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 IEC (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

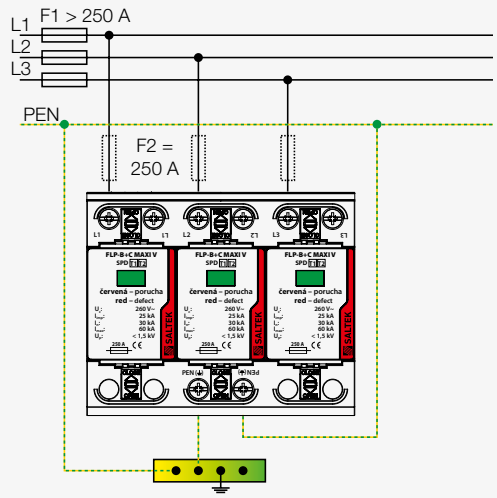
Application of SALTEK SPD Type 3 IEC (EN) 62305 Location of SPD Type 3: at the boundary of LPZ2 and LPZ3 zones (technology)	
Conditions met by:	
DA-275 (DIN rail version)	- all types of wiring (if the equipment is in the clamp or distribution board)
DA-275…, CZ…	- all types of wiring (sockets with overvoltage 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

The 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).

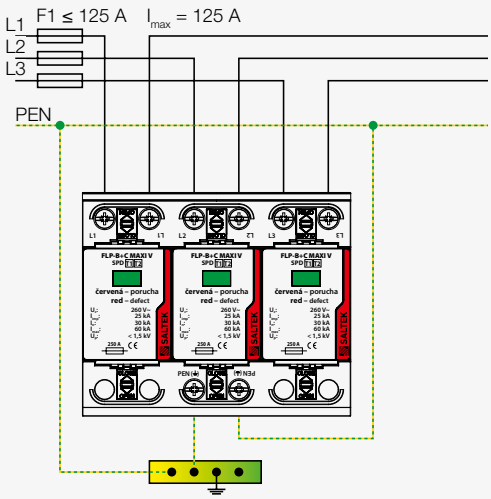
An example of back-up fuse for SPD – FLP-B+C MAXI V – in different supply networks.
The catalogue value of maximum back-up fuse for FLP-B+C MAXI V is 250 A, and 125 A for the “V” connection.

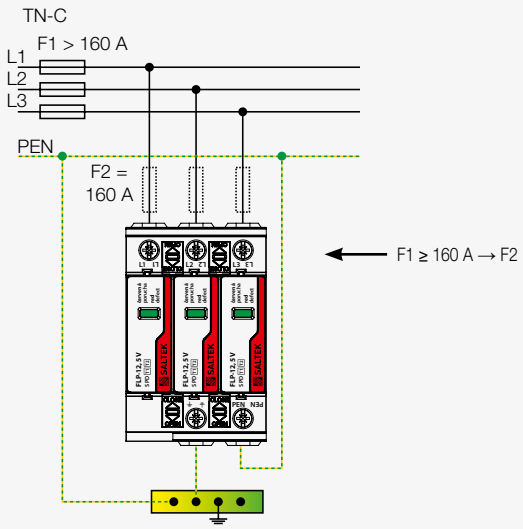
Parallel connection TN-C



F1 > 250 A → F2
F1 ≤ 250 A → ~~F2~~
F1 > 125 A
F1 ≤ 125 A

“V” (series) connection



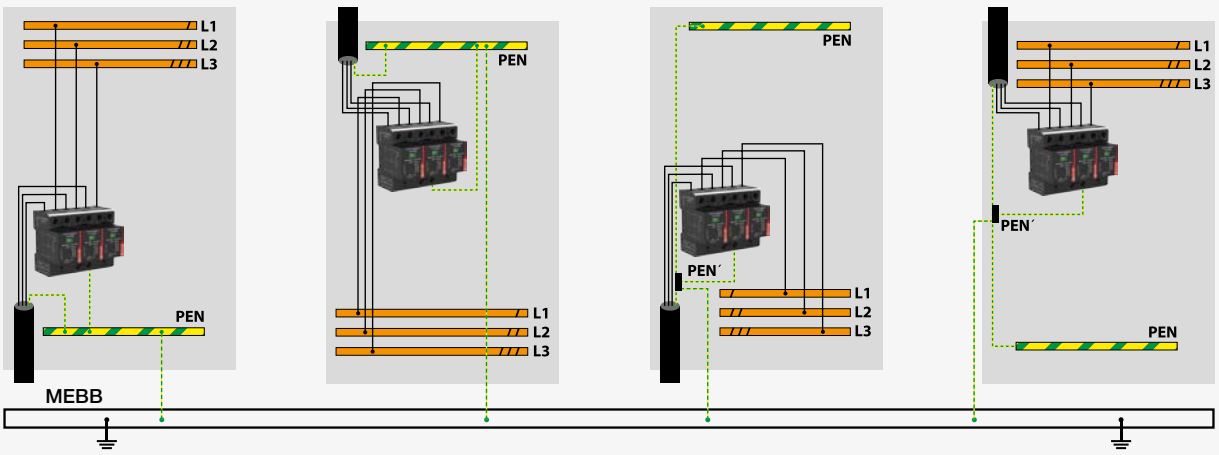


5. Principles for positioning and connecting of lightning and surge arresters

Surge protective 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 (HD 60364-5-534). 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 (EN) 60364-4-41 standard, while minimum cross-sections of the connecting conductors are specified in IEC (EN) 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 surge 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

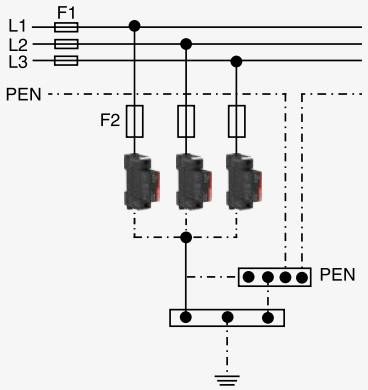
Only the SPD Type 1 should be dimensioned. Dimensioning of the SPD Type 1 should be based on the calculation of the lightning protection level (LPL) for the lightning protection system (LPS).

The table from IEC (CLC/TS) 61643-12 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.

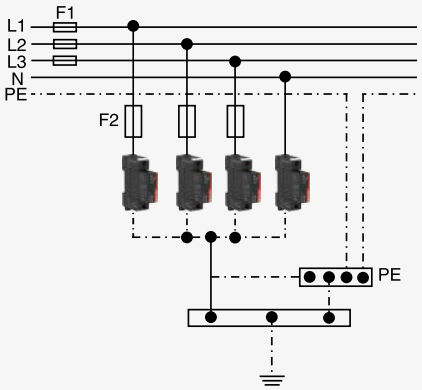
If the LPL value is not known, the worse scenario is anticipated			Low voltage networks									
LPL	Maximum current corresponding to LPL	Number of conductors (n)	TT			TN-C	TN-S			IT without neutral conductor	IT with neutral conductor	
			Connection mode				Connection mode			Connection mode		
			CT1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

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

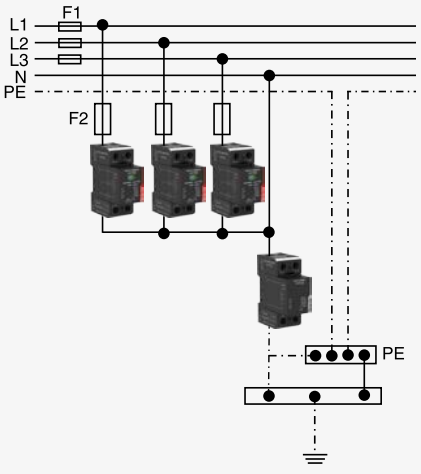
CT1 – TN-C



CT1 – TN-S



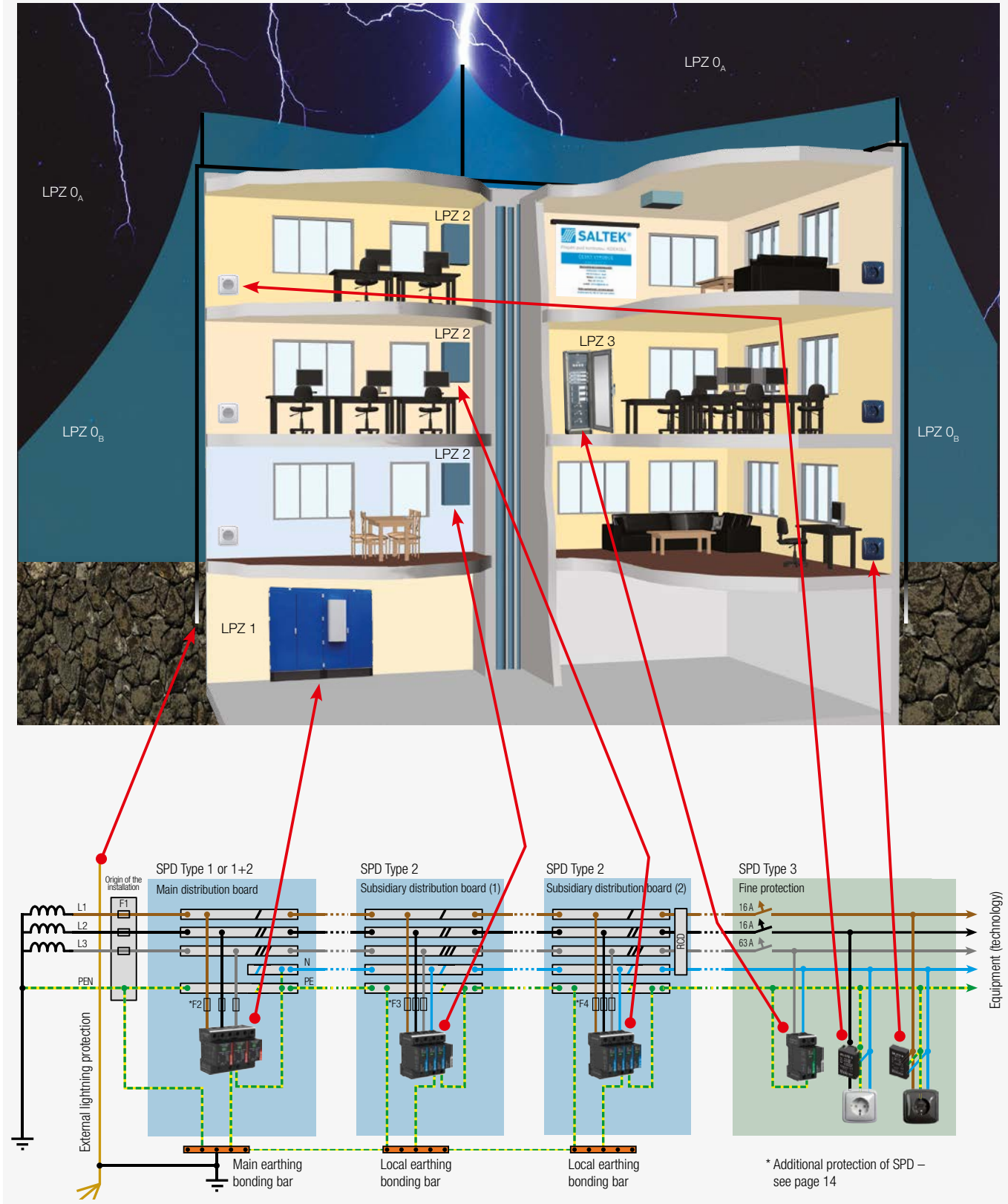
CT2



Behind the **FLP-B+C MAXI V...** in low-voltage power network 230/400 V AC is **not required to install any additional SPD** (e.g. SPD type 3) if the **length** of the electrical circuit from the SPD to protected electrical equipment is **not exceed 10 meters** and the lengths of connecting cables of the SPD are not longer than 0,5 meter as it´s mentioned in installation manual of SPD.

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.



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, technological units, industrial structures	3-ph. TN-C	**FLP-B+C MAXI V(S)/3** **FLP-25-T1-V(S)/3**	**SLP-275 V/3 (S)**	distance > 5 m surge protection to DIN rail: **DA-275 V/1(S)+1** (up to 63 A) **DA-275 V/3(S)+1** (up to 63 A) **DA-275-DJ25-(S)** (25 A) surge 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) **RACK-PROTECTOR** multiple sockets for 19" enclosures **CZ-275-A, DA-275 CZS DA-275-A, DA-275-S** for additional assembly to sockets and appliances
			distance > 50 m **FLP-12,5 V/3 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/3**	
		FLP-25-T1-V(S)/3	**SLP-275 V/3 (S)**	
		FLP-B+C MAXI V(S)/3 **FLP-25-T1-V(S)/3 + SLP-275 V/3 (S)** (also with terminals to the equipment)	**SLP-275 V/3 (S)**	
			distance > 50 m **FLP-12,5 V/3 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/3**	
	3-ph. TN-S	**FLP-B+C MAXI V(S)/4** **FLP-25-T1-V(S)/4**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/4**	
		FLP-25-T1-V(S)/4	**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)	**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	**FLP-B+C MAXI V(S)/3** **FLP-25-T1-V(S)/3**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/4**	
		FLP-25-T1-V(S)/3	**SLP-275 V/4 (S)**	
		FLP-B+C MAXI V(S)/3 **FLP-25-T1-V(S)/3 + SLP-275 V/3 (S)** (also with terminals to the equipment)	**SLP-275 V/4 (S)**	
			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		**FLP-12,5 V/3 (S)**	distance < 5 m place before the surge protection RTO-xx (xx – rated current 16, 35 or 63 A)
	3-ph. TN-S		**FLP-12,5 V/4 (S)**	
	3-ph. TN-C-S	division in the apartment distr. board	**FLP-12,5 V/3 (S)**	
	1-ph. TN-C		**FLP-B+C MAXI V(S)/1**	
	1-ph. TN-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	**3× FLP-SG50 V(S)/1**	**SLP-275 V/3 (S)**	number acording to connection 1-phase TN-C **1x RTO-xx** 1-phase TN-S **2x RTO-xx** 3-phase TN-C **3x RTO-xx** 3-phase TN-S **4x RTO-xx**
			distance > 50 m **FLP-12,5 V/3 (S)**	
		with terminals to the equipment **3× FLP-SG50 V(S)/1 + 1× SLP-275 V/3 (S)**	distance > 100 m **FLP-B+C MAXI V(S)/3**	
	3-ph. TN-S	**4× FLP-SG50 V(S)/1**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
		with terminals to the equipment **4× FLP-SG50 V(S)/1 + 1× SLP-275 V/4 (S)**	distance > 100 m **FLP-B+C MAXI V(S)/4**	
	3-ph. TN-C-S	division in the main distribution board **3× FLP-SG50 V(S)/1**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
		with terminals to the equipment **3× FLP-SG50 V(S)/1 + 1× SLP-275 V/4 (S)**	distance > 100 m **FLP-B+C MAXI V(S)/4**	

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
Structures equipped with ESE (active down conductor)	3-ph. TN-C	**3x FLP-SG50 V(S)/1**	**SLP-275 V/3 (S)**	distance > 5 m surge protection to DIN rail: **DA-275 V/1(S)+1** (up to 63 A) **DA-275 V/3(S)+1** (up to 63 A) **DA-275-DJ25-(S)** (25 A) surge 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) **RACK-PROTECTOR** multiple sockets for 19" enclosures **CZ-275-A, DA-275 CZS DA-275-A, DA-275-S** for additional mounting to sockets and appliances
			distance > 50 m **FLP-12,5 V/3 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/3**	
		3x FLP-SG50 V(S)/1	**SLP-275 V/3 (S)**	
		also with terminals to the equipment **3x FLP-SG50 V(S)/1 + SLP-275 V/3 (S)**	**SLP-275 V/3 (S)**	
			distance > 50 m **FLP-12,5 V/3 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/3**	
	3-ph. TN-S	**4x FLP-SG50 V(S)/1**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/4**	
		4x FLP-SG50 V(S)/1	**SLP-275 V/4 (S)**	
		also with terminals to the equipment **4x FLP-SG50 V(S)/1 + SLP-275 V/4 (S)**	**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	**3x FLP-SG50 V(S)/1**	**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	**SLP-275 V/4 (S)**	
		also with terminals to the equipment **3x FLP-SG50 V(S)/1 + SLP-275 V/3 (S)**	**SLP-275 V/4 (S)**	
			distance > 50 m **FLP-12,5 V/4 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/4**	
Technological equipment with 1-phase connection	1-ph. TN-C	**FLP-SG50 V(S)/1** with terminals to the equipment **FLP-SG50 V(S)/1 + SLP-275 V/1 (S)**	**SLP-275 V/1 (S)**	distance < 5 m SPD back-up RTO-xx (xx – rated current 16, 35 or 63 A) number acording to connection 1-phase TN-C **1x RTO-xx** 1-phase TN-S **2x RTO-xx** 3-phase TN-C **3x RTO-xx** 3-phase TN-S **4x RTO-xx**
			distance > 50 m **FLP-12,5 V/1 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/1**	
	1-ph. TN-S	**2× FLP-SG50 V(S)/1** with terminals to the equipment **2× FLP-SG50 V(S)/1 + 1× SLP-275 V/2 (S)**	**SLP-275 V/2 (S)**	
			distance > 50 m **FLP-12,5 V/2 (S)**	
			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** with terminals to the equipment **FLP-SG50 V(S)/1 + SLP-275 V/1 (S)**	**SLP-275 V/2 (S)**	
			distance > 50 m **1× FLP-12,5 V/2 (S)**	
			distance > 100 m **FLP-B+C MAXI V(S)/2**	

Notes

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

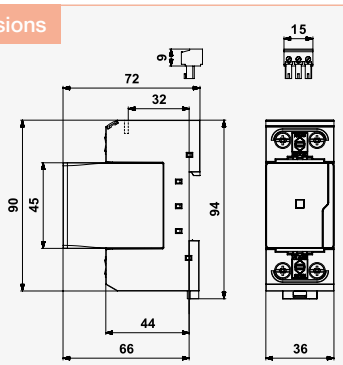
- Line FLP-SG50 V
- Line FLP-25-T1-V
- Line FLP-B+C MAXI V
- Line FLP-EV12,5-VBH
- Line FLP-12,5 V

FLP-SG50 V(S)/1

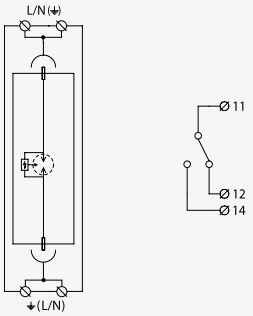
SPD type 1 – lightning current arresters, spark gap
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 µs)	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_{fi}	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A04054	A04053

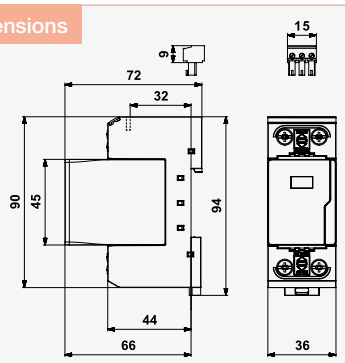
Spare module	FLP-SG50 V/0	FLP-SG50 VS/0
Ordering number	A04227	A04148

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

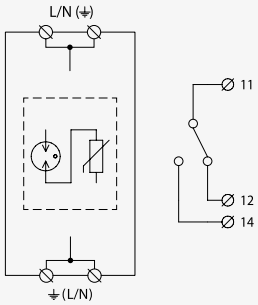
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- one-pole high performance lightning current arrester without follow current
- 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
- no leakage current
- optional remote fault signalling (S)

Dimensions



Basic circuit diagram



Parameter / Type		FLP-25-T1-V/1	FLP-25-T1-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 µs)	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A06263	A06264

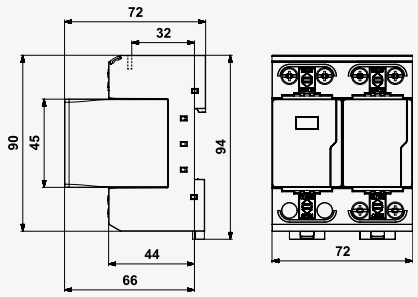
Spare module	FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number	A05453	A05453

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

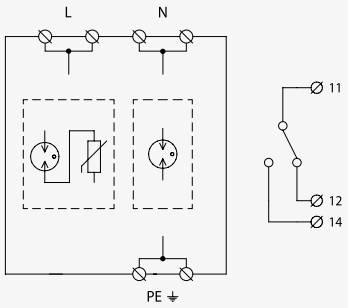
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- combination of one-pole 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 – houses, office and industrial buildings
- coordination with SPD Type 2 (SLP-275 V) even without surge separating inductors
- no leakage current
- optional remote fault signalling (S)

Dimensions



Basic circuit diagram



Parameter / Type		FLP-25-T1-V/1+1	FLP-25-T1-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 µs) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	50 kA	50 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A06257	A06258

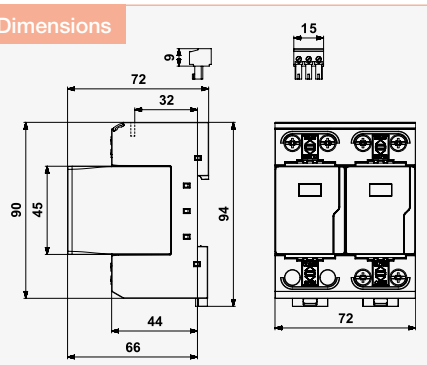
Spare module	FLP-25-T1-V/0	FLP-A50N V/0	FLP-25-T1-V/0	FLP-A50N V/0
Ordering number	A05453	A03537	A05453	A03537

FLP-25-T1-V(S)/2

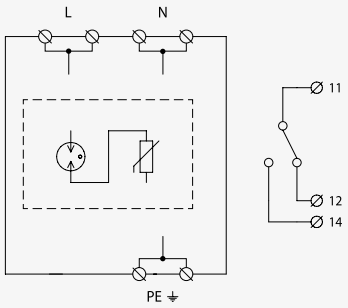
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- two-pole high performance lightning current arrester without follow current
- 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
- no leakage current
- optional remote fault signalling (S)

Dimensions



Basic circuit diagram



Parameter / Type		FLP-25-T1-V/2	FLP-25-T1-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 µs)	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A06259	A06260

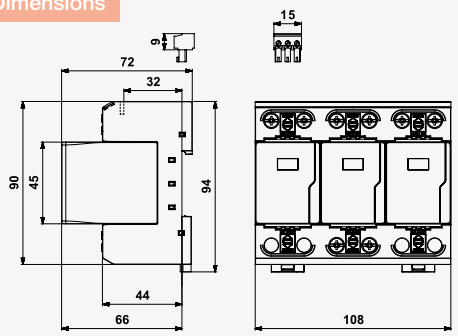
Spare module	FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number	A05453	A05453

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

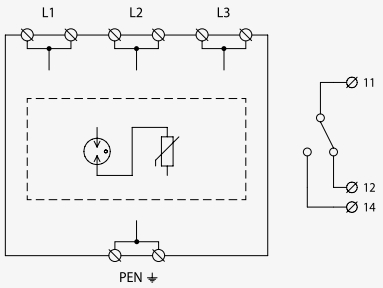
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs)	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05300	A05301

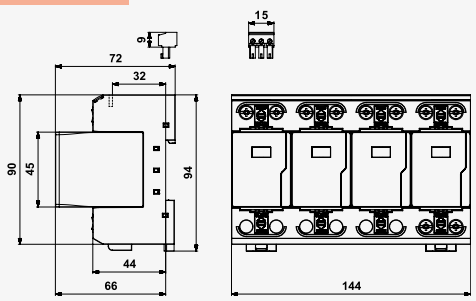
Spare module	FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number	A05453	A05453

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

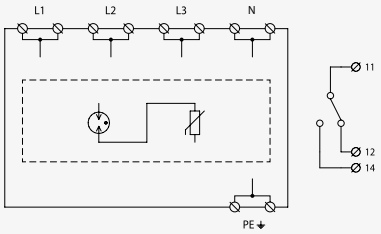
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs)	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05302	A05303

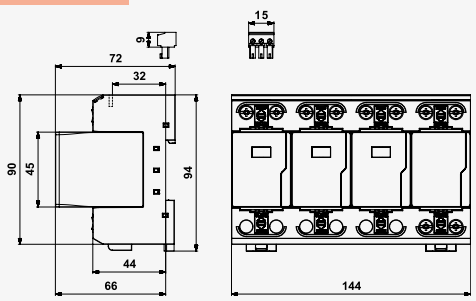
Spare module	FLP-25-T1-V/0	FLP-25-T1-V/0
Ordering number	A05453	A05453

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

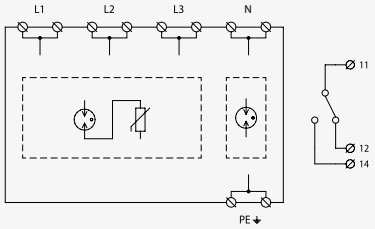
SPD type 1 – lightning current arresters, combination type T1 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 µs) 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05304	A05305

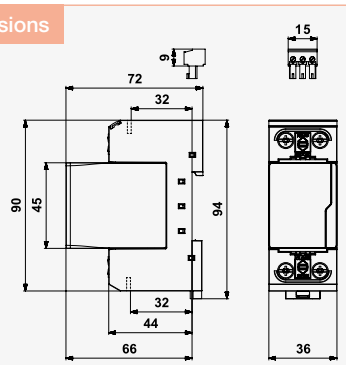
Spare module	FLP-25-T1-V/0	FLP-A100N V/0	FLP-25-T1-V/0	FLP-A100N V/0
Ordering number	A05453	A03536	A05453	A03536

FLP-A...N VS/NPE

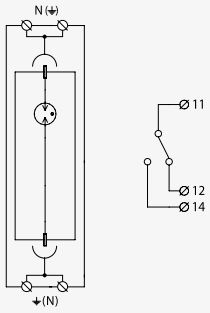
SPD type 1 – lightning current arresters, spark gap for N-PE
N-PE module, pluggable module

- for connection SPD Type 1 in 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 µs)	I_{imp}	50 kA	100 kA
Nominal discharge current (8/20 µs)	I_n	50 kA	100 kA
Maximum discharge current (8/20 µs)	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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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		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 mm²	1,5 mm²
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		A03573	A03574

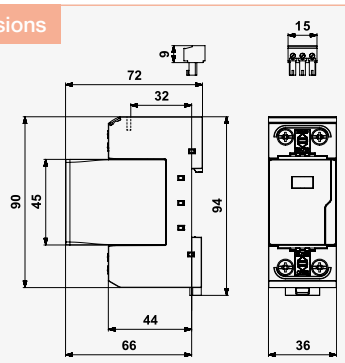
Spare module	FLP-A50N V/0	FLP-A100N V/0
Ordering number	A03537	A03536

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

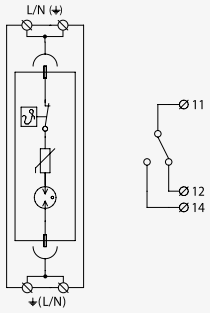
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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/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 µs)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05091	A03533

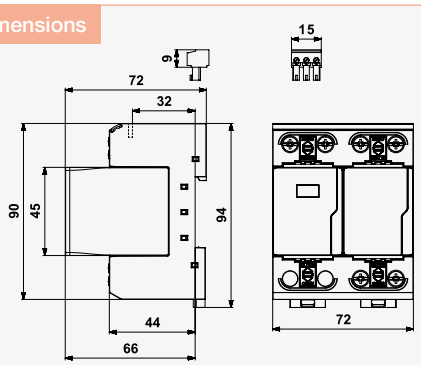
Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	A03535	A03535

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

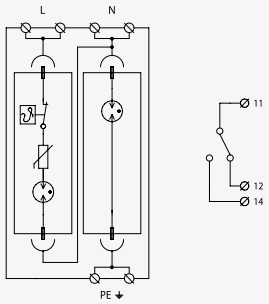
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 µs) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 µs) N-PE	I_n	50 kA	50 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 µs) 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
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05095	A03783

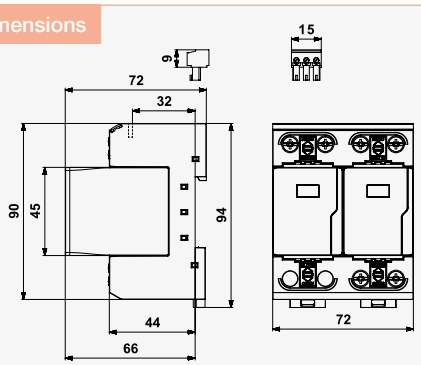
Spare module	FLP-B+C MAXI V/0	FLP-A50N V/0	FLP-B+C MAXI V/0	FLP-A50N V/0
Ordering number	A03535	A03537	A03535	A03537

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

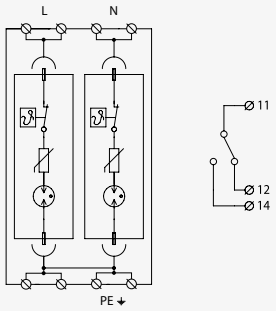
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05092	A03784

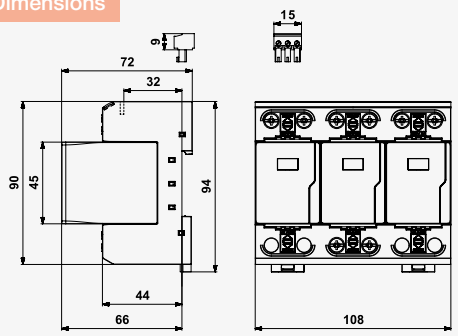
Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	A03535	A03535

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

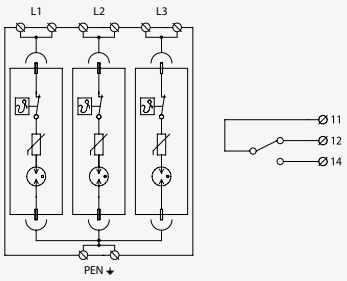
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05093	A03570

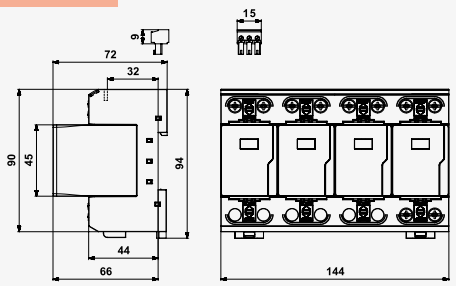
Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	A03535	A03535

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

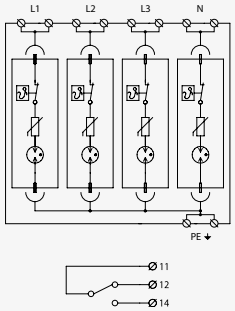
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	I_{max}	60 kA	60 kA
Voltage protection level	U_p	1,5 kV	1,5 kV
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05094	A03571

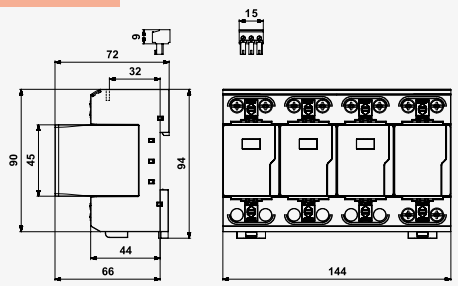
Spare module	FLP-B+C MAXI V/0	FLP-B+C MAXI V/0
Ordering number	A03535	A03535

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

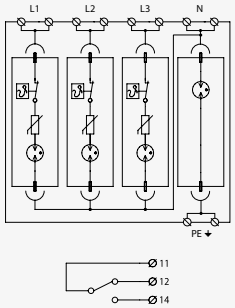
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (25 kA)
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_{imp}	25 kA	25 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	100 kA	100 kA
Nominal discharge current (8/20 µs) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 µs) N-PE	I_n	100 kA	100 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 µs) 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
Ability to independently switch off the following current N-PE	I_{fi}	0,1 kA	0,1 kA
Class test T3: Test voltage	U_{oc}	20 kV	20 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 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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		A05096	A03572

Spare module	FLP-B+C MAXI V/0	FLP-A100N V/0	FLP-B+C MAXI V/0	FLP-A100N V/0
Ordering number	A03535	A03536	A03535	A03536

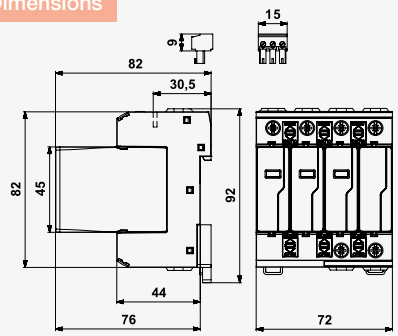
FLP-EV12,5-VBH/.S+1

NEW

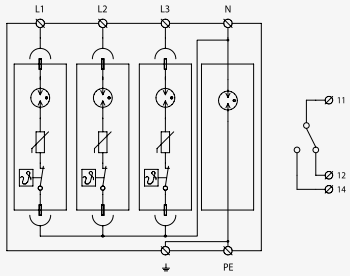
SPD type 1 and type 2 – lightning current and surge arresters, combination type T1+T2 (12,5 kA)
pluggable module, visual fault signalling, remote fault signalling

- combination of one-pole lightning current arrester and encapsulated
- efficiency spark gap, connected in the 1+1 or 3+1 mode
- installation at the boundary of zones LPZ 0 and LPZ 1 or higher
- for protection against impact of direct or indirect lightning strikes – eg. charching stations for electrical vehicles

Dimensions



Basic circuit diagram



Parameter / Type		FLP-EV12,5-VBH/1S+1	FLP-EV12,5-VBH/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 µs) L-N	I_{imp}	12,5 kA	12,5 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	25 kA	50 kA
Nominal discharge current (8/20 µs) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 µs) N-PE	I_n	30 kA	50 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 µs) N-PE	I_{max}	60 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 kV	2,5 kV
Class test T3: Test voltage	U_{oc}	20 kV	20 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA
Ability to independently switch off the following current N-PE	I_{fi}	0,1 kA	0,1 kA
Maximum overcurrent protection		160 A gL/gG	160 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)		1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A07043	A07049

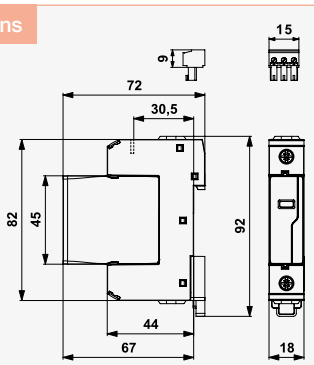
Spare module	FLP-12,5-VBH/0	FLP-NPE-25-VH/0	FLP-12,5-VBH/0
Ordering number	A07050	A07066	A07050

FLP-12,5 V/1 (S)

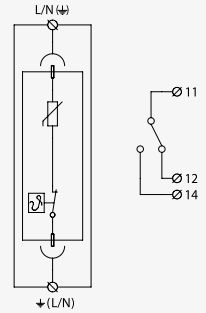
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling

- 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 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03421	A03422

Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	A03431	A03431

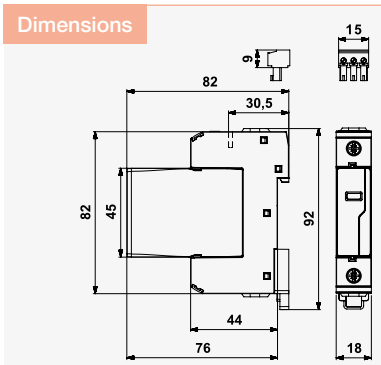
FLP-12,5-075-VH/1(S)

NEW

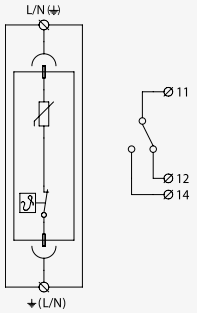
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling

- 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-12,5-075-VH/1	FLP-12,5-075-VH/1S
Nominal voltage	U_n	48 ÷ 60 V AC/DC	48 ÷ 60 V AC/DC
Maximum operating voltage	U_c	75 V AC / DC	75 V AC / DC
Lightning impulse current (10/350 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,28 kV	0,28 kV
Voltage protection level	U_p	0,45 kV	0,45 kV
Short-circuit current rating	I_{SCCR}	25 kA	25 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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A04168	A04169

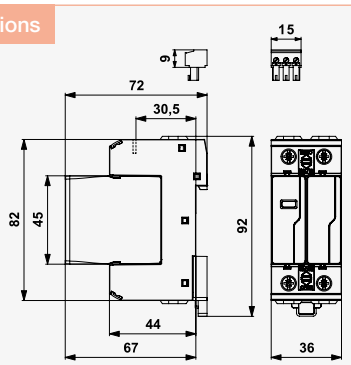
Spare module	FLP-12,5-075-VH/0	FLP-12,5-075-VH/0
Ordering number	A04571	A04571

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

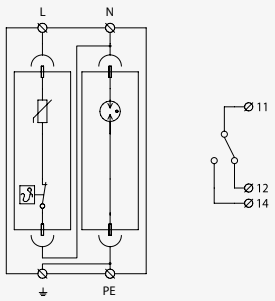
SPD type 1 and type 2 - lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_{imp}	12,5 kA	12,5 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	25 kA	25 kA
Nominal discharge current (8/20 µs) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 µs) N-PE	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 µs) 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
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		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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03423	A03424

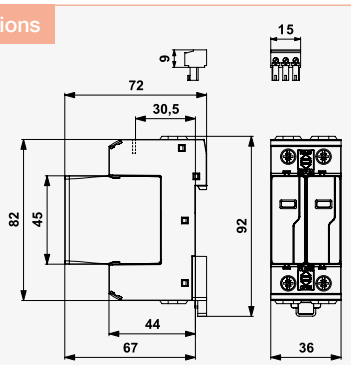
Spare module	FLP-12,5 V/0	FLP-NPE 25 V/0	FLP-12,5 V/0	FLP-NPE 25 V/0
Ordering number	A03431	A03432	A03431	A03432

FLP-12,5 V/2 (S)

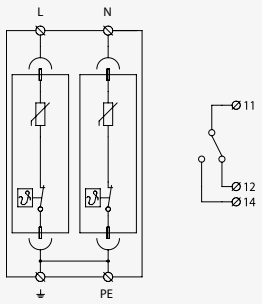
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03809	A05182

Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	A03431	A03431

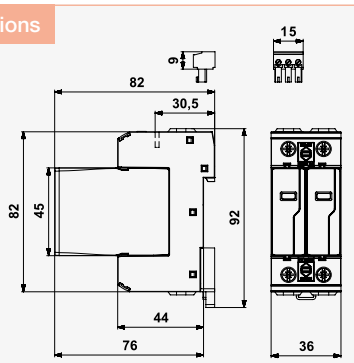
FLP-12,5-075-VH/2 (S)

NEW

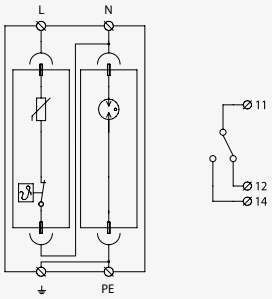
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling

- 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-12,5-075-VH/2	FLP-12,5-075-VH/2S
Nominal voltage	U_n	48 ÷ 60 V AC/DC	48 ÷ 60 V AC/DC
Maximum operating voltage	U_c	75 V AC / DC	75 V AC / DC
Lightning impulse current (10/350 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,28 kV	0,28 kV
Voltage protection level	U_p	0,45 kV	0,45 kV
Short-circuit current rating	I_{SCCR}	25 kA	25 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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
Fault indication		red indication field	red indication field
Remote indication		-	potential-free change-over contact
Remote indication contacts		-	V / 0,5 A AC, 250 V / 0,1 A DC
Cross-section of remote indication conductors		-	1,5 mm²
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		A04170	A04171

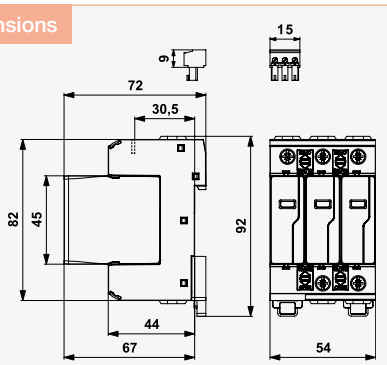
Spare module	FLP-12,5-075-VH/0	FLP-12,5-075-VH/0
Ordering number	A04571	A04571

FLP-12,5 V/3 (S)

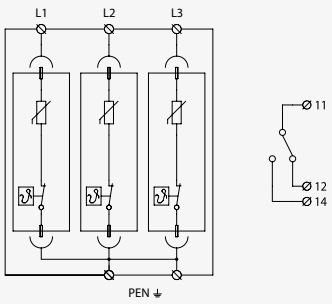
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03425	A03426

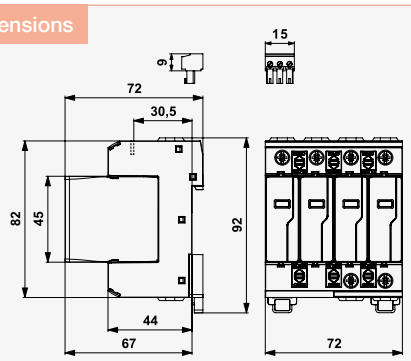
Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	A03431	A03431

FLP-12,5 V/4 (S)

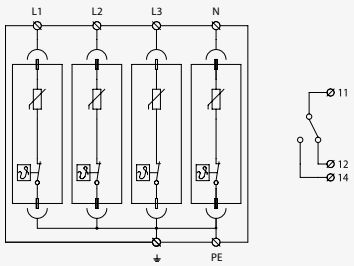
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03429	A03430

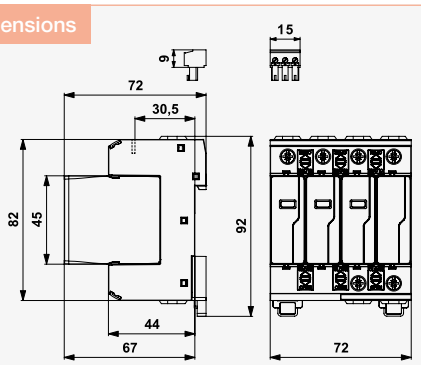
Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	A03431	A03431

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

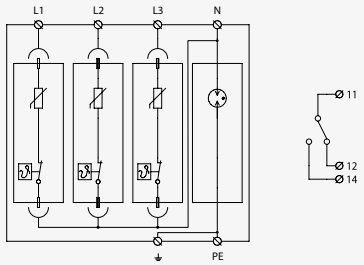
SPD type 1 and type 2 – lightning current and surge arresters, MOV T1, T2
pluggable module, visual fault signalling, module locking

- 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



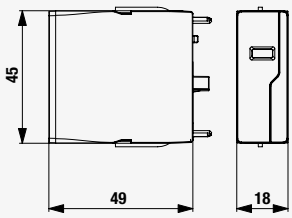
Parameter / Type		FLP-12,5 V/3+1	FLP-12,5 V/3S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Lightning impulse current (10/350 µs) L-N	I_{imp}	12,5 kA	12,5 kA
Lightning impulse current (10/350 µs) N-PE	I_{imp}	50 kA	50 kA
Nominal discharge current (8/20 µs) L-N	I_n	30 kA	30 kA
Nominal discharge current (8/20 µs) N-PE	I_n	50 kA	50 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	60 kA	60 kA
Maximum discharge current (8/20 µs) 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
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		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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03427	A03428

Spare module	FLP-12,5 V/0	FLP-12,5 V/0
Ordering number	A03431	A03431

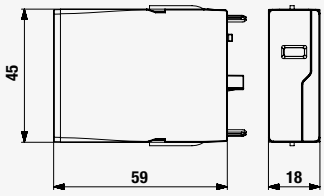
FLP-…V/0

Replacement modules of SPD type 1 and type 1 and 2

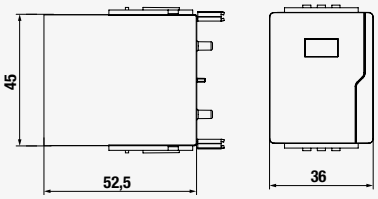
Dimensions



FLP-12,5 V/0
FLP-NPE 25 V/0

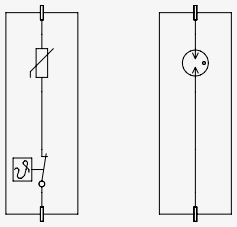


FLP-12,5-075-VH/0
FLP-12,5-VBH/0
FLP-NPE-25-VH/0



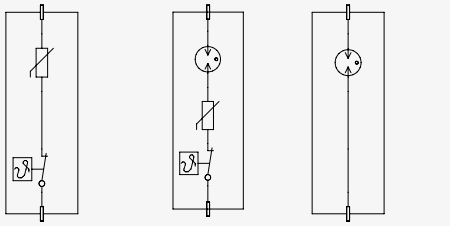
FLP-SG50 V/0
FLP-SG50 VS/0
FLP-25-T1-V/0
FLP-B+C MAXI V/0
FLP-A50N V/0
FLP-A100N V/0

Basic circuit diagram



FLP-12,5 V/0
FLP-12,5-VBH/0

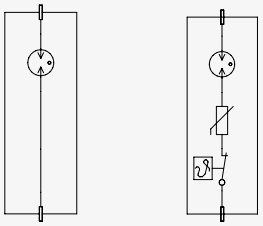
FLP-NPE 25 V/0



FLP-12,5-075-VH/0

FLP-12,5-VBH/0

FLP-NPE-25-VH/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-12,5-VBH/0

Type	Ordering number
FLP-SG50 V/0	A04227
FLP-SG50 VS/0	A04148
FLP-25-T1-V/0	A05453
FLP-A50N V/0	A03537
FLP-A100N V/0	A03536
FLP-B+C MAXI V/0	A03535
FLP-12,5 V/0	A03431
FLP-NPE 25 V/0	A03432
FLP-12,5-075-VH/0	A04571
FLP-12,5-VBH/0	A07050
FLP-NPE-25-VH/0	A07066

Notes

SPDs connected to LV power supply 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

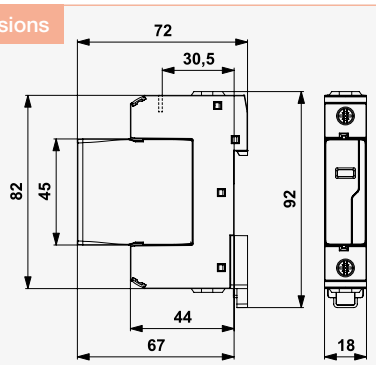
- Line SLP-… V
- Line SLP-… VB

SLP-... V/1

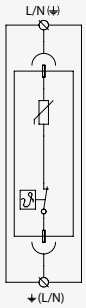
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling

- 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	230 ÷ 690 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 µs)	I_n	15 kA	15 kA	20 kA	20 kA	20 kA	15 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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					
Ordering number		A01815	A05185	A01617	A01955	A01817	A03301

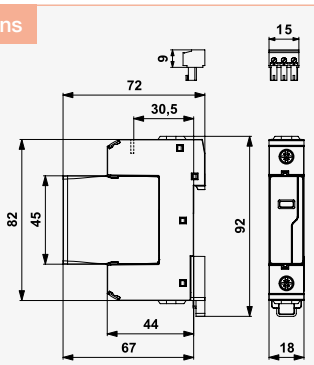
Spare module	SLP-075 V/0	SLP-150 V/0	SLP-275 V/0	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	A01811	A05193	A02368	A01950	A01813	A03303

SLP-... V/1 S

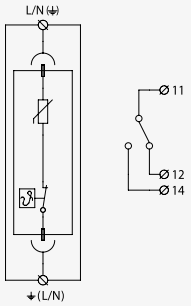
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, remote fault signalling

- 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	230 ÷ 690 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 µs)	I_n	15 kA	15 kA	20 kA	20 kA	20 kA	15 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	1,5 mm²	1,5 mm²	1,5 mm²	1,5 mm²	1,5 mm²
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					
Ordering number		A01823	A05186	A01618	A02771	A01825	A03302

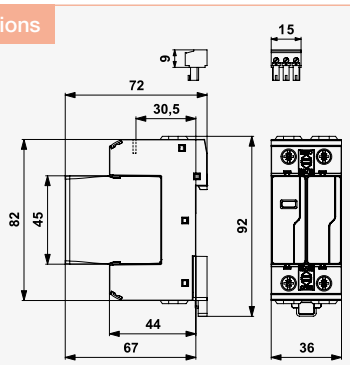
Spare module	SLP-075 V/0	SLP-150 V/0	SLP-275 V/0	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	A01811	A05193	A02368	A01950	A01813	A03303

SLP-275 V/1(S)+1

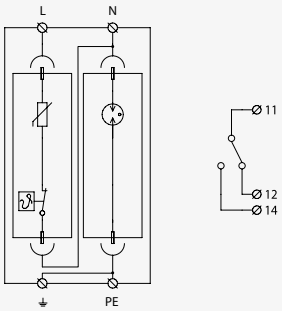
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 µs) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	40 kA	40 kA
Maximum discharge current (8/20 µs) 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_{fi}	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01948	A02491

Spare module	SLP-275 V/0	SLP-NPE V/0	SLP-275 V/0	SLP-NPE V/0
Ordering number	A02368	A03722	A02368	A03722

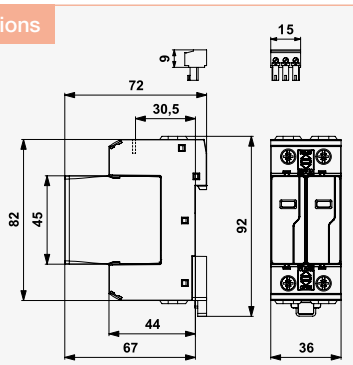
SLP-… V/2 (S)

NEW

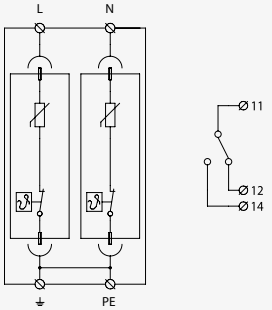
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- 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-075 V/2	SLP-075 V/2 S	SLP-275 V/2	SLP-275 V/2 S
Nominal voltage	U_n	60 V AC	60 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	75 V AC / 100 V DC	75 V AC / 100 V DC	275 V AC / 350 V DC	275 V AC / 350 V DC
Nominal discharge current (8/20 µs)	I_n	15 kA	15 kA	20 kA	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA	40 kA	40 kA
Voltage protection level at 5 kA	U_p	0,3 kV	0,3 kV	0,9 kV	0,9 kV
Voltage protection level	U_p	0,4 kV	0,4 kV	1,35 kV	1,35 kV
Short-circuit current rating	I_{SCCR}	50 kA	50 kA	50 kA	50 kA
Maximum overcurrent protection		160 A gL/gG	160 A gL/gG	160 A gL/gG	160 A gL/gG
Response time	t_a	25 ns	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	-	1,5 mm²
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 / T2			
Ordering number		A07022	A07023	A01619	A05183

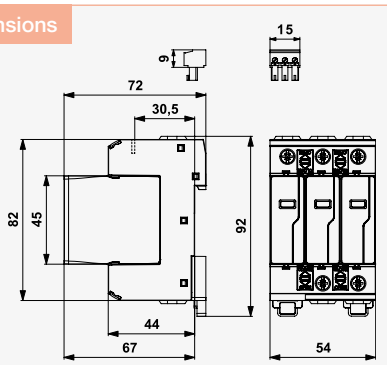
Spare module	SLP-075 V/0	SLP-075 V/0	SLP-275 V/0	SLP-275 V/0
Ordering number	A01811	A01811	A02368	A02368

SLP-275 V/3 (S)

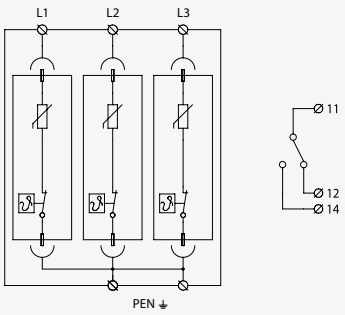
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- 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 µs)	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01760	A01761

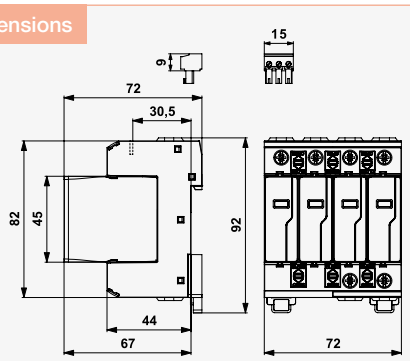
Spare module	SLP-275 V/0	SLP-275 V/0
Ordering number	A02368	A02368

SLP-275 V/4 (S)

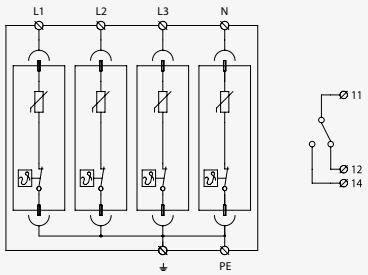
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- 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 µs)	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01722	A01763

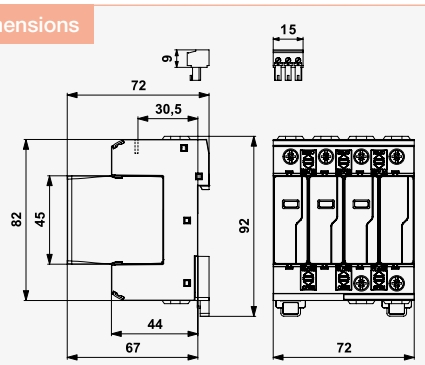
Spare module	SLP-275 V/0	SLP-275 V/0
Ordering number	A02368	A02368

SLP-275 V/3(S)+1

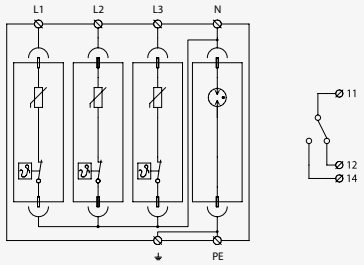
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 µs) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	40 kA	40 kA
Maximum discharge current (8/20 µs) 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_{fi}	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01946	A02002

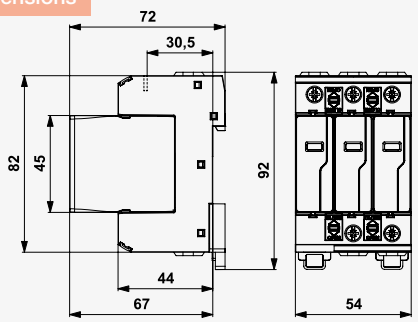
Spare module	SLP-275 V/0	SLP-NPE V/0	SLP-275 V/0	SLP-NPE V/0
Ordering number	A02368	A03722	A02368	A03722

SLP-... V/3

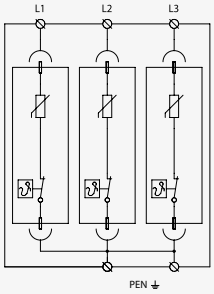
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking

- three-pole varistor surge arrester
- installation to LV installations, especially to sub-distribution boards in TN, IT systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- suitable for the protection of wind farms and inverters

Dimensions



Basic circuit diagram



Parameter / Type		SLP-385 V/3	SLP-440 V/3	SLP-600 V/3
Nominal voltage	U_n	230 V AC	400 V AC	230÷690 V AC
Maximum operating voltage	U_c	385 V AC / 500 V DC	440 V AC / 585 V DC	760 V AC
Nominal load current	I_n	20 kA	20 kA	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA	40 kA
Voltage protection level at 5 kA	U_p	1,3 kV	1,5 kV	2,7 kV
Voltage protection level	U_p	1,8 kV	1,9 kV	3,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	25 kA	25 kA
Maximum overcurrent protection		160 A gL/gG	125 A gL/gG	100 A gL/gG
Response time	t_a	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 ed.2 / T2	EN 61643-11 ed.2 / T2	EN 61643-11 ed.2 / T2
Ordering number		A01952	A01910	A06076

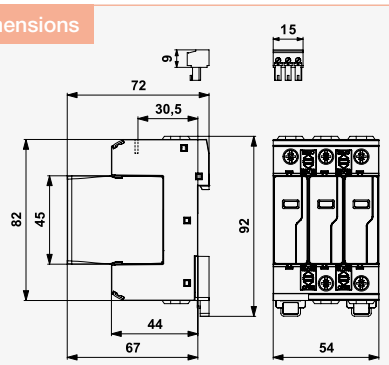
Spare module	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	A01950	A01813	A03303

SLP-... V/3 S

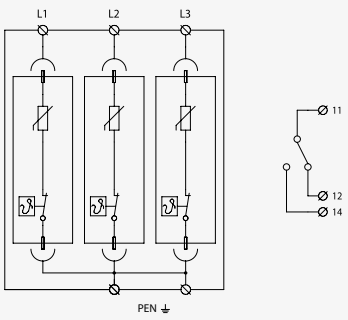
SPD type 2 – surge arrester, MOV
pluggable module, visual fault signalling, module locking, remote fault signalling

- three-pole varistor surge arrester
- installation to LV installations, especially to sub-distribution boards in TN, IT systems
- for protection of the installations and equipments against impact of induced overvoltages during a lightning strike or switching overvoltages
- suitable for the protection of wind farms and inverters

Dimensions



Basic circuit diagram



Parameter / Type		SLP-385 V/3 S	SLP-440 V/3 S	SLP-600 V/3 S
Nominal voltage	U_n	230 V AC	400 V AC	230÷690 V AC
Maximum operating voltage	U_c	385 V AC / 500 V DC	440 V AC / 585 V DC	760 V AC
Nominal load current	I_n	20 kA	20 kA	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA	40 kA
Voltage protection level at 5 kA	U_p	1,3 kV	1,5 kV	2,7 kV
Voltage protection level	U_p	1,8 kV	1,9 kV	3,2 kV
Short-circuit current rating	I_{SCCR}	50 kA	25 kA	25 kA
Maximum overcurrent protection		160 A gL/gG	125 A gL/gG	100 A gL/gG
Response time	t_a	25 ns	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	1,5 mm²	1,5 mm²
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 ed.2 / T2	EN 61643-11 ed.2 / T2	EN 61643-11 ed.2 / T2
Ordering number		A02633	A01913	A06305

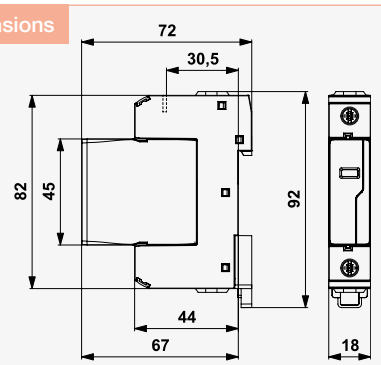
Spare module	SLP-385 V/0	SLP-440 V/0	SLP-600 V/0
Ordering number	A01950	A01813	A03303

SLP-... VB/1

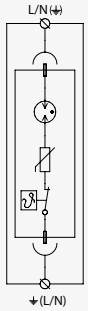
SPD type 2 – surge arrester, combination type
pluggable module, visual fault signalling

- 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 µs)	I_n	15 kA	20 kA	20 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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		
Ordering number		A02155	A02182	A01944

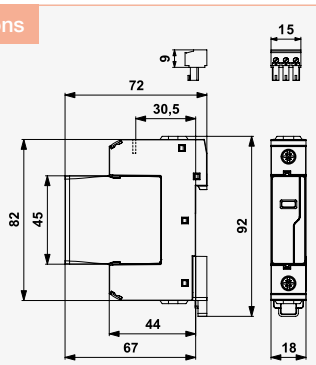
Spare module	SLP-075 VB/0	SLP-130 VB/0	SLP-275 VB/0
Ordering number	A03312	A03313	A03314

SLP-... VB/1 S

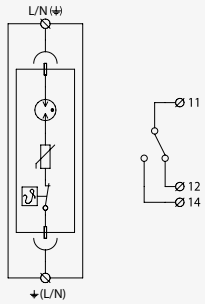
SPD type 2 – surge arrester, combination type
pluggable module, visual fault signalling, remote fault signalling

- 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 µs)	I_n	15 kA	20 kA	20 kA
Maximum discharge current (8/20 µs)	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	1,5 mm²	1,5 mm²
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		
Ordering number		A02156	A02996	A01945

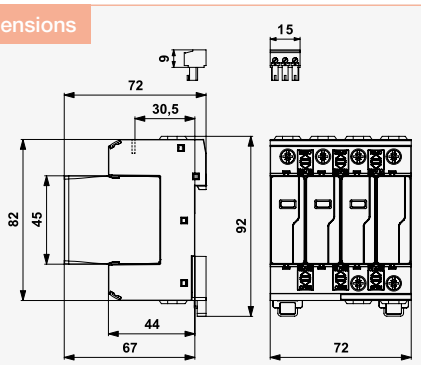
Spare module	SLP-075 VB/0	SLP-130 VB/0	SLP-275 VB/0
Ordering number	A03312	A03313	A03314

SLP-275 VB/3(S)+1

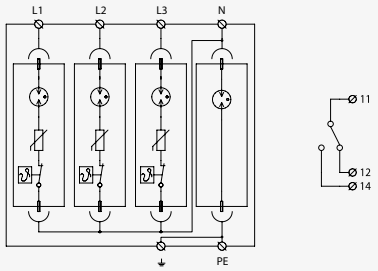
SPD type 2 – surge arrester, combination type
pluggable module, visual fault signalling, module locking

- 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



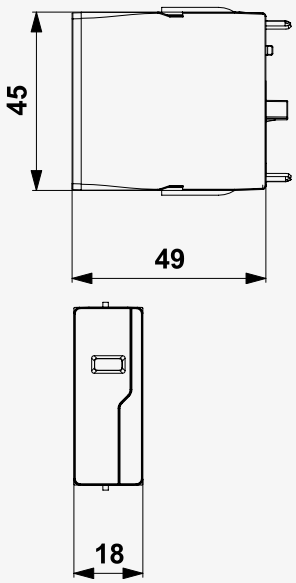
Parameter / Type		SLP-275 VB/3+1	SLP-275 VB/3S+1
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 µs) L-N	I_n	20 kA	20 kA
Nominal discharge current (8/20 µs) N-PE	I_n	20 kA	20 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	25 kA	25 kA
Maximum discharge current (8/20 µs) 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_{fi}	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A03310	A03311

Spare module	SLP-275 VB/0	SLP-NPE V/0	SLP-275 VB/0	SLP-NPE V/0
Ordering number	A03314	A03722	A03314	A03722

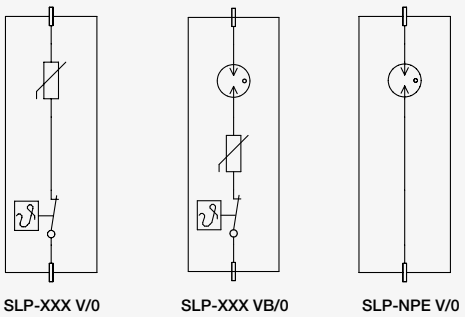
SLP-... V./0

Replacement modules of SPD type 2

Dimensions



Basic circuit diagram



Type	Ordering number
SLP-075 V/0	A01811
SLP-150 V/0	A05193
SLP-275 V/0	A02368
SLP-385 V/0	A01950
SLP-440 V/0	A01813
SLP-600 V/0	A03303
SLP-NPE V/0	A03722
SLP-075 VB/0	A03312
SLP-130 VB/0	A03313
SLP-275 VB/0	A03314

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

Surge Protections SPDs Type 3

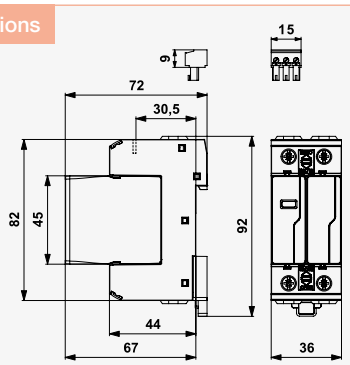
- Surge Protections, SPDs Type 3
- Installation close to protected equipment
- For DIN rail 35 mm
- With integrated RFi filter
- Modules for additional installation
- For 19" RACK enclosures

DA-275 V/1(S)+1

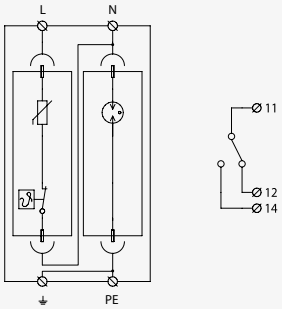
SPD type 3 – surge protection, basic on DIN rail
pluggable module, visual fault signalling, module locking

- 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 µs) L-N	I_n	5 kA	5 kA
Nominal discharge current (8/20 µs) 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 L-N	U_p	1 kV	1 kV
Voltage protection level mode L-PE	U_p	1,5 kV	1,5 kV
Voltage protection level mode N-PE	U_p	1,5 kV	1,5 kV
Ability to independently switch off the following current N-PE	I_{fi}	0,1 kA	0,1 kA
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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01872	A01975

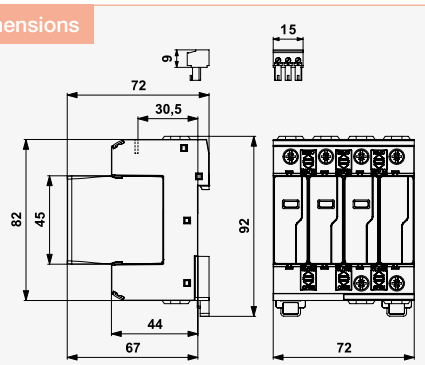
Spare module	DA-275 V/0	DA-NPE V/0	DA-275 V/0	DA-NPE V/0
Ordering number	A03594	A03004	A03594	A03004

DA-275 V/3(S)+1

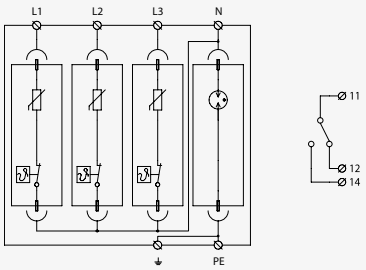
SPD type 3 – surge protection, basic on DIN rail
pluggable module, visual fault signalling, module locking

- 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



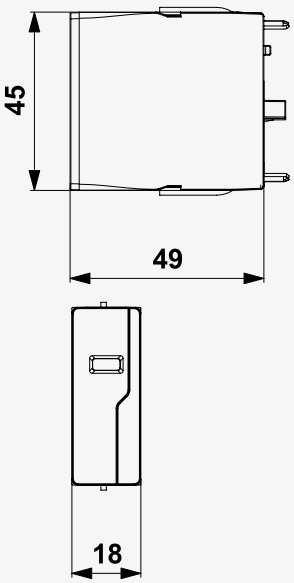
Parameter / Type		DA-275 V/3+1	DA-275 V/3S+1
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage L-N	U_c	275 V AC	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC	255 V AC
Nominal discharge current (8/20 µs) L-N	I_n	5 kA	5 kA
Nominal discharge current (8/20 µs) N-PE	I_n	10 kA	10 kA
Test 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
Ability to independently switch off the following current N-PE	I_{fi}	0,1 kA	0,1 kA
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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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		A01848	A01849

Spare module	DA-275 V/0	DA-NPE V/0	DA-275 V/0	DA-NPE V/0
Ordering number	A03594	A03004	A03594	A03004

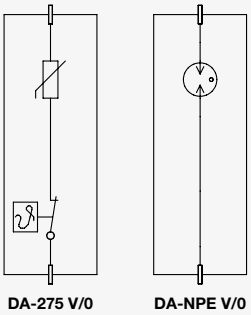
DA-... V/0

Replacement modules of SPD type 3

Dimensions



Basic circuit diagram



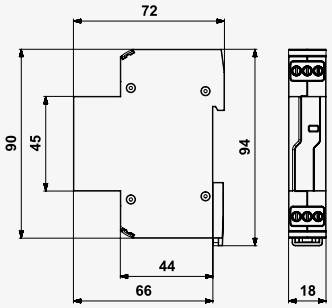
Type	Ordering number
DA-275 V/0	A03594
DA-NPE V/0	A03004

DA-...-DJ25

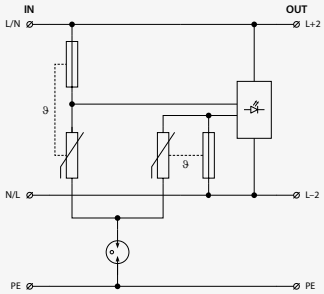
SPD type 3 – surge protection, basic on DIN rail
visual fault signalling

- 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



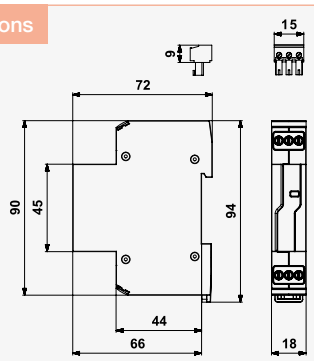
Parameter / Type		DA-075-DJ25	DA-150-DJ25
Nominal voltage	U_n	60 V AC	120 V AC
Maximum operating voltage	U_c	75 V AC	150 V AC
Nominal load current	I_L	25 A	25 A
Nominal discharge current (8/20 µs) L-N	I_n	2 kA	2,5 kA
Nominal discharge current (8/20 µs) N-PE	I_n	2 kA	2,5 kA
Nominal discharge current (8/20 µs) 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	0,43 kV	0,63 kV
Voltage protection level mode N-PE	U_p	0,75 kV	1,1 kV
Voltage protection level mode L-PE	U_p	0,75 kV	1,1 kV
Short-circuit current rating	I_{SCCR}	1,5 kA	1,5 kA
Maximum overcurrent protection		25 A gL/gG or B 25 A	25 A gL/gG or B 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 (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
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		A06094	A06095

DA-275-DJ25-(S)

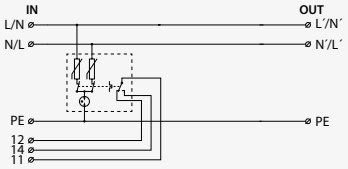
SPD type 3 – surge protection, basic on DIN rail
visual fault signalling

- 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



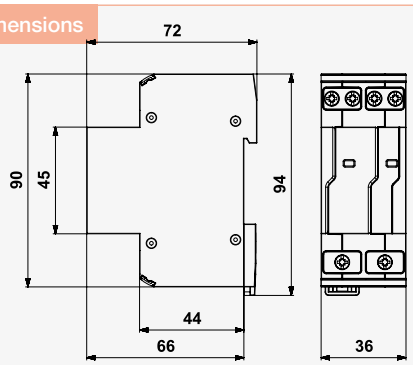
Parameter / Type		DA-275-DJ25	DA-275-DJ25-S
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC
Nominal load current	I_L	25 A	25 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA
Nominal discharge current (8/20 µs) 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		32 A gL/gG or C 32 A	32 A gL/gG or C 32 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 (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
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 mm²
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		A05770	A05771

DA-275-DF..

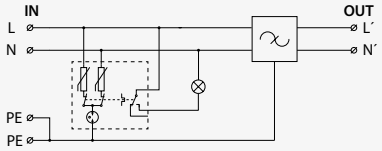
SPD type 3 – surge protection with RFi filter
visual fault signalling

- 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

Dimensions



Basic circuit diagram



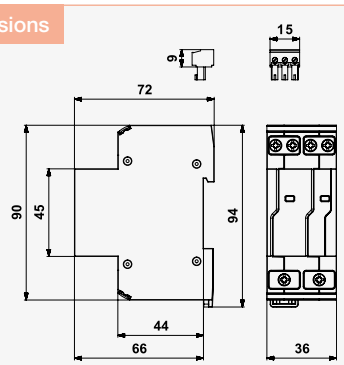
Parameter / Type		DA-275-DF2	DA-275-DF6	DA-275-DF10	DA-275-DF16
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	2 A	6 A	10 A	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) 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 (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Fault indication		red indicator	red indicator	red indicator	red indicator
Cross-section of remote indication conductors solid (max)		1,5 mm²	1,5 mm²	1,5 mm²	1,5 mm²
Cross-section of remote indication conductors stranded (max)		1,5 mm²	1,5 mm²	1,5 mm²	1,5 mm²
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			
Ordering number		A05715	A05717	A05719	A05721

DA-275-DF..-S

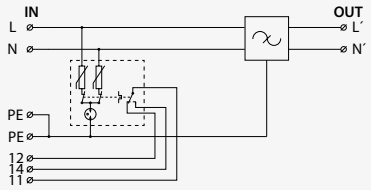
SPD type 3 – surge protection with RFi filter
visual and remote fault signalling

- 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

Dimensions



Basic circuit diagram



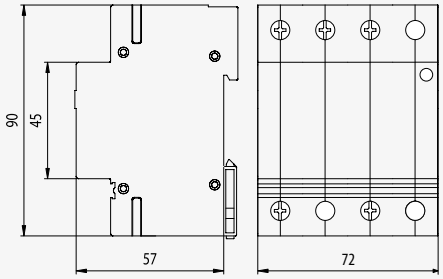
Parameter / Type		DA-275-DF2-S	DA-275-DF6-S	DA-275-DF10-S	DA-275-DF16-S
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	2 A	6 A	10 A	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) 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 (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
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 mm²	1,5 mm²	1,5 mm²	1,5 mm²
Cross-section of remote indication conductors stranded (max)		1,5 mm²	1,5 mm²	1,5 mm²	1,5 mm²
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			
Ordering number		A05716	A05718	A05720	A05722

DA-275 DF 25

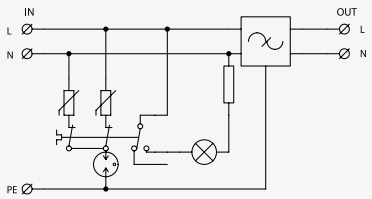
SPD type 3 – surge protection with RFi filter
visual fault signalling

- 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



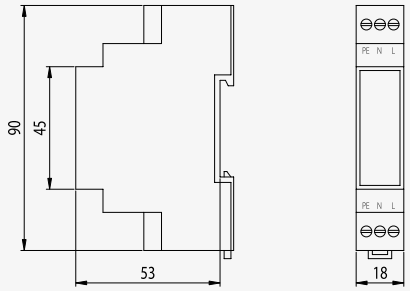
Parameter / Type		DA-275 DF 25
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	25 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA
Nominal discharge current (8/20 µs) L+N-PE	I_n	5 kA
Test voltage L-N	U_{oc}	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		A03732

DA-275 DFI 1

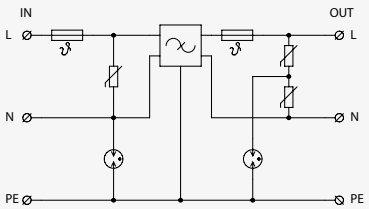
SPD type 3 – surge protection with RFi filter
fault signalling due to power supply interruption

- 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
- priority of protection

Dimensions



Basic circuit diagram



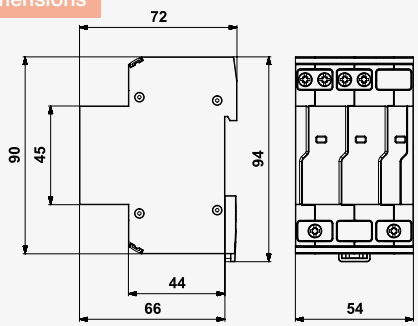
Parameter / Type		DA-275 DFI 1
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	1 A
Nominal discharge current (8/20 µs) L-N	I_n	1,5 kA
Nominal discharge current (8/20 µs) N-PE	I_n	1,5 kA
Test voltage L-N	U_{oc}	3 kV
Test voltage N-PE	U_{oc}	3 kV
Voltage protection 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 (min/max)		0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²
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		A01205

DA-275-DFi..

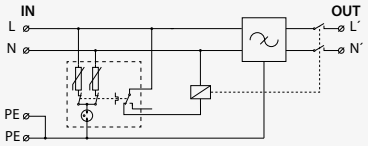
SPD type 3 – surge protection with RFi filter
fault signalling due to power supply interruption, visual fault signalling

- 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
- priority of protection

Dimensions



Basic circuit diagram



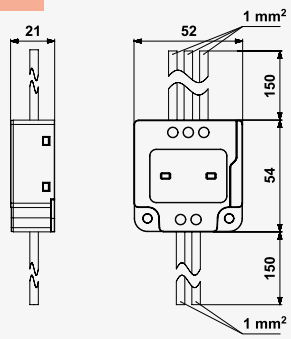
Parameter / Type		DA-275-DFi6	DA-275-DFi10	DA-275-DFi16
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC	275 V AC
Nominal load current	I_L	6 A	10 A	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) 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 (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
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 mm²	1,5 mm²	1,5 mm²
Cross-section of remote indication conductors stranded (max)		1,5 mm²	1,5 mm²	1,5 mm²
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		
Ordering number		A05723	A05724	A05725

DA-275-BFi2

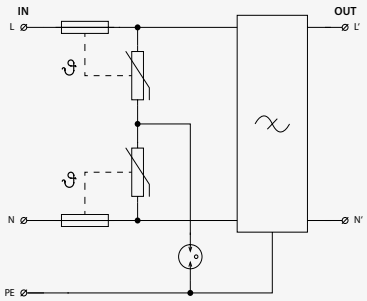
SPD type 3 – surge protection with RFi filter
fault signalling due to power supply interruption

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

Dimensions



Basic circuit diagram



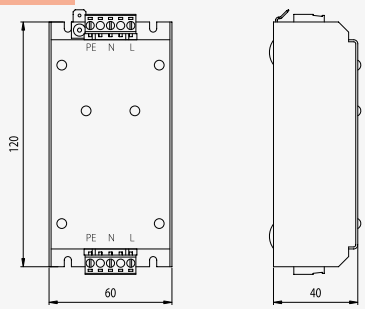
Parameter / Type		DA-275-BFi2
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	2 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA
Nominal discharge current (8/20 µs) L+N-PE	I_n	5 kA
Test voltage L-N	U_{oc}	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	1,65 kV
Voltage protection level mode L(N)-PE	U_p	1,5 kV
Short-circuit current rating	I_{SCCR}	3 kA
Maximum overcurrent protection		B 16 A
Response time L-N	t_a	25 ns
Response time L(N)-PE	t_a	100 ns
Filter attenuation at 1MHz (50 Ω/50 Ω) unsymmetrical		20 dB
Fault indication		loss of voltage
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 / T3
Ordering number		A06262

DA-275 BFG

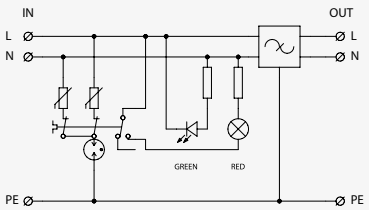
SPD type 3 – surge protection with RFi filter
visual fault signalling, grounding terminal, class I device

- 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



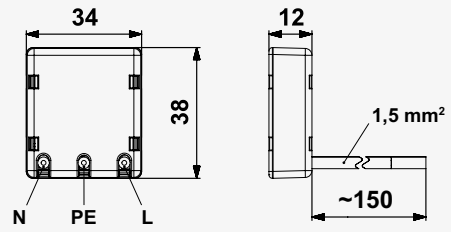
Parameter / Type		DA-275 BFG
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal load current	I_L	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA
Nominal discharge current (8/20 µs) L+N-PE	I_n	5 kA
Test voltage L-N	U_{oc}	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 (min/max)		0,14 mm^2 / 2,5 mm^2
Cross-section of connected conductors stranded (min/max)		0,14 mm^2 / 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		A00629

CZ-275-A

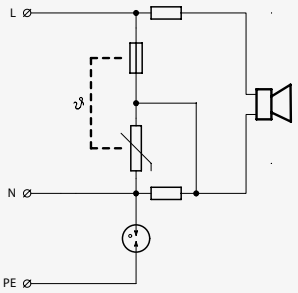
SPD type 3 – module of surge protection for build in
acoustic fault signalling

- 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-symetrical connection

Dimensions



Basic circuit diagram



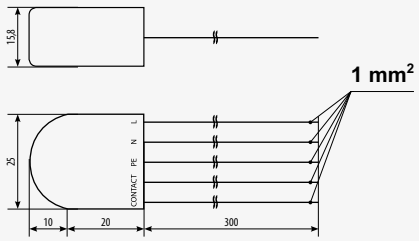
Parameter / Type		CZ-275-A
Nominal voltage	U_n	230 V AC
Maximum operating voltage L-N	U_c	275 V AC
Maximum operating voltage N-PE	U_c	255 V AC
Nominal discharge current (8/20 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	6 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
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		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		A06737

DA-275 CZS

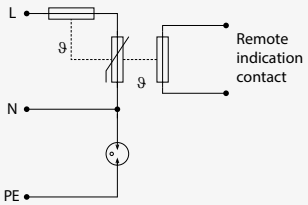
SPD type 3 – module of surge protection for build in
remote fault signalling

- 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-symetrical connection

Dimensions



Basic circuit diagram



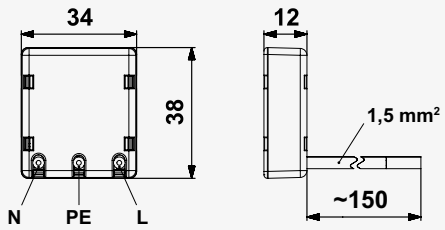
Parameter / Type		DA-275 CZS
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA
Test voltage L-N	U_{oc}	6 kV
Test voltage N-PE	U_{oc}	6 kV
Voltage protection level mode L-N	U_p	1,35 kV
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		A01916

DA-275-A

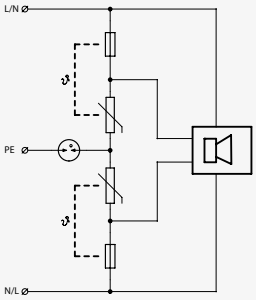
SPD type 3 – module of surge protection for build in
acoustic fault signalling

- 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



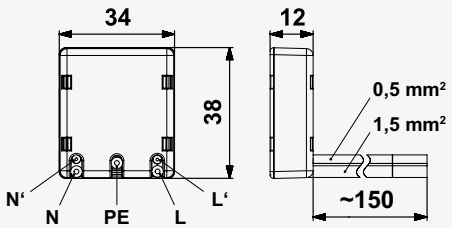
Parameter / Type		DA-275-A
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 µs) L-N	I_n	2 kA
Nominal discharge current (8/20 µs) N-PE	I_n	2 kA
Nominal discharge current (8/20 µs) L+N-PE	I_n	4 kA
Test voltage L-N	U_{oc}	4 kV
Test voltage N-PE	U_{oc}	4 kV
Test voltage L-PE	U_{oc}	4 kV
Test voltage L+N-PE	U_{oc}	8 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		A06738

DA-275-S

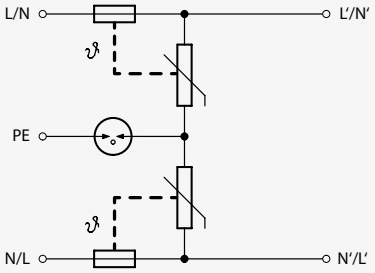
SPD type 3 – module of surge protection for build in
remote fault signalling

- 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

Dimensions



Basic circuit diagram



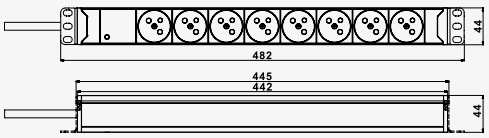
Parameter / Type		DA-275-S
Nominal voltage	U_n	230 V AC
Maximum operating voltage	U_c	275 V AC
Nominal discharge current (8/20 µs) L-N	I_n	2 kA
Nominal discharge current (8/20 µs) N-PE	I_n	2 kA
Nominal discharge current (8/20 µs) L+N-PE	I_n	4 kA
Test voltage L-N	U_{oc}	4 kV
Test voltage N-PE	U_{oc}	4 kV
Test voltage L-PE	U_{oc}	4 kV
Test voltage L+N-PE	U_{oc}	8 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		A06739

RACK-PROTECTOR-…-1U

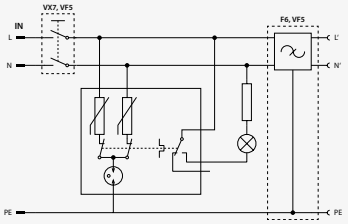
SPD type 3 – multiple socket outlet with surge protection for 19" RACK
visual fault signalling, 3 m power supply cord, CEE 7/7 type plug

- variants with/without on/off switch and with/without RFi filter
- with French type (earthing pin) and Euro type sockets
- for protection of information technological equipments against surge voltage and possibly RF interference
- mounting height 1U
- X8: 8 sockets
- VX7: on/off switch, 7 sockets
- F6: RFi filter, 6 sockets
- VF5: RFi filter, on/off switch, 5 sockets
- EURO-X12: 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 µs) L-N	I_n	3 kA	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) 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
RFi 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				
Ordering number		A05872	A05873	A05874	A05875	A05961

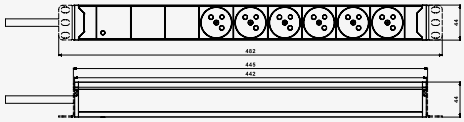
RACK-PROTECTOR-…-1U-5

NEW

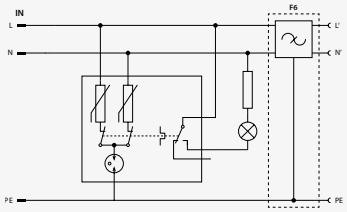
SPD type 3 – multiple socket outlet with surge protection for 19" RACK
visual fault signalling, 5 m power supply cord, CEE 7/7 type plug

- variants with/without RFi filter
- with French type (earthing pin) and Euro type sockets
- for protection of information technological equipments against surge voltage and possibly RF interference
- mounting height 1U
- X8: 8 sockets
- F6: RFi filter, 6 sockets
- EURO-X12: 12 Euro sockets

Dimensions



Basic circuit diagram



Parameter / Type		RACK-PROTECTOR-X8-1U-5	RACK-PROTECTOR-F6-1U-5	RACK-PROTECTOR-EURO-X12-1U-5
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	16 A	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA	3 kA
Nominal discharge current (8/20 µs) 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		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
RFi filter		-	yes	-
Filter attenuation at 1MHz (50 Ω//50 Ω/) unsymmetrical		-	30 dB	-
Fault indication		red indicator	red indicator	red indicator
Degree of protection		IP 40	IP 40	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		19" rack	19" rack	19" rack
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number		A07009	A06751	A07008

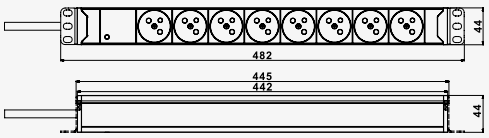
RACK-PROTECTOR-…-1U-PI

NEW

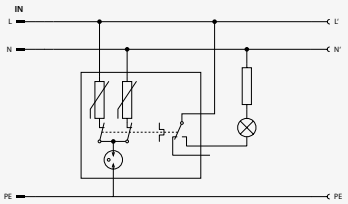
SPD type 3 – multiple socket outlet with surge protection for 19" RACK
visual fault signalling, 3 m power supply cord, industrial plug 16 A 2P+PE

- with French type (earthing pin) and Euro type sockets
- for protection of information technological equipments against surge voltage
- mounting height 1U
- X8: 8 sockets
- EURO-X12: 12 Euro sockets

Dimensions



Basic circuit diagram



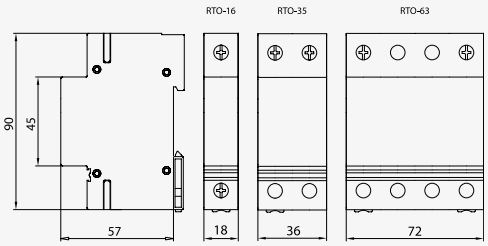
Parameter / Type		RACK-PROTECTOR-X8-1U-PI	RACK-PROTECTOR-EURO-X12-1U-PI
Nominal voltage	U_n	230 V AC	230 V AC
Maximum operating voltage	U_c	275 V AC	275 V AC
Nominal load current	I_L	16 A	16 A
Nominal discharge current (8/20 µs) L-N	I_n	3 kA	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA	3 kA
Nominal discharge current (8/20 µs) 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		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
Fault indication		red indicator	red indicator
Degree of protection		IP 40	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C
Mounting		19" rack	19" rack
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3	
Ordering number		A06255	A06256

RTO-...

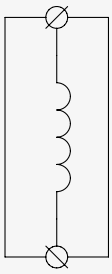
Separating inductor (bridge) for coordination

- 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 IL		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		A01432	A01433	A01434

Notes

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-...-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.

Fig. 01 Wiring of SPD to Class I equipment

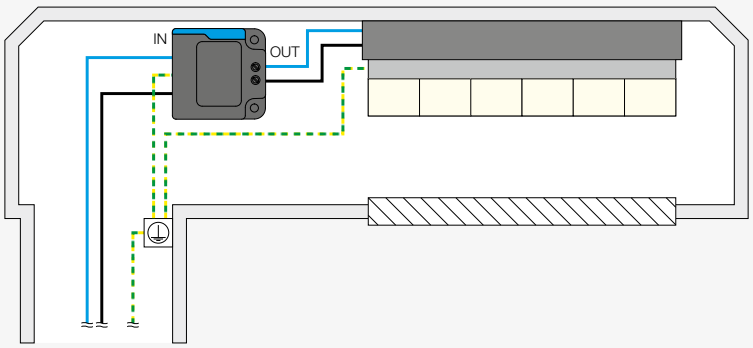


Fig. 02 Wiring of SPD to Class II equipment

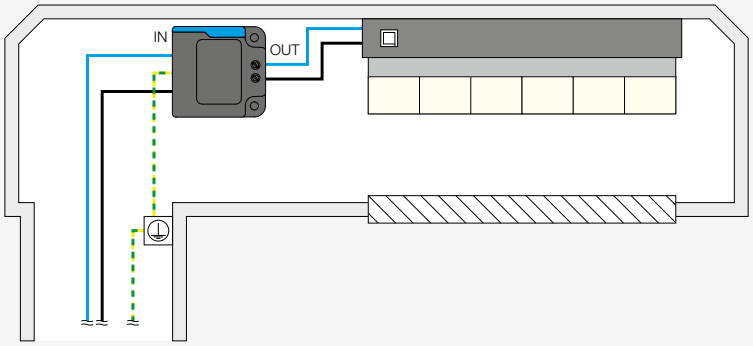
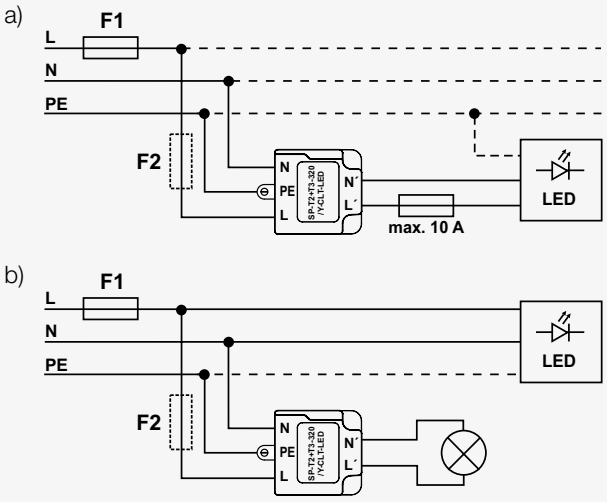
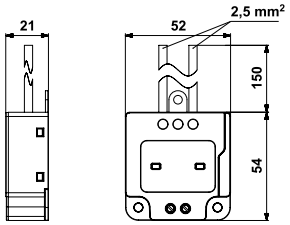


Fig. 03 Wiring of SPD: a) transit (priority of protection), b) paralell (priority of supply)

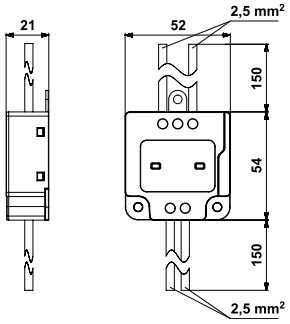


Overview SP-T2+T3-320/Y…-LED

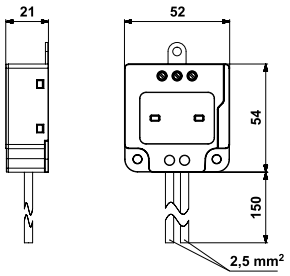
SP-T2+T3-320/Y-CLT-LED
A06044

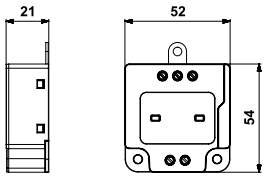
SP-T2+T3-320/Y-CLC-LED
A06246

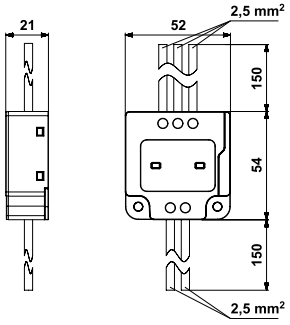
SP-T2+T3-320/Y-TLC-LED
A06247

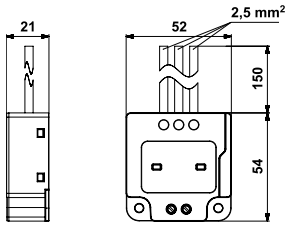
SP-T2+T3-320/Y-TLT-LED
A06244

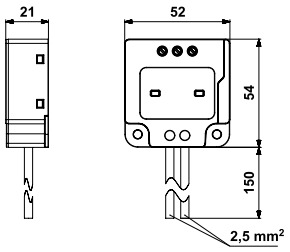
SP-T2+T3-320/Y-CCC-LED
A06245

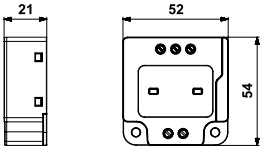
SP-T2+T3-320/Y-CCT-LED
A06243

SP-T2+T3-320/Y-TTC-LED
A06248

SP-T2+T3-320/Y-TTT-LED
A06222

SP-T2+T3-320/Y-.L.-LED

NEW

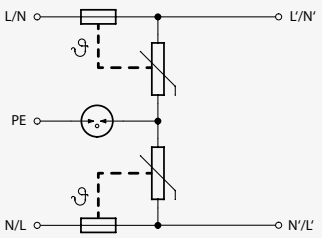
SPD type 2 and type 3 – surge protective device for LED lights
fault signalling by supply interruption

- 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

See page 87.

Basic circuit diagram



Parameter / Type		SP-T2+T3-320/Y-CLT-LED	SP-T2+T3-320/Y-CLC-LED	SP-T2+T3-320/Y-TLC-LED	SP-T2+T3-320/Y-TLT-LED
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	320 V AC	320 V AC	320 V AC	320 V AC
Nominal load current	I_L	10 A	10 A	10 A	10 A
Nominal discharge current (8/20 µs) L-N	I_n	5 kA	5 kA	5 kA	5 kA
Nominal discharge current (8/20 µs) N-PE	I_n	5 kA	5 kA	5 kA	5 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	10 kA	10 kA	10 kA	10 kA
Maximum discharge current (8/20 µs) N-PE	I_{max}	10 kA	10 kA	10 kA	10 kA
Test voltage L-N	U_{oc}	10 kV	10 kV	10 kV	10 kV
Test voltage N-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Test voltage L-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,3 kV	1,3 kV	1,3 kV	1,3 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}	3 kA	3 kA	3 kA	3 kA
Maximum overcurrent protection		32 A gL/gG or C 32 A	32 A gL/gG or C 32 A	32 A gL/gG or C 32 A	32 A gL/gG or C 32 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
Cross-section of connected conductors solid (min/max)		0,14 mm² / 2,5 mm²	-	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 1,5 mm²	-	0,14 mm² / 1,5 mm²	0,14 mm² / 1,5 mm²
Fault indication		loss of voltage, dark grey indication field			
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
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2,T3			
Ordering number		A06044	A06246	A06247	A06244

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

NEW

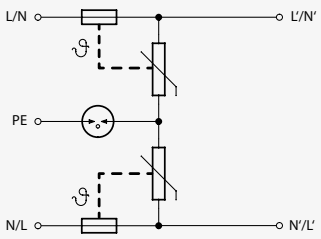
SPD type 2 and type 3 – surge protective device for LED lights
fault signalling by supply interruption

- 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

See page 87.

Basic circuit diagram



Parameter / Type		SP-T2+T3-320/Y-CCC-LED	SP-T2+T3-320/Y-CCT-LED	SP-T2+T3-320/Y-TTC-LED	SP-T2+T3-320/Y-TTT-LED
Nominal voltage	U_n	230 V AC	230 V AC	230 V AC	230 V AC
Maximum operating voltage	U_c	320 V AC	320 V AC	320 V AC	320 V AC
Nominal load current	I_L	10 A	10 A	10 A	10 A
Nominal discharge current (8/20 µs) L-N	I_n	5 kA	5 kA	5 kA	5 kA
Nominal discharge current (8/20 µs) N-PE	I_n	5 kA	5 kA	5 kA	5 kA
Maximum discharge current (8/20 µs) L-N	I_{max}	10 kA	10 kA	10 kA	10 kA
Maximum discharge current (8/20 µs) N-PE	I_{max}	10 kA	10 kA	10 kA	10 kA
Test voltage L-N	U_{oc}	10 kV	10 kV	10 kV	10 kV
Test voltage N-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Test voltage L-PE	U_{oc}	10 kV	10 kV	10 kV	10 kV
Voltage protection level mode L-N	U_p	1,3 kV	1,3 kV	1,3 kV	1,3 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}	3 kA	3 kA	3 kA	3 kA
Maximum overcurrent protection		32 A gL/gG or C 32 A	32 A gL/gG or C 32 A	32 A gL/gG or C 32 A	32 A gL/gG or C 32 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
Cross-section of connected conductors solid (min/max)		-	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Cross-section of connected conductors stranded (min/max)		-	0,14 mm² / 1,5 mm²	0,14 mm² / 1,5 mm²	0,14 mm² / 1,5 mm²
Fault indication		loss of voltage, dark grey indication field			
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
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T2,T3			
Ordering number		A06245	A06243	A06248	A06222

Accessories

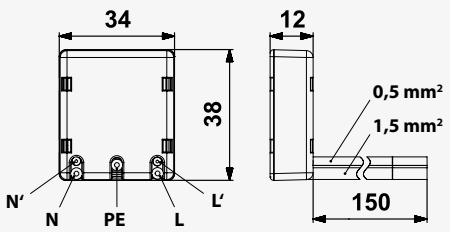
	Product	Ordering number	Example of use
	**Adapter DIN 45 mm**	A06265	

DA-320-LED

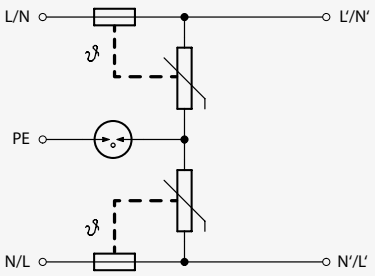
SPD type 3 – surge protective device for LED lights
fault signalling by supply interruption

- 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 µs) L-N	I_n	3 kA
Nominal discharge current (8/20 µs) N-PE	I_n	3 kA
Nominal discharge current (8/20 µs) 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	1,5 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
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		A06740

Surge Protective Devices for 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 SPD PV Type 1 and 2
- Surge arrester SPD PV Type 2

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 IEC (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 IEC (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 standard IEC (EN) 62305 (Lightning protection).
The core (key device) of the whole photovoltaic system is the inverter, so the lightning and surge protection should be focused on the inverter and, it should be incorporated into the whole lightning and surge 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
  – SPD PV Type 2 is installed
  – If distance "l" between PV modules and inverter is longer than 10 m - SPD is installed on both sides of the DC line

- If separating spark-over distance "s" is not kept
  – SPD PV Type 1 and Type 2 is installed
  – It is always necessary to install SPD PV on both sides of the DC line

General circuit diagram of solar photovoltaic systems

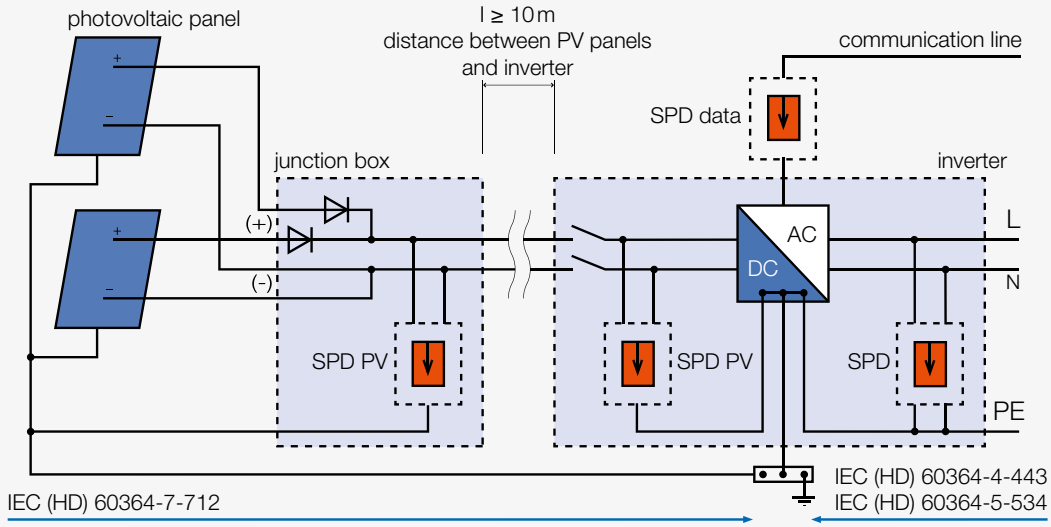


Fig. 1

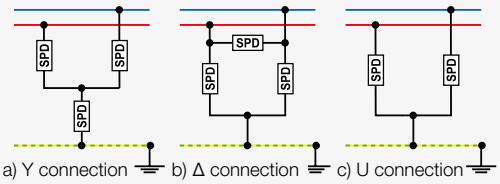
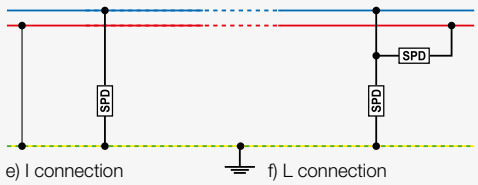


Fig. 2



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.

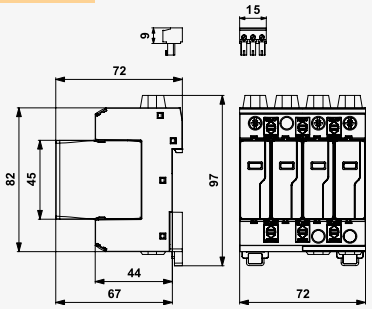
When mounting an SPD, the necessary length of the connecting conductors should be complied with HD 60364-5-534 (IEC 60364-5-53, chapter 534), clause 534.2.9.

FLP-PV550 V/U (S)

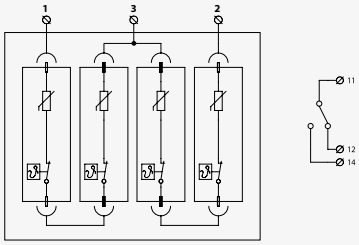
SPD PV type 1 and type 2 – lightning current and surge arresters for PV installation
pluggable module, visual fault signalling, module locking

- 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 µs)	I_{Total}	25 kA	25 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	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_{SCPV}	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 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²
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 61643-31, IEC 61643-31	EN 61643-31, IEC 61643-31
Ordering number		A06145	A06146

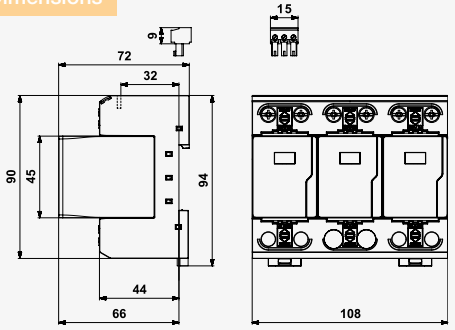
Spare module	FLP-PV275U V/0	FLP-PV275U V/0
Ordering number	A06147	A06147

FLP-PV1000 V(S)/Y

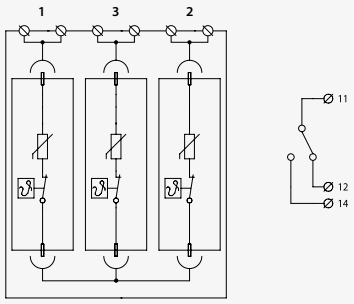
SPD PV type 1 and type 2 – lightning current and surge arresters for PV installation
pluggable module, visual fault signalling, module locking

- 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	1 000 V DC
Lightning impulse current (10/350 µs)	I_{imp}	12,5 kA	12,5 kA
Nominal discharge current (8/20 µs)	I_n	30 kA	30 kA
Maximum discharge current (8/20 µs)	I_{max}	60 kA	60 kA
Voltage protection level mode 1/2	U_p	3,6 kV	3,6 kV
Voltage protection level mode 1/3, 2/3	U_p	3,6 kV	3,6 kV
Short-circuit current rating	I_{SCPV}	1 000 A DC	1 000 A DC
Response time	t_a	25 ns	25 ns
Cross-section of connected conductors solid (min/max)		2,5 mm² / 50 mm²	2,5 mm² / 50 mm²
Cross-section of connected conductors stranded (min/max)		2,5 mm² / 35 mm²	2,5 mm² / 35 mm²
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 mm²
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 61643-31, IEC 61643-31	EN 61643-31, IEC 61643-31
Ordering number		A04059	A04058

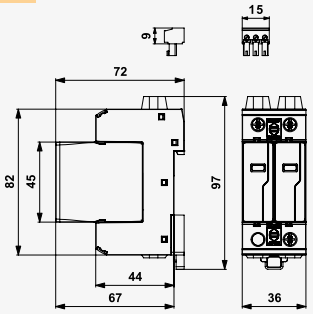
Spare module	FLP-PV500Y V/0	FLP-PV500Y V/0
Ordering number	A04211	A04211

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

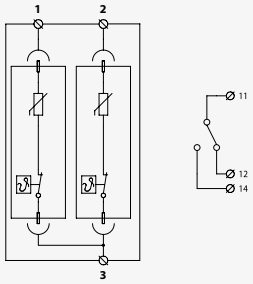
SPD PV type 2 - surge arrester for PV installation
pluggable module, visual fault signalling, module locking

- 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 µs)	I_n	15 kA	15 kA	15 kA	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA	40 kA	40 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_{SCPV}	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	-	1,5 mm²
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 61643-31, IEC 61643-31			
Ordering number		A03662	A03663	A03664	A03665

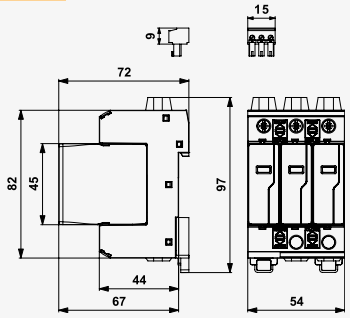
Spare module	SLP-PV170U V/0	SLP-PV170U V/0	SLP-PV500U V/0	SLP-PV500U V/0
Ordering number	A03692	A03692	A03694	A03694

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

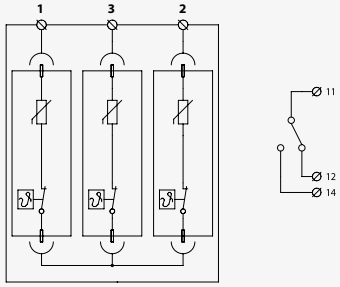
SPD PV type 2 – surge arrester for PV installation
pluggable module, visual fault signalling, module locking

- 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



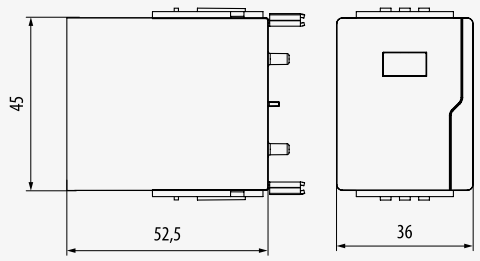
Parameter / Type		SLP-PV700 V/Y	SLP-PV700 V/Y S	SLP-PV1000 V/Y	SLP-PV1000 V/Y S	SLP-PV1500 V/Y	SLP-PV1500 V/Y S
Maximum operating voltage mode 1/3, 2/3	U_{CPV}	750 V DC	750 V DC	1 020 V DC	1 020 V DC	1 500 V DC	1 500 V DC
Nominal discharge current (8/20 µs)	I_n	20 kA	20 kA	15 kA	15 kA	15 kA	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA	40 kA	40 kA	40 kA	40 kA	40 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_{SCPV}	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 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²	1 mm² / 35 mm²
Cross-section of connected conductors stranded (min/max)		1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²	1 mm² / 25 mm²
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 mm²	-	1,5 mm²	-	1,5 mm²
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 61643-31, IEC 61643-31					
Ordering number		A03668	A03669	A03670	A03671	A06036	A06037

Spare module	SLP-PV350Y V/0	SLP-PV350Y V/0	SLP-PV500Y V/0	SLP-PV500Y V/0	SLP-PV750Y V/0	SLP-PV750Y V/0
Ordering number	A03744	A03744	A03736	A03736	A06040	A06040

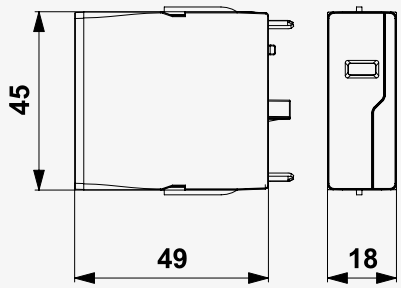
FLP-PV... V/0, SLP-PV... V/0

Replacement modules of SPD for PV

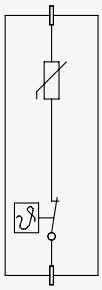
Dimensions



FLP-PV500Y V/0



Basic circuit diagram



Type	Ordering number
FLP-PV275U V/0	A06147
FLP-PV500Y V/0	A04211
SLP-PV170U V/0	A03692
SLP-PV500U V/0	A03694
SLP-PV350Y V/0	A03744
SLP-PV500Y V/0	A03736
SLP-PV750Y V/0	A06040

Notes

SPDs for data / signalling / telecommunication networks

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

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

Data, signal and telecommunication protections

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

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

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

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

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

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

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

The table with principle of marking for easier orientation:

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

Example of marking:

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

Fig. 1 Principle of protection coordination and protection complexity

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

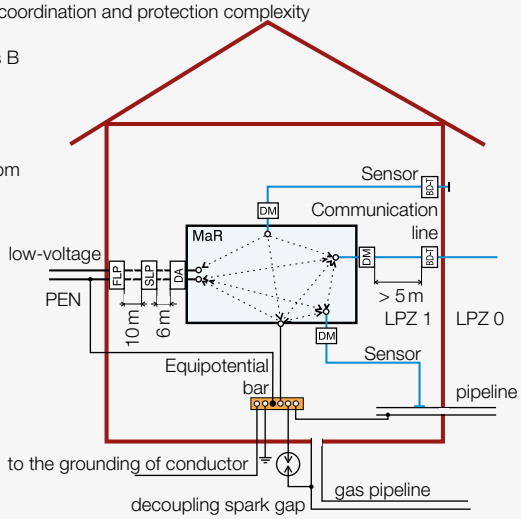


Fig. 2 Coupling between input and output line and earth connection

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

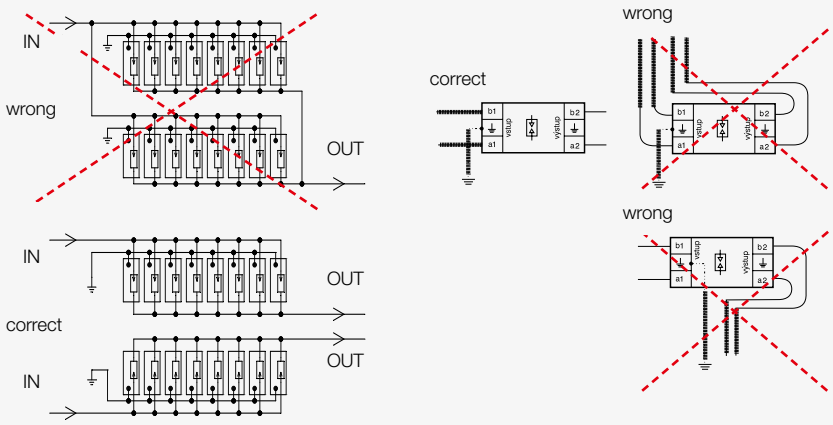
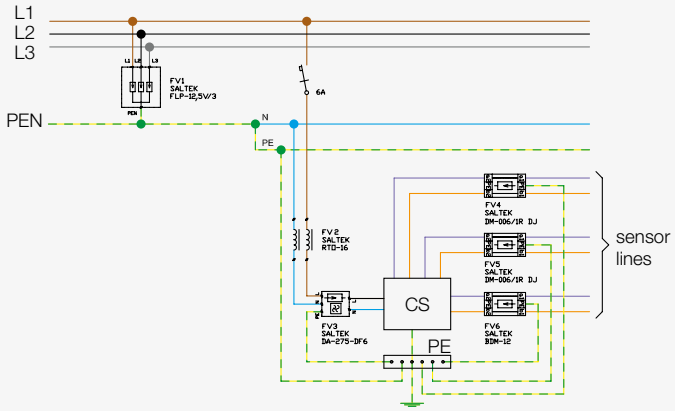


Fig. 3 Principle of the protection of control systems



The principle of placing the dataline protections

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

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

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

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

Maintenance of protective devices

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

Fig. 4 Coordination distance

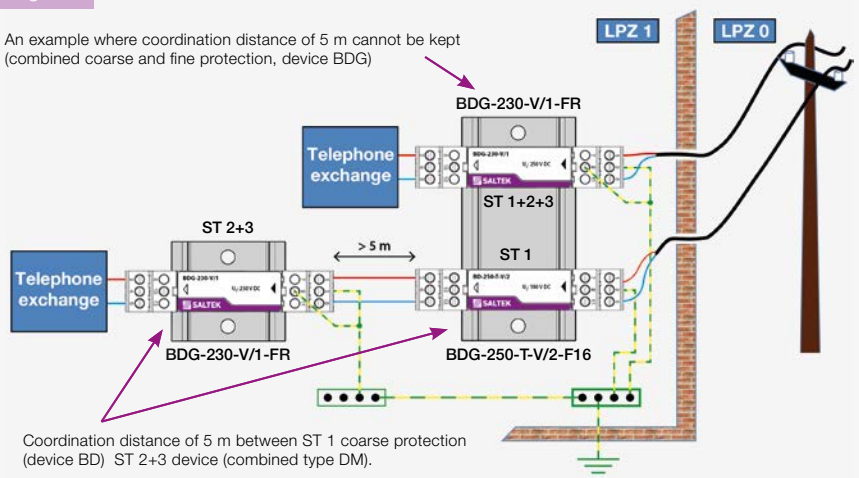


Fig. 5 Protection of electronic security system

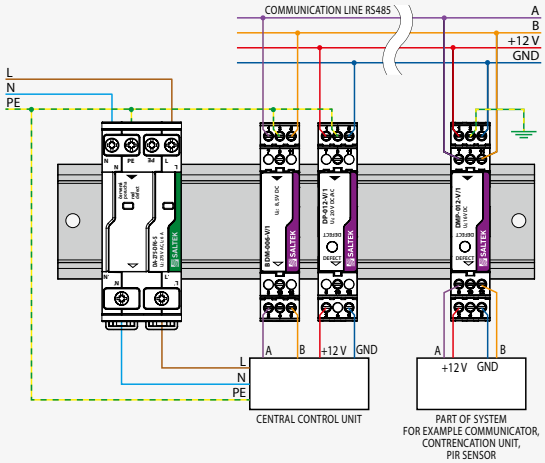
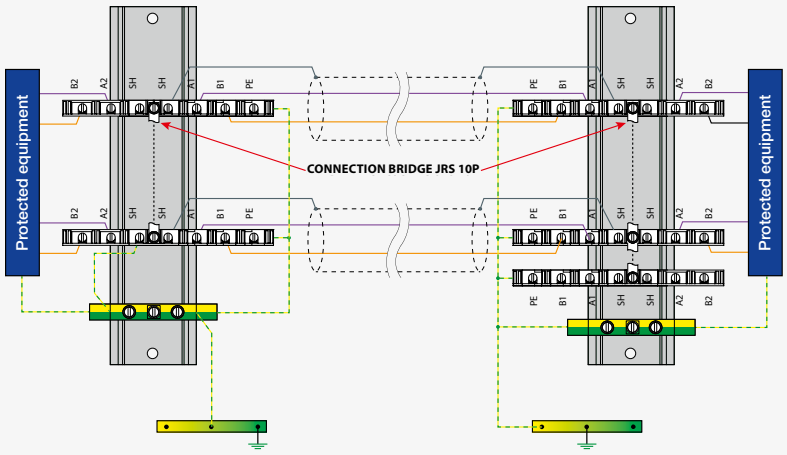


Fig. 6 Grounding of the shielding



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

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

MEASURING AND CONTROL TECHNOLOGY AND BUS SYSTEMS								
Interface/Signal		Protected lines	U (DC) [V]	Discharge current per core		SPD xx – corresponding voltage	Mounting	Notes
				10/350 µs	8/20 µs			
DC power supply	I =16 A	2	12 ÷ 48	x	2 kA	DP-xxxDC-16	DIN 35	
				x	2 kA	DP-xx-V/1-F16	DIN 35	
		2	12 ÷ 60	x	1 kA	DPF-xxxDC-16(-S)	DIN 35	RFi filter
KNX TP (EIB)		2	24	2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
				x	10 kA	DMG-024/1-RB	DIN 35	
M-Bus (Meter Bus)		2	36	2,5 kA	10 kA	BDM-048-V/1-FR1	DIN 35	
				2,5 kA	10 kA	DM-048/1R DJ	DIN 35	
CAN-Bus communication max. 1,5 Mbit/s		2	6	x	10 kA	DM-006/1R DJ	DIN 35	
		2	6	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
Device Net communication 500 kbit/s	I = 2 A	2	24	2,5 kA	10 kA	BDM-024-V/1-FR2	DIN 35	
				x	10 kA	DM-024/1 L2 DJ	DIN 35	
	I = 2 A	2	5	2,5 kA	10 kA	BDM-006-V/1-FR2	DIN 35	
				x	10 kA	DM-006/1L2 DJ	DIN 35	
	I = 1 A	2	24	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35	
			5	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
C-Bus		2	5	x	10 kA	DM-006/1R DJ	DIN 35	
Honeywell communication max. 0,9 Mbit/s		2	5	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
Dupline		2	15	2,5 kA	10 kA	BDG-012-V/1-FR1	DIN 35	
E-Bus (Honeywel)		2	48	2,5 kA	10 kA	BDG-048-V/1-FR1	DIN 35	
Fieldbus Foundation		2	30	2,5 kA	10 kA	BDG-048-V/1-FR1	DIN 35	
Genius I/O Bus		2	12	2,5 kA	10 kA	BDG-012-V/1-FR1	DIN 35	
FIPIO/FIPWAY		2	30	2,5 kA	10 kA	BDG-048-V/1-FR1	DIN 35	
INTERBUS INLINE		2	48	2,5 kA	10 kA	BDG-048-V/1-FR1	DIN 35	
K-Bus		2	24	2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
LUXMATE-Bus		2	24	2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
Procontic CS31 (RS-232)		2	15	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35	
Profibus-DP/FMS high-speed lines	up to 1,5 Mbit/s	2	9	x	10 kA	DM-006/1R DJ	DIN 35	
		2	6	2,5 kA	10 kA	BDM-006-V/1-FR1	DIN 35	
	up to 20 Mbit/s	9	18	x	150 A	DL-RS DD9	Canon	
	up to 50 Mbit/s	2	6/15	x	5 kA	DMHF-xx/1-Ry*	DIN 35	
		3/4	6/24	2,5 kA	10 kA	BDMHF-xx-V/1-4FR1	DIN 35	
		2	6/24	2,5 kA	10 kA	BDMHF-xx-V/1-FR1	DIN 35	
		2	6 ÷ 24	2,5 kA	10 kA	BDGHF-xx-V/1-FR1	DIN 35	
		2+2	6 ÷ 24	2,5 kA	10 kA	BDGHF-xx-V/2-FR1	DIN 35	
R-Bus		2	6	2,5 kA	10 kA	BDG-006-V/1-FR1	DIN 35	
SDLS		2	6	x	5 kA	CLSA-6	Krone LSA+	
Securilan-LON-Bus		2	6	2,5 kA	10 kA	BDG-006-V/1-FR1	DIN 35	
SIGMA SYS		2	48	2,5 kA	10 kA	BDG-048-V/1-FR1	DIN 35	
(Siemens EPS)		2	48	2,5 kA	10 kA	BDM-048-V/1-FR1	DIN 35	
SS97 SINIS (RS-232)		2	15	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35	
SUCONET		2	6	2,5 kA	10 kA	BDG-006-V/1-FR1	DIN 35	
TELEPERM M analog input		2	12	2,5 kA	10 kA	BDM-012-V/1-FR1	DIN 35	
		2	24	2,5 kA	10 kA	BDM-024-V/1-FR1	DIN 35	
		2	12	x	5 kA	CLSA-12	Krone LSA+	
		2	24	x	5 kA	CLSA-24	Krone LSA+	
TELEPERM M binary I/O		2	48	x	10 kA	DM-048/1L DJ	DIN 35	
		2	48	2,5 kA	10 kA	BDM-048-V/1-FR1	DIN 35	
		2	12	x	10 kA	DM-012/1L DJ	DIN 35	
		2	12	2,5 kA	10 kA	BDM-012-V/1-FR1	DIN 35	
TELEPERM MFM100		2	12	2,5 kA	10 kA	BDG-012-V/1-FR1	DIN 35	
TTY		2	6 ÷ 24	x	10 kA	DM-xxx/1R DJ	DIN 35	
		2	6 ÷ 24	2,5 kA	10 kA	BDM-xxx-V/1-FR1	DIN 35	
Potential-free (isolated) contacts		1	6 ÷ 110	x	10 kA	DMJ-xx/2-Ry*	DIN 35	
				2,5 kA	10 kA	BDM-xx-V/2-JFR1	DIN 35	
				2,5 kA	10 kA	BDM-xx-V/2-JFR2	DIN 35	
				2,5 kA	10 kA	BDM-xx-V/4-JFR1	DIN 35	
				2,5 kA	10 kA	BDM-xx-V/4-JFR1	DIN 35	
Protection against power crossing of lines up to 400 V		2	24/48	x	5 kA	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	Mounting	Notes
			10/350 µs	8/20 µs			
ADSL analog line	2	170	x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	2,5 kA	DL-TLF-UHF	DIN 35	
			2,5 kA	10 kA	BDG-230-V/1-FR	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
Analog telephone line	2	170	x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-UHF	DIN 35	
			2,5 kA	10 kA	BDG-230-V/1-FR	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
DATEX-P	2	24	x	5 kA	CLSA-24	LSA plus	disconnection
			x	5 kA	DMG-024/1-Ry*	DIN 35	
			2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
ISDN U_{K0}	2	120	x	2,5 kA	DL-ISDN RJ45	DIN 35	
			x	5 kA	CLSA-ISDN	LSA plus	disconnection
Modem M1	2	15	x	5 kA	CLSA-24	LSA plus	disconnection
			x	5 kA	DMG-024 1R-Ry*	DIN 35	isolated signal ground
			2,5 kA	10 kA	BDG-024-V/1-FR1	DIN 35	
			2,5 kA	10 kA	BDM-24-V/1-FR1	DIN 35	
Telephony systems (eg. Siemens, HICOM, ALCATEL)	2	170	x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-UHF	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
T-DSL	2	170	x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	5 kA	CLSA-TLF	LSA plus	disconnection
			x	2,5 kA	DL-TLF-UHF	DIN 35	
			2,5 kA	10 kA	BDGHF-230-V/1-FR	DIN 35	
	2+2		2,5 kA	10 kA	BDGHF-230-V/2-FR	DIN 35	
	2		2,5 kA	x	BD-250-T-V/2-16	DIN 35	
Multipurpose coarse protection	2	180	2,5 kA	x	BD-250-T-V/2-16	DIN 35	
				x	BD-250-T-V/2-F16	DIN 35	
		70	2,5 kA	x	BD-090-T-V/2-16	DIN 35	
				x	BD-090-T-V/2-F16	DIN 35	
		180	2,5 kA	x	BD-250-T	DIN 35	
		70	2,5 kA	x	BD-090-T	DIN 35	
VDSL	2	170	x	2,5 kA	FAX-OVERDRIVE ...		
			x	5 kA	CLSA-DSL	LSA plus	disconnection
			x	2,5 kA	DL-TLF-UHF	DIN 35	
			2,5 kA	x	BD-250-T-V/2-16	DIN 35	
VDSL2, VDSL3	2	60	x	2,5 kA	DL-VDSL3	DIN 35	

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

ETHERNET AND GENERAL STRUCTURED CABLING								
Application	Protected pairs	Max. bitrate	Impulse current per core [A]		PoE compatibility (IEEE802.3)	SPD type	Mounting	LPZ location
			10/350 µs	8/20 µs				
Gigabit Ethernet (without PoE)	4	10 Gbps	x	200	NO	DL-Cat. 6A	DIN 35	LPZ 1 ->
	4	10 Gbps	x	200	NO	DL-Cat.6A-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
Gigabit Ethernet with PoE	4	1 Gbps	250	150	af/at/bt	DL-1G-RJ45-PoE-AB	DIN 35	LPZ 0_B ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-RJ45-PoE-AB	DIN 35	LPZ 0_B ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-PoE-IP66	outdoor panel/pole	LPZ 0 ->
	4	1 Gbps	250	150	af/at/bt	DL-1G-POE-M	DL-PL-RACK-1U	LPZ 0_B ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-POE-M	DL-PL-RACK-1U	LPZ 0_B ->
	4	10 Gbps	x	200	af/at/bt	DL-Cat.6A-60V-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	10 Gbps	x	200	af/at/bt	DL-Cat.6A-60V	DIN 35	LPZ 1 ->
Gigabit Ethernet PoE Injector	4	1 Gbps	250	150	af/at	DL-1G-POE-INJECTOR	DIN 35	LPZ 0_B ->
	4	1 Gbps	250	150	af/at	DL-1G-POE-PCB-INJECTOR	DL-CS-RACK-1U-INJECTOR	LPZ 0_B ->
General structured cabling (IP telephony, KNX, DMX, RS-485,...)	4	1 Gbps	250	150	af/at/bt	DL-1G-60V-PoE	DIN 35	LPZ 0_B ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-60V-PoE	DIN 35	LPZ 0_B ->
	4	10 Gbps	x	200	af/at/bt	DL-Cat.6A-60V-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->
	4	1 Gbps	250	150	af/at/bt	DL-1G-60V-PoE-M	DL-PL-RACK-1U	LPZ 0_B ->
	4	10 Gbps	250	150	af/at/bt	DL-10G-60V-PoE-M	DL-PL-RACK-1U	LPZ 0_B ->
Ethernet, Fast Ethernet, Token Ring, CDDI/FDDI	4	10 Gbps	x	200	NO	DL-Cat. 6A	DIN 35	LPZ 1 ->
	2 + 1 PoE	500 Mbps	x	1500	af	DL-Cat.5e POE plus	DIN 35	LPZ 1 ->
	4	10 Gbps	x	200	NO	DL-Cat.6A-M (-R-M)	DL-PL-RACK-1U	LPZ 1 ->

SALTEK® SPD applications in data / signalling / telecommunication systems

TELECOMMUNICATIONS AND RADIOCOMMUNICATIONS (COAXIAL INTERFACES)									
Application	Power load CW* [W]	Frequency range [GHz]	Max. DC load [A]	Impulse current per core [kA]		SPD type	Connectors	Impedance	LPZ location
				10/350 µs	8/20 µs				
Transmitters	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	295	DC - 3,8	6	2,5	10	HX-230 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	570	DC - 3,5	6	2,5	10	HX-350 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	1175	DC - 3,0	6	2,5	10	HX-470 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	tuning based	tuned (NB)	NO	5	20	ZX-xxx N50	N (F/F)	50 Ω	LPZ 0 ->
Transceivers, cellular networks (GSM, GSM-R, UMTS, 3G, LTE, 4G, 5G, TETRA,…)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	295	DC - 3,8	6	2,5	10	HX-230 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	570	DC - 3,5	6	2,5	10	HX-350 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	1175	DC - 3,0	6	2,5	10	HX-470 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	tuning based	tuned (NB)	NO	5	20	ZX-xxx N50	N (F/F)	50 Ω	LPZ 0 ->
Professional receivers (GPS, Galileo, Glonass, Beidou, SAT LNB, measuring and monitoring receivers,...)	x	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 ->
	x	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	x	DC - 3,0	0,7	0,5	2,5	SX-090-B50 F/F	BNC (F/F)	50 Ω	LPZ 0_B ->
	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0_B ->
	x	DC - 2,15	4	2,5	10	FX-090 F75 T F/F	F (F/F)	75 Ω	LPZ 0 ->
Commercial TV/SAT receivers (DVB-T2, DVB-S2,…)	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0_B ->
Microwave PtP links (split)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
Microwave PtP links (all outdoor)	x	0,5	2x 1 (PoE)	0,25	0,15	DL-10G-PoE-IP66	RJ45	100 Ω	LPZ 0 ->
Coaxial video networks (CCTV, analogue)	x	0,15	0,06	x	5	VL-B75 F/F	BNC (F/F)	75 Ω	LPZ 1 ->
	x	DC - 2,15	4	2,5	10	FX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0 ->
	x	DC - 2,15	0,7	0,5	2,5	SX-090-F75 F/F	F (F/F)	75 Ω	LPZ 0_B ->
WLAN, WiFi (coaxial interfaces)	45	DC - 3,8	6	2,5	10	HX-090 SMA50	SMA (F/M)	50 Ω	LPZ 0 ->
	45	DC - 3,8	6	2,5	10	HX-090 N50	N (F/M,F/F)	50 Ω	LPZ 0 ->
	x	DC - 3,0	0,7	0,5	2,5	SX-090-B50 F/F	BNC (F/F)	50 Ω	LPZ 0_B ->

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

SPDs for data / signalling / telecommunication networks

Devices with pluggable module

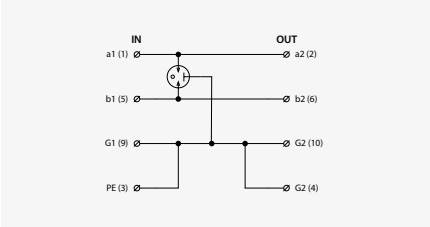
- SPDs with coarse and fine protection
- Pluggable modules for easy replacement
- For 1 up to 4-core lines
- Multiple core lines save the space
- All variants in “F” version with separated line and protective earth

- Line BD – lightning current arresters
- Line BDM – for 2/3/4-core communication lines
- Line BDG – with separated signal ground and protective earth
- Line BDMHF, BDGHF – for high-speed lines
- Line DMP – for protection of signal and low-voltage power line
- Line DP – for extra-low voltage circuits

Overview of SPDs for data / signalling / telecommunication networks

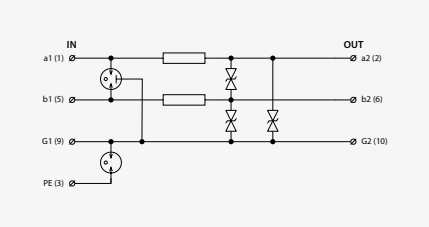
Devices with pluggable module

BD-…-T…



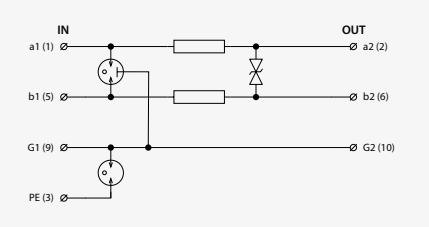
2 core line incoming from LPZ 0 to structure.
See page: 109

BDM-…



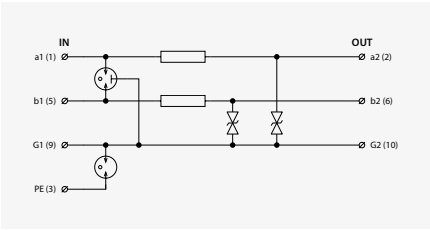
2-3 core line incoming from LPZ 0 to structure with one-pole connected with ground.
See page: 110–113

BDG-…



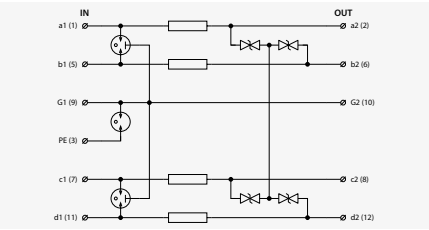
2 core floating line incoming from LPZ 0 to structure.
See page: 114–117

BDM-…-J…



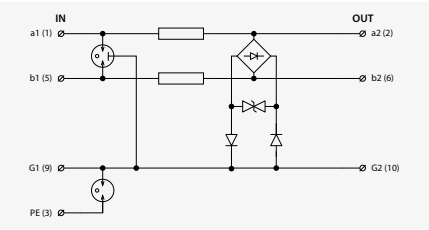
Single core lines.
See page: 118–120

BDG-…-4…



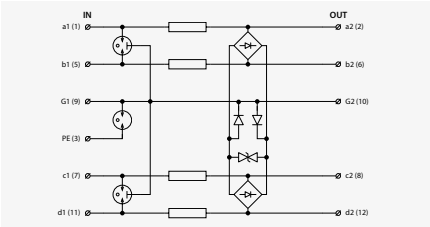
3-4 core floating line.
See page: 121

BDMHF-…



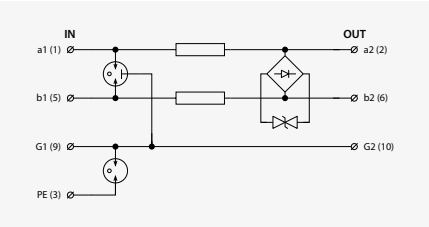
2 or 3 cores high-speed line.
See page: 122

BDMHF-…-4…



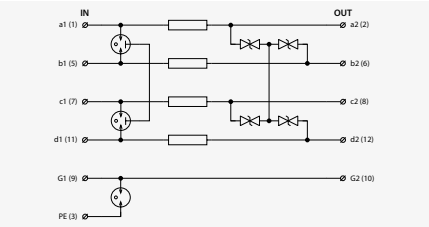
3-4 core high-speed line.
See page: 123

BDGHF-…



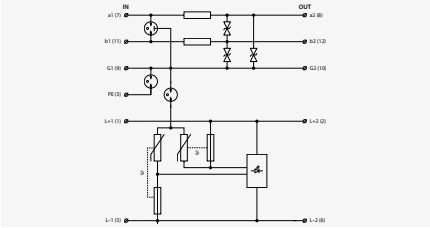
2 core high-speed floating line.
See page: 124–125

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



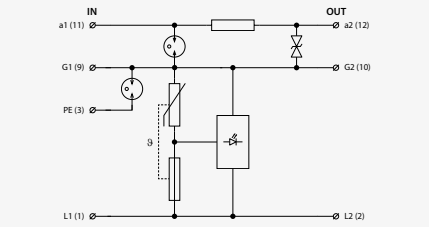
Up to 4 core line with diferential surge protection. Line separated from ground.
See page: 126

DMP-…



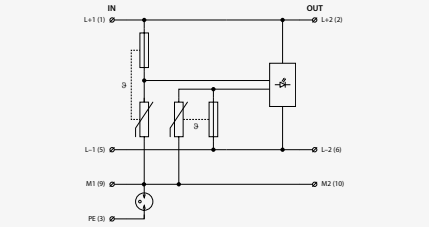
2 core line combined with power supply.
See page: 127

DMP-…-J…



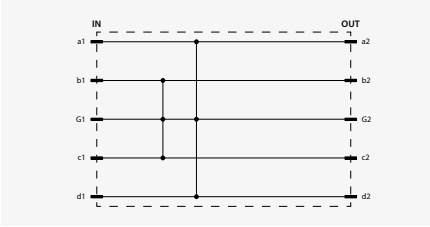
Single core line combined with power supply.
See page: 128

DP-…-16



Power supply 12, 24, 48, 60 V up to 16 A.
See page: 129

DMZ-V-0 (Accessories)



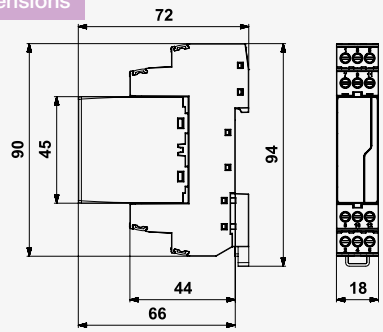
Short-circuiting module for maintenance of signalling lines.
See page: 200

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

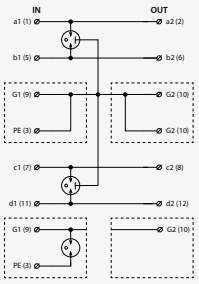
Lightning current arresters, ST1 with plugable module
pluggable module

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

Dimensions



Basic circuit diagram



connection for
BD-...-T-V/2-F16

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 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	-	-	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	550 V	550 V	-	-
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	-	-	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/µs	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
Treshold frequency core-core	f	120 MHz	120 MHz	120 MHz	120 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A05550	A05551	A05554	A05555

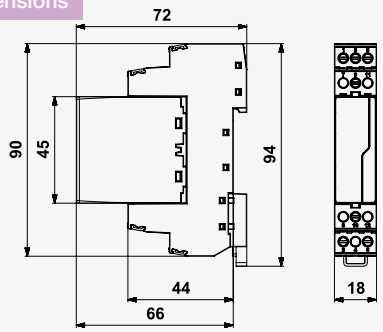
Spare module	BD-090-T-V/2-0	BD-250-T-V/2-0	BD-090-T-V/2-0	BD-250-T-V/2-0
Ordering number	A05390	A05391	A05390	A05391

BDM-...-V/1-FR1

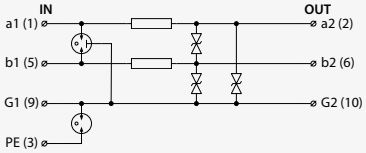
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

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
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 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 GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND 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 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
Treshold frequency core-core	f	0,8 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A05709	A05710	A05711	A05712

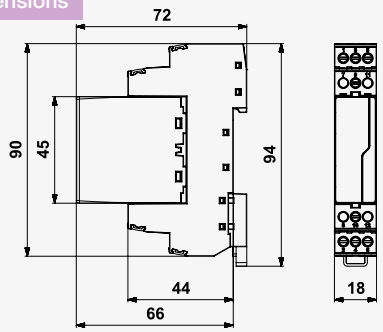
Spare module	BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0
Ordering number	A05501	A05502	A05503	A05504

BDM-…-V/1-FR.

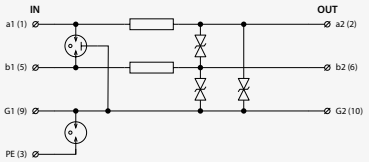
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-060-V/1-FR1	BDM-230-V/1-FR	BDM-230-V/1-FR1
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	60 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	45 V AC / 64 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	85 V	350 V	350 V
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	550 V	550 V	550 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	85 V	350 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	3,3 Ω	1,6 Ω
Treshold frequency core-core	f	6,5 MHz	11 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2		
Ordering number		A06438	A05713	A06461

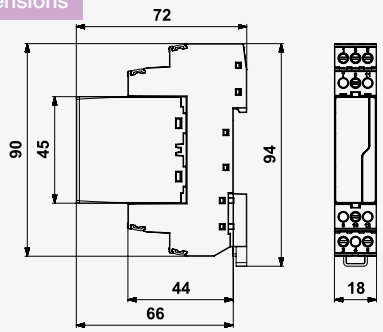
Spare module	BDM-060-V/1-0	BDM-230-V/1-0	BDM-230-V/1-0
Ordering number	A06437	A05505	A05505

BDM-...-V/1-FR2

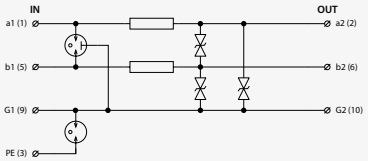
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-006-V/1-FR2	BDM-012-V/1-FR2	BDM-024-V/1-FR2	BDM-048-V/1-FR2	BDM-060-V/1-FR2
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC	60 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	I_L	2 A	2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	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	85 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	12 V	22 V	46 V	65 V	85 V
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,4 Ω	0,4 Ω	0,4 Ω	0,4 Ω	0,4 Ω
Treshold frequency core-core	f	0,8 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2				
Ordering number		A06385	A06398	A06411	A06424	A06439

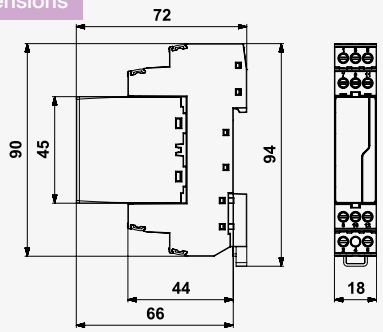
Spare module	BDM-006-V/1-0	BDM-012-V/1-0	BDM-024-V/1-0	BDM-048-V/1-0	BDM-060-V/1-0
Ordering number	A05501	A05502	A05503	A05504	A06437

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

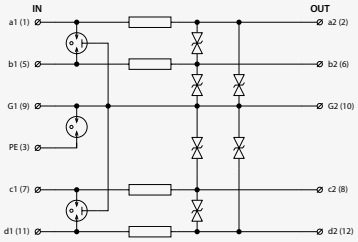
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-006-V/2-FR1	BDM-012-V/2-FR1	BDM-024-V/2-FR1	BDM-048-V/2-FR1	BDM-060-V/2-FR1	BDM-230-V/2-FR
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	230 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) 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/µs	U_p	12 V	22 V	46 V	65 V	85 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	12 V	22 V	46 V	65 V	85 V	350 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA	1 ns
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA	2,5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns	1 ns	5 kA
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	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Treshold frequency core-core	f	0,8 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz	11 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2					
Ordering number		A06388	A06401	A06414	A06427	A06443	A06464

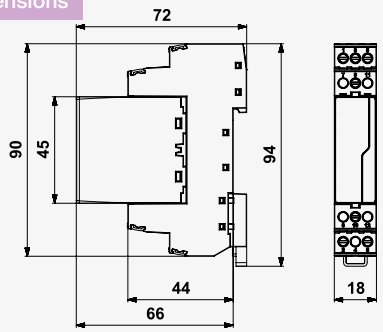
Spare module	BDM-006-V/2-0	BDM-012-V/2-0	BDM-024-V/2-0	BDM-048-V/2-0	BDM-060-V/2-0	BDM-230-V/2-0
Ordering number	A06387	A06400	A06413	A06426	A06442	A06463

BDG-...-V/1-FR1

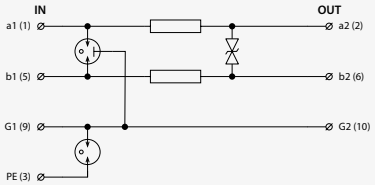
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

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
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 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 GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND 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 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
Treshold frequency core-core	f	1,2 MHz	3 MHz	6 MHz	7 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A05704	A05705	A05706	A05707

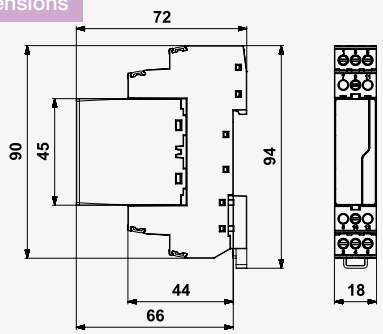
Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0
Ordering number	A05399	A05400	A05401	A05402

BDG-…-V/1-FR.

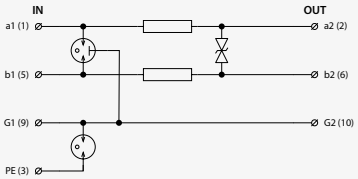
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDG-060-V/1-FR1	BDG-230-V/1-FR	BDG-230-V/1-FR1
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	60 V DC	230 V DC	230 V DC
Maximum operating voltage	U_c	45 V AC / 64 V DC	177 V AC / 250 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	0,5 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	85 V	350 V	350 V
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	550 V	550 V	550 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	550 V	550 V	550 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	3,3 Ω	1,6 Ω
Treshold frequency core-core	f	10 MHz	16 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2		
Ordering number		A06499	A05708	A06514

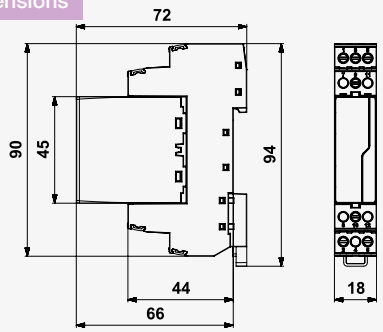
Spare module	BDG-060-V/1-0	BDG-230-V/1-0	BDG-230-V/1-0
Ordering number	A06498	A05403	A05403

BDG-...-V/1-FR2

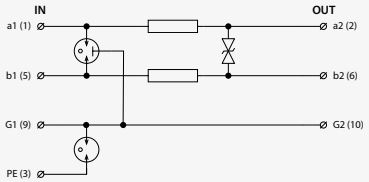
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDG-006-V/1-FR2	BDG-012-V/1-FR2	BDG-024-V/1-FR2	BDG-048-V/1-FR2	BDG-060-V/1-FR2
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC	60 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	I_L	2 A	2 A	2 A	2 A	2 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) per core GND-PE	I_n	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	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	85 V
C3 voltage protection level mode core GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,4 Ω	0,4 Ω	0,4 Ω	0,4 Ω	0,4 Ω
Treshold frequency core-core	f	1,2 MHz	3 MHz	6 MHz	7 MHz	10 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2				
Ordering number		A06469	A06477	A06485	A06493	A06500

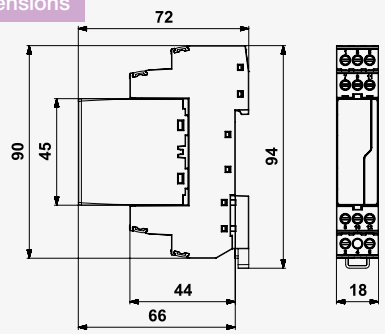
Spare module	BDG-006-V/1-0	BDG-012-V/1-0	BDG-024-V/1-0	BDG-048-V/1-0	BDG-060-V/1-0
Ordering number	A05399	A05400	A05401	A05402	A06498

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

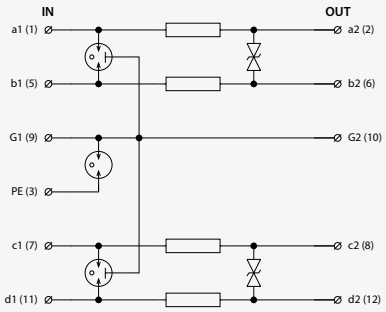
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDG-006-V/2-FR1	BDG-012-V/2-FR1	BDG-024-V/2-FR1	BDG-048-V/2-FR1	BDG-060-V/2-FR1	BDG-230-V/2-FR
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC	60 V DC	230 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) per core GND-PE	I_n	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA	20 kA	20 kA	20 kA	10 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	22 V	46 V	65 V	85 V	350 V
C3 voltage protection level mode core GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V	550 V
C3 voltage protection level mode core-GND at 1 kV/µs	U_p	550 V	550 V	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Treshold frequency core-core	f	1,2 MHz	3 MHz	6 MHz	7 MHz	10 MHz	16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2					
Ordering number		A06472	A06480	A06488	A06496	A06504	A06517

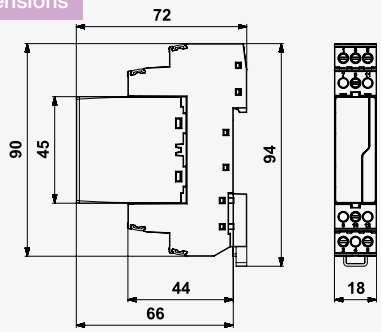
Spare module	BDG-006-V/2-0	BDG-012-V/2-0	BDG-024-V/2-0	BDG-048-V/2-0	BDG-060-V/2-0	BDG-230-V/2-0
Ordering number	A06471	A06479	A06487	A06495	A06503	A06516

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

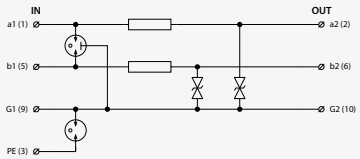
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-006-V/2-JFR1	BDM-006-V/2-JFR2	BDM-012-V/2-JFR1	BDM-012-V/2-JFR2
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	6 V DC	12 V DC	12 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC	11 V AC / 16 V DC	11 V AC / 16 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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 GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	12 V	12 V	22 V	22 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Treshold frequency core-GND	f	0,8 MHz	0,8 MHz	2 MHz	2 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A06390	A06391	A06403	A06404

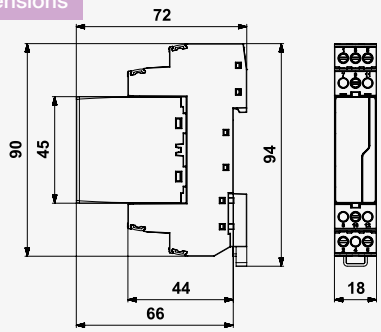
Spare module	BDM-006-V/2-J-0	BDM-006-V/2-J-0	BDM-012-V/2-J-0	BDM-012-V/2-J-0
Ordering number	A06389	A06389	A06402	A06402

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

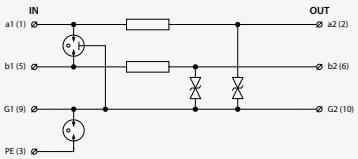
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-024-V/2-JFR1	BDM-024-V/2-JFR2	BDM-048-V/2-JFR1	BDM-048-V/2-JFR2
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	24 V DC	24 V DC	48 V DC	48 V DC
Maximum operating voltage	U_c	25 V AC / 36 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	36 V AC / 51 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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 GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	46 V	46 V	65 V	65 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,4 Ω	0,8 Ω	0,4 Ω
Treshold frequency core-GND	f	4 MHz	4 MHz	5 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A06416	A06417	A06429	A06430

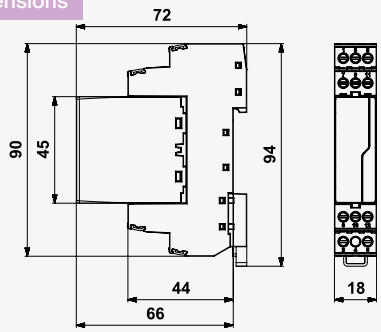
Spare module	BDM-024-V/2-J-0	BDM-024-V/2-J-0	BDM-048-V/2-J-0	BDM-048-V/2-J-0
Ordering number	A06415	A06415	A06428	A06428

BDM-...-V/4-JFR1

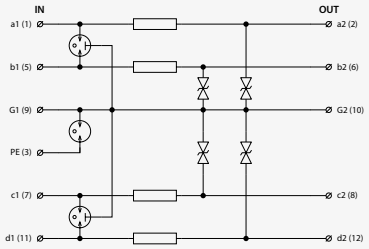
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDM-006-V/4-JFR1	BDM-012-V/4-JFR1	BDM-024-V/4-JFR1	BDM-048-V/4-JFR1
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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 GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	12 V	22 V	46 V	65 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω
Treshold frequency core-GND	f	0,8 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A06396	A06409	A06422	A06435

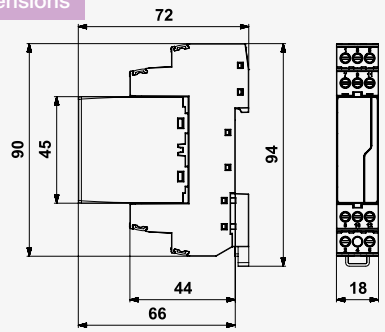
Spare module	BDM-006-V/4-J-0	BDM-012-V/4-J-0	BDM-024-V/4-J-0	BDM-048-V/4-J-0
Ordering number	A06395	A06408	A06421	A06434

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

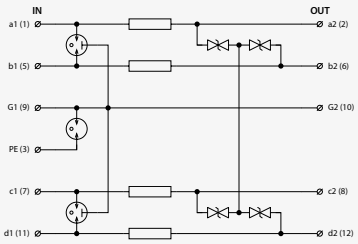
Lightning current arrester with coarse and fine surge protection, ST1+2+3 with plugable module
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDG-006-V/1-4FR1	BDG-012-V/1-4FR1	BDG-024-V/1-4FR1	BDG-048-V/1-4FR1
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_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 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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	18 V	24 V	46 V	90 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	0,8 Ω
Treshold frequency core-core	f	1,2 MHz	3 MHz	6 MHz	7 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2			
Ordering number		A06467	A06475	A06483	A06491

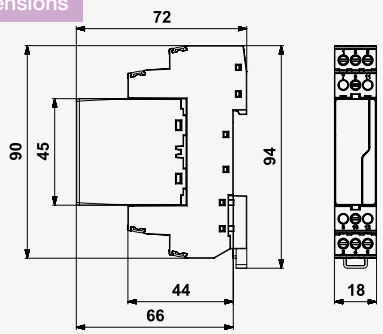
Spare module	BDG-006-V/1-4-0	BDG-012-V/1-4-0	BDG-024-V/1-4-0	BDG-048-V/1-4-0
Ordering number	A06466	A06474	A06482	A06490

BDMHF-...-V/1-FR1

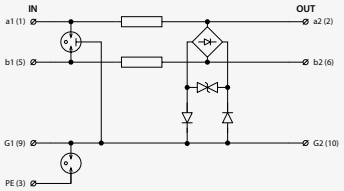
Surge protection for industrial communication bus (eg. PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDMHF-006-V/1-FR1	BDMHF-024-V/1-FR1
Connection (input – output)		terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	24 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current	I_L	1 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	14 V	48 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	–	–
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	14 V	48 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	–	–
Response time GND-PE	t_a	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω
Treshold frequency core-core	f	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number		A06547	A06553

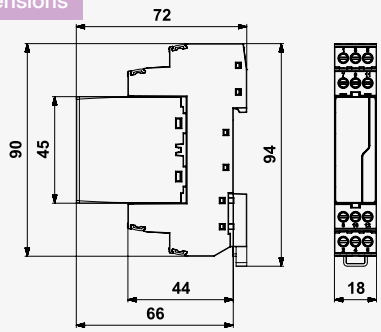
Spare module	BDMHF-006-V/1-0	BDMHF-024-V/1-0
Ordering number	A06543	A06549

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

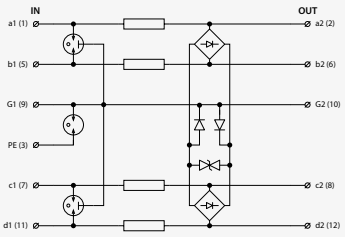
Surge protection for industrial communication bus (eg. PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDMHF-006-V/1-4FR1	BDMHF-024-V/1-4FR1
Connection (input – output)		terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	24 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	25 V AC / 36 V DC
Nominal load current	I_L	1 A	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA
C3 volt. prot. lev. mode core-core at 1 kV/µs	U_p	16 V	48 V
C3 volt. prot. lev. mode core-PE at 1 kV/µs	U_p	–	–
C3 volt. prot. lev. mode GND-PE at 1 kV/µs	U_p	550 V	550 V
C3 volt. prot. lev. mode core GND at 1 kV/µs	U_p	16 V	48 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	–	–
Response time GND-PE	t_a	100 ns	100 ns
Response time core-GND	t_a	1 ns	1 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω
Treshold frequency core-core	f	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number		A06545	A06551

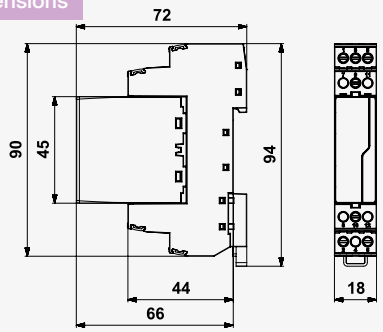
Spare module	BDMHF-006-V/1-4-0	BDMHF-024-V/1-4-0
Ordering number	A06544	A06550

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

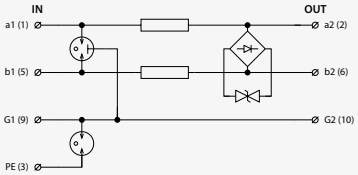
Surge protection for industrial communication bus (eg. PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDGHF-006-V/1-FR1	BDGHF-012-V/1-FR1	BDGHF-024-V/1-FR1	BDGHF-230-V/1-FR
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	230 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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	14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Treshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
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 / D1, C2			
Ordering number		A06520	A06526	A06532	A06538

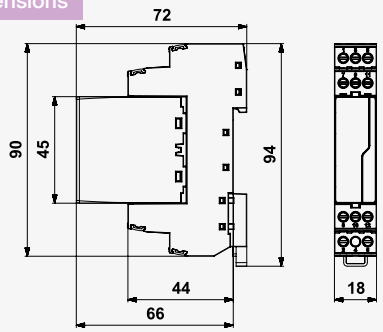
Spare module	BDGHF-006-V/1-0	BDGHF-012-V/1-0	BDGHF-024-V/1-0	BDGHF-230-V/1-0
Ordering number	A06519	A06525	A06531	A06537

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

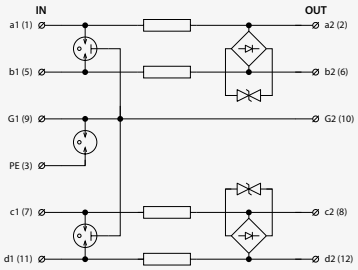
Surge protection for industrial communication bus (eg. PROFIBUS)
pluggable module, coupling impedance (R – resistance), line separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		BDGHF-006-V/2-FR1	BDGHF-012-V/2-FR1	BDGHF-024-V/2-FR1	BDGHF-230-V/2-FR1
Connection (input – output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 1+2+3	ST 1+2+3	ST 1+2+3	ST 1+2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	230 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	177 V AC / 250 V DC
Nominal load current	I_L	1 A	1 A	1 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA	20 kA	20 kA	20 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	14 V	24 V	48 V	350 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
C3 voltage protection level mode core GND at 1 kV/µs	U_p	550 V	550 V	550 V	550 V
D1 lightning impulse current (10/350 µs) per core	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA	5 kA	5 kA
Response time core-core	t_a	1 ns	1 ns	1 ns	1 ns
Response time GND-PE	t_a	100 ns	100 ns	100 ns	100 ns
Response time core-GND	t_a	100 ns	100 ns	100 ns	100 ns
Serial resistance per core	R	0,8 Ω	0,8 Ω	0,8 Ω	3,3 Ω
Treshold frequency core-core	f	70 MHz	70 MHz	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
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 / D1, C2			
Ordering number		A06523	A06529	A06535	A06541

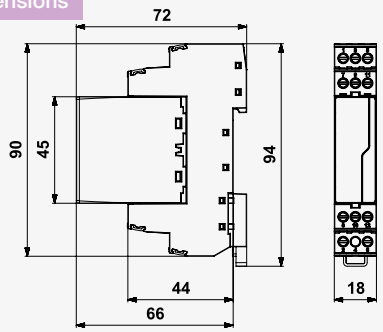
Spare module	BDGHF-006-V/2-0	BDGHF-012-V/2-0	BDGHF-024-V/2-0	BDGHF-230-V/2-0
Ordering number	A06522	A06528	A06534	A06540

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

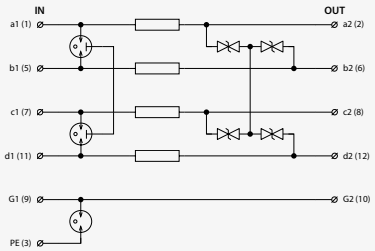
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 with plugable module
pluggable module, coupling impedance (R – resistance), shielding (G) separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



Parameter / Type		DMG-024-V/1-4FR1-DIF
Connection (input – output)		terminals-terminals
Location of SPD		ST 2+3
Nominal voltage	U_n	24 V DC
Maximum operating voltage	U_c	25 V AC / 36 V DC
Nominal load current	I_L	1 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA
C2 nominal discharge current (8/20 µs) GND-PE	I_n	20 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	46 V
C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V
Response time core-core	t_a	1 ns
Response time GND-PE	t_a	100 ns
Serial resistance per core	R	0,8 Ω
Treshold frequency core-core	f	6 MHz
Isolation voltage core-GND(PE)		> 4 kV
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2
Ordering number		A06281

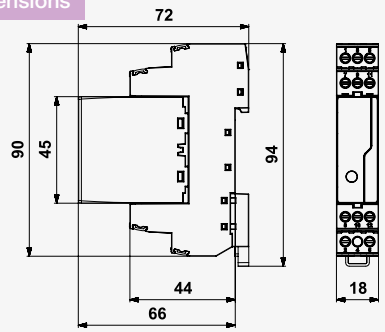
Spare module	DMG-024-V/1-4-0
Ordering number	A06282

DMP-...-V/1-FR1

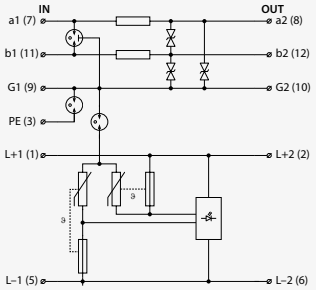
Combination of surge protections for signal and supply lines
pluggable module, coupling impedance (R – resistance) in part of data, line separated from protective earth via GDT

- combination of two-stage surge protection of 2-core signalling line in data part and surge protection for ELV in supply part
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection systems, etc., mainly for measuring circuits and sensors where signal and supply are transmited 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
line part: Nominal load current	I_L	1 A	1 A
line part: C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA
line part: C3 voltage protection level mode core-core at 1 kV/µs	U_p	22 V	46 V
line part: C3 voltage protection level mode GND-PE at 1 kV/µs	U_p	550 V	550 V
line part: Response time core-core	t_a	1 ns	1 ns
line part: Response time GND-PE	t_a	100 ns	100 ns
line part: Serial resistance per core	R	0,8 Ω	0,8 Ω
line part: Treshold frequency core-core	f	2 MHz	4 MHz
power part: Nominal load current	I_L	16 A	16 A
power part: Test voltage L+(L-)-PE	U_{oc}	4 kV	4 kV
power part: Voltage protection level L+ - L-	U_p	0,18 kV	0,13 kV
power part: Voltage protection level L+(L-)-PE	U_p	0,95 kV	0,95 kV
power part: Maximum overcurrent protection		16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
power part: Response time L+ - L-		25 ns	25 ns
power part: Response time L+(L-)-PE		100 ns	100 ns
power part: Fault indication		red indicator	red indicator
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	
Ordering number		A05798	A05799

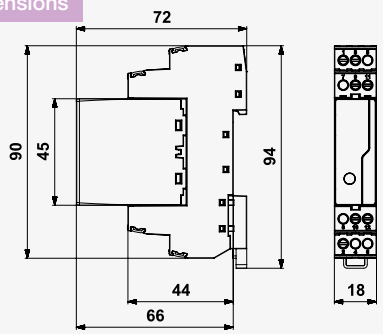
Spare module	DMP-012-V/1-0	DMP-024-V/1-0
Ordering number	A05814	A05815

DMP-...-V/1-JFR1

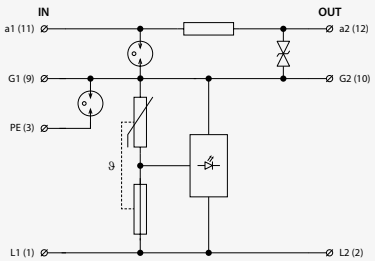
Combination of surge protections for signal and supply lines
pluggable module, coupling impedance (R – resistance) in part of data, line separated from protective earth via GDT

- surge protection of 3-core line comprehend signal transmission and supply
- installation close to protected equipment
- for protection of interfaces of I&C, electronic security and fire detection systems, etc., mainly for measuring circuits and sensors where signal and supply are transmited 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
line part	Nominal load current	I_L	1 A	1 A
	C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA
	C2 nominal discharge current (8/20 µs) GND-PE	I_n	10 kA	10 kA
	C3 voltage protection level mode GND-PE at 1 kV/µs	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
	Treshold frequency core-core	f	2 MHz	4 MHz
power part	Nominal load current	I_L	16 A	16 A
	Test voltage L+(L-)-PE	U_{oc}	4 kV	4 kV
	Voltage protection level L+(L-)-PE	U_p	0,75 kV	0,75 kV
	Maximum overcurrent protection		16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
	Response time L+(L-)-PE		100 ns	100 ns
	Fault indication		red indicator	red indicator
Cross-section of connected conductors solid (min/max)			0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)			0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection			IP 20	IP 20
Range of operating temperatures (min/max)			-40 °C / 70 °C	-40 °C / 70 °C
According to standard			EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	
Ordering number			A05802	A05803

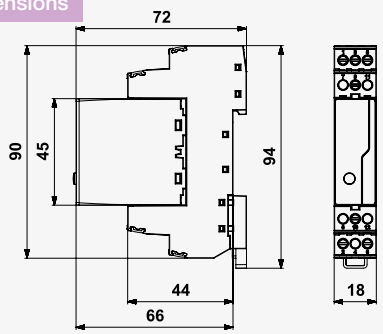
Spare module	DMP-012-V/1-J-0	DMP-024-V/1-J-0
Ordering number	A05816	A05817

DP-...-V/1-F16

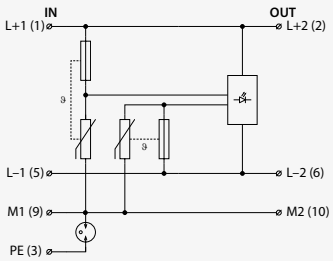
Surge protection for ELV power supply networks, with plugable module
pluggable module, visual fault signalling, middle conductor separated from protective earth via GDT

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

Dimensions



Basic circuit diagram



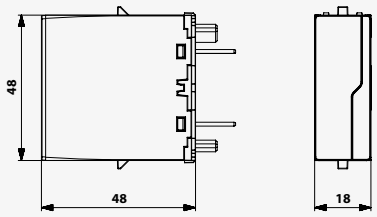
Parameter / Type		DP-012-V/1-F16	DP-024-V/1-F16	DP-048-V/1-F16
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC
Maximum operating voltage	U_c	20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current	I_L	16 A	16 A	16 A
C2 nominal discharge current (8/20 µs) per core	I_n	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at I_n	U_p	180 V	230 V	370 V
C2 voltage protection level mode core-PE at I_n	U_p	750 V	750 V	750 V
C2 voltage protection level mode core-PE at I_n		750 V	750 V	750 V
Test voltage L+ - L-		4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV
Test voltage M-PE		4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,18 kV	0,23 kV	0,37 kV
Voltage protection level L+(L-)-PE		0,75 kV	0,75 kV	0,75 kV
Voltage protection level M-PE		0,75 kV	0,75 kV	0,75 kV
Maximum overcurrent protection		16 A gL/gG or B 16 A	16 A gL/gG or B 16 A	16 A gL/gG or B 16 A
Response time L+ - L-		25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns
Response time M-PE		100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Fault indication		red indicator	red indicator	red indicator
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012, EN 61643-11:2012, IEC 61643-11:2011 / T3, C2		
Ordering number		A05664	A05665	A05666

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

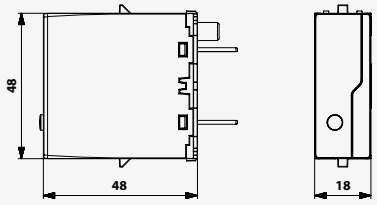
BD / BDM / BDG / BDMHF / BDGHF / DMP / DP-...-V/.-0

Replaceble modules of BD., DM., DP.

Dimensions



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



DMP-..., DP-...

Basic circuit diagram

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

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

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

SPDs for data / signalling / telecommunication networks

Compact devices

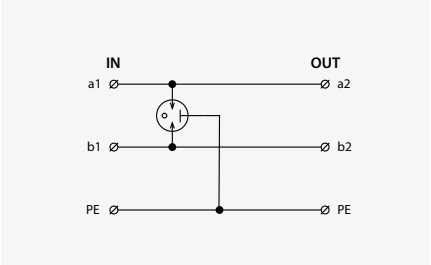
- SPDs with coarse and fine protection
- For 1 up to 4-core lines
- Multiple core lines save the space

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

Overview of SPDs for data / signalling / telecommunication networks

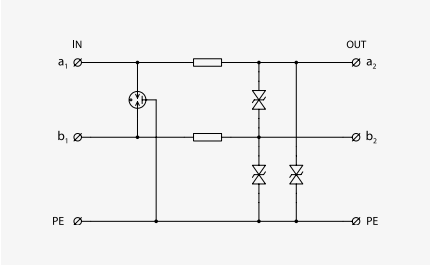
Compact devices

BD-…T



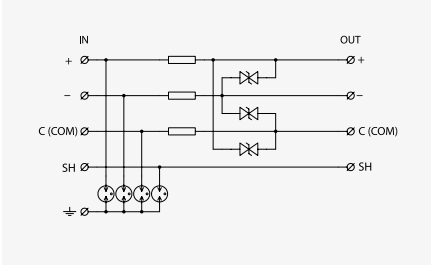
2 core line incoming from LPZ 0 to structure.
See page: 133

DM-…



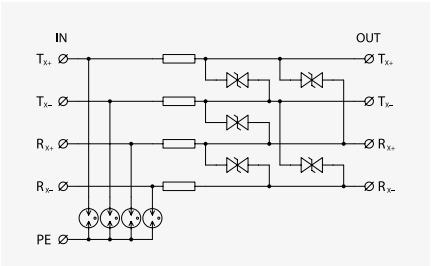
2-3 cores line incoming from LPZ 0 to structure with one-pole connected with ground.
See page: 134–135

DM- …/1 3R(L) DJ



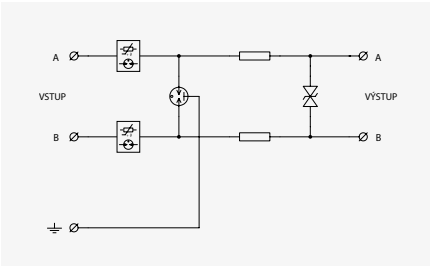
3 core floating line with shielding.
See page: 136–137

DM- …/1 4R DJ



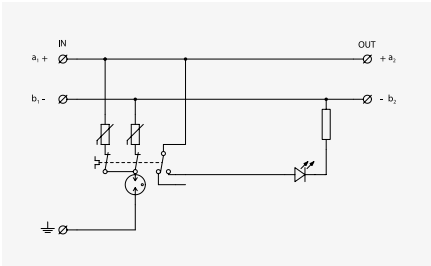
4 core floating line.
See page: 138

DMS-…-T



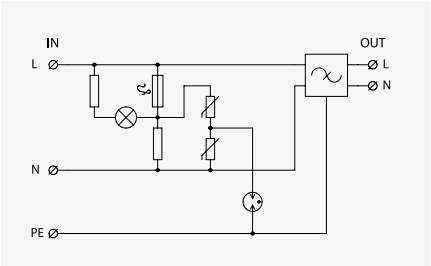
2 core line with current limiting function.
See page: 139

DP-…



Power supply 12, 24, 48 V up to 16 A.
See page: 141

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



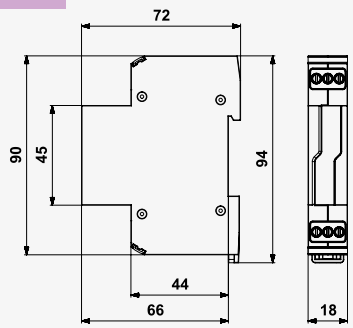
Power supply 24 V up to 6 A with integrated RFi filter.
See page: 142–143

BD-...-T

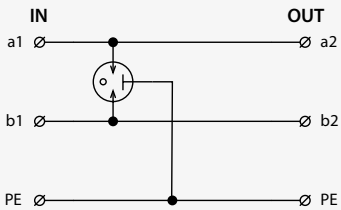
Lightning current arresters, compact ST1
compact device

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

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 µs) per core	I_n	10 kA	10 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	20 kA	20 kA
D1 impulse discharge current (10/350 µs) core-core	I_{imp}	2,5 kA	2,5 kA
D1 total discharge current (10/350 µs) cores-PE	I_{Total}	5 kA	5 kA
C3 voltage protection level mode core-core at 1 kV/µs	U_p	550 V	550 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	120 MHz	120 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / D1, C2	
Ordering number		A05821	A05822

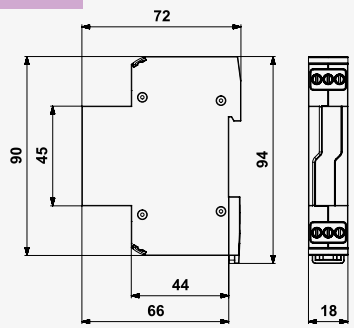
DM-.../1-R-DJ

NEW

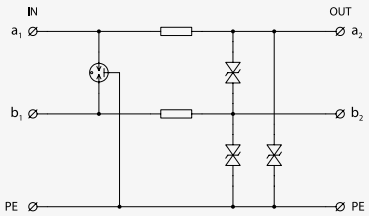
Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3
coupling impedance (R – resistance)

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

Dimensions



Basic circuit diagram



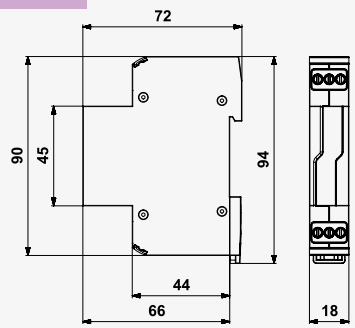
Parameter / Type		DM-006/1-R-DJ	DM-012/1-R-DJ	DM-024/1-R-DJ	DM-048/1-R-DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	35,6 V AC / 50,2 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 µs) 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	70 V
C2 voltage protection level mode core-PE at I_n	U_p	25 V	35 V	75 V	95 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	15 V	25 V	50 V	70 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	15 V	25 V	50 V	70 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 Ω	1 Ω	1 Ω	1 Ω
Treshold frequency core-core	f	1 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
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 / B2, C1, C2, C3			
Ordering number		A06726	A06727	A06728	A06729

DM-.../1-L2-DJ

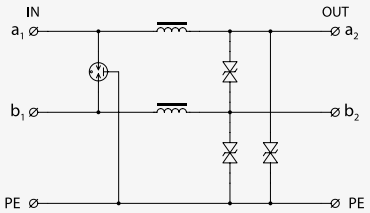
Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3
coupling impedance (L – inductance)

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

Dimensions



Basic circuit diagram



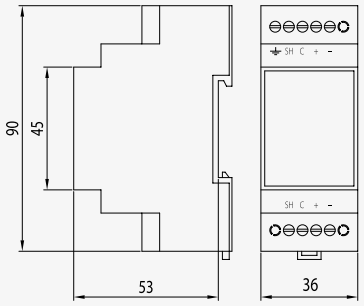
Parameter / Type		DM-012/1-L2-DJ	DM-024/1-L2-DJ	DM-048/1-L2-DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_L	2 A	2 A	2 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	35 V	75 V	95 V
C2 voltage protection level mode core-PE at I_n	U_p	35 V	75 V	95 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	25 V	50 V	70 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	25 V	50 V	70 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 inductance per core	L	100 mH	100 mH	100 mH
Treshold frequency core-core	f	150 kHz	150 kHz	150 kHz
Cross-section of connected conductors solid (max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2 / B2, C1, C2, C3		
Ordering number		A06731	A06732	A06733

DM-.../1 3R DJ

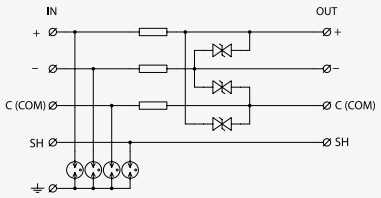
Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3
coupling impedance (R – resistance)

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

Dimensions



Basic circuit diagram



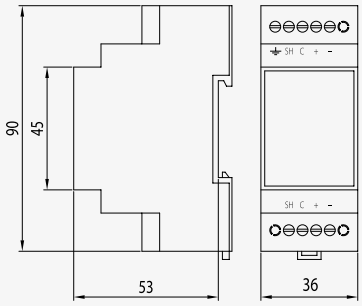
Parameter / Type		DM-006/1 3R DJ	DM-012/1 3R DJ	DM-024/1 3R DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC
Maximum operating voltage	U_c	5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current	I_L	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	25 V	35 V	50 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	650 V	650 V	650 V
Response time core-core	t_a	1 ns	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns	100 ns
Serial resistance per core	R	6,8 Ω	6,8 Ω	6,8 Ω
Treshold frequency core-core	f	1 MHz	1,7 MHz	3,4 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A01350	A01349	A01234

DM-.../1 3L DJ

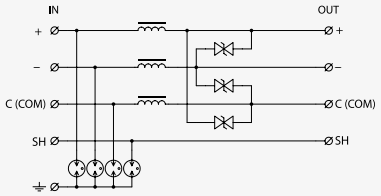
Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3
coupling impedance (L – inductance)

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

Dimensions



Basic circuit diagram



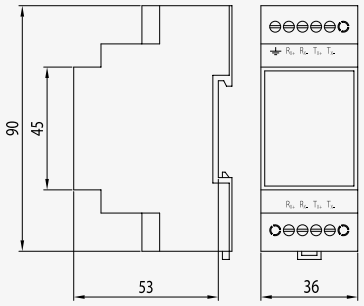
Parameter / Type		DM-006/1 3L DJ	DM-012/1 3L DJ	DM-024/1 3L DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC
Maximum operating voltage	U_c	5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current	I_L	0,37 A	0,37 A	0,37 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	25 V	35 V	50 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	650 V	650 V	650 V
Response time core-core	t_a	1 ns	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns	100 ns
Serial inductance per core	L	100 µH	100 µH	100 µH
Treshold frequency core-core	f	0,16 MHz	0,16 MHz	0,16 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A01402	A02094	A01519

DM-.../1 4R DJ

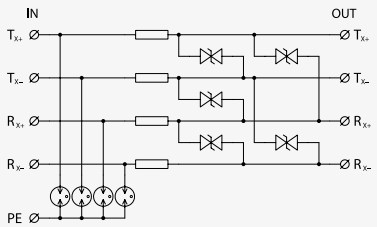
Coarse and fine surge protection for telecommunications and signalling network, compact ST2+3
coupling impedance (R – resistance)

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

Dimensions



Basic circuit diagram



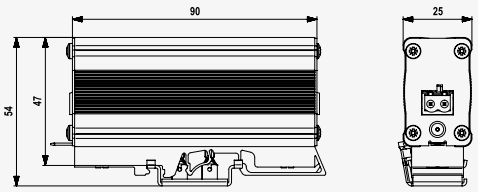
Parameter / Type		DM-006/1 4R DJ	DM-012/1 4R DJ	DM-024/1 4R DJ
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC
Maximum operating voltage	U_c	5,7 V AC / 8,1 V DC	10,2 V AC / 14,5 V DC	20,6 V AC / 29,1 V DC
Nominal load current	I_L	0,06 A	0,06 A	0,06 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	25 V	35 V	50 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	40 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	650 V	650 V	650 V
Response time core-core	t_a	1 ns	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns	100 ns
Serial resistance per core	R	6,8 Ω	6,8 Ω	6,8 Ω
Treshold frequency core-core	f	1 MHz	1,7 MHz	3,4 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A01675	A01689	A01357

DMS-...-T

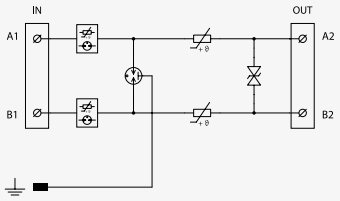
Special surge protection with limiting current
coupling impedance (resistance)

- special two-stage surge protection of 2-core signalling line with current limiting
- installation close to protected equipment
- for protection of communication interfaces, mainly the measuring loops, of I&C, electronic security and fire detection systems, etc. against surge voltage where are long parallel lines with power network
- coarse and fine surge protection in differential mode (core – core) and coarse surge protection in common mode (core – PE)

Dimensions



Basic circuit diagram



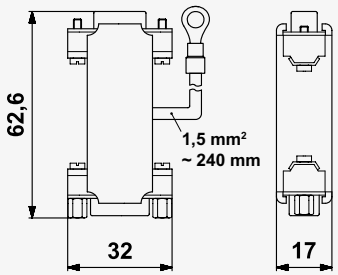
Parameter / Type		DMS-024-T	DMS-048-T
Connection (input - output)		terminals-terminals	terminals-terminals
Location of SPD		ST 2+3	ST 2+3
Nominal voltage	U_n	24 V DC	48 V DC
Maximum operating voltage	U_c	25 V AC / 33 V DC	39 V AC / 56 V DC
Nominal load current	I_L	0,06 A	0,06 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	75 V	110 V
C2 voltage protection level mode core-PE at I_n	U_p	500 V	500 V
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns
Serial resistance per core	R	13 Ω	13 Ω
Treshold frequency core-core	f	1,1 MHz	2,0 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2	
Ordering number		A06596	A06597

DL-RS DD9

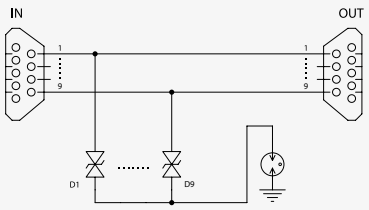
Surge protection for RS interfaces (with DSUB conectors)
DSUB 9 connectors

- 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



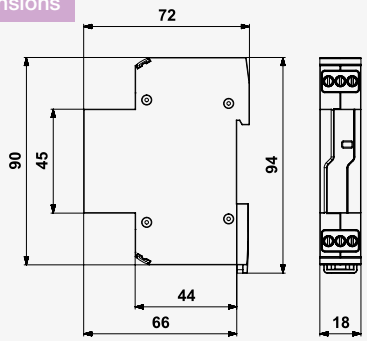
Parameter / Type		DL-RS DD9
Location of SPD		ST 3
Maximum operating voltage	U_c	12,7 V AC / 18 V DC
C1 nominal discharge current (8/20 µs) per core	I_n	150 A
C1 voltage protection level mode core-core at I_n	U_p	65 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	50 V
C3 voltage protection level mode core-PE at 1 kV/µs	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		A00968

DP-…-25

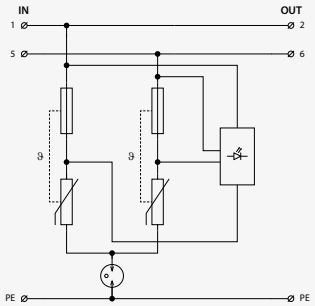
Surge protection for ELV power supply networks, compact version
visual fault signalling

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

Dimensions



Basic circuit diagram



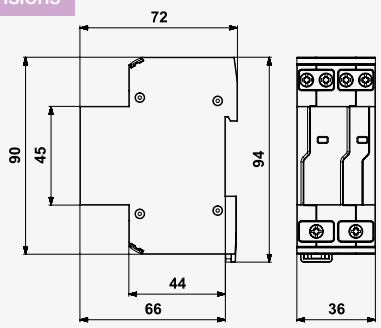
Parameter / Type		DP-012-25	DP-024-25	DP-048-25
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 2	ST 2
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC
Maximum operating voltage	U_c	20 V AC / 20 V DC	36 V AC / 36 V DC	60 V AC / 60 V DC
Nominal load current	I_L	25 A	25 A	25 A
C2 nominal discharge current (8/20 µs) per core	I_n	2 kA	2 kA	2 kA
C2 voltage protection level mode core-core at I_n	U_p	180 V	230 V	380 V
C2 voltage protection level mode core-PE at I_n	U_p	550 V	550 V	550 V
Test voltage L+ - L-		4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,18 kV	0,23 kV	0,38 kV
Maximum overcurrent protection		25 A gL/gG or C 25 A	25 A gL/gG or C 25 A	25 A gL/gG or C 25 A
Response time L+ - L-		25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns
Cross-section of connected conductors solid (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Fault indication		red indicator	red indicator	red indicator
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number		A06096	A06097	A06098

DPF-...DC-16

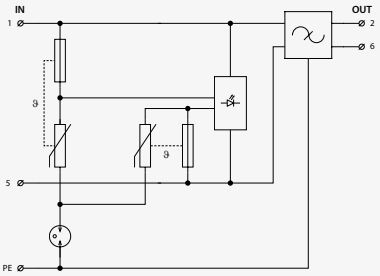
Surge protection for ELV power supply networks, with RFi filter
visual fault signalling

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

Dimensions



Basic circuit diagram



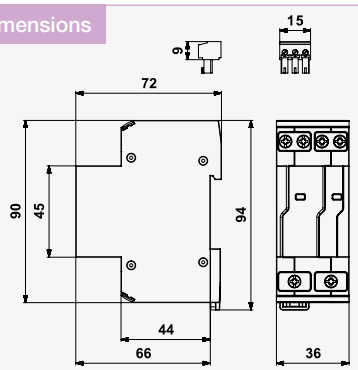
Parameter / Type		DPF-012DC-16	DPF-024DC-16	DPF-048DC-16
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC
Maximum operating voltage	U_c	20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current	I_L	16 A	16 A	16 A
Test voltage L+ - L-		4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,25 kV	0,29 kV	0,42 kV
Voltage protection level L+(L-)-PE		0,5 kV	0,5 kV	0,5 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L+ - L-		25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns
RFi filter		yes	yes	yes
Filter attenuation at 1MHz (50 Ω/50 Ω) symmetrical		45 dB	45 dB	45 dB
Filter attenuation at 1MHz (50 Ω/50 Ω) unsymmetrical		30 dB	30 dB	30 dB
Cross-section of connected conductors solid (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Fault indication		red indicator	red indicator	red indicator
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number		A06635	A06636	A06637

DPF-...DC-16-S

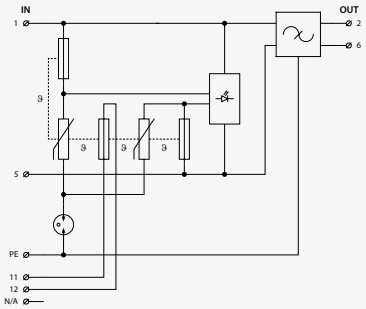
Surge protection for ELV power supply networks, with RFi filter
visual and remote fault signalling

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

Dimensions



Basic circuit diagram

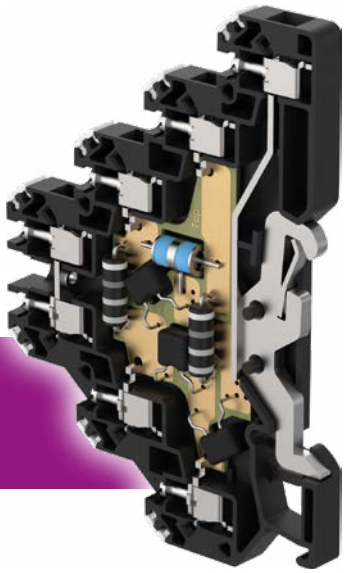


Parameter / Type		DPF-012DC-16-S	DPF-024DC-16-S	DPF-048DC-16-S
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Nominal voltage	U_n	12 V AC	24 V AC	48 V AC
Maximum operating voltage	U_c	20 V AC / 20 V DC	34 V AC / 34 V DC	60 V AC / 60 V DC
Nominal load current	I_L	16 A	16 A	16 A
Test voltage L+ - L-		4 kV	4 kV	4 kV
Test voltage L+(L-)-PE		4 kV	4 kV	4 kV
Voltage protection level L+ - L-		0,25 kV	0,29 kV	0,42 kV
Voltage protection level L+(L-)-PE		0,5 kV	0,5 kV	0,5 kV
Maximum overcurrent protection		16 A gL/gG or C 16 A	16 A gL/gG or C 16 A	16 A gL/gG or C 16 A
Response time L+ - L-		25 ns	25 ns	25 ns
Response time L+(L-)-PE		100 ns	100 ns	100 ns
RFi filter		yes	yes	yes
Filter attenuation at 1MHz (50 Ω/50 Ω) symmetrical		45 dB	45 dB	45 dB
Filter attenuation at 1MHz (50 Ω/50 Ω) unsymmetrical		30 dB	30 dB	30 dB
Cross-section of connected conductors solid (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 6 mm²	0,14 mm² / 6 mm²	0,14 mm² / 6 mm²
Fault indication		red indicator	red indicator	red indicator
Remote indication		potential-free open contact	potential-free open contact	potential-free open contact
Remote indication contacts		230 V / 0,5 A AC, 24 V / 0,5 A DC	230 V / 0,5 A AC, 24 V / 0,5 A DC	230 V / 0,5 A AC, 24 V / 0,5 A DC
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-11:2012, IEC 61643-11:2011 / T3		
Ordering number		A06664	A06665	A06666

Notes

SPDs for data / signalling / telecommunication networks

Terminal blocks with screw terminals



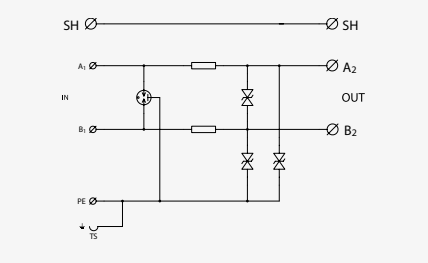
- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Direct grounding via DIN rail clip

- 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

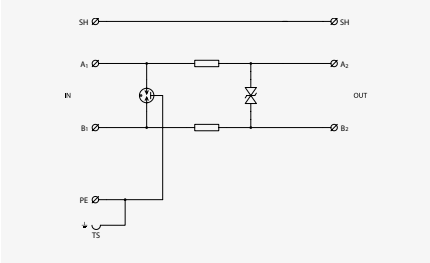
Terminal blocks with screw terminals

DM-…/1-RS



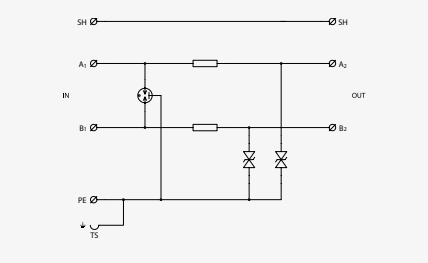
2/3-core line with one pole connected to common ground.
See page: 147

DMG-…/1-RS



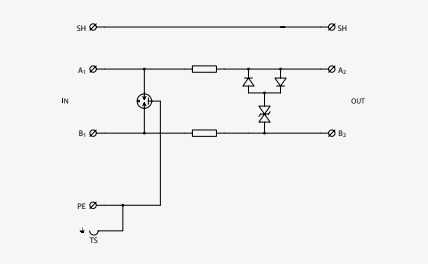
2-core floating line.
See page: 148

DMJ-…/2-RS



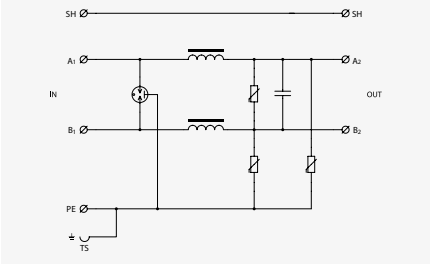
Two single-core lines with common ground.
See page: 149

DMHF-…/1-RS



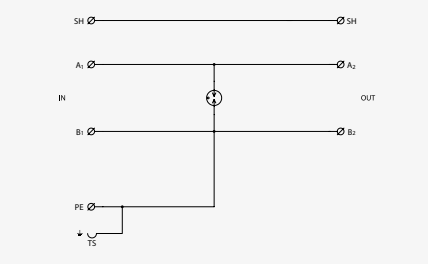
2-core high-speed floating line.
See page: 150

DMLF-…/1-RS



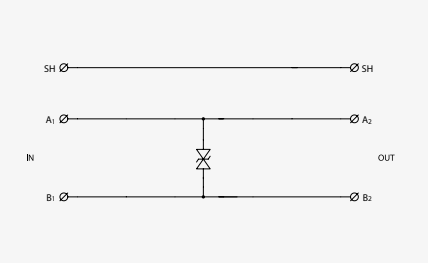
2-core low-frequency line.
See page: 151

DS-B...-RS



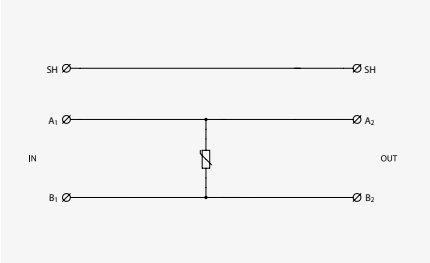
Single stage protection of 2-core line.
See page: 152

DS-D...-RS



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

DS-V...-RS



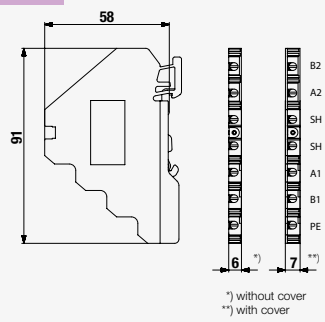
Single stage protection of 2-core line.
See page: 152

DM-.../1-RS

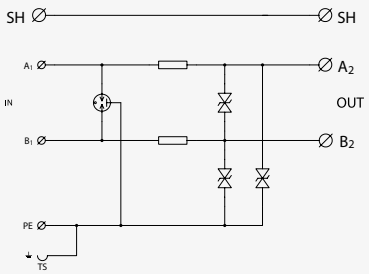
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screw terminals

- coarse and fine surge protection for 2-core signalling networks
- installation close to protected equipment
- for protection of communication interfaces, 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
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	60 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	I_L	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	18 V	28 V	50 V	80 V	100 V
C2 voltage protection level mode core-PE at I_n	U_p	30 V	40 V	65 V	95 V	120 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	45 V	65 V	85 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	15 V	20 V	45 V	65 V	85 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	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω	1,6 Ω
Treshold frequency core-core	f	1 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3				
Ordering number		A05140	A05141	A05142	A05143	A05129

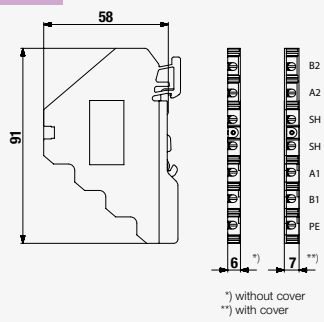
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

DMG-.../1-RS

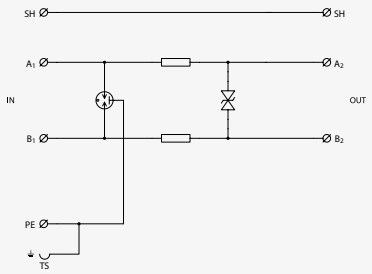
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screw terminals

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

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
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	60 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC	45 V AC / 64 V DC
Nominal load current	I_L	0,5 A	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	18 V	28 V	50 V	80 V	100 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	45 V	65 V	85 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	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
Response time core-PE	t_a	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
Treshold frequency core-core	f	1 MHz	2 MHz	4 MHz	5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3				
Ordering number		A05132	A05133	A05134	A05135	A05136

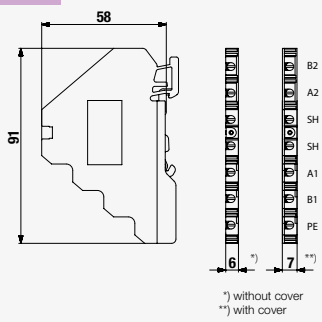
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

DMJ-.../2-RS

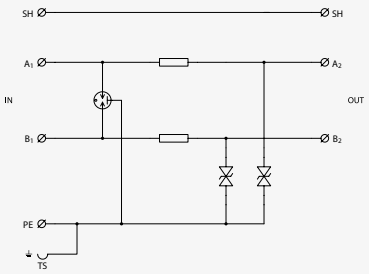
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screw terminals

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

Dimensions



Basic circuit diagram



Parameter / Type		DMJ-012/2-RS	DMJ-024/2-RS	DMJ-048/2-RS	DMJ-060/2-RS
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	12 V DC	24 V DC	48 V DC	60 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
Nominal load current	I_L	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-PE at I_n	U_p	40 V	65 V	95 V	120 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	20 V	45 V	65 V	85 V
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
Treshold frequency core-core	f	2 MHz	4 MHz	5 MHz	6,5 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number		A05144	A05145	A05131	A05146

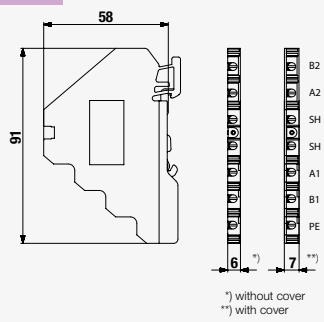
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

DMHF-.../1-RS

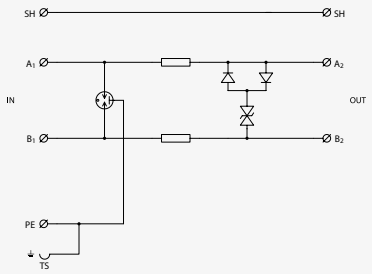
Surge protection for industrial communication bus (eg. PROFIBUS)
coupling impedance (resistance), screw terminals

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

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 µs) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	26 V	36 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	14 V	28 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number		A05138	A05139

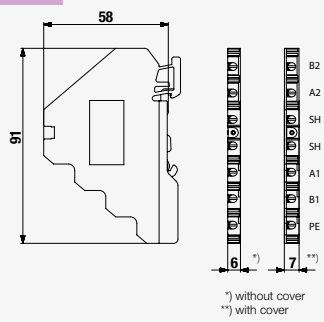
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

DMLF-.../1-RS

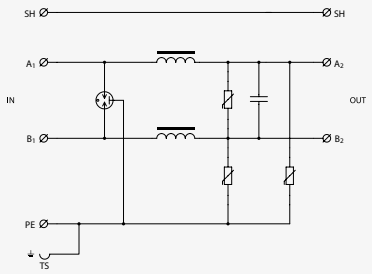
Coarse and fine surge protection for telecommunications and signalling network with limiting Radio-frequency interference coupling impedance (inductance), screw terminals

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

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 µs) per core	I_n	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	65 V
C2 voltage protection level mode core-PE at I_n	U_p	80 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	55 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	55 V
Response time core-core	t_a	25 ns
Response time core-PE	t_a	25 ns
Treshold frequency core-core	f	0,07 MHz
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		A05333

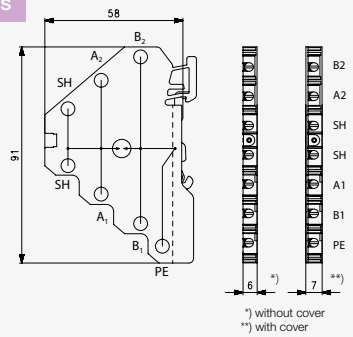
Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

DS-...-RS

Single stage surge arrester in terminal block
B – Gas Discharge Tube, V – varistors, D – fast suppressor diods, screw terminal

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

Dimensions



Basic circuit diagram

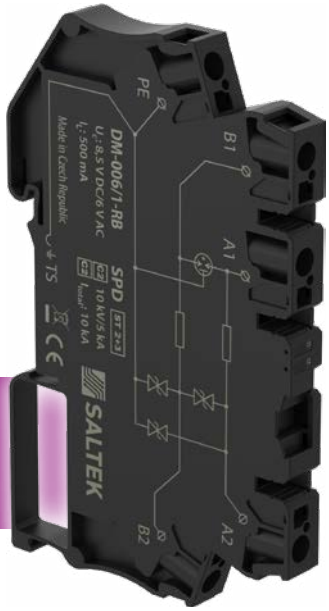
Basic circuit diagrams on page 154

Parameter / Type		DS-B090-RS	DS-D024-RS	DS-V130-RS
Connection (input - output)		terminals-terminals	terminals-terminals	terminals-terminals
Location of SPD		ST 2	ST 3	ST 2
Maximum operating voltage	U_c	50 V AC / 70 V DC	20,6 V AC / 29,1 V DC	140 V AC / 180 V DC
Nominal load current	I_L	16 A	16 A	16 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA	0,3 kA	6 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	-	-
C2 voltage protection level mode core-PE at I_n	U_p	-	48 V	530 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	550 V	-	-
Response time core-PE	t_a	100 ns	1 ns	25 ns
Cross-section of connected conductors solid (min/max)		0,14 mm² / 4 mm²	0,14 mm² / 4 mm²	0,14 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²	0,14 mm² / 2,5 mm²
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A05148	A05153	A05151

Accessories:	Ordering number	See page
Connection bridge JRS 10P	B41175	199

SPDs for data / signalling / telecommunication networks

Terminal blocks with screwless terminals



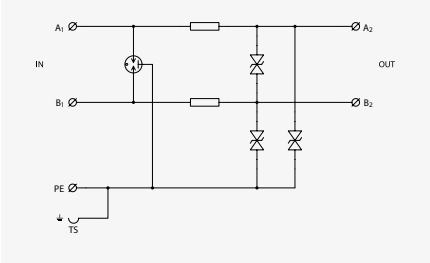
- SPDs with coarse and fine protection
- For single and two-core lines
- Multiple core lines significantly save the space
- Screwless terminals for easy connection

- 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

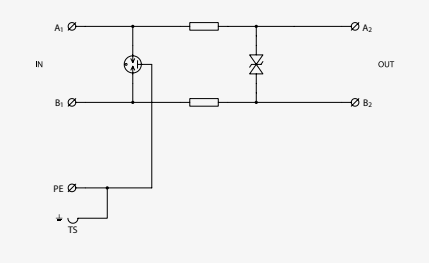
Terminal blocks with screwless terminals

DM-.../1-RB



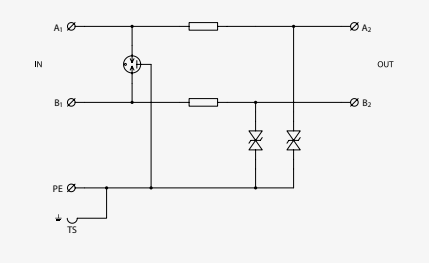
2-core line with one pole connected to common ground.
See page: 155

DMG-.../1-RB



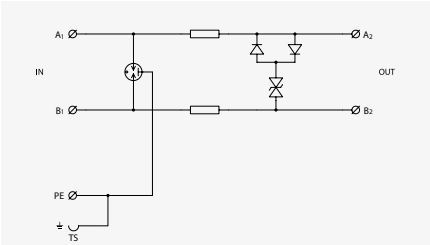
2-core floating line.
See page: 156

DMJ-.../2-RB



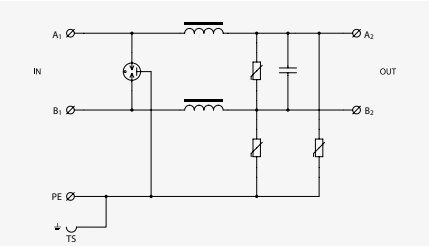
Two single-core lines with common ground.
See page: 157

DMHF-.../1-RB



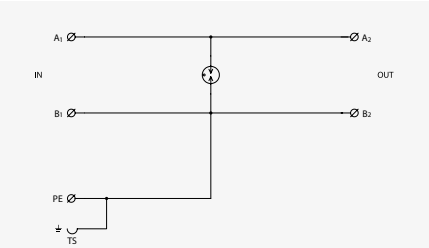
2-core high-speed floating line.
See page: 158

DMLF-024/1-RB



2-core low-frequency line.
See page: 159

DS-B090-RB



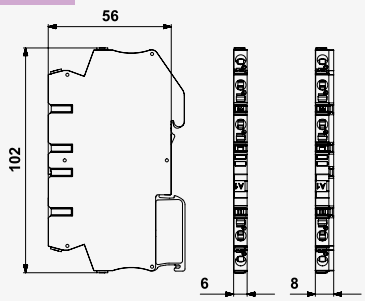
Single stage protection of 2-core line.
See page: 160

DM-.../1-RB

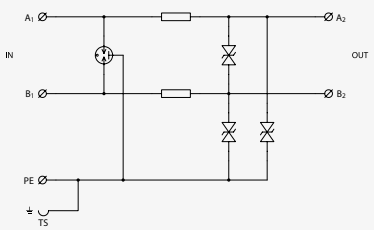
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screwless terminals

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

Dimensions



Basic circuit diagram



Parameter / Type		DM-006/1-RB	DM-012/1-RB	DM-024/1-RB	DM-048/1-RB
Connection (input - output)		screwless terminals	screwless terminals	screwless terminals	screwless terminals
Location of SPD		ST 2+3	ST 2+3	ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	12 V DC	24 V DC	48 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	11 V AC / 16 V DC	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_L	0,5 A	0,5 A	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	18 V	28 V	50 V	80 V
C2 voltage protection level mode core-PE at I_n	U_p	30 V	40 V	65 V	95 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	20 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	1 MHz	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm² / 4 mm²	0,08 mm² / 4 mm²	0,08 mm² / 4 mm²	0,08 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3			
Ordering number		A06057	A06058	A06059	A06060

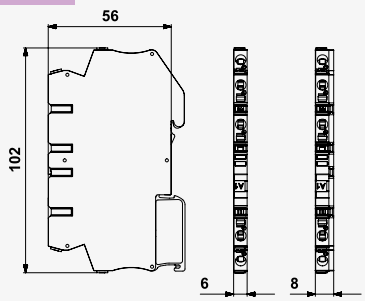
Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

DMG-.../1-RB

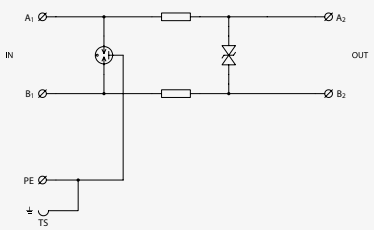
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screwless terminals

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

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 µs) per core	I_n	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	18 V	50 V	80 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	12 V	45 V	65 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	1 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm² / 4 mm²	0,08 mm² / 4 mm²	0,08 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A06061	A06062	A06063

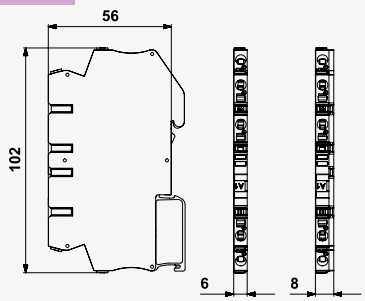
Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

DMJ-.../2-RB

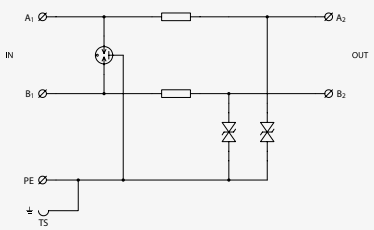
Coarse and fine surge protection for telecommunications and signalling network, ST2+3 in terminal block
coupling impedance (resistance), screwless terminals

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

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 µs) per core	I_n	5 kA	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA	0,5 kA
C2 voltage protection level mode core-PE at I_n	U_p	40 V	65 V	95 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	2 MHz	4 MHz	5 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm² / 4 mm²	0,08 mm² / 4 mm²	0,08 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3		
Ordering number		A06065	A06066	A06067

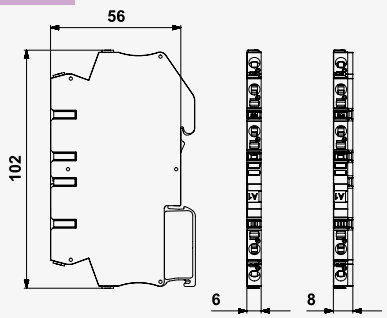
Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

DMHF-0../1-RB

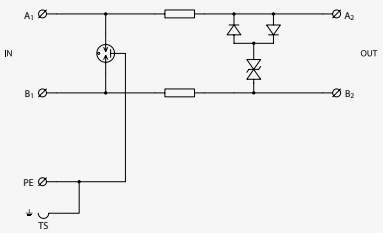
Surge protection for industrial communication bus (eg. PROFIBUS)
coupling impedance (resistance), screwless terminals

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

Dimensions



Basic circuit diagram



Parameter / Type		DMHF-006/1-RB	DMHF-015/1-RB
Connection (input - output)		screwless terminals	screwless terminals
Location of SPD		ST 2+3	ST 2+3
Nominal voltage	U_n	6 V DC	15 V DC
Maximum operating voltage	U_c	6 V AC / 8,5 V DC	6 V AC / 8,5 V DC
Nominal load current	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	26 V	36 V
C2 voltage protection level mode core-PE at I_n	U_p	350 V	350 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	14 V	28 V
C3 voltage protection level mode core-PE at 1 kV/µs	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
Treshold frequency core-core	f	70 MHz	70 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm² / 4 mm²	0,08 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,08 mm² / 2,5 mm²	0,08 mm² / 2,5 mm²
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		DIN rail 35 mm	DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number		A06064	A06290

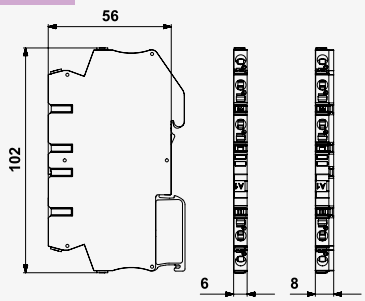
Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

DMLF-024/1-RB

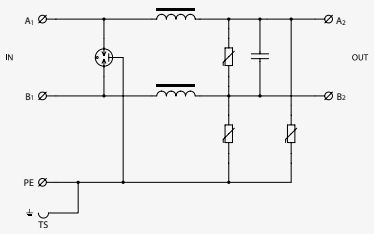
Coarse and fine surge protection for telecommunications and signalling network with limiting Radio-frequency interference coupling impedance (inductance), screwless terminals

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

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 µs) per core	I_n	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA
C2 voltage protection level mode core-core at I_n	U_p	65 V
C2 voltage protection level mode core-PE at I_n	U_p	80 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	55 V
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	55 V
Response time core-core	t_a	25 ns
Response time core-PE	t_a	25 ns
Treshold frequency core-core	f	0,07 MHz
Cross-section of connected conductors solid (min/max)		0,08 mm² / 4 mm²
Cross-section of connected conductors stranded (min/max)		0,08 mm² / 2,5 mm²
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		A06069

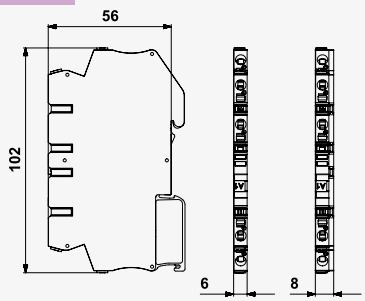
Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

DS-B090-RB

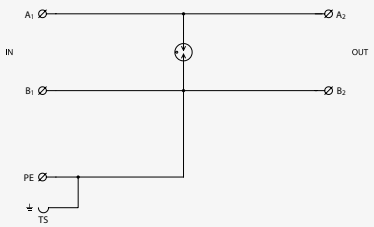
Single stage surge protection
B – Gas Discharge Tube, screwless terminal

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

Dimensions



Basic circuit diagram

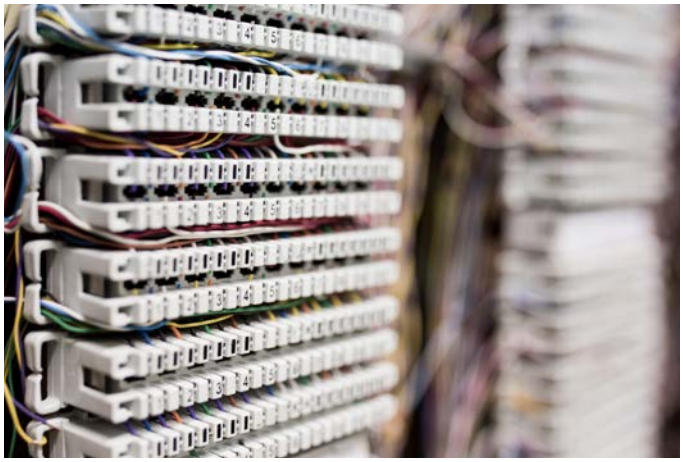


Parameter / Type		DS-B090-RB
Connection (input - output)		screwless terminals
Location of SPD		ST 2
Maximum operating voltage	U_c	50 V AC / 70 V DC
Nominal load current	I_L	10 A
C2 nominal discharge current (8/20 µs) per core	I_n	10 kA
D1 impulse discharge current (10/350 µs) per core	I_{imp}	0,5 kA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

Accessories:	Ordering number	See page
Cross connectors for terminal blocks with screwless terminals (-RB)	by type	199

SPDs for data / signalling / telecommunication networks

SPDs for LSA-PLUS strips

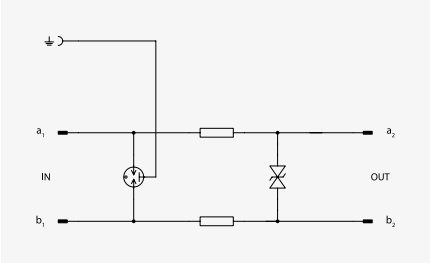


- Coarse and fine surge protection
- Easy connections to disconnection LSA-PLUS strips
- For 2-core signal lines in I&C, electronic security, fire detection and telecommunication systems
- Line CLSA - surge arresters

Overview of SPDs for data / signalling / telecommunication networks

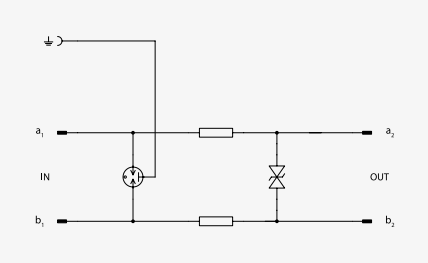
For LSA-PLUS strips

CLSA-24, 48



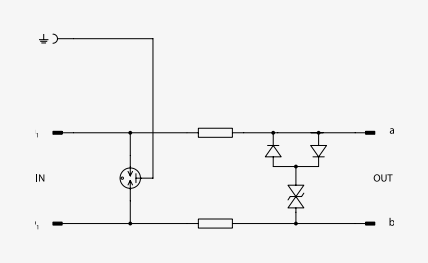
2-core floating line.
See page: 163

CLSA-ISDN, CLSA-TLF



2-core floating phone line.
See page: 164

CLSA-DSL



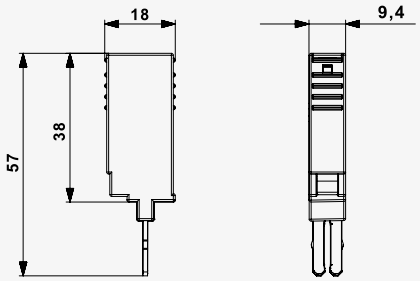
2-core high-speed floating line.
See page: 165

CLSA-...

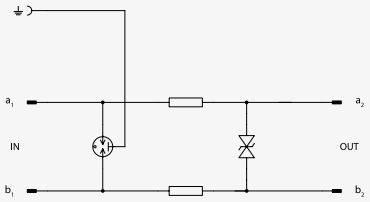
SPDs for telecommunication and signalling networks, for LSA-PLUS strips
for LSA-PLUS disconnection strips

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

Dimensions



Basic circuit diagram



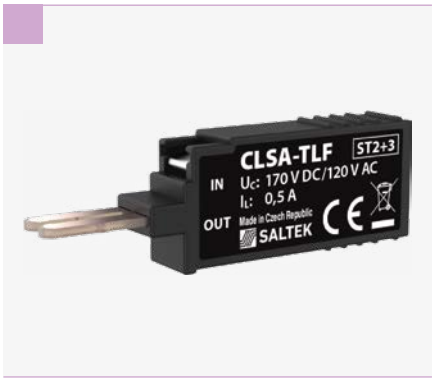
Parameter / Type		CLSA-24	CLSA-48
Connection (input - output)		LSA disconnection rail	LSA disconnection rail
Accessories		grounding rail	grounding rail
Location of SPD		ST 2+3	ST 2+3
Maximum operating voltage	U_c	25 V AC / 36 V DC	36 V AC / 51 V DC
Nominal load current	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-PE at I_n	U_p	400 V	400 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	48 V	65 V
C3 voltage protection level mode core-PE at 1 kV/µs	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	4 MHz	6,5 MHz
Degree of protection		IP 20	IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C	-40 °C / 70 °C
Mounting		LSA disconnection rail	LSA disconnection rail
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3	
Ordering number		A05171	A05172

Accessories	Ordering number	See page
Comb grounding rail	B95712	200
Universal disconnection rail LSA 2/10	B95710	200
Mounting frame – 1 position	B95711	200

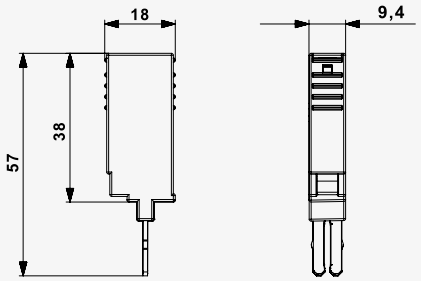
CLSA-...

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

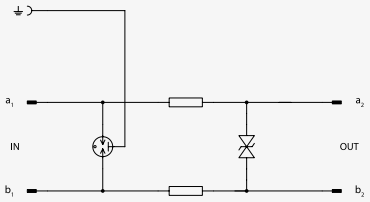
- combination of coarse and fine protection of 2-core telecommunication lines
- installation close to protected equipment
- for protection of telecommunication lines against impact of surge voltage
- coarse and fine surge protection in differential mode (core – core) and coarse protection in common mode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



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 µs) per core	I_n	5 kA	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA	10 kA
C2 voltage protection level mode core-core at I_n	U_p	220 V	310 V
C2 voltage protection level mode core-PE at I_n	U_p	400 V	400 V
C3 voltage protection level mode core-core at 1 kV/µs	U_p	170 V	230 V
C3 voltage protection level mode core-PE at 1 kV/µs	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	
Ordering number		A05174	A05173

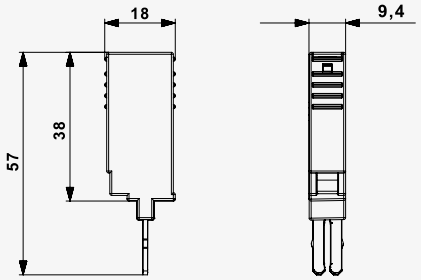
Accessories	Ordering number	See page
Comb grounding rail	B95712	200
Universal disconnection rail LSA 2/10	B95710	200
Mounting frame – 1 position	B95711	200

CLSA-...

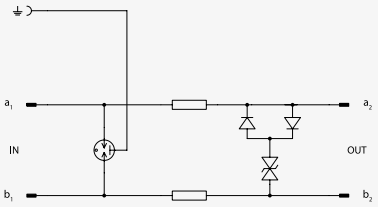
SPDs for telecommunication and signalling networks, for LSA-PLUS strips
for LSA-PLUS disconnection strips

- combination of coarse and fine protection of 2-core high-speed telecommunication lines including ADSL
- installation close to protected equipment
- CLSA-DSL for protection of telecommunication lines against impact of surge voltage
- 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-DSL
Connection (input - output)		LSA disconnection rail
Accessories		grounding rail
Location of SPD		ST 2+3
Maximum operating voltage	U_c	120 V AC / 170 V DC
Nominal load current	I_L	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	5 kA
C2 total discharge current (8/20 µs) cores-PE	I_{Total}	10 kA
C2 voltage protection level mode core-core at I_n	U_p	280 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/µs	U_p	230 V
C3 voltage protection level mode core-PE at 1 kV/µs	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	1,6 Ω
Treshold frequency core-core	f	65 MHz
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 °C / 70 °C
Mounting		LSA disconnection rail
According to standard		EN 61643-21+A1,A2:2013, IEC 61643-21+A1,A2:2012 / C2,C3
Ordering number		A05176

Accessories	Ordering number	See page
Comb grounding rail	B95712	200
Universal disconnection rail LSA 2/10	B95710	200
Mounting frame – 1 position	B95711	200

Notes

SPDs for data / signalling / telecommunication networks

SPDs for phone lines

- Coarse and fine protection SPDs
- For protection of telecommunication lines (ISDN, xDSL, xDSL2, xDSL2+, VDSL3)
- Line DL-TLF-UHF
- Line DL-ISDN
- Line DL-VDSL

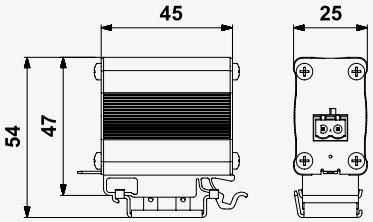
DL-TLF-UHF

NEW

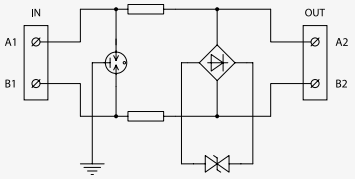
SPD for analogue phone line and xDSL protection
screw terminals

- combination of coarse and fine protection for phone and xDSL lines
- for protection of one line pair of 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-TLF-UHF
Location of SPD		ST 1+2+3
Maximum operating voltage	U_c	170 V DC
Nominal load current at 25 °C	I_L	0,3 A
D1 total impulse current (10/350 µs) cores-PE	I_{total}	5 kA
C2 nominal discharge current (8/20 µs) core-core	I_n	5 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	600 V (10 kV / 5 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	900 V (10 kV / 5 kA)
C3 voltage protection level mode core-core (@I_n - 1kV/µs)	U_p	250 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	550 V (10 A)
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Serial resistance per core	R	10 Ω
Treshold frequency core-core	f	150 MHz (@ -1dB)
Insertion attenuation	A	<1 dB (@ 35 MHz)
Connection (input - output)		screw terminals for wire cross-section 0,2 to 2,5 mm²
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 / 80 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A07084

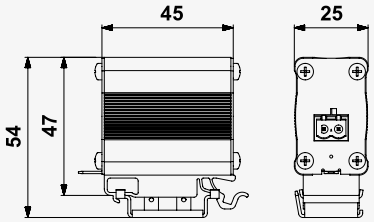
DL-VDSL3

NEW

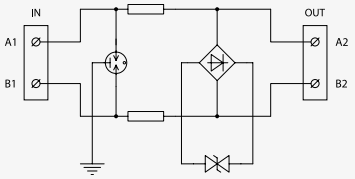
SPD for high-speed xDSL lines
screw terminals

- combination of coarse and fine protection for high-speed xDSL lines
- for protection of one line pair of ADSL2, VDSL2, VDSL2+, VDSL3
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder

Dimensions



Basic circuit diagram



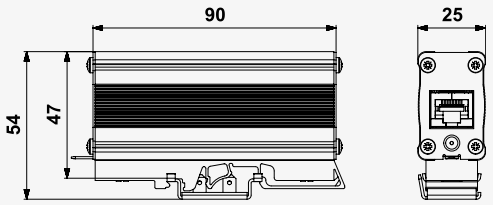
Parameter / Type		DL-VDSL3
Location of SPD		ST 1+2+3
Maximum operating voltage	U_c	60 V DC
Nominal load current at 25 °C	I_L	0,6 A
D1 total impulse current (10/350 µs) cores-PE	I_{total}	5 kA
C2 nominal discharge current (8/20 µs) core-core	I_n	5 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	450 V (10 kV / 5 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	1100 V (10 kV / 5 kA)
C3 voltage protection level mode core-core (@I_n - 1kV/µs)	U_p	90 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	600 V (10 A)
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Serial resistance per core	R	2,2 Ω
Treshold frequency core-core	f	300 MHz (@ -1dB)
Insertion attenuation	A	<0,2 dB (@ 35 MHz)
Connection (input - output)		screw terminals for wire cross-section 0,2 to 2,5 mm²
Degree of protection		IP 20
Range of operating temperatures (min/max)		-40 / 80 °C
Mounting		DIN rail 35 mm
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A07120

DL-ISDN RJ45

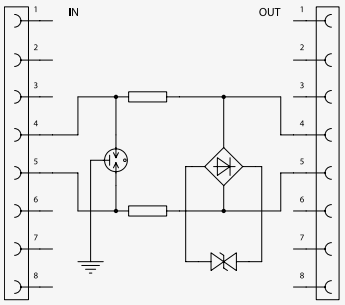
SPD for telephone lines
RJ45 connectors

- 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



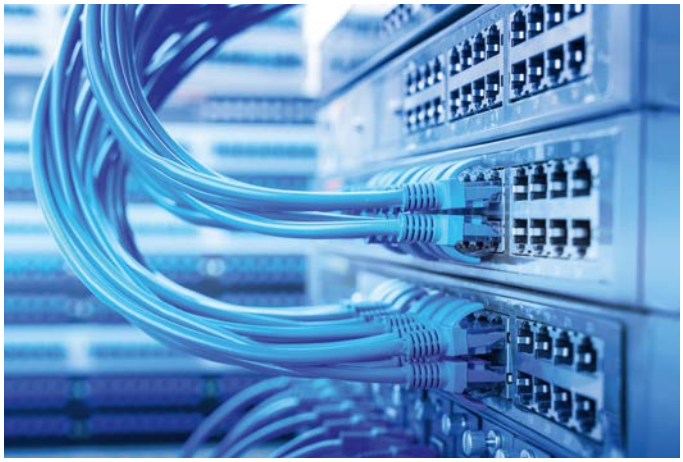
Basic circuit diagram



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 µs) per core	I_n	2,5 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	270 V (5 kV/2,5 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	300 V (5 kV/2,5 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	180 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	400 V (10 A)
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Serial resistance per core	R	6,8 Ω
Treshold frequency core-core	f	80 MHz
Connection (input - output)		RJ 45/RJ 45
Degree of protection		IP 20
Range of operating temperatures (min/max)		-10 °C / 50 °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		A03382

SPDs for data / signalling / telecommunication networks

SPDs for Ethernet networks



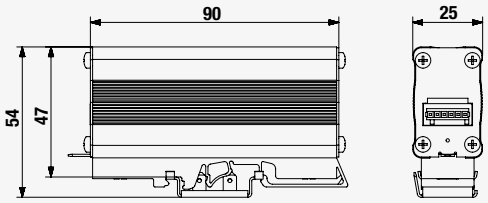
- SPDs for protection of Ethernet networks up to 10 Gbps bitrate
- Variants for lines combined with Power over Ethernet (PoE)
- Line DL-Cat.6A – surge arresters
- Line DL-1G and DL-10G – surge arresters
- Line DL-...-60V – for general structured cabling networks

DL-Cat.5e POE plus

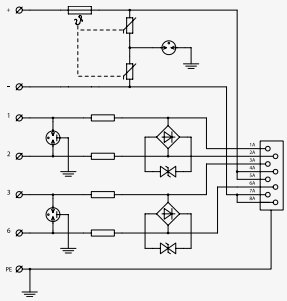
SPD for Fast Ethernet networks with separated PoE pairs
screwless terminals / RJ45 connector

- LPZ 1 and higher for Fast Ethernet with PoE
- combination of coarse and fine protection of Ethernet line with PoE
- installation close to protected equipment
- for protection of WiFi equipment, IP cameras, 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			DL-Cat.5e POE plus
line part	Location of SPD		ST 2+3
	Maximum operating voltage	U_c	8,5 V DC
	Nominal load current	I_L	0,1 A
	C2 nominal discharge current (8/20 µs) per core	I_n	1,5 kA
	C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	180 V (3 kV/1,5 kA)
	C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	490 V (3 kV/1,5 kA)
	C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	60 V (10 A)
	C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	560 V (10 A)
	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 µs) core-core	I_n	1 kA
	C2 voltage protection level mode (POE) (@U_{OC}/I_n)		320 V (2 kV/1 kA)
	C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	780 V (2 kV/1 kA)
	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)		-10 °C / 50 °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			A03806

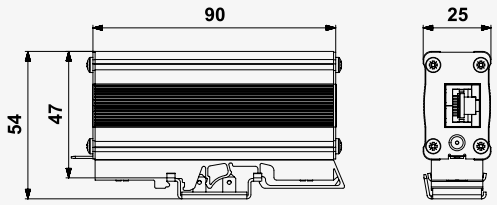
DL-Cat. 6A-...

NEW

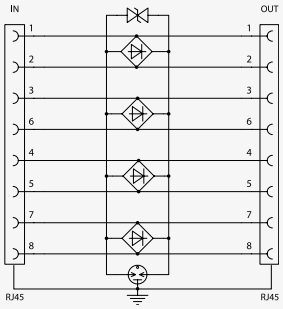
SPDs for Ethernet network and general structured cabling
LPZ 1 and higher

- fine surge protection
- installation at protected device inside LPZ 1 and higher (not suitable for LPZ 0)
- DL-Cat.6A - for protection of Ethernet networks (up to Cat.6A) without PoE
- DL-Cat.6A-60V - for protection of Ethernet networks (up to Cat.6A) with PoE and general structured cabling networks
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder

Dimensions



Basic circuit diagram



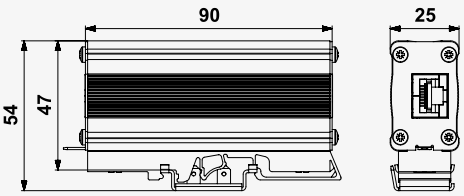
Parameter / Type		DL-Cat. 6A-60V	DL-Cat. 6A
Location of SPD		ST2+3	ST2+3
Maximum operating voltage core-core (data)	U_C	60 V DC	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	60 V DC	8,5 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,2 kA	0,2 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	1,6 kA	1,6 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	130 V (0,4 kV/0,2 kA)	55 V (0,4 kV/0,2 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	400 V (0,4 kV/0,2 kA)	400 V (0,4 kV/0,2 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	130 V (0,4 kV/0,2 kA)	55 V (0,4 kV/0,2 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	130 V (10 A)	30 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	600 V (10 A)	600 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	130 V (10 A)	55 V (10 A)
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	500 MHz	500 MHz
Insertion attenuation at f_{max}		2,9 dB	2,9 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DIN rail 35 mm	DIN rail 35 mm
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / C2, C3	EN 61643-21+A1,A2 / C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	NO
Ordering number		A07108	A06574

DL-..G-RJ45-PoE-AB

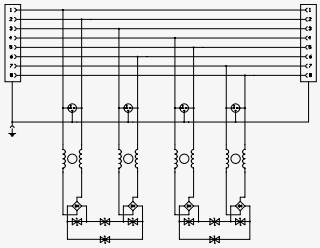
SPDs for Ethernet networks with PoE
LPZ 0 and higher

- combination of coarse and fine protection of Ethernet line with PoE
- instalation at the entry of the line into building or close to protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line with PoE (Power over Ethernet) against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder
- suitable for all PoE types – PoE/PoE+/PoE++ (IEEE 802.3 af/at/bt)

Dimensions



Basic circuit diagram



Parameter / Type		DL-1G-RJ45-PoE-AB	DL-10G-RJ45-PoE-AB
Location of SPD		ST 1+2+3	ST 1+2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	58 V DC	58 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	60 V (0,3 kV/0,15 kA)	60 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV/0,15 kA)	90 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	45 V (10 A)	45 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	85 V (10 A)	85 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA	2 kA
Response time core-core	t_a	1ns	1ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	250 MHz	500 MHz
Insertion attenuation at f_{max}		1,2 dB	1,8 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DIN rail 35 mm	DIN rail 35 mm
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	af/at/bt
Ordering number		A06148	A06149

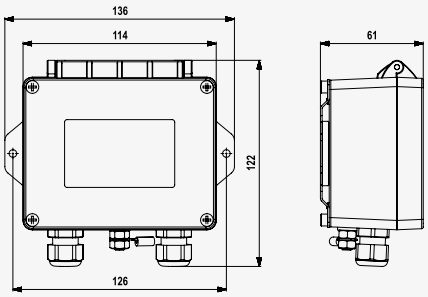
DL-10G-PoE-IP66

NEW

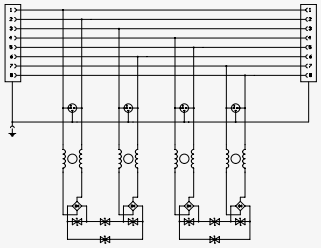
SPD for outdoor mounted Ethernet devices with PoE
LPZ 0

- combination of coarse and fine protection of Ethernet line with PoE
- protection of exterior Ethernet network devices (cameras, sensors, information panels, APs, etc.)
- exterior installation - anywhere at LPZ 0 because of IP66 water and dust protection
- suitable for all PoE types (IEEE 802.3 af/at/bt)
- in the scope of delivery: mounting material for panel and pole montage

Dimensions



Basic circuit diagram



Parameter / Type		DL-10G-PoE-IP66
Location of SPD		ST 1+2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	58 V DC
Nominal load current at 25 °C	I_L	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	60 V (0,3 kV / 0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV / 1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV / 0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	45 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	85 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Maximum frequency	f_{max}	500 MHz
Insertion attenuation at f_{max}		3,2 dB
Connection (input/output)		RJ45 / RJ45
Degree of protection		IP 66
Mounting		panel / pole / mast
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21 + A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt
Ordering number		A07098

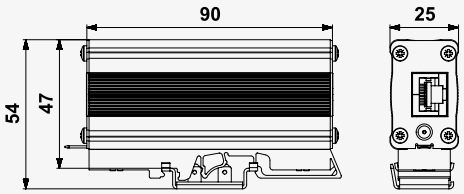
DL-..G-60V-PoE

NEW

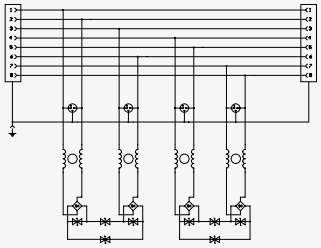
SPDs for Ethernet networks with PoE and general structured cabling
LPZ 0 and higher

- combination of coarse and fine protection of Ethernet line with PoE and structured cabling networks with signals with amplitudes up to 60 V
- instalation at the entry of the line into building or close to the protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line with PoE, IP telephony, KNX, DMX, RS-485, signalling loops and other signals over twisted pairs against surge voltage
- suitable for all PoE types – PoE/PoE+/ PoE++ (IEEE 802.3 af/at/bt)
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder

Dimensions



Basic circuit diagram



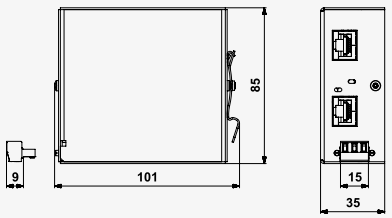
Parameter / Type		DL-1G-60V-PoE	DL-10G-60V-PoE
Location of SPD		ST 1+2+3	ST 1+2+3
Maximum operating voltage core-core (data)	U_C	60 V DC	60 V DC
Maximum operating voltage pair-pair (PoE)	U_C	60 V DC	60 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	120 V (0,3 kV/0,15 kA)	120 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV/0,15 kA)	90 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	110 V (10 A)	110 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	85 V (10 A)	85 V (10 A)
D1 total discharge current (10/350 µs) 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
Maximum frequency	f_{max}	250 MHz	500 MHz
Insertion attenuation at f_{max}		1,5 dB	2,5 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DIN rail 35 mm	DIN rail 35 mm
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	af/at/bt
Ordering number		A07069	A07070

DL-1G-POE-INJECTOR

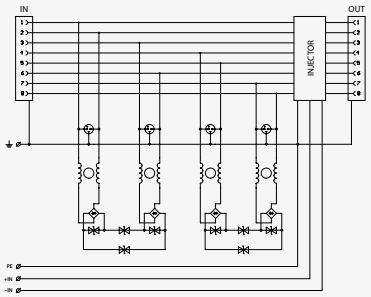
SPDs for Ethernet networks
passive midspan PoE injector with integrated SPD

- two-stage surge protection device for Ethernet and PoE protection with integrated PoE/PoE+ injector
- installed at the boundary of LPZ 0 and LPZ 1 zones or near the equipment to be protected
- to protect Ethernet Cat. 6 lines with PoE (Power over Ethernet), operating in A and B modes

Dimensions



Basic circuit diagram

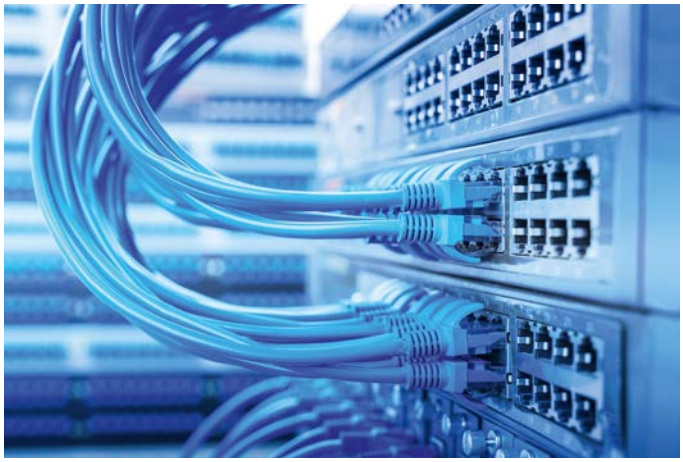


Parameter / Type		DL-1G-POE-INJECTOR
Location of SPD		ST 1+2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	58 V DC
Nominal load current at 25 °C	I_L	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	70 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (2,5 kV/1,25 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	80 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	80 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Maximum frequency	f_{max}	250 MHz
Insertion attenuation at f_{max}		1,2 dB
Connection (input/output)		RJ45 / RJ45
Degree of protection		IP 20
Mounting		DIN rail 35 mm
Range of operating temperatures (min/max)		-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at
Ordering number		A06620

Notes

SPDs for data / signalling / telecommunication networks

Multichannel SPDs for Ethernet networks



- SPDs for protection of Ethernet networks up to 10Gbps
- Versions for lines with PoE (incl. injector) and general structured cabling
- Design for 19" RACK (height 1RU)
- Modular Plug&Play system
- DL-PL-RACK-1U – for various SPD modules installation
- DL-CS-RACK-1U-INJECTOR – for PoE injector with integrated SPD

SALTEK RACK system solution NEW

For multichannel systems with (or without) 19" RACK cabinets are used, the new SALTEK RACK surge protection system is advantageous. This allows communication lines with different transmission categories to be routed through a single 1U profile and properly protected against overvoltages (according to the user's own configuration). This solution has not yet been possible with standard systems. The advantage is the space saving in the RACK cabinet due to the possibility of using different surge devices in a common box of 1U height. With dynamically expanding data networks, additional surge protection modules can be easily added to the boxes to expand the number of protected transmission channels.

- **DL-PL-RACK-1U**

1RU box for mounting into a 19" RACK cabinet or standalone, allowing to be equipped with up to 16 independent plug-in modules of **DL-...-M** (or -R-M) series surge protection devices in the so called "Hot Plug&Play" system, i.e. with the possibility of changing the configuration of surge protectors during network operation without the necessity to disassemble the box. See Fig. 01.

- **DL-CS-RACK-1U-INJECTOR**

1RU box for mounting into the 19" RACK cabinet, with pre-installed cabling for external power supply connection. Allows the integration of up to 6 midspan PoE injector **DL-1G-POE-PCB-INJECTOR** modules with integrated surge protection devices. See Fig. 02.

The injector can be programmed with jumpers to create either the **PoE A** or **PoE B** variant, including optional polarity setting for the **PoE A** version.

Fig. 01 DL-PL-RACK-1U and the installation of protection modules

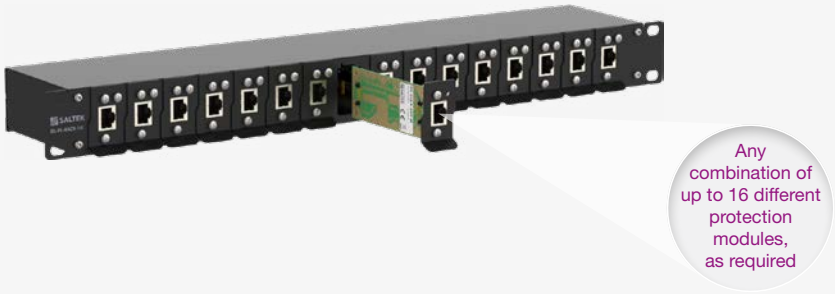
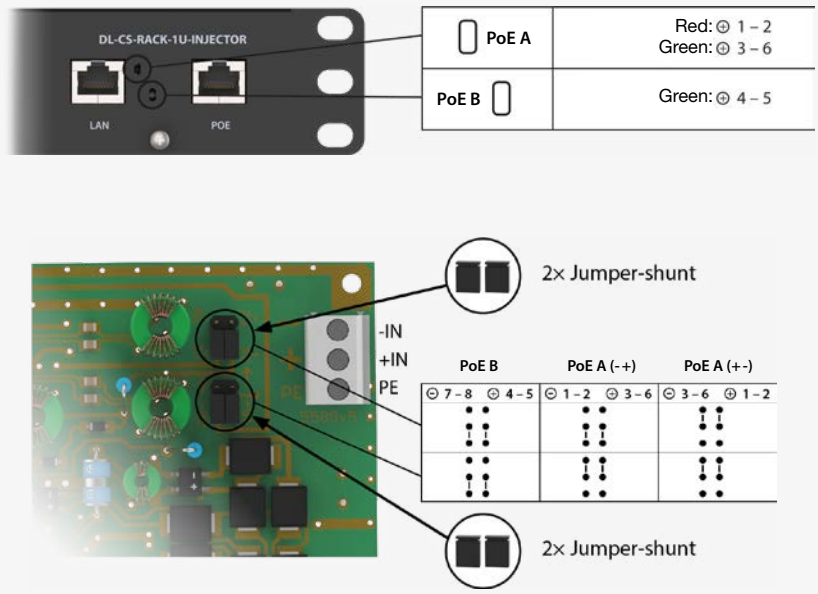


Fig. 02 DL-CS-RACK-1U-INJECTOR and the installation of protection modules

Fig. 03 Setting up the DL-1G-POE-PCB-INJECTOR module

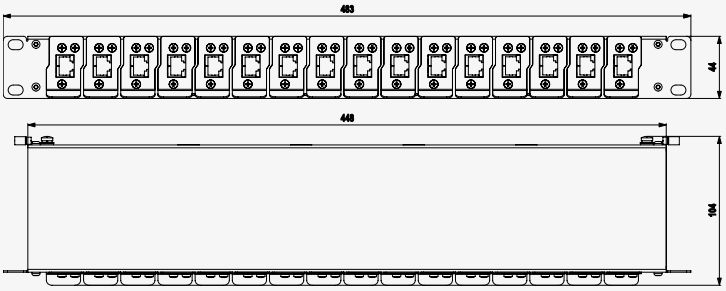


DL-PL-RACK-1U

SPDs for Ethernet networks, 19" RACK devices
mounting 1RU box for DL-…-M and DL-...-R-M modules

- mounting box for 19" Racks or free hanging
- for DL- …-M SPD and DL-...-R-M modules mounting
- surge protection of up to 16 independent lines
- 1RU profile
- easy Hot Plug&Play modules installation
- common modules grounding via box body

Dimensions



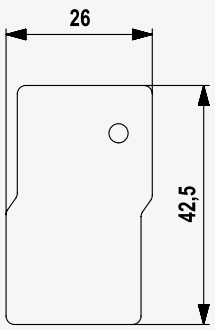
Type	DL-PL-RACK-1U
Ordering number	A04163

Cap for DL-PL-RACK-1U

SPDs for Ethernet networks, 19" RACK devices

- protection cap for unused modular slots

Dimensions

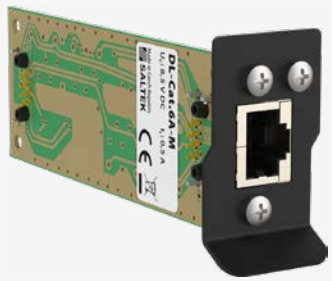


Type	Cap for DL-PL-RACK-1U
Ordering number	A04180

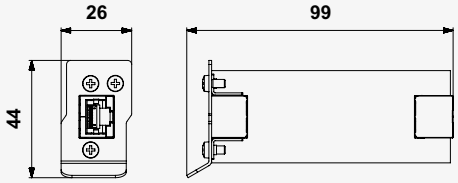
DL-Cat.6A-M / -R-M

Fine SPD module for Ethernet without PoE protection
LPZ 1 and higher

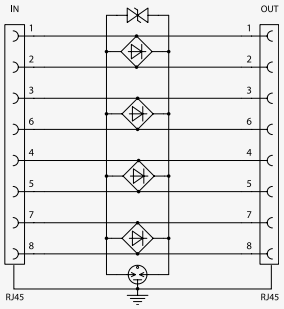
- fine surge protection
- installation at protected device inside LPZ 1 and higher (not suitable for LPZ 0)
- for protection of Ethernet networks (up to Cat.6A) without PoE
- installation into DL-PL-RACK-1U box
- DL-...-M with front output
- DL-...-R-M with rear output
- not applicable for Ethernet with PoE



Dimensions



Basic circuit diagram



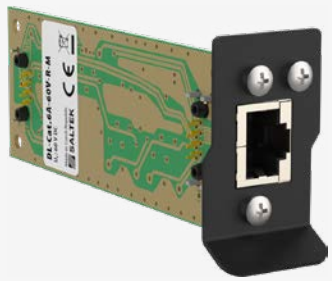
Parameter / Type		DL-Cat.6A-M	DL-Cat.6A-R-M
Location of SPD		ST2+3	ST2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	8,5 V DC	8,5 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,2 kA	0,2 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	1,6 kA	1,6 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	55 V (0,3 kV/0,15 kA)	55 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	400 V (2,5 kV/1,25 kA)	400 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	55 V (0,3 kV/0,15 kA)	55 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	30 V (10 A)	30 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	600 V (10 A)	600 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	55 V (10 A)	55 V (10 A)
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	500 MHz	500 MHz
Insertion attenuation at f_{max}		2,9 dB	2,9 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DL-PL-RACK-1U	DL-PL-RACK-1U
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / C2, C3	EN 61643-21+A1,A2 / C2, C3
According to IEEE 802.3 standard (PoE)		no	no
Ordering number		A04196	A04184

DL-Cat.6A-60V-M / -R-M

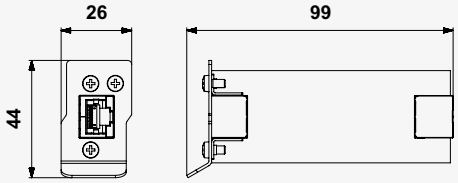
NEW

Fine SPD module for Ethernet with PoE and general structured cabling protection
LPZ 1 and higher

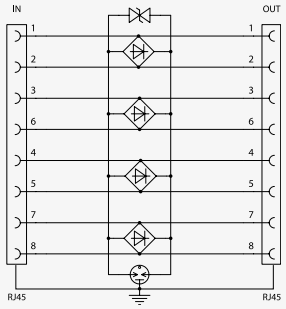
- fine surge protection of Ethernet line with PoE and structured cabling networks with signals with amplitudes up to 60 V
- instalation at the entry of the line into building or close to the protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line with PoE, IP telephony, KNX, DMX, RS-485, signalling loops and other signals over twisted pairs against surge voltage
- suitable for all PoE types – PoE/PoE+/ PoE++ (IEEE 802.3 af/at/bt)
- installation into DL-PL-RACK-1U box
- DL-...-M with front output
- DL-...-R-M with rear output



Dimensions



Basic circuit diagram

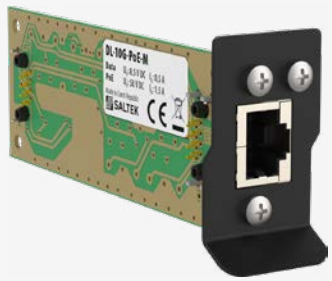


Parameter / Type		DL-Cat.6A-60V-M	DL-Cat.6A-60V-R-M
Location of SPD		ST 2+3	ST 2+3
Maximum operating voltage core-core (data)	U_C	60 V DC	60 V DC
Maximum operating voltage pair-pair (PoE)	U_C	60 V DC	60 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,2 kA	0,2 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	1,6 kA	1,6 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	130 V (0,4 kV/0,2 kA)	130 V (0,4 kV/0,2 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	400 V (0,4 kV/1,2 kA)	400 V (0,4 kV/0,2 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	130 V (0,4 kV/0,2 kA)	130 V (0,4 kV/0,2 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	130 V (10 A)	130 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	600 V (10 A)	600 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	130 V (10 A)	130 V (10 A)
Response time core-core	t_a	1 ns	1 ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	500 MHz	500 MHz
Insertion attenuation at f_{max}		2,9 dB	2,9 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DL-PL-RACK-1U	DL-PL-RACK-1U
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / C2, C3	EN 61643-21+A1,A2 / C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	af/at/bt
Ordering number		A04210	A04209

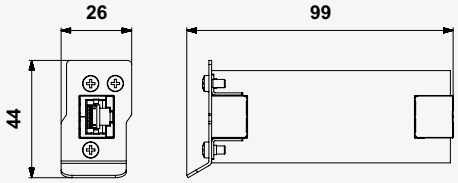
DL-..G-PoE-M

Dual-stage SPD module for Ethernet with PoE
LPZ 0 and higher

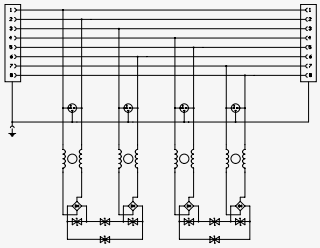
- combination of coarse and fine protection of Ethernet line with PoE
- instalation at the entry of the line into building or close to protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line with PoE (Power over Ethernet) against surge voltage
- suitable for all PoE types – PoE/PoE+/ PoE++ (IEEE 802.3 af/at/bt)
- installation into DL-PL-RACK-1U box



Dimensions



Basic circuit diagram



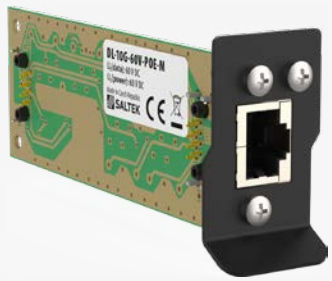
Parameter / Type		DL-1G-PoE-M	DL-10G-PoE-M
Location of SPD		ST 1+2+3	ST 1+2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	58 V DC	58 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	60 V (0,3 kV/0,15 kA)	60 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV/0,15 kA)	90 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	45 V (10 A)	45 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	85 V (10 A)	85 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA	2 kA
Response time core-core	t_a	1ns	1ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	250 MHz	500 MHz
Insertion attenuation at f_{max}		1,2 dB	1,8 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DL-PL-RACK-1U	DL-PL-RACK-1U
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	af/at/bt
Ordering number		A04165	A04181

DL-..G-60V-PoE-M

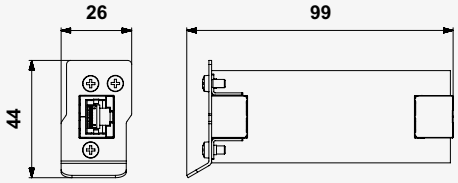
NEW

Dual-stage SPD module for Ethernet with PoE and general structured cabling
LPZ 0 and higher

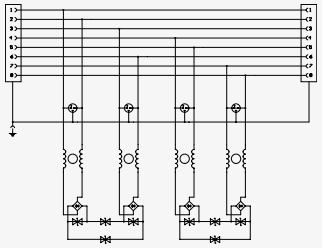
- combination of coarse and fine protection of Ethernet line with PoE and structured cabling networks with signals with amplitudes up to 60 V
- instalation at the entry of the line into building or close to the protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- for protection of Ethernet line with PoE, IP telephony, KNX, DMX, RS-485, signalling loops and other signals over twisted pairs against surge voltage
- suitable for all PoE types – PoE/PoE+/ PoE++ (IEEE 802.3 af/at/bt)
- installation into DL-PL-RACK-1U box



Dimensions



Basic circuit diagram



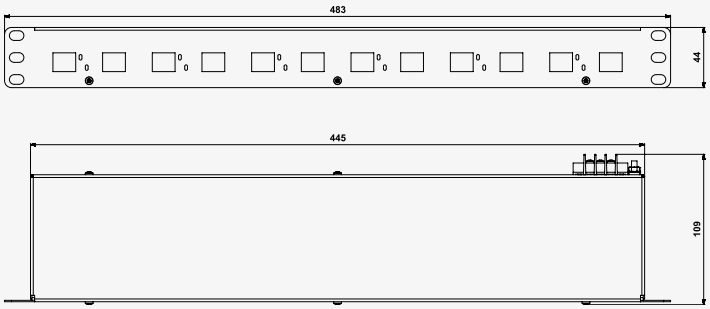
Parameter / Type		DL-1G-60V-PoE-M	DL-10G-60V-PoE-M
Location of SPD		ST 1+2+3	ST 1+2+3
Maximum operating voltage core-core (data)	U_C	60 V DC	60 V DC
Maximum operating voltage pair-pair (PoE)	U_C	60 V DC	60 V DC
Nominal load current at 25 °C	I_L	0,5 A	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	120 V (0,3 kV/0,15 kA)	120 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV/0,15 kA)	90 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	110 V (10 A)	110 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	85 V (10 A)	85 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA	2 kA
Response time core-core	t_a	1ns	1ns
Response time core-PE	t_a	100 ns	100 ns
Maximum frequency	f_{max}	250 MHz	500 MHz
Insertion attenuation at f_{max}		1,5 dB	2,5 dB
Connection (input/output)		RJ45 / RJ45	RJ45 / RJ45
Degree of protection		IP 20	IP 20
Mounting		DL-PL-RACK-1U	DL-PL-RACK-1U
Range of operating temperatures (min/max)		-10 °C / 50 °C	-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at/bt	af/at/bt
Ordering number		A07085	A07086

DL-CS-RACK-1U-INJECTOR

SPDs for Ethernet networks, 19" RACK devices
1U height

- for SPD modules: DL-1G-POE-PCB-INJECTOR, Pg. 187
- including wiring for connection of SPD modules (PoE supply)

Dimensions



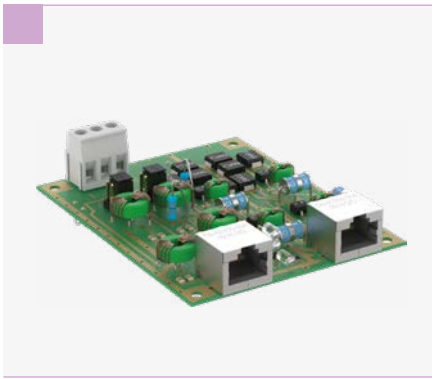
Type	DL-CS-RACK-1U-INJECTOR
Ordering number	A06569

Accessories	Ordering number	See page
SPD module	A06570	187

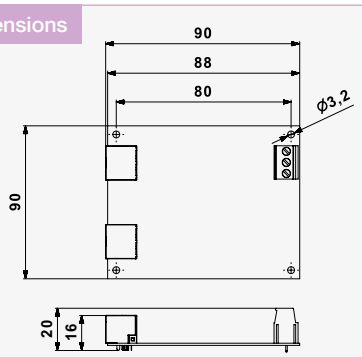
DL-1G-POE-PCB-INJECTOR

SPD for Ethernet networks
LPZ 0 and higher, RJ45 connectors, with integrated PoE injector

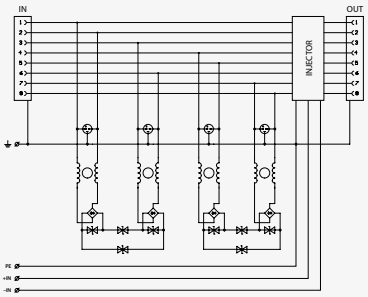
- combination of coarse and fine protection of Ethernet line with PoE
- instalation at the entry of the line into building and close to protected equipment, at the boundary of LPZ 0 and LPZ 1 or higher
- integrated midspan PoE injector (IEEE 802.3at)
- for protection of Ethernet line Cat. 6 with PoE (Power over Ethernet)
- for assembly to DL-CS-RACK-1U-INJECTOR



Dimensions



Basic circuit diagram



Parameter / Type		DL-1G-POE-PCB-INJECTOR
Location of SPD		ST 1+2+3
Maximum operating voltage core-core (data)	U_C	8,5 V DC
Maximum operating voltage pair-pair (PoE)	U_C	58 V DC
Nominal load current at 25 °C	I_L	0,5 A
C2 nominal discharge current (8/20 µs) per core	I_n	0,15 kA
C2 total discharge current (8/20 µs) cores-PE	I_{total}	10 kA
C2 voltage protection level mode core-core (@U_{OC}/I_n)	U_p	70 V (0,3 kV/0,15 kA)
C2 voltage protection level mode core-PE (@U_{OC}/I_n)	U_p	700 V (2,5 kV/1,25 kA)
C2 voltage protection level mode pair-pair (PoE) (@U_{OC}/I_n)	U_p	90 V (0,3 kV/0,15 kA)
C3 voltage protection level mode core-core (@I_n - 1 kV/µs)	U_p	80 V (10 A)
C3 voltage protection level mode core-PE (@I_n - 1 kV/µs)	U_p	500 V (10 A)
C3 voltage protection level mode pair-pair (PoE) (@I_n - 1 kV/µs)	U_p	80 V (10 A)
D1 total discharge current (10/350 µs) cores-PE	I_{total}	2 kA
Response time core-core	t_a	1 ns
Response time core-PE	t_a	100 ns
Maximum frequency	f_{max}	250 MHz
Insertion attenuation at f_{max}		1,2 dB
Connection (input/output)		RJ45 / RJ45
Degree of protection		IP 20
Mounting		DL-CS-RACK-1U-INJECTOR
Range of operating temperatures (min/max)		-10 °C / 50 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
According to IEEE 802.3 standard (PoE)		af/at
Ordering number		A06570

Notes

SPDs for data / signalling / telecommunication networks

SPDs for devices with coaxial interfaces

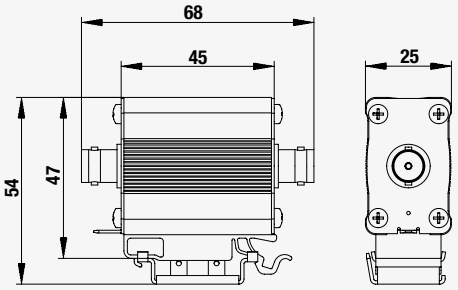
- Protection of coaxial video interfaces
- Radiocommunication technology protection (transmitters and receivers)
- SPDs for TV/SAT/CATV receivers
- Line VL – surge arrester for video lines
- Line HX, ZX and FX – Lightning Current Arresters
- Line SX – Combined Arresters

VL-B75 F/F

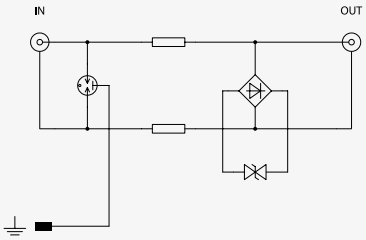
SPDs for video distribution networks
BNC connectors, 75 Ω

- 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



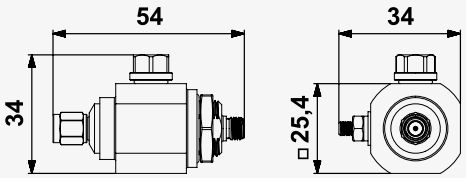
Parameter / Type		VL-B75 F/F
Location of SPD		ST 2+3
Maximum operating voltage	U_c	8,5 V DC
Nominal load current at 25 °C	I_L	0,06 A
C2 nominal discharge current (8/20 µs) core-SH	I_n	5 kA
C2 nominal discharge current (8/20 µs) SH-PE	I_n	5 kA
C2 voltage protection level mode core-SH at I_n	U_p	150 V
C2 voltage protection level mode SH-PE at I_n	U_p	350 V
C3 voltage protection level mode core-SH at 1 kV/µs	U_p	35 V
C3 voltage protection level mode SH-PE at 1 kV/µs	U_p	350 V
Response time core-SH	t_a	1 ns
Response time SH-PE	t_a	100 ns
Impedance	Z	75 Ω
Frequency range	f	0 - 150 MHz
Connection (input-output)		BNC 75
Degree of protection		IP 20
Mounting		DIN rail 35 mm
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2 / C2, C3
Ordering number		A03376

HX-090 SMA F/M

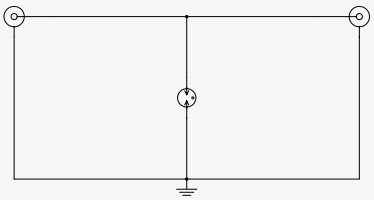
Lightning current arrester for coaxial lines
SMA connectors, 50 Ω

- 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 radiocommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution

Dimensions



Basic circuit diagram



Parameter / Type		HX-090 SMA F/M
Location of SPD		ST 1+2
Maximum operating voltage	U_C	70 V DC
Nominal load current at 25 °C	I_L	6 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	10 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	2,5 kA
Dynamic spark-over voltage at 1kV/µs	U_{dyn}	700 V
Response time core-PE	t_a	100 ns
Impedance	Z	50 Ω
Power (CW)	P	40 W
Frequency range	f	0 - 3,8 GHz
Insertion loss typ. (max.)	A	0,2 (0,4) dB
VSWR typ. (max.)		1,1 (1,2)
Connection (input-output)		SMA 50
Degree of protection		IP 66
Mounting		panel (∅ 17mm) / HX holder
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A04134

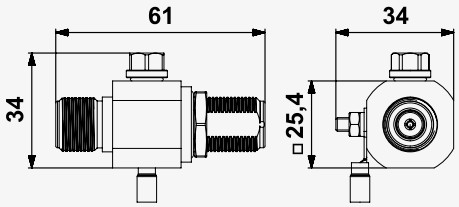
Accessories	Ordering number	See page
HX Holder	A01564	199

HX-... N50 F/.

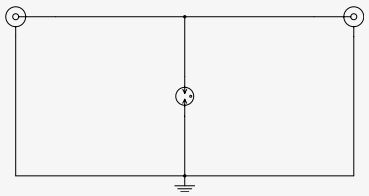
Lightning current arrester for coaxial lines
N connectors, 50 Ω

- 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 radiocommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution

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 at 25 °C	I_L	6 A	6 A	6 A	6 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
Dynamic spark-over voltage at 1 kV/µs	U_{dyn}	700 V	700 V	800 V	800 V
Response time core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Impedance	Z	50 Ω	50 Ω	50 Ω	50 Ω
Power (CW)	P	40 W	40 W	295 W	295 W
Frequency range	f	0 - 3,8 GHz	0 - 3,8 GHz	0 - 3,8 GHz	0 - 3,8 GHz
Insertion loss typ. (max.)	A	0,2 (0,4) dB	0,2 (0,4) dB	0,2 (0,4) dB	0,2 (0,4) dB
VSWR typ. (max.)		1,1 (1,2)	1,1 (1,2)	1,1 (1,2)	1,1 (1,2)
Connection (input-output)		N 50	N 50	N 50	N 50
Degree of protection		IP 66	IP 66	IP 66	IP 66
Mounting		panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder
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 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A03405	A03346	A03511	A03510

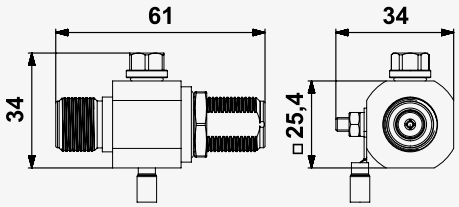
Accessories	Ordering number	See page
HX Holder	A01564	199

HX-... N50 F/.

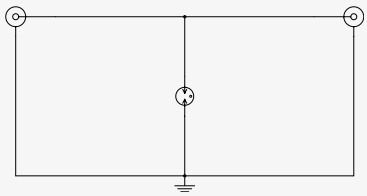
Lightning current arrester for coaxial lines
N connectors, 50 Ω

- 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 radiocommunication equipment against impact of direct or indirect lightning strike
- suitable for the combined signal and power supply distribution

Dimensions



Basic circuit diagram



Parameter / Type		HX-350-N50 F/F	HX-350-N50 F/M	HX-470-N50 F/F	HX-470-N50 F/M
Location of SPD		ST 1+2	ST 1+2	ST 1+2	ST 1+2
Maximum operating voltage	U_C	250 V DC	250 V DC	360 V DC	360 V DC
Nominal load current at 25 °C	I_L	6 A	6 A	6 A	6 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	10 kA	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	2,5 kA	2,5 kA	2,5 kA	2,5 kA
Dynamic spark-over voltage at 1 kV/µs	U_{dyn}	900 V	900 V	980 V	980 V
Response time core-PE	t_a	100 ns	100 ns	100 ns	100 ns
Impedance	Z	50 Ω	50 Ω	50 Ω	50 Ω
Power (CW)	P	570 W	570 W	1175 W	1175 W
Frequency range	f	0 - 3,5 GHz	0 - 3,5 GHz	0 - 3,0 GHz	0 - 3,0 GHz
Insertion loss typ. (max.)	A	0,2 (0,4) dB	0,2 (0,4) dB	0,2 (0,4) dB	0,2 (0,4) dB
VSWR typ. (max.)		1,1 (1,2)	1,1 (1,2)	1,1 (1,2)	1,1 (1,2)
Connection (input-output)		N 50	N 50	N 50	N 50
Degree of protection		IP 66	IP 66	IP 66	IP 66
Mounting		panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder	panel (Ø 17 mm) / HX holder
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 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3	EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A06703	A06704	A06555	A06556

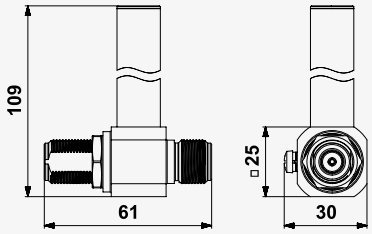
Accessories	Ordering number	See page
HX Holder	A01564	199

ZX-0,44-N50-F/F

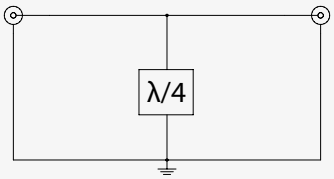
Lightning current arrester for coaxial lines
connectors N 50 Ω, λ/4 short circuit impedance transformer

- lightning current arrester uses λ/4 short circuit impedance transformer
- installation at the boundary of LPZ 0 and LPZ 1 zones (or higher) at the line entry into building
- for protection of coaxial radio lines and telecommunication devices against impact of direct or indirect lightning strike
- it works like band-pass (filter) for a relatively narrow frequency spectrum around the base frequency, outside of this spectrum it works like a short circuit (not suitable for combination with power supply)

Dimensions



Basic circuit diagram



Parameter / Type		ZX-0,44-N50-F/F
Location of SPD		ST 1+2+3
C2 nominal discharge current (8/20 µs) core-PE	I_n	20 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	5 kA
Dynamic spark-over voltage at 1 kV/µs	U_{dyn}	0,25 V
Response time core-PE	t_a	1 ns
Impedance	Z	50 Ω
Power (CW)	P	2000 W
Frequency range*	f	390 - 490 MHz
Insertion loss typ. (max.)	A	0,1 (0,2) dB
VSWR typ. (max.)		1,1 (1,2)
Connection (input-output)		N 50
Degree of protection		IP 66
Mounting		panel (∅ 17 mm) / HX holder
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A06207

* Frequency range according to tuning

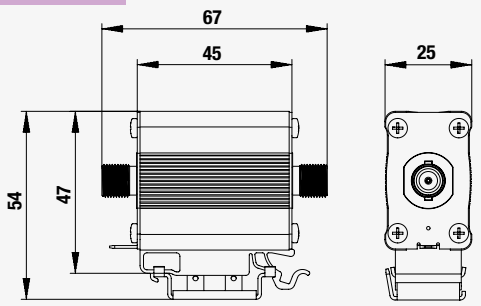
Accessories	Ordering number	See page
HX Holder	A01564	199

FX-... .75 T F/F

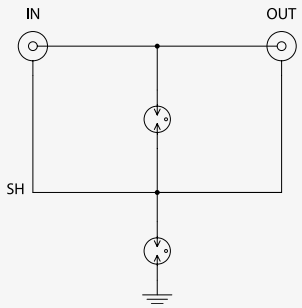
Lightning current arrester for floating coaxial lines
F connectors, 75 Ω

- lightning current arrester with floating shielding (separated by GDT)
- installation at the boundary of LPZ 0 and LPZ 1 zones at the line entry into building
- for protection of floating 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



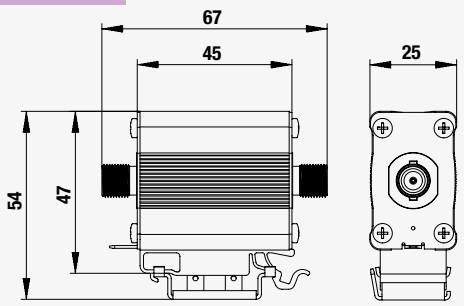
Parameter / Type		FX-090 B75 T F/F	FX-090 F75 T F/F	FX-230 F75 T F/F
Location of SPD		ST 1	ST 1	ST 1
Maximum operating voltage	U_C	70 V DC	70 V DC	180 V DC
Nominal load current at 25 °C	I_L	4 A	4 A	4 A
C2 nominal discharge current (8/20 µs) core-SH	I_n	10 kA	10 kA	10 kA
C2 nominal discharge current (8/20 µs) SH-PE	I_n	10 kA	10 kA	10 kA
D1 impulse discharge current (10/350 µs) core-SH	I_{imp}	2,5 kA	2,5 kA	2,5 kA
D1 impulse discharge current (10/350 µs) SH-PE	I_{imp}	2,5 kA	2,5 kA	2,5 kA
C3 voltage protection level mode core-SH at 1 kV/µs	U_p	1 200 V	1 200 V	1 200 V
C3 voltage protection level mode SH-PE at 1 kV/µs	U_p	600 V	600 V	600 V
Response time core-SH	t_a	100 ns	100 ns	100 ns
Response time SH-PE	t_a	100 ns	100 ns	100 ns
Impedance	Z	75 Ω	75 Ω	75 Ω
Frequency range	f	0 - 2,15 GHz	0 - 2,15 GHz	0 - 2,15 GHz
Insertion loss typ. (max.)	A	0,6 dB (1 dB)	0,6 dB (1 dB)	0,6 dB (1 dB)
VSWR typ. (max.)		1,2 (1,5)	1,2 (1,5)	1,2 (1,5)
Connection (input-output)		BNC 75	F 75	F 75
Degree of protection		IP 20	IP 20	IP 20
Mounting		DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
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 / D1, C2	EN 61643-21+A1,A2 / D1, C2	EN 61643-21+A1,A2 / D1, C2
Ordering number		A03385	A03387	A03392

FX-090-F75 F/F

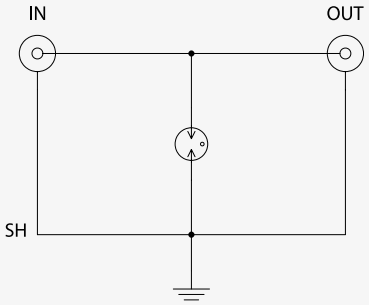
Lightning current arrester for coaxial lines
F connectors, 75 Ω

- lightning current arrester with grounded shielding
- 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 F/F
Location of SPD		ST 1
Maximum operating voltage	U_C	70 V DC
Nominal load current at 25 °C	I_L	4 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	10 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	2,5 kA
C3 voltage protection level mode core-PE at 1 kV/µs	U_p	1 200 V
Response time core-PE	t_a	100 ns
Impedance	Z	75 Ω
Frequency range	f	0 - 2,3 GHz
Insertion loss typ. (max.)	A	0,6 dB (1 dB)
VSWR typ. (max.)		1,2 (1,5)
Connection (input-output)		F 75
Degree of protection		IP 20
Mounting		DIN rail 35 mm
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 61643-21+A1,A2 / D1, C2
Ordering number		A04212

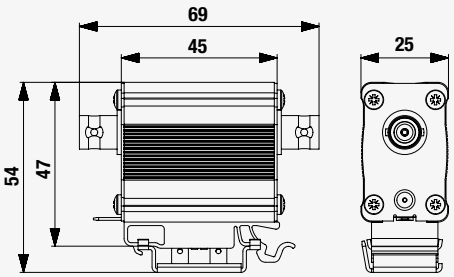
Accessories	Ordering number	See page
Grounding block F75	B14893	199

SX-090-B50 F/F

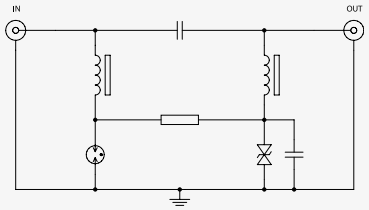
Dual-stage lightning arrester for coaxial lines
BNC connectors, 50 Ω

- dual stage coarse and fine arrester, shielding connected to protective grounding
- installation close to protected equipment or at the LPZ 0_B - LPZ 1 boundary
- for complex protection of sensitive professional receivers inputs (GPS, SAT,...) against overvoltage
- suitable for combined RF and DC distribution via coaxial cable
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder

Dimensions



Basic circuit diagram



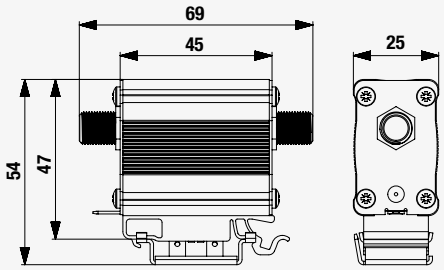
Parameter / Type		SX-090-B50 F/F
Location of SPD		ST 1+2+3
Maximum operating voltage	U_C	26 V DC
Nominal load current at 25 °C	I_L	0,7 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	2,5 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	0,5 kA
C2 voltage protection level mode core-PE at I_n	U_p	700 V
C3 voltage protection level mode core-PE at I_n = 100 A (10/1000)	U_p	85 V
Response time core-PE	t_a	1 ns
Impedance	Z	50 Ω
Frequency range	f	0 - 3 GHz
Insertion loss typ. (max.)	A	1,5 (3,0) dB
VSWR typ. (max.)		1,2 (1,3)
Connection (input-output)		BNC 50
Degree of protection		IP 20
Mounting		DIN rail 35 mm
Range of operating temperatures (min/max)		-40 °C / 70 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A04157

SX-090 F75 F/F

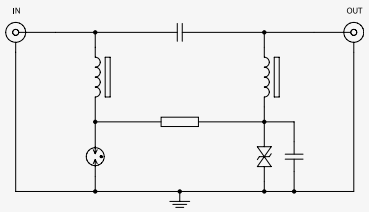
Surge arrester for coaxial lines
F connectors, 75 Ω

- dual stage coarse and fine arrester, shielding connected to protective grounding
- installation close to protected equipment or at the LPZ 0_B - LPZ 1 boundary
- for complex protection of coaxial inputs of TV/SAT and CCTV systems against surge voltage
- in the scope of delivery: universal plastic adapter for mounting on DIN rail and GND 2 holder

Dimensions



Basic circuit diagram

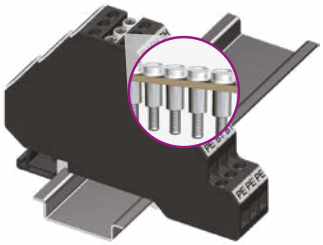


Parameter / Type		SX-090-F75 F/F
Location of SPD		ST 1+2+3
Maximum operating voltage	U_C	26 V DC
Nominal load current at 25 °C	I_L	0,7 A
C2 nominal discharge current (8/20 µs) core-PE	I_n	2,5 kA
D1 impulse discharge current (10/350 µs) core-PE	I_{imp}	0,5 kA
C2 voltage protection level mode core-PE at I_n	U_p	700 V
C3 voltage protection level mode core-PE at I_n = 100 A (10/1000)	U_p	85 V
Response time core-PE	t_a	1 ns
Impedance	Z	75 Ω
Frequency range	f	0 - 2,3 GHz
Insertion loss typ. (max.)	A	1,5 (3,0) dB
VSWR typ. (max.)		1,5 (2,0)
Connection (input-output)		F 75
Degree of protection		IP 20
Mounting		DIN rail 35 mm
Range of operating temperatures (min/max)		-40 °C / 70 °C
According to standard		EN 61643-21+A1,A2 / D1, C2, C3
Ordering number		A04158

Accessories	Ordering number	See page
Grounding block F75	B14893	199

Accessories for SPDs for data / signalling / telecommunication networks

Accessories for ICT SPDs

	Product	Ordering number	Example of use
	**Connection bridge JRS 10P**	B41175	

Accessories for ICT SPDs

	Product	Packaging	Ordering number	Example of use
	**CS-2,5/2**	25 pcs	B470102	
	CS-2,5/3	20 pcs	B470103	
	CS-2,5/4	15 pcs	B470104	
	CS-2,5/5	10 pcs	B470105	
	CS-2,5/10	5 pcs	B470109	

Accessories for SPDs for coaxial lines

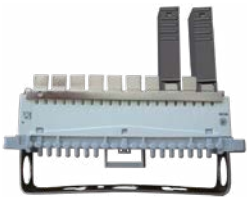
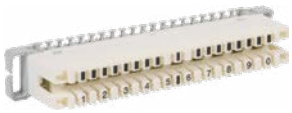
	Product	Ordering number	Example of use
	**HX Holder**	A01564	

Accessories for SPDs for coaxial lines

	Product	Ordering number	Example of use
	**Grounding block F75**	B14893	

Accessories for SPDs for data / signalling / telecommunication networks

Accessories for ICT SPDs

	Product	Ordering number	Example of use
	**Comb grounding rail**	B95712	
	**Universal disconnection rail LSA 2/10**	B95710	
	**Mounting frame – 1 position**	B95711	

Accessories for BD., DM., DP.

	Product	Ordering number	Example of use
	**Short-circuiting module DMZ-V-0** For short-cicuiting (and earthing) of all cores connected to base BDM/ BDG. Suitable for unused wires or for maintenance and work on the line	A05818	

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
- Systems of pipeline cathodic protection
- 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

Isolating spark gaps

The isolating spark gaps of ISG series are designed to balance differential potentials on conductive non-live parts of technological equipment of buildings that are not galvanically interconnected.

In the event that a difference in potential arises between the conductive parts, the ISGs are able to interconnect the parts for a transient period of time and thus eliminate the dangerous voltage difference. The ISGs may well be used for temporary connection of different grounds which due to functional reasons cannot be galvanically linked to each other, or for bridging insulated flanges on pipes, etc.

The ISG products are designed for use in normal environments, while the ISG EX versions are designed for areas with a risk of explosion and be used e.g. in the gas or chemical industries. Due to their IP 67 protection level they can be installed both indoors and outdoors.

The ISGs are manufactured in various sparkover voltage variants. They can be used as protective elements against dangerous contact voltages (product types with switching voltages of 50 V), or for temporary interconnection of various conductive metal parts using higher switching voltages which, however, for safety reasons are not considered to be a problem.

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV

ELECTROTECHNICAL TESTING INSTITUTE - CZECH REPUBLIC
ELEKTROTECHNISCHE PRÜFANSTALT - TSCHECHISCHE REPUBLIK
INSTITUT ELECTROTECHNIQUE D'ESSAIS - REPUBLIQUE TCHÈQUE

Pod lisem 129/2, 171 02 Praha 8 - Troja

CERTIFICATE

No.: 1200589

Product: Isolating spark gap

Type: ISG-…(H Ex), ISGC-…(H Ex), ISGO-…(H Ex), ISGT-…H Ex

Rating: U_N = 35, 70, 250, 350 V AC
U_N = 50, 100, 375, 500 V DC
I_{imp} = 50, 100 kA – see Annex

Ordering firm: SALTEK s.r.o.
Dráždanská 561/85, 400 07 Ústí nad Labem - Krásné Březno, Czech Republic

Manufacturer: SALTEK s.r.o.
Dráždanská 561/85, 400 07 Ústí nad Labem - Krásné Březno, Czech Republic

Trade mark:

The test results are stated in the test-report No.: 022180-01/01 of: 13.11.2020

A sample of the product was found to be in conformity with:
CSN EN 62561-3 ed. 2:2018 (idt EN 62561-3:2017, idt IEC 62561-3:2017)

Other data:

Certificate was issued on the basis of fulfillment of requirements of the "EZÚ certificate" certification scheme and on the basis of agreement No. 022180 between the client and the Electrotechnical Testing Institute.

Compliance of the product with mentioned standards and regulations ensures compliance of the product with essential requirements of Government Order No. 118/2016 Sb. (2014/35/EU) as amended and the certificate may be used as a supporting document for the EU Declaration of Conformity under Act No. 90/2016 Coll., on Conformity Assessment of Products When Made Available on the Market, as amended.

The validity of the certificate is limited to: 23.11.2023

24.11.2020
Prague

Mgr. Miroslav Sedláček
Head of Certification Body

022180-01

Physical-Technical Testing Institute
Ostrava - Radvanice

(1) **Supplementary EU - Type Examination Certificate No.3**

(2) **Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres (Directive 2014/34/EU)**

(3) EU - Type Examination Certificate number:

FTZÚ 14 ATEX 0155X

(4) Product: **Isolating Spark Gap, type ISG(.)-(...) H Ex**

(5) Manufacturer: **SALTEK s.r.o.**

(6) Address: **Dráždanská 85, 400 07 Ústí nad Labem, Czech Republic**

(7) This supplementary certificate extends EC - Type Examination Certificate No. FTZÚ 14 ATEX 0155X to apply to products designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

(8) The Physical-Technical Testing Institute, Notified Body number 1026, in accordance with Articles 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26.02.2014, certifies that this product, as modified by this supplementary certificate, has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

(9) In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20.04.2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20.04.2016.

(10) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012+A11:2013, EN 60079-18:2015, EN 60079-31:2014

(11) The marking of the product shall include the following:
Ex II 2G Ex mb IIC T6 Gb
Ex II 2D Ex tb IIIC T80°C Db

(12) This certificate is valid till: **28.02.2023**

Responsible person:
Dipl. Ing. Lukáš Martinák
Head of Certification Body

Date of issue: 28.02.2018

Page: 1/3

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.

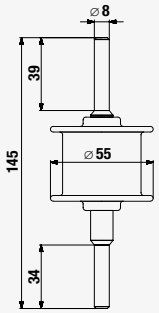
Physical-Technical Testing Institute, s.p., Pikartská 1337/7, 716 07 Ostrava - Radvanice, Czech Republic
tel +420 595 223 111, fax +420 596 232 672, ftzu@ftzu.cz, www.ftzu.cz

ISG-A100

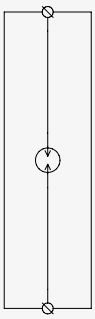
Isolating Spark Gap
connecting pins

- 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



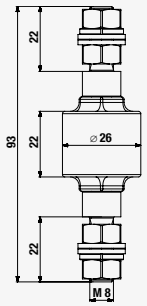
Parameter / Type		ISG-A100
Lightning impulse current	I_{imp}	100 kA
Rated impulse sparkover voltage	U_{nimp}	5 kV
Rated power frequency withstand voltage	U_{WAC}	2,5 kV
Isolation resistance		100 MΩ
Classification		class H - heavy duty
Degree of protection		IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012
Ordering number		A03590

ISG-...

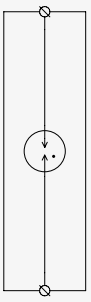
Isolating Spark Gap
two M8 bolts with nuts

- 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



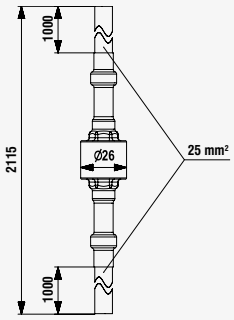
Parameter / Type		ISG-50	ISG-100	ISG-500
Lightning impulse current	I_{imp}	50 kA	50 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,5 kV
Isolation resistance		100 MΩ	100 MΩ	100 MΩ
Classification		class N - normal duty	class N - normal duty	class H - heavy duty
Degree of protection		IP 67	IP 67	IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
According to standard		EN 62561-3:2012, IEC 62561-3:2012		
Ordering number		A04086	A04078	A04127

ISGC-...

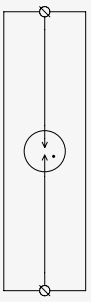
Isolating Spark Gap
connecting cables

- 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



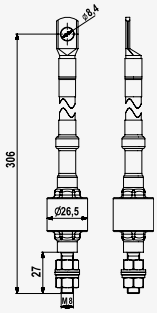
Parameter / Type		ISGC-50	ISGC-100	ISGC-500
Lightning impulse current	I_{imp}	50 kA	50 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,5 kV
Isolation resistance		100 MΩ	100 MΩ	100 MΩ
Classification		class N - normal duty	class N - normal duty	class H - heavy duty
Degree of protection		IP 67	IP 67	IP 67
Range of operating temperatures (min/max)		-40 °C / 80 °C	-40 °C / 80 °C	-40 °C / 80 °C
According to standard			EN 62561-3:2012, IEC 62561-3:2012	
Ordering number		A05365	A05366	A05368

ISGO-500

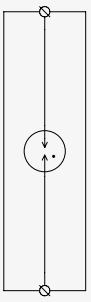
Isolating Spark Gap
connecting cable and M8 bolt with nut

- 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



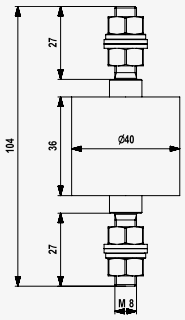
Parameter / Type		ISGO-500
Lightning impulse current	I_{imp}	100 kA
Rated impulse sparkover voltage	U_{nimp}	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,5 kV
Isolation resistance		100 MΩ
Classification		class H - heavy duty
Degree of protection		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		A05518

ISG-...H Ex

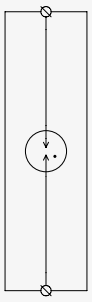
Isolating spark gaps for explosive environment (Ex)
two M8 bolts with nuts, stainless steel enclosure

- 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



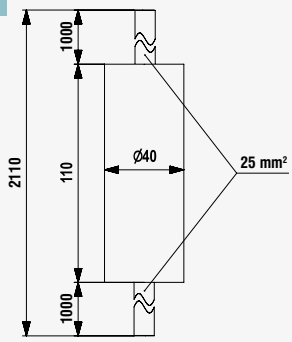
Parameter / Type		ISG-50H Ex	ISG-100H Ex	ISG-500H Ex
Lightning impulse current	I_{imp}	100 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,5 kV
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		
Explosion-tested version		II 2G Ex mb IIC T6 Gb, II 2D Ex tb IIIC T80°C Db		
Ordering number		A04131	A04132	A04109

ISGC-...H Ex

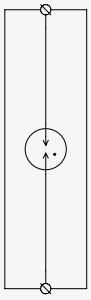
Isolating spark gaps for explosive environment (Ex)
connecting cables, stainless steel enclosure

- 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



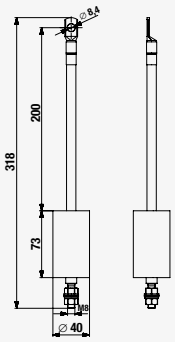
Parameter / Type		ISGC-50H Ex	ISGC-100H Ex	ISGC-500H Ex
Lightning impulse current	I_{imp}	100 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,5 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		
Explosion-tested version		II 2G Ex mb IIC T6 Gb, II 2D Ex tb IIIC T80°C Db		
Ordering number		A04128	A04129	A04120

ISGO-...H Ex

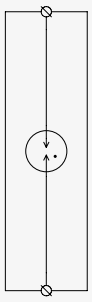
Isolating spark gaps for explosive environment (Ex)
connecting cable and M8 bolt with nut, stainless steel enclosure

- 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-500H Ex
Lightning impulse current	I_{imp}	100 kA	100 kA	100 kA
Rated impulse sparkover voltage	U_{rimp}	0,9 kV	0,95 kV	1,5 kV
Rated power frequency withstand voltage	U_{WAC}	0,035 kV	0,07 kV	0,35 kV
Rated DC withstand voltage	U_{WDC}	0,05 kV	0,1 kV	0,5 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		
Explosion-tested version		II 2G Ex mb IIC T6 Gb, II 2D Ex tb IIIC T80°C Db		
Ordering number		A06142	A06143	A05514

Notes

Digital SPD tester

GIGATESTpro-SALTEK

Measuring instrument for SPD control
Test tips

- Tester SPDs (MOVs or GDTs)
- Measurements of insulation resistance
- Measurement of voltage
- The database of SPDs in the instrument
- Easy test result
- Measurement protection by detecting the presence of voltage

Parameter	GIGATESTpro - SALTEK
Test of SPDs	
Measuring range	40 V ÷ 1 050 V
Resolution	1 V
Reference error	± (2% R + 2 D)*
Measuring principle	Increasing DC voltage and simultaneously measures the 1 mA current through the SPD
Insulation resistance	
Measuring range	0,100 MΩ ÷ 9,999 GΩ (U = 50 V ÷ 1 000 V)
Nominal test current	≥ 1 mA
Automatic discharge of tested object	yes
DC and AC voltage (TRMS)	
Measuring range	0 V ÷ 600 V DC / AC (45 Hz ÷ 65 Hz)
Resolution	1 V
Reference error	± (2% R + 2 D)*
Power supply	4× AAA alkaline battery 1,5 V or NiMH accumulator 1,2 V
Display	High contrast bright multicolour graphic OLED
Overvoltage category	CAT III / 300 V or CAT II / 600 V
Ordering number	B00010

* R: reading, D: digit

Index of SALTEK® products – by type

Index of SALTEK® products – by type

Index of SALTEK® products – by order number

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A01349	DM-012/1 3R DJ	136
A01350	DM-006/1 3R DJ	136
A01357	DM-024/1 4R DJ	138
A01402	DM-006/1 3L DJ	137
A01432	RTO-16	83
A01433	RTO-35	83
A01434	RTO-63	83
A01519	DM-024/1 3L DJ	137
A01617	SLP-275 V/1	50
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A01619	SLP-275 V/2	53
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A01689	DM-012/1 4R DJ	138
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A01760	SLP-275 V/3	54
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A01763	SLP-275 V/4 S	55
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A03392	FX-230 F75 T F/F	195
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A03423	FLP-12,5 V/1+1	41
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A03425	FLP-12,5 V/3	44
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A03665	SLP-PV500 V/U S	95
A03668	SLP-PV700 V/Y	96
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A03670	SLP-PV1000 V/Y	96
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A03732	DA-275 DF 25	71
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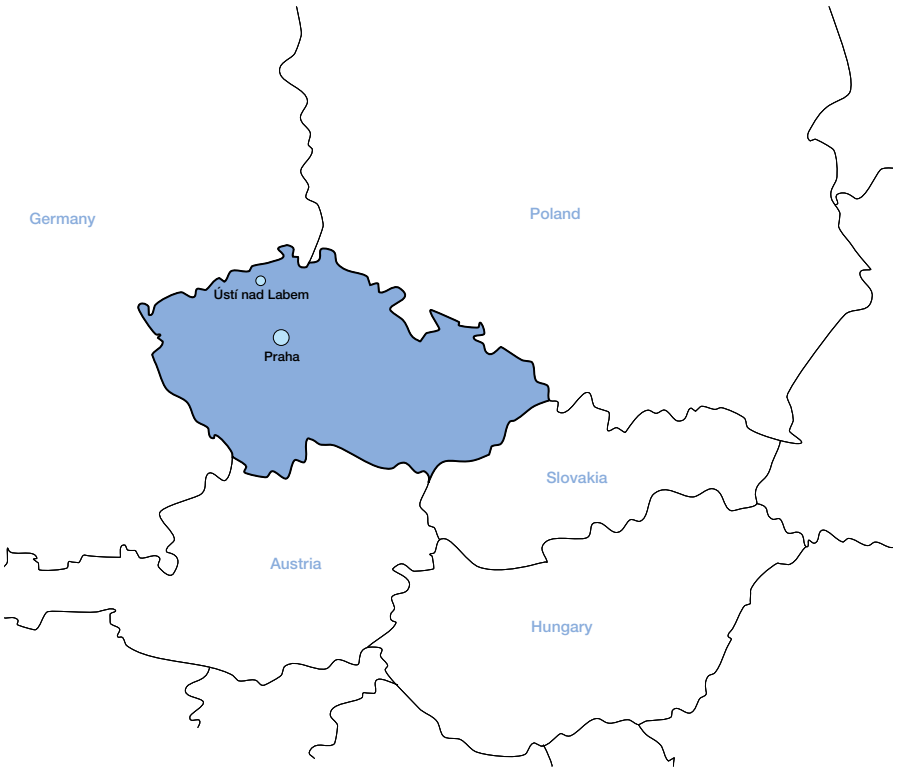

SALTEK s.r.o.
Drážďanská 85
400 07 Ústí nad Labem
Czech Republic
Phone: +420 272 942 470
E-mail: trade@saltek.cz
www.saltek.eu/en

SALTEK s.r.o.
Drážďanská 85
400 07 Ústí nad Labem
Czech Republic
Phone: +420 272 942 470
E-mail: trade@saltek.cz
www.saltek.eu/en

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