



# Surge protection



# Building Connections

Digitalisation, the Energiewende (energy transition), mobility – the future is gathering speed. At OBO Bettermann, we're proud to be a driving force. And as a facilitator, we make connections. Today, we are already developing the innovative electrical infrastructure systems and solutions of tomorrow. Reliably, flexibly, sustainably.

Already today, OBO is one of the leading manufacturers of installation systems for the electrical infrastructure in buildings and plants. When it comes to the friction-free flow of power, energy and data, engineers and tradespeople worldwide rely on the comprehensive range from OBO.

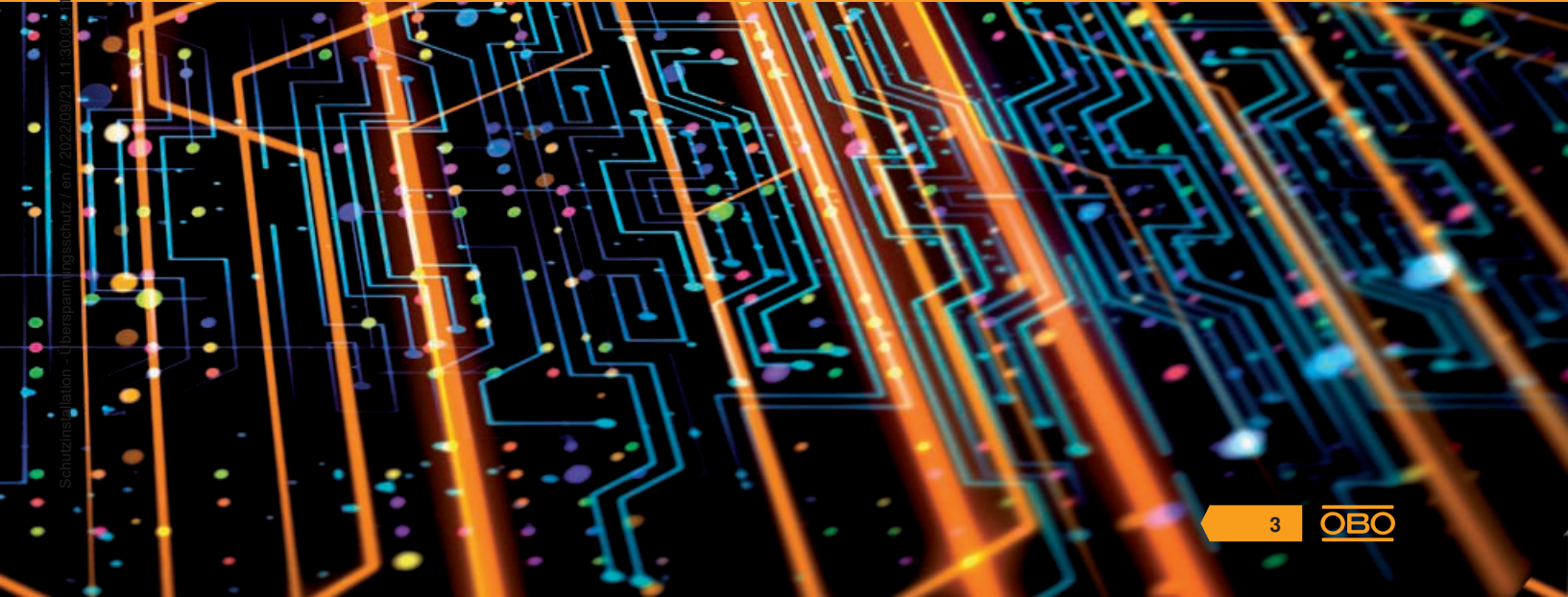




OBO applies its slogan "Building Connections" to around 30,000 high-quality branded electrical products and services, which are used in application solutions for projects in industry, business and infrastructure.

OBO operates a global network and employs more than 4,200 people in more than 60 countries. The headquarters of the family company, which was founded in 1911, is located in Menden, Germany. In addition, more than 40 subsidiaries are present in markets on all continents.

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# Improved structure, sharpened profile



Each of our products carries a benefit which only the OBO brand can offer. Products are developed, manufactured and tested with a high level of competence – from the idea through to the final check. From flawless logistics through to practical information – we can provide support at every level. We can offer additional security through certificates on the conformity of our products with the most important standards and directives. In a nutshell – OBO helps you more. In every location and in every phase of a project.

To maintain this, we continually challenge ourselves. Not as an end in itself but for the better processing of each customer's requests – fast, reliably and future-oriented. That is the reason we have not only established our three central application areas, but also reworked our catalogue structure. In this way, we can display our service offers more clearly, highlight the product benefits more effectively and illustrate the respective application areas more tangibly.



# OBO Product Worlds



## Industrial installations

- Cable support systems
- Connection and routing systems
- Fastening material



## Building installations

- Cable routing systems
- Device installation ducts, trunking and poles
- Floor installation systems and underfloor applications
- Installation systems



## Safety and protection installations

- Surge protection
- External lightning protection
- Equipotential bonding and earthing
- Insulation and cable bandages
- Fire-tested support and routing systems
- Fire protection ducts



It's your choice – from now on there's a catalogue for each OBO product category. Simply select the catalogues and order together with a collection case.



# Always at your service

If you have questions about products, installation or planning – OBO staff offer exceptionally competent support at each and every phase of your project. So that you are always on the safe side.

- Product and system information, digitally or printed
- Selection and planning aids on the web, as a CAD application or in printed form, as well as in the myOBO app
- 2D and 3D product data for planning
- Field service and branch offices in 60 countries
- Engineering services for major projects

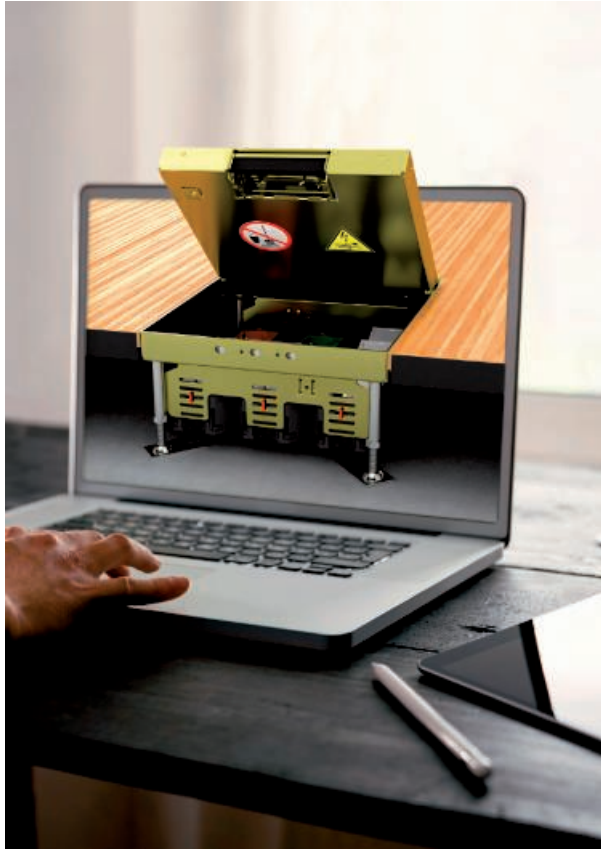
**Our Customer Service  
can be contacted on  
+49 23 73 89 - 17 00**

Monday–Thursday 07.30 - 17.00  
Friday 07.30 - 15.00

or via e-mail at [export@obo.de](mailto:export@obo.de)

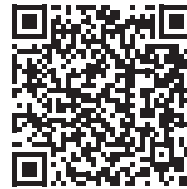






## OBO Construct: Planning has never been so easy!

OBO Construct is a collection of planning tools that were developed especially for electrical installation engineers and planners. This platform offers support in product configuration and a selection aid for the matching systems, and automatically generates a corresponding parts list. With OBO Construct, you can therefore access and edit projects at any time and at any location – via your smartphone, tablet or desktop PC. Versions of the app are available for iOS and Android.



## OBO Academy: From the basics to the concrete application

The OBO Academy has been offering an extensive further education programme for many years. This programme helps with first-hand information and expertise, giving you that essential head start in terms of in-depth knowledge. In our seminars, planner days or online seminars, we provide you with current developments, trends, norms and regulations – systematically, comprehensively and practically oriented.







## Planning virtually, implementing efficiently

When planning and implementing electrical technology, BIM (building information modelling) is becoming increasingly more important. We can now offer our partners the first solution to unlock the full potential of the BIM method for practical applications - giving you more planning efficiency, transparency and cost security with complex projects. Find out about the advantages of BIM@OBO now:

- Intelligent libraries structured according to individual systems
- Available for Revit, as a plug-in and directly via the OBO website
- Simple integration via drag & drop
- Practical display of material lists for ordering directly
- Intuitive user interface

You can find further information at [obo.de/BIM](https://obo.de/BIM).  
Welcome to the future!







## Clear delivery capability

With an approximate storage area of 38,000 m<sup>2</sup> and five strategically well-located sales warehouses, we ensure that our products arrive at the right place at the right time. Our logistics specialists work hard to ensure all our partners are supplied flexibly and as quickly as possible. This you can rely on!

- 1** **Sales Warehouse North**  
Bad Fallingbostal
- 2** **Sales Warehouse West**  
Iserlohn
- 3** **Sales Warehouse East**  
Delitzsch
- 4** **Sales Warehouse South-West**  
Groß-Rohrheim
- 5** **Sales Warehouse South**  
Dasing







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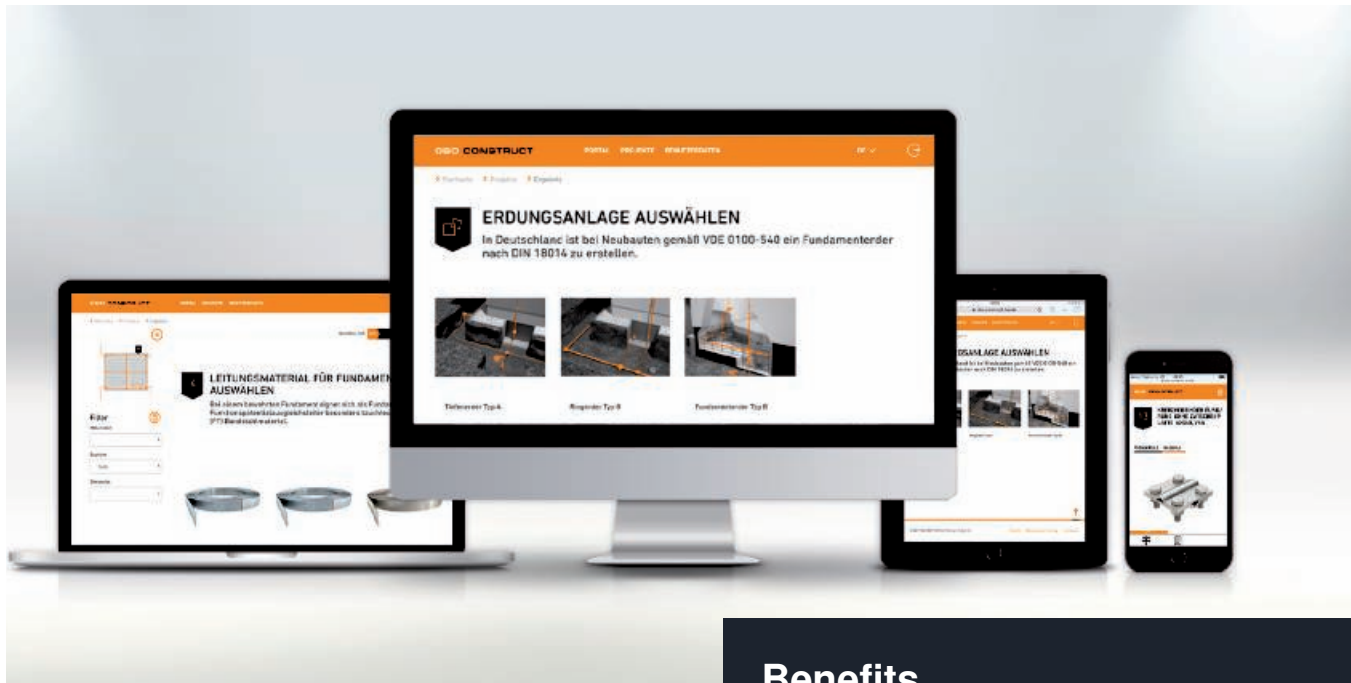


# Planning aids



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# OBO Construct planning aids



## Digital selection aids for earthing systems and surge protection

The OBO Construct electronic planning aids are programs developed to support electrical installation engineers and planners in the design of electrical installation systems. In particular, in complex areas such as surge protection and earthing, there are countless technical and standard general conditions to be observed. The two OBO Construct programs for earthing and surge protection systems should provide active help here. Systematic questions simplify the search for suitable products and guaranteed surge protection systems and earthing systems which fulfil the standards.

### OBO Construct for surge protection

This online tool aids you in the project-orientated selection and connection of suitable surge protection systems and provides you with information on the OBO surge protection systems. You can create your personal materials list, connection diagram and invitation to tender texts quickly, efficiently and in a targeted manner for complete surge protection in the fields of energy technology, photovoltaics, telecommunication, MSR, TV, HF and data technology. The result can be exported easily into Excel format for further processing.

## Benefits

- Time and place-independent work assistance
- Transmit planning requirements to complete product systems
- Find suitable products quickly and simply
- Calculate material and parts lists automatically
- Download configuration results as Excel or Word files

### OBO Construct for earthing systems

Earthing systems can be planned and configured easily using the digital selection aid. The simple and intuitive user guidance leads you through the individual components of the earthing system step by step. The software then automatically calculates the amounts required and the matching accessories. The application can be opened on any end device, irrespective of its operating system – be it smartphone, tablet or desktop PC.





# Lightning protection guide. Safely routed.

## Reference work and planning aid for electrical installation engineers and technical planners

At OBO Bettermann, we can look back on more than 90 years of experience in the field of lightning and surge protection. This experience and, of course, the latest standards and technical innovations have flowed into the company's new lightning protection guide. The brochure allows you to plan installations in the field of lightning and surge protection faster and more easily.

It contains a balanced mixture of both basic and expert knowledge, as well as planning and selection aids for the protection of buildings and systems.

The new lightning protection guide can be requested by calling +49 23 73 89 - 17 00 and is also available for download on the OBO website.



## Topics

- Basic principles
- The external lightning protection system
- Air-termination and down-conductor systems
- Examples and selection aids for wind load calculation conform with Eurocode 1+3
- Earthing systems with foundation earth electrode to current DIN 18014
- The internal lightning protection system
- Equipotential bonding systems
- Overvoltage protection systems
- Current standards
- New selection and planning aids
- Examples



# First-hand support and knowledge



### OBO TBS seminars: First-hand knowledge

With a comprehensive programme of training courses and seminars on the subject of surge voltage and lightning protection systems, OBO is able to support its customers with specialist knowledge from a single source. Alongside the basic theoretical principles, the programme also deals with practical implementation in everyday applications. Special calculation and application examples round off the comprehensive programme of knowledge transfer.

### Invitations to tender on the Internet at [www.ausschreiben.de](http://www.ausschreiben.de)

More than 10,000 entries from the cable support systems, fire protection systems, connection and fastening systems, transient and lightning protection systems, cable routing systems, device systems and underfloor systems can be recalled for free. Regular updates and extensions mean that you always have a comprehensive overview of the OBO products. All the current file formats (PDF, DOC, GAEB, HTML, TEXT, XML, ÖNORM) are available.  
[www.ausschreiben.de](http://www.ausschreiben.de)

### Invitations to tender, product information and data sheets

We can make life easier for you, with our comprehensive selection of materials designed for practical applications, which provide you with effective support with the planning and calculation of a project. These include:

- Invitations to tender
- Product information
- Data sheets

### Invitations to tender for lightning protection/earthing at the highest level:

OBO manufactures products to RAL GZ642-5 and is dedicated to compliance with the RAL directives. Lightning protection and earthing products can be used for invitations to tender according to RAL.

These documents are continually updated and can be downloaded for free at any time from the Internet download area at [www.obo-bettermann.com](http://www.obo-bettermann.com).





**Customer service and credibility**

Friendliness, reliability and competence create acceptance, credibility and lasting working relationships. These shared values arise from OBO's consistent orientation around the wishes and needs of its customers. Close partnerships with customers is OBO's foremost priority.

**Speed and reliability**

Optimised procedures and highly developed logistics ensure that OBO products are in the right place at the right time, anywhere in the world. OBO offers comprehensive support for large-scale projects, from planning all the way to installation.

**Help and advice**

Answers to questions about products and installation, planning advice for complex projects – OBO's staff will help you through every phase of your project, no matter what field it is in. We are constantly improving the support we provide in every phase of collaboration, laying the foundations for genuine partnerships.



- Production location
- Subsidiary
- Representative

## Minor cause, major effect: Damage caused by surge voltages



Our dependency on electrical and electronic equipment continues to increase, in both our professional and private lives. Data networks in companies or emergency facilities such as hospitals and fire stations are lifelines for an essential real time information exchange. Sensitive databases, e.g. in banks or media publishers, need reliable transmission paths.

It is not only lightning strikes that pose a latent threat to these systems. More and more frequently, today's electronic aids are damaged by surge voltages caused by remote lightning discharges or switching operations in large electrical systems. During thunderstorms too, high volumes of energy are instantaneously released. These voltage peaks can penetrate a building through all manner of conductive connections and cause enormous damage.



# Financial implications of lightning and surge damage



Financial losses can only be considered in isolation when no legal or insurance requirements for the safety of people apply.

### Substantial losses result from the destruction of electrical devices, notably:

- Computers and servers
- Telephone systems
- Fire alarm systems
- Monitoring systems
- Lift, garage door and roller shutter drives
- Consumer electronics
- Kitchen appliances

### Additional costs can also be incurred due to outages and consequential damage in relation to:

- Loss of data
- Production outage
- Loss of contactability (Internet, telephone, fax)
- Faulty heating system
- Costs due to faults and false alarms in fire or burglar alarm systems

### Financial losses are on the rise

Recent statistics and numbers show: Surge voltage damages per year have been on the decline since 2014. The positive development could be a result, amongst other things, of the mandatory use of surge protection measures to VDE 0100-443. At the same time, the figures also show that the costs per year are rising significantly. A reason for this is the growing dependency on electrical devices and the increasing number of smart home solutions. Therefore it is always recommended to retrofit surge protection systems, even when they are not required by norms. Although costs will be covered by insurance policies, the annoyance about the preventable damage is initially large. Information on protection measures can be found in, for example, the German Directive VdS 2010.

Year	Amount of lightning and surge voltage damage	Paid damages for lightning and surge voltage damage
2010	290,000	€170 million
2011	380,000	€230 million
2012	360,000	€230 million
2013	290,000	€170 million
2014	380,000	€250 million
2015	350,000	€240 million
2016	320,000	€250 million
2017	300,000	€240 million
2018	280,000	€250 million
2019	230,000	€250 million
2020	200,000	€260 million

Number of instances of damage from lightning and surge voltages and amounts paid out by home and contents insurance companies (the example is of Germany); source: GDV extrapolation based on industry and risk statistics; numbers rounded to the nearest €10,000 or €10 million.

# Lightning and surge protection standards

When planning and executing a lightning protection system, it is necessary to observe all relevant national guidelines and take account of any special circumstances or applications and the safety stipulations in the relevant country-specific supplements.

A lightning and surge protection system consists of several systems, each tailored to each of the others. At its most basic, a lightning and surge protection system consists of one internal and one external lightning protection system.

These, in turn, can be categorised as follows:

- Air-termination devices
- Down-conductors
- Earthing systems
- Area shielding
- Separation distance
- Lightning protection equipotential bonding system

These systems must be carefully selected for the application at hand, and used in a coordinated way. Installation of the systems takes place according to various application and product standards. The supplements to the international IEC guidelines and harmonised European versions of the various country-specific translations often contain additional informative information specific to the country in question.

### Product standards

To ensure that the components can withstand the loads to which they are likely to be exposed in application, they must be checked against the respective product standard for external and internal lightning protection.



External and internal lightning protection systems





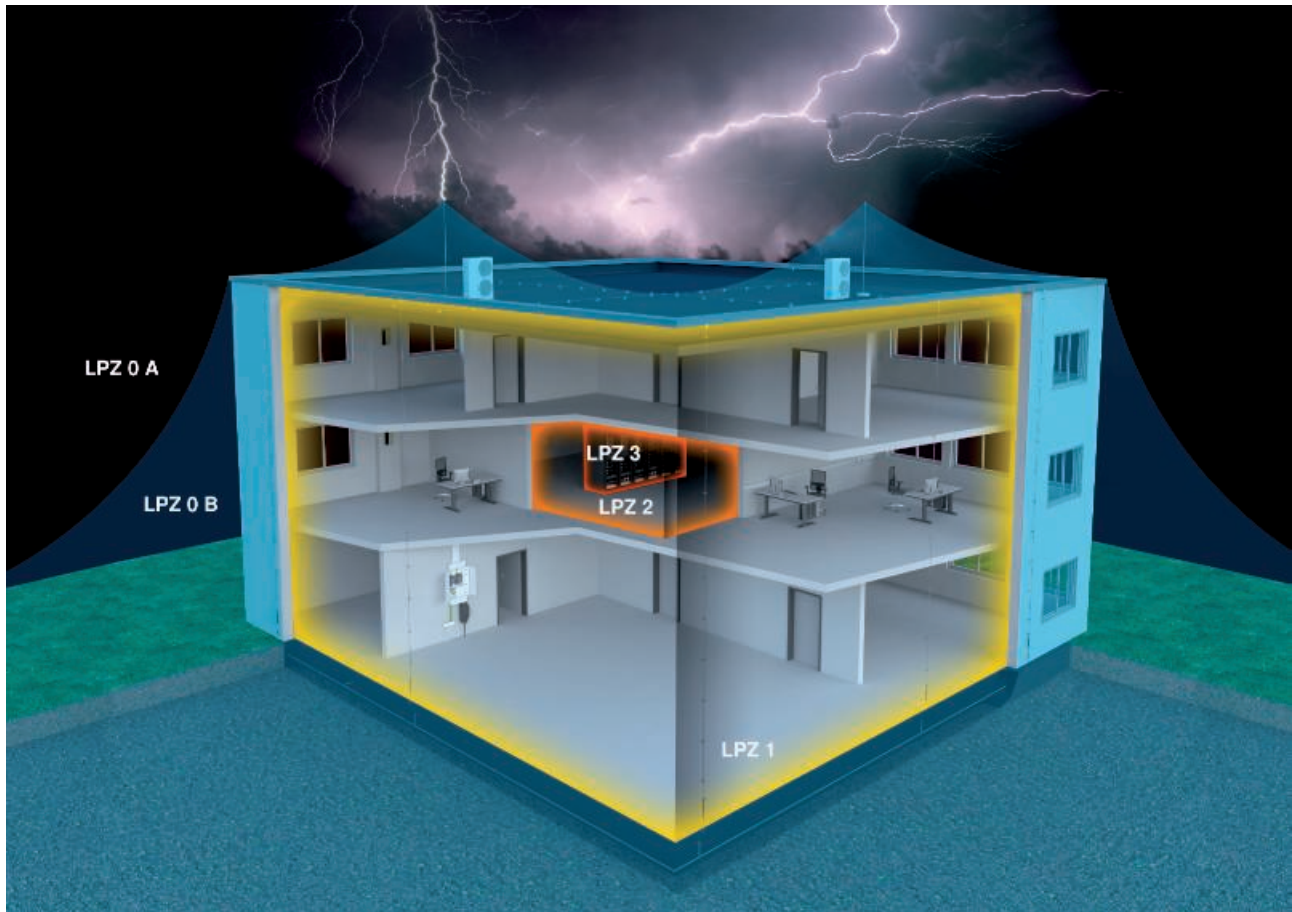
Standard	German supplement	Contents
VDE 0185-305-1 (IEC 62305-1)		Protection against lightning – Part 1: General principles
VDE 0185-305-2 (IEC 62305-2)		Protection against lightning – Part 2: Risk management
	1	Lightning risk in Germany
	2	Calculation aids for estimating the risk of damage for buildings
	3	Additional information on use of EN 62305-2
VDE 0185-305-3 (IEC 62305-3)		Protection against lightning – Part 3: Physical damage to structures and life hazard
	1	Additional information on use of EN 62305-3
	2	Additional information for building structures
	3	Additional information for the testing and servicing of lightning protection systems
	4	Use of metal roofs in lightning protection systems
	5	Lightning and surge protection in PV power supply systems
VDE 0185-305-4 (IEC 62305-4)		Protection against lightning – Part 4: Electrical and electronic systems within structures
	1	Distribution of the lightning current
VDE 0675-6-11 (IEC 0675-6-11)		Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems
VDE 0100-534 (IEC 60364-5-53)		Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control – Clause 534: Devices for protection against surge voltages
VDE 0100-443 (IEC 60364-4-44)		Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances – Clause 443: Protection against surge voltages of atmospheric origin or due to switching
VDE 0100-712 (IEC 60364-7-712)		Requirements for operational premises, special rooms and systems – photovoltaic (PV) power supply systems

Key lightning protection standards and specifications

Product standards	Contents
VDE 0185-561-1 (IEC 62561-1)	Lightning protection system components – Requirements for connection components
VDE 0185-561-2 (IEC 62561-2)	Lightning protection system components – Requirements for conductors and earthers
VDE 0185-561-3 (IEC 62561-3)	Lightning protection system components – Requirements for isolating spark gaps
VDE 0185-561-4 (IEC 62561-4)	Lightning protection system components – Requirements for conductor fasteners
VDE 0185-561-5 (IEC 62561-5)	Lightning protection system components – Requirements for earth electrode inspection housings and earth electrode seals
VDE 0185-561-6 (IEC 62561-6)	Lightning protection system components – Requirements for lightning strike counters
VDE 0185-561-7 (IEC 62561-7)	Lightning protection system components – Requirements for earthing enhancing compounds
IEC TS 62561-8	Lightning protection system components – Requirements for components for insulated lightning protection systems
VDE 0675-6-11 (IEC 61643-11)	Surge protective devices for use in low-voltage power systems – Requirements and test methods
VDE 0845-3-1 (IEC 61643-21)	Surge protection for use in telecommunications and signalling networks

Lightning protection and surge protection components

# Gradual surge reduction with lightning protection zones



## Lightning protection zone concept

The lightning protection zone concept described in international standard IEC 62305-4 (DIN VDE 0185 Part 4) has proved to be practical and efficient. This concept is based on the principle of gradually reducing surges to a safe level before they reach the terminal device and cause damage. In order to achieve this

situation, a building's entire energy network is split into lightning protection zones (LPZ = lightning protection zone). Installed at each transition from one zone to another is a surge arrester for equipotential bonding. These arresters correspond to the requirement class in question.

## Lightning protection zone




LPZ 0 A	Unprotected zone outside the building. Direct lightning strike, no shielding against electromagnetic interference pulses LEMP (Lightning Electromagnetic Pulse).
LPZ 0 B	Through the area protected by the external lightning protection system. No shielding against LEMP.
LPZ 1	Zone inside the building. Low partial lightning energies possible.
LPZ 2	Zone inside the building. Low surges possible.
LPZ 3	Zone inside the building (can also be the metal housing of a consumer). No interference pulses through LEMP or surges present.



# Choosing the right surge protective devices



The classification of surge protective devices into types means they can be matched to different requirements with regard to location, protection level and current-carrying capacity. The table provides an overview of the zone transitions. It also shows which OBO surge protective devices can be installed in the energy supply network and their respective function.

Zone transition	Protection device and device type	Product example	Product figure
LPZ 0 B to LPZ 1	Protection device for lightning protection equipotential bonding in accordance with VDE 0185-305 (IEC 62305) for direct or close lightning strikes. Devices: Type 1+2 (Class I+II), e.g. CCF Compact Max. protection level according to standard: 1.5 kV OBO protection level: < 1.5 kV Installation, e.g. in the main distributor/at building entry	MCF Compact Item no.: 5096987	
LPZ 1 to LPZ 2	Protection device for lightning protection equipotential bonding in accordance with VDE 0185-305 (IEC 62305) for direct or close lightning strikes. Devices: Type 2 (Class II), e.g. V20 Max. protection level according to standard: 1.5 kV OBO protection level: < 1.3 kV Installation, e.g. in the main distributor/at building entry	V20 Item no.: 5095253	
LPZ 2 to LPZ 3	Protection device, designed for surge protection of portable consumers at sockets and power supplies. Devices: Type 3 (Class III), e.g. ÜSM-A Max. protection level according to standard: 1.5 kV OBO protection level: < 1.3 kV Installation, e.g. on the end consumer	ÜSM-A Item no.: 5092451	

# BET Test Centre – for lightning protection, electrical engineering and support systems



## BET with countless tasks

Whereas previously only lightning current, environmental and electrical testing had been possible at BET, the BET Test Centre is now also a competent partner for the testing of cable support systems. This combination has made it necessary to revise the meaning of the name. If BET previously stood for "Blitzschutz- und EMV-Technologiezentrum" (Lightning protection and EMC technology centre), since 2009 these letters have meant BET Test Centre for lightning protection, electrical engineering and support systems.

## Test generator for lightning current tests

The test generator planned in 1994 and completed in 1996 makes it possible to carry out lightning current tests at up to 200 kA. The generator was planned and constructed in cooperation with Soest Technical College. Due to the intensive planning and scientific support in the construction of the test system, it has worked for 20 years without errors and meets current standardised test requirements.

## Testing tasks

The main load of the testing generator is generated through the testing of products from the TBS product division. For this, developmental tests of new developments, modifications to existing OBO products and also comparison tests with competitive products are carried out. These include lightning protection components, surge protective devices and lightning conductors. Tests for lightning protection components are carried out according to DIN EN 62561-1, for spark gaps according to DIN EN 62561-3 and for lightning and surge protective devices according to DIN EN 61643-11. This is only a small amount of the testing standards used for tests in the BET Test Centre.



# Certification

In development, manufacture and marketing, the products of OBO Bettermann are subject to high, standardised quality standards and international standards. For decades now, OBO Bettermann has operated an ISO 9001-certified quality management system, which also fulfils the high requirements of the ATEX 2014/34/EU directive for EX products. In addition, OBO has run a certified energy management system according to ISO 50001 and is a long-standing member of Industrieverband Feuerverzinken e.V.

The BET Test Centre is a testing laboratory, recognised and certified by VDE, for the execution of countless tests according to international standards for lightning protection systems.



**Zertifikat zur Anerkennung**  
*Certificate of acceptance*

von / of  
**OBO Bettermann GmbH & Co. KG**  
BET Testcenter  
Hünger Ring 52  
58710 Menden  
GERMANY

durch die / by the  
**VDE Prüf- und Zertifizierungsinstitut GmbH**  
*VDE Testing and Certification Institute*

**Zertifikat**  
*Mitteilung über die Bewertung des Qualitätssicherungssystems*

Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen  
Richtlinie 2014/34/EU  
Anhang IV - Modul D: Konformität mit dem Baumuster auf der Grundlage einer Qualitätsbeurteilung bezogen auf den Produktionsprozess  
Anhang VII - Modul E: Konformität mit dem Baumuster auf der Grundlage der Qualitätsbeurteilung bezogen auf das Produkt

Nummer des Zertifikates: **BVS 16 ATEX ZQS/E310**

Produktkategorie: **Geräte und Komponenten**  
Gerätegruppe II, Kategorien I/II, 20: Transienten- und Blitzschutz-Systeme

**Confirmation**

Hierewith we confirm, that

**OBO BETTERMANN GmbH & Co. KG**  
Hünger Ring 52  
58710 Menden

is a member of our association

**Industrieverband Feuerverzinken e. V., Düsseldorf.**

The company OBO BETTERMANN GmbH & Co. KG provides among other things corrosion protection for fabricated iron and steel articles by hot dip galvanizing and examines that business in accordance with the requirements of the standard

**DIN EN ISO 1461**  
"Hot dip galvanized coatings on fabricated iron and steel articles - specifications and test methods".

Industrieverband Feuerverzinken e.V.      Düsseldorf, February 3rd, 2017  
- Director -

Industrieverband Feuerverzinken e.V.  
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40230 Düsseldorf

*Mark Huckel*  
Mark Huckel

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**WEISS BERWANN FEUERVERZINKEN**

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BET Testcenter  
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GERMANY

DEKRA EXAM GmbH, beherrschte Stelle Nr. 0156 gemäß Artikel 17 der AEG-RL vom 26. Februar 2014, bescheinigt, dass der Hersteller ein für die Produktion geeignetes, das dem Anhang IV dieser Richtlinie genügt System in Übereinstimmung mit Anhang IV der Richtlinie anwendet. Anträge werden alle überwachenden Produkte mit dem Baumusterprüfprotokoll im Auditbericht Nr. 2025/0310/16, ausgestellt am 21.12.2016, nach einem Audit des Qualitätssicherungssystems werden Bestandteil dieses Auditberichts sein. Das Audit wurde am 21.12.2016 durchgeführt und kann zurückgezogen werden, wenn die Anforderungen an die Qualitätsbeurteilung nach Anhang IV und VII erfüllt sind. Richtlinie 2014/34/EU ist in der CE-Kennzeichnung die Kennnummer der CE als der benannten Stelle anzugeben, die in der Phase der Produktion

*Mark Huckel*  
Fachautor

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DE 5, 40230 Düsseldorf, Telefon +49 211 3989 150, Telefax +49 211 3989 111, de-iso@dekra.com

**Acceptance Program**

Stufe 2 / in Stage 2

40046136  
2019-06-22  
3022906-0601-0001237781

In mit dem gültigen Dokument „TDAP SCOPE“: Es berechtigt zu geschützten Zeichens des VDE.  
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**VDE INSTITUT**

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**Acceptance Program**

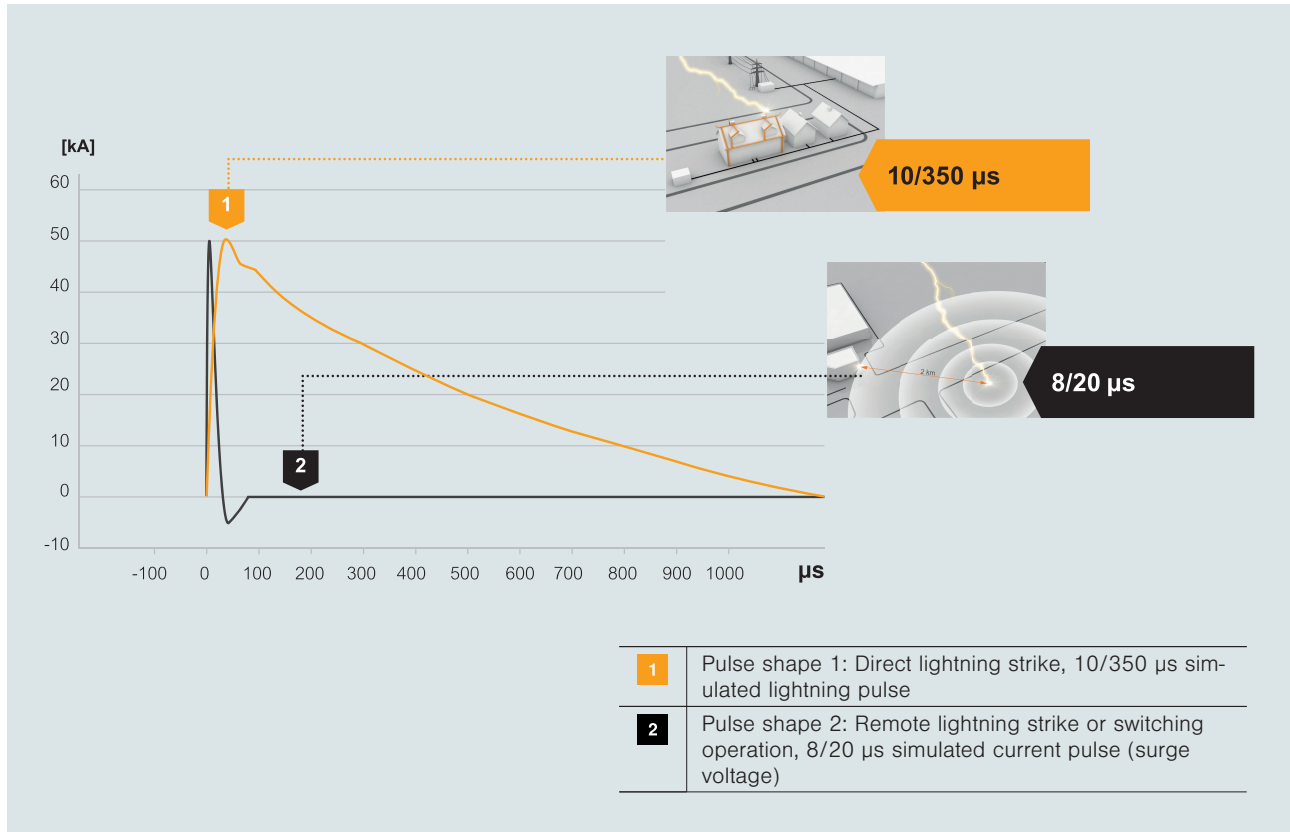
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**VDE INSTITUT**

# Types of pulse and their characteristics



## Testing types for lightning and surge protection

Both lightning current tests and surge voltage tests can be carried out at up to 20 kV. A hybrid generator is used for these tests, which was also developed as part of a cooperation with the Soest Technical College. EMC testing of cable support systems can also be carried out using this test generator. All kinds of cable routing and cable support systems of up to 8 m length can be tested without any difficulties. Tests for electrical conductivity according to IEC 61537 are also carried out.

## Simulation of real environmental conditions

To carry out standardised tests on components intended for external use, they must be pretreated under real environmental conditions. This takes place in a salt spray trough and a sulphur dioxide testing

chamber. Depending on the test, the test length and the concentration of the salt spray or sulphur dioxide in the testing chambers may vary. This means that it is possible to conduct tests according to IEC 60068-2-52, ISO 7253, ISO 9227 and EN ISO 6988.

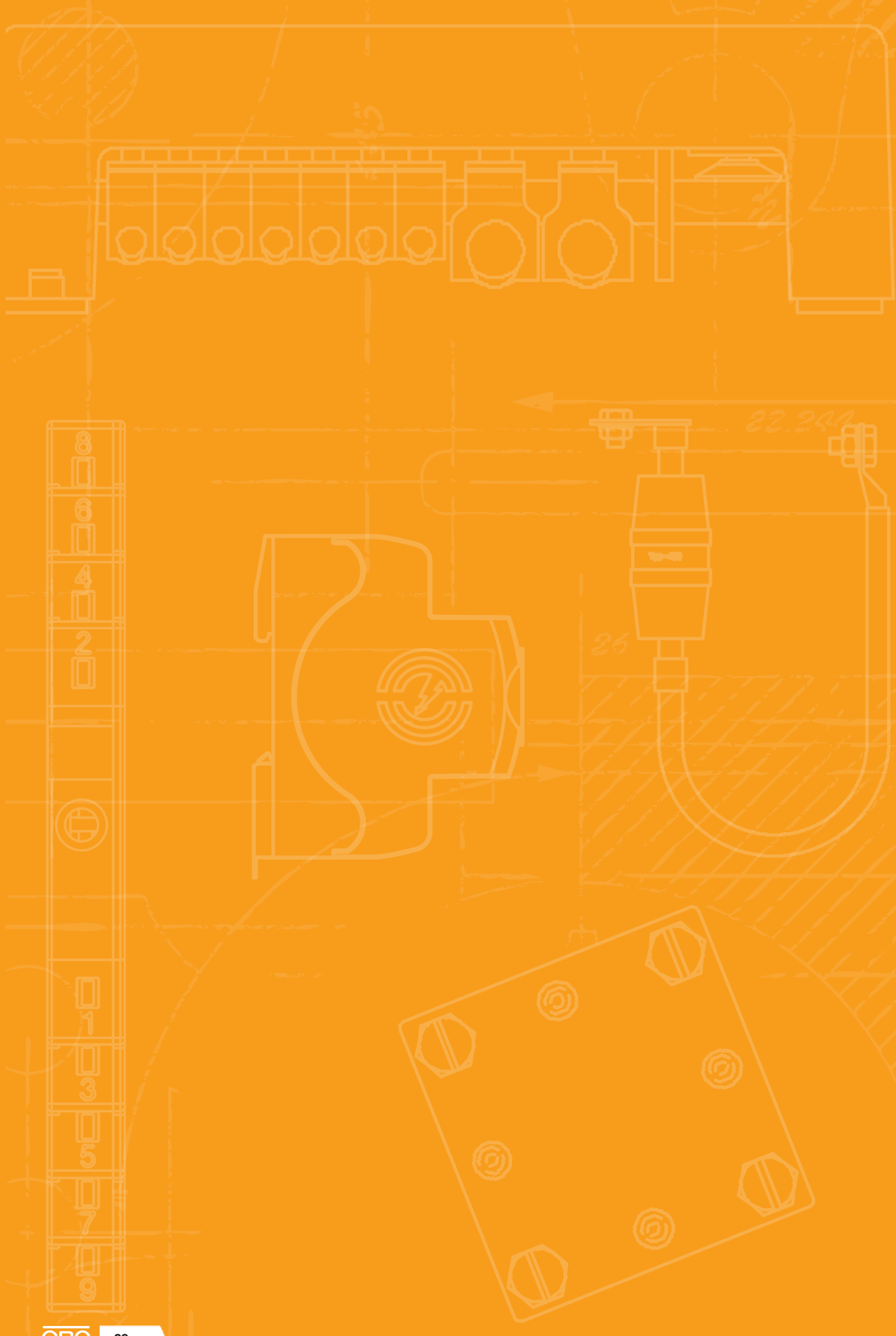
## Testing cable support systems

The well-known KTS testing system, newly installed in the BET Test Centre, allows the investigation of the load capacities of any cable support system manufactured by OBO. The basis for this is IEC 61537 and VDE 0639.

In the BET Test Centre, OBO Bettermann has a testing department in which products can be tested according to standards, even during the development phase.







# AC power supplies



AC power supplies

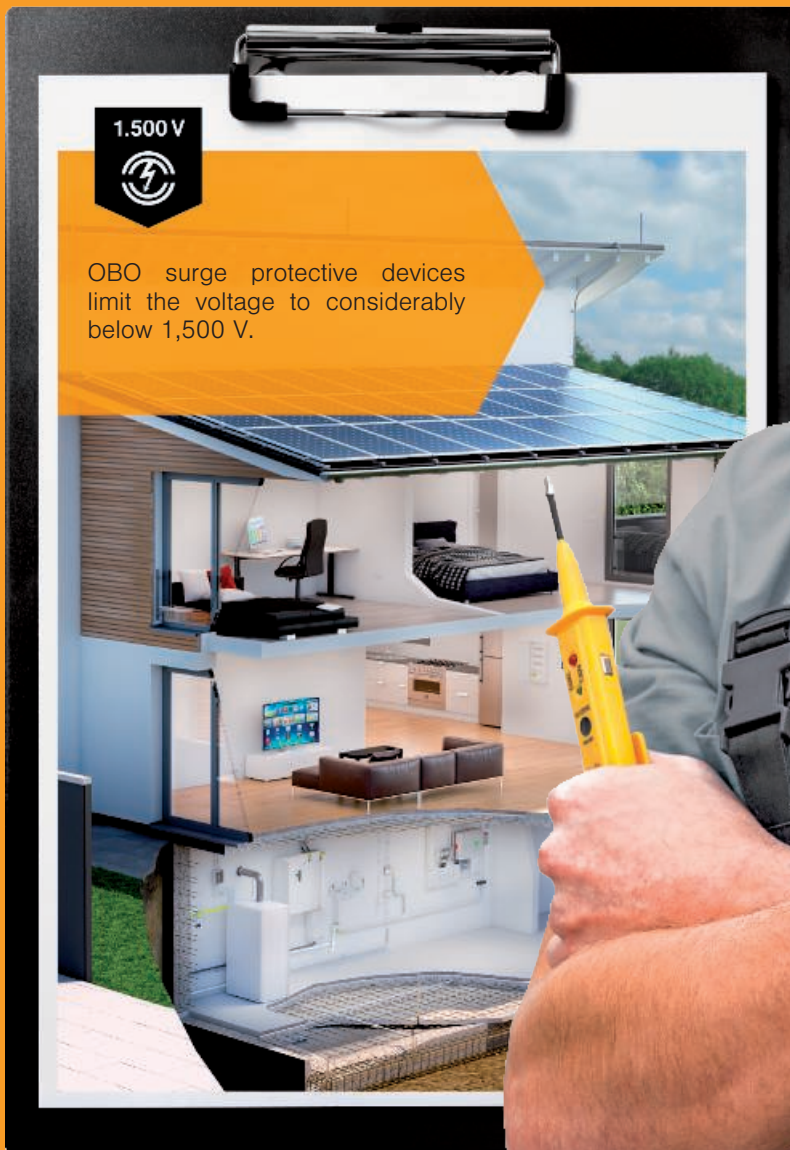
30



# Surge protection that is now mandatory

## The new DIN VDE 0100-443

Since October 2016, surge protection in all new buildings has been mandatory in Germany for an electrical installation conformant with the standard.





# On the safe side with OBO

With surge protection in the power-side connection compartment (NAR)



Gemäß der VDE-Richtlinien  
**VDE 0100-443**  
**VDE 0100-534**  
 ist Überspannungsschutz  
**Pflicht**



Only 50 mm wide, optionally with FS contact

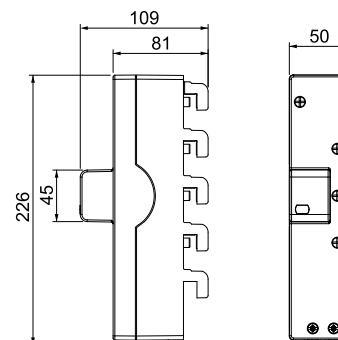
Solutions from housing to the highest lightning protection class (FPC I)

Type 1+2 surge protection for mounting on 40 mm busbar system

Visual display without power consumption

Screw fastening secures permanent contact to the busbar

# LightningController - MCF25-NAR-TNC



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF25-NAR-TNC	255	3	IP20	1	100.800	5096950

Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

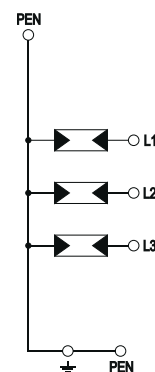
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 25 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with outside cable infeed.

## MCF25-NAR-TNC

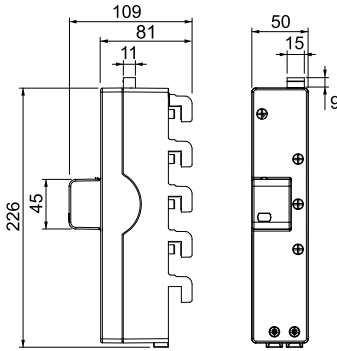
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	8.5 kA
Total discharge current (10/350)	$I_{total}$	25 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	60 kA
Combined voltage protection level [L-PEN]	$U_{D/L-PEN}$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T/L-N, 120 min}$	442 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

## Connection options





# LightningController - MCF25-NAR-TNC+FS



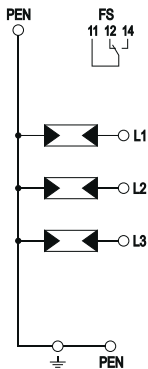
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 25 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Building with outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF25-NAR-TNC+FS	255	3	IP20	1	102.000	5096953

## Connection options

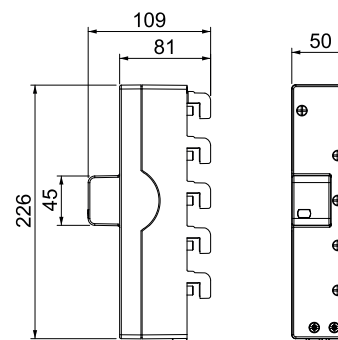


MCF25-NAR-TNC+FS		
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	8.5 kA
Total discharge current (10/350)	$I_{total}$	25 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	60 kA
Combined voltage protection level [L-PEN]	$U_p / L-PEN$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_T / L-N, 120 \text{ min}$	442 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>





# LightningController - MCF30-NAR-TT



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF30-NAR-TT	255	3+N/PE	IP20	1	107.504	5096961

Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

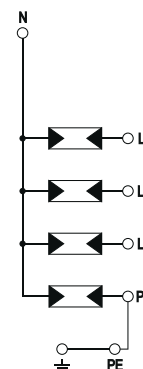
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 30 kA (10/350) 3+NPE
- Fulfils the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with outside cable infeed.

## MCF30-NAR-TT

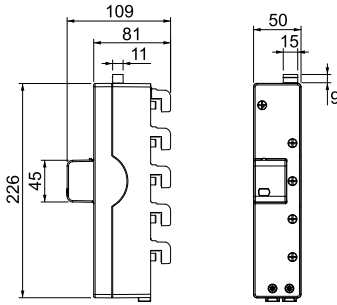
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	7.5 kA
Total discharge current (10/350)	$I_{total}$	30 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	80 kA
Protection level [L-N]	$U_d$	1.5 kV
Protection level [N-PE]	$U_{p / N-PE}$	1.5 kV
Combined voltage protection level [L-PE]	$U_{d / L-PE}$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T / L-N, 120 min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_{1 / N-PE, 200 ms}$	1200 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

## Connection options





# LightningController - MCF30-NAR-TT+FS



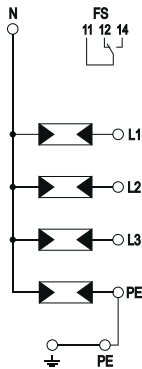
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 30 kA (10/350) 3+NPE
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Building with outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF30-NAR-TT+FS	255	3+N/PE	IP20	1	107.600	5096963

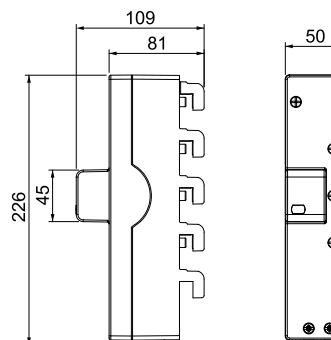
## Connection options



MCF30-NAR-TT+FS		Type 1+2
SPD to EN 61643-11		Class I-II
SPD to IEC 61643-11		Class I-II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	7.5 kA
Total discharge current (10/350)	$I_{total}$	30 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	80 kA
Protection level [L-N]	$U_p$	1.5 kV
Protection level [N-PE]	$U_{p / N-PE}$	1.5 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_T / L-N, 120 \text{ min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_T / N-PE, 200 \text{ ms}$	1200 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>



# LightningController - MCF38-NAR-TNC



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF38-NAR-TNC	255	3	IP20	1	100.800	5096971

Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

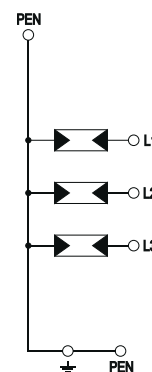
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 38 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with lightning protection or outside cable infeed.

## MCF38-NAR-TNC

SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Total discharge current (10/350)	$I_{total}$	38 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	60 kA
Combined voltage protection level [L-PEN]	$U_{D/L-PEN}$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T/L-N, 120 min}$	442 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

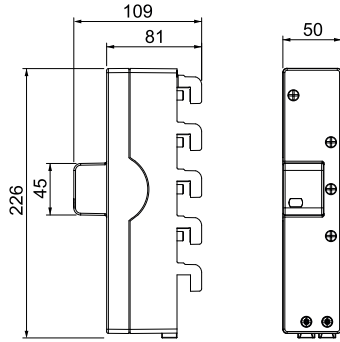
## Connection options







# LightningController - MCF38-NAR-TNC+FS



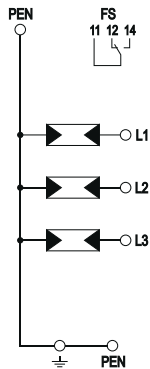
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 38 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Buildings with lightning protection or outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF38-NAR-TNC+FS	255	3	IP20	1	102.000	5096973

## Connection options

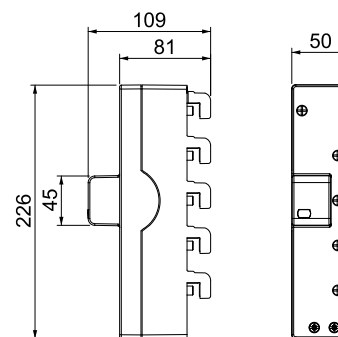


### MCF38-NAR-TNC+FS

SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Total discharge current (10/350)	$I_{total}$	38 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	60 kA
Combined voltage protection level [L-PEN]	$U_{d / L-PEN}$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_T / L-N, 120 \text{ min}$	442 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>



## LightningController - MCF50-NAR-TT



Type	Max. continuous voltage		Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
	AC V	Pole version				
<b>MCF50-NAR-TT</b>	255	3+N/PE	IP20	1	106.700	<b>5096975</b>

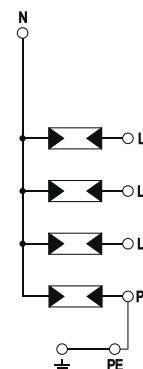
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

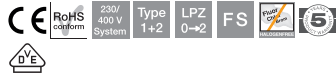
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 50 kA (10/350) 3+NPE
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with lightning protection or outside cable infeed.

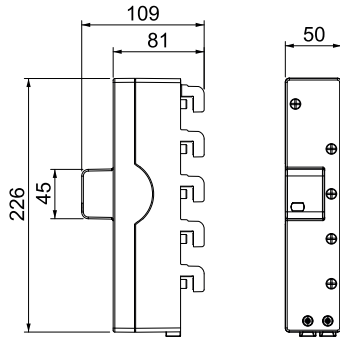
MCF50-NAR-TT		Type 1+2
SPD to EN 61643-11		Class I+II
SPD to IEC 61643-11		
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Total discharge current (10/350)	$I_{total}$	50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	80 kA
Protection level [L-N]	$U_d$	1.5 kV
Protection level [N-PE]	$U_{p/N-PE}$	1.5 kV
Combined voltage protection level [L-PE]	$U_{d/L-PE}$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T/L-N, 120 min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_{1/N-PE, 200 ms}$	1200 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

### Connection options





## LightningController - MCF50-NAR-TT+FS



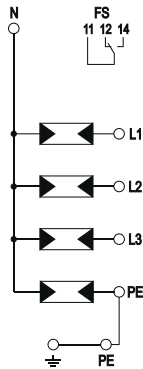
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 50 kA (10/350) 3+N-PE
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 160 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Building with lightning protection or outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF50-NAR-TT+FS	255	3+N/PE	IP20	1	107.500	5096977

### Connection options



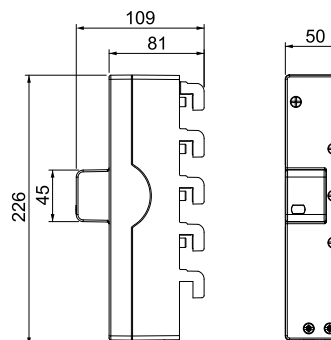
### MCF50-NAR-TT+FS

SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Total discharge current (10/350)	$I_{total}$	50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	80 kA
Protection level [L-N]	$U_d$	1.5 kV
Protection level [N-PE]	$U_d / N-PE$	1.5 kV
Combined voltage protection level [L-PE]	$U_d / L-PE$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T / L-N, 120 min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_{I / N-PE, 200 ms}$	1200 V
Max. mains-side overcurrent protection		160 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>





# LightningController - MCF75-NAR-TNC



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF75-NAR-TNC	255	3	IP20	1	100.800	5096982

Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

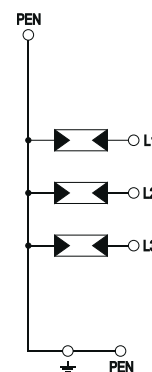
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 75 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 315 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with lightning protection or outside cable infeed.

## MCF75-NAR-TNC

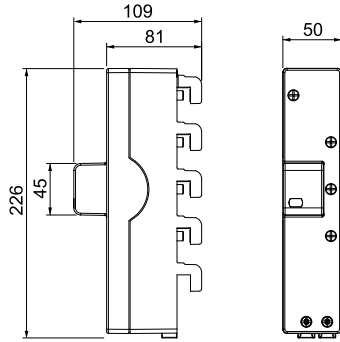
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	25 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Total discharge current (10/350)	$I_{total}$	75 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	75 kA
Combined voltage protection level [L-PEN]	$U_{D/L-PEN}$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T/L-N, 120 min}$	442 V
Max. mains-side overcurrent protection		315 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

## Connection options





# LightningController - MCF75-NAR-TNC+FS



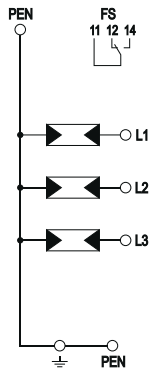
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-C systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 75 kA (10/350) 3-pole
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 315 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Buildings with lightning protection or outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF75-NAR-TNC+FS	255	3	IP20	1	102.000	5096983

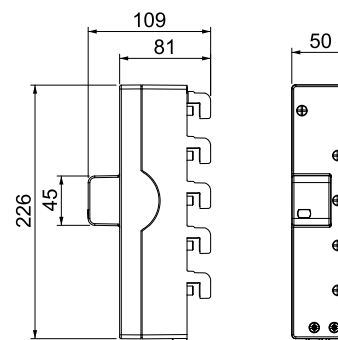
## Connection options



MCF75-NAR-TNC+FS		Type 1+2
SPD to EN 61643-11		Class I+II
SPD to IEC 61643-11		
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	25 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Total discharge current (10/350)	$I_{total}$	75 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	75 kA
Combined voltage protection level [L-PEN]	$U_{d / L-PEN}$	1.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_T / L-N, 120 \text{ min}$	442 V
Max. mains-side overcurrent protection		315 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>



# LightningController - MCF100-NAR-TT



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
<b>MCF100-NAR-TT</b>	255	3+N/PE	IP20	1	107.200	<b>5096985</b>

Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

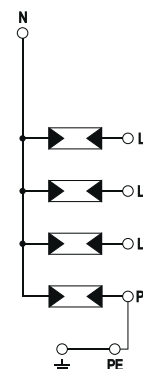
- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 100 kA (10/350) 3+NPE
- Fulfills the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 315 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100

Application: Building with lightning protection or outside cable infeed.

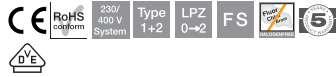
## MCF100-NAR-TT

SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	25 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Total discharge current (10/350)	$I_{total}$	100 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	100 kA
Protection level [L-N]	$U_p$	1.5 kV
Protection level [N-PE]	$U_{p / N-PE}$	1.5 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T / L-N, 120 min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_{T / N-PE, 200 ms}$	1200 V
Max. mains-side overcurrent protection		315 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>

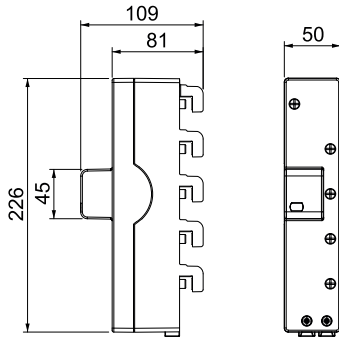
## Connection options







## LightningController - MCF100-NAR-TT+FS



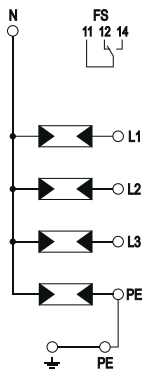
Combination arrester, type 1+2, for mounting on 40 mm busbars, for TN-S and TT systems

- Protection level  $\leq 1.5$  kV to protect the terminals
- Lightning protection equipotential bonding according to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 100 kA (10/350) 3+NPE
- Fulfils the requirements of VDE 0100-534 (IEC 60364-5-53)
- Line follow current quenching up to 50 kA and max. backup fuse up to 315 A gL/gG
- Spark gaps for use in the pre-meter area according to VDE-AR-N 4100
- With potential-free changeover contact for remote signalling

Application: Building with lightning protection or outside cable infeed.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF100-NAR-TT+FS	255	3+N/PE	IP20	1	107.600	5096988

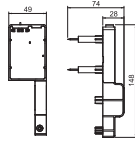
### Connection options



MCF100-NAR-TT+FS		Type 1+2
SPD to EN 61643-11		Class I+II
SPD to IEC 61643-11		
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	25 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Total discharge current (10/350)	$I_{total}$	100 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	100 kA
Protection level [L-N]	$U_p$	1.5 kV
Protection level [N-PE]	$U_{p / N-PE}$	1.5 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$	2.5 kV
TOV voltage [L-N] – fail safe mode – 120 min.	$U_{T / L-N, 120 min}$	442 V
TOV voltage [N-PE] – withstand mode – 200 ms	$U_{T / N-PE, 200 ms}$	1200 V
Max. mains-side overcurrent protection		315 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE
Conductor cross-section, flexible (fine-wire)		10 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		10 - 35 mm <sup>2</sup>
FM contacts		Changeover
Switching power AC		250 V/ 2 A
Switching power DC		250 V/ 0,1 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>



## Voltage tap for MCF-NAR series



Type	Nominal voltage AC (50/60 Hz) V	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
<b>MCF-NAR-SMG</b>	230	IP20	1	5.850	<b>5096900</b>

Adapter for voltage tap in power-side connection compartment

- Simple and space-saving voltage taps for the termination point meter position (APZ) and the space for additional applications (RfZ)
- With spring contacts for easy connection of wires
- Includes 2 plug sockets
- Safety screw to prevent unwanted loosening
- Replaceable 5 A fine-wire fuse with a breaking capacity of 50 kA
- Fuse holder 6.3 x 32 mm





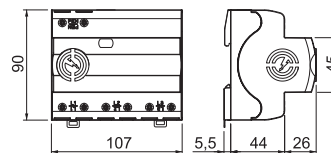
# Combination arrester MCF Compact

Surge protection energy technology, arrester, type 1+2

- Type 1 + 2 SPD:  $I_{imp} = 25$  kA per pole and up to 100 kA in total
- Protection level:  $< 1.5$  kV, usable in coordination with type 3 SPD
- Usable in buildings with lightning protection class 1–4
- Quality according to EN 61643-11 certified by an external testing institute
- Universally usable for industry, offices, commercial and residential buildings
- System protection up to 315 A usable without separate fusing
- Remote signalling, potential-free changeover (RS)
- Variants in three to three-pole+NPE versions
- Operating instructions always available online via QR code
- Space savings of up to 25% (compared to MCD variant)



# LightningController Compact - MCF75



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF75-3+FS	255	3	IP20	1	75.000	5096981

Combination arrester, lightning current and surge arrester, type 1+2

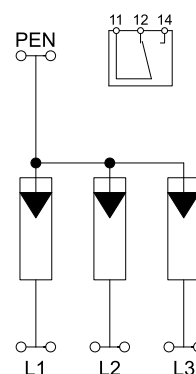
- Protection level  $\leq 1.5$  kV
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 75 kA (10/350), 3-pole
- Line following current quenching 50 kA Ipeak, arrester backup fuse to 315 A gL/gG
- Fulfills the requirements of VDE-AR-N 4100 for use in pre-meter area
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings

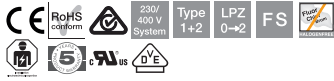
Application: Industrial systems and buildings with external lightning protection of the highest class I to IV.

## MCF75-3+FS

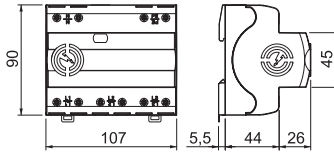
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
SPD to UL 1449		Type 4
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	35 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Total discharge current (10/350)	$I_{total}$	75 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	75 kA
Combined voltage protection level [L-PEN]	$U_{p/L-PEN}$	1.5 kV
Max. mains-side overcurrent protection		315 A
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		VDE, UL
Conductor cross-section, flexible (fine-wire)		1.5 - 25 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)		16 - 3 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

## Connection options





## LightningController Compact - MCF100



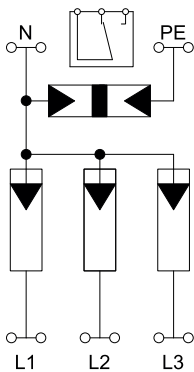
Combination arrester, lightning current and surge arrester, type 1+2

- Protection level  $\leq 1.5$  kV
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 100 kA (10/350), 3+NPE
- Line following current quenching 50 kA I<sub>peak</sub>, arrester backup fuse to 315 A gL/gG
- Fulfills the requirements of VDE-AR-N 4100 for use in pre-meter area
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings

Application: Industrial systems and buildings with external lightning protection of the highest class I to IV.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
MCF100-3+NPE+FS	255	3+N/PE	IP20	1	93.500	5096987

### Connection options



### MCF100-3+NPE+FS

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	U <sub>n</sub> 230 V
Maximum continuous voltage AC	U <sub>C</sub> 255 V
Nominal discharge current (8/20 μs)	I <sub>n/L-N</sub> 35 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Impulse discharge current (10/350 μs)	I <sub>imp</sub> 25 kA
Total discharge current (10/350)	I <sub>total</sub> 100 kA
Maximum discharge current (8/20 μs) [total]	I <sub>total</sub> 100 kA
Protection level [L-N]	U <sub>b</sub> 1.5 kV
Max. mains-side overcurrent protection	315 A
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T <sub>u</sub> -40 - +80 °C
Protection rating	IP20
Approvals	VDE, UL
Conductor cross-section, flexible (fine-wire)	1.5 - 25 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 3 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





## Combination arrester MCD 50

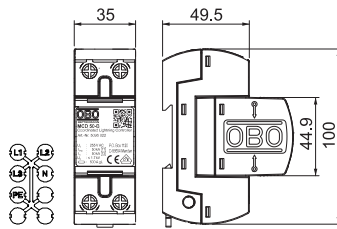
Surge protective device for energy technology, arrester, type 1 (industry)

The combination arresters MCD 50 meet the type 1+2 requirement class according to IEC 61643-11. These devices protect low-voltage consumer systems from surges of all types and are available in single-pole to four-pole versions. The voltage-limiting, high-performance spark gaps offer several benefits. A short response time, a low protection level and high current leakage capability with long service life.

- Type 1+2 SPD – VDE-tested
- Connectable lightning current and surge arresters
- High arresting capacity up to 50 kA (10/350) per pin
- Combination arresters for buildings with lightning protection system
- Simple standard DIN rail mounting
- Labelled connections
- Usable in systems with lightning protection class I-IV



## Combination arrester, 1-pole



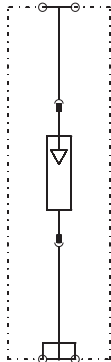
Combination arrester, type 1+2, for use in TN and TT networks

- Lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 150 kA (10/350) in total
- Protection level < 1.7 kV allows device protection
- Short-circuit resistance 10 kA, arrester backup fuse to 500 A gL/gG
- Suitable for use in pre-meter area
- Encapsulated, non-extinguishing spark gaps

Application: Industrial systems and buildings with external lightning protection of the highest class I to IV.

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B	255	1-pole	1	34.400	5096849

## Connection options



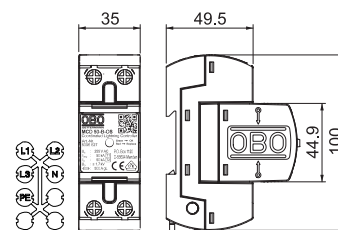
MCD 50-B		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	50 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Protection level	$U_p$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity leff	$I_{fi eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>







## Combination arrester, 1-pole with function display



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B-OS	255	1-pole	1	34.800	5096852

Combination arrester, type 1+2, 1-pole, for use in TN and TT networks:

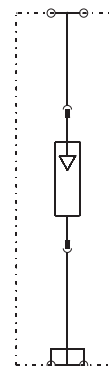
MCD 50-B-OS: Coordinated lightning current arrester, type 1+2 to EN 61643-11 with visual function display. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305.

- Arresting capacity 50 kA (10/350  $\mu$ s) per pole
- Power consumption < 26 mW/pole
- Protection level < 1.7 kV, allows device protection
- Line follow current quenching 25 kA I<sub>peak</sub>
- Incl. plug caps for labelling the connections
- Encapsulated, non-extinguishing spark gap
- Can be used in standard distributor housings

Application: Compact surge protection concepts and installations in a distributor.

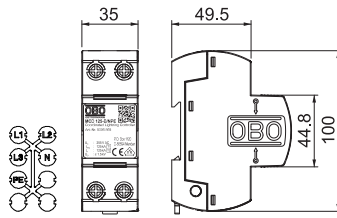
MCD 50-B-OS		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	50 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Protection level	$U_p$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity I <sub>eff</sub>	$I_{fi\ eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>

### Connection options





## Combination arrester, 1-pole NPE



Combination arrester, type 1+2, N+PE for use in TN-S and TT networks.

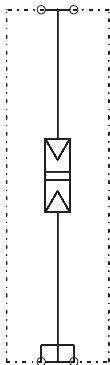
MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 to EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

- Arresting capacity 125 kA (10/350  $\mu$ s)
- Conforms to VDE-AR-N 4100
- Incl. plug caps for labelling the connections
- Protection level < 1.5 kV, allows device protection
- Encapsulated, non-extinguishing spark gap

Application: Industrial systems and buildings with external lightning protection of Classes I to IV.

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 125-B NPE	255	NPE	1	46.500	5096865

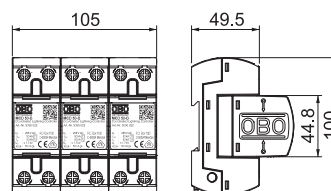
### Connection options



MCD 125-B NPE		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	$I_{imp}$	125 kA
Total discharge current (10/350)	$I_{total}$	125 kA
Nominal discharge current (8/20)	$I_n$	125 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Protection level (N-PE)		< 1,5 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity (eff) [N-PE]	$I_{fi}$	0.1 kA
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>



## Combination arrester, 3-pole



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3	255	3-pole	1	117.000	5096877

Combination arrester, type 1+2, 3-pole, for use in TN-C networks.

Completely pre-terminated and ready for connection, consisting of: 3x MCD 50-B: Type 1+2 (Class B) coordinated lightning current arrester EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

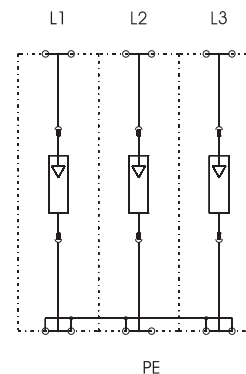
- Lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 150 kA (10/350) in total
- Protection level < 1.7 kV allows device protection
- Short-circuit resistance 10 kA, arrester backup fuse to 500 A gL/gG
- Suitable for use in pre-meter area according to VDE-AR-N 4100
- Encapsulated, non-extinguishing spark gaps

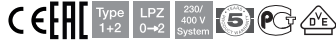
Application: Industrial systems and buildings with external lightning protection of the Classes I to IV.

### MCD 50-B 3

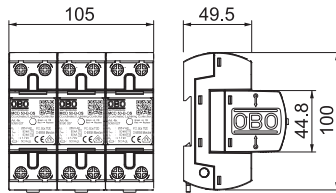
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	150 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Protection level	$U_d$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity $I_{eff}$	$I_{fi eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>

### Connection options





## Combination arrester, 3-pole with function display



Combination arrester set, type 1+2, 3-pole, with visual function display, for use in TN-C networks:

Completely pre-terminated and ready for connection, consisting of:  
3 x MCD 50-B-OS: Type 1+2 coordinated lightning current arresters to DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

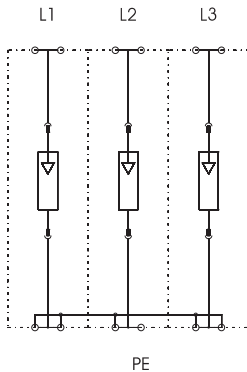
- Lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 150 kA (10/350) in total
- Protection level < 1.7 kV allows device protection
- Short-circuit resistance 10 kA, arrester backup fuse to 500 A gL/gG
- Power consumption < 26 mW/pole
- Encapsulated, non-extinguishing spark gaps

Application: Industrial systems and buildings with external lightning protection of Classes I to IV.

Highest continuous voltage

Type	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3-OS	255 V 3-pole	1	118.000	5096835

## Connection options

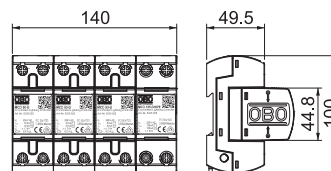


## MCD 50-B 3-OS

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	150 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Protection level	$U_p$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity left	$I_{fi eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>



## Combination arrester, 3-pole + NPE



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3+1	255	3 + NPE	1	168.000	5096879

Combination arrester, type 1+2, 4-pole, for use in TT and TN-S networks.

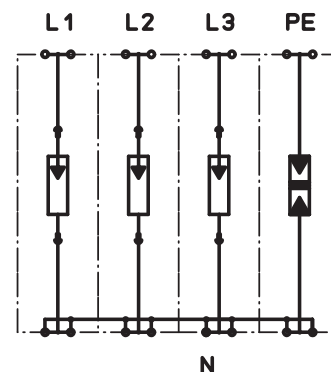
Completely pre-terminated and ready for connection, consisting of:  
 3x MCD 50-B: Coordinated lightning current arrester, type 1+2 to EN 61643-11 and  
 1x MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 to EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

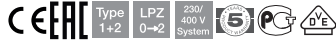
- Lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) in total
- Protection level < 1.7 kV allows device protection
- Short-circuit resistance 10 kA, arrester backup fuse to 500 A gL/gG
- Suitable for use in pre-meter area according to VDE-AR-N 4100
- Encapsulated, non-extinguishing spark gaps

Application: Industrial systems and buildings with external lightning protection of the classes I to IV.

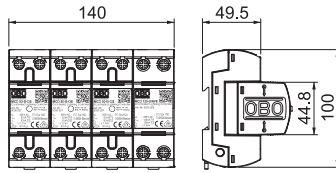
MCD 50-B 3+1	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 255 V
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class II
Lightning protection zone LPZ	0-2
Impulse discharge current (10/350)	$I_{imp}$ 50 kA
Total discharge current (10/350)	$I_{total}$ 125 kA
Nominal discharge current (8/20)	$I_n$ 50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$ 125 kA
Protection level	$U_p$ < 1,7 kV
Protection level (N-PE)	< 1,5 kV
Response time	$t_A$ <100 ns
Follow current quenching capacity $I_{eff}$	10 kA
Follow current quenching capacity (eff) [N-PE]	$I_{fi}$ 0.1 kA
Maximum back-up fuse	500 A
Temperature range	$\vartheta$ -40 - +85 °C
Division unit TE (17.5 mm)	8
Protection rating	IP20
Approvals	VDE
Connection cross-section, rigid	10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire	10 - 35 mm <sup>2</sup>
Connection cross-section, flexible	10 - 25 mm <sup>2</sup>

### Connection options





### Combination arrester, 3-pole + NPE with function display



Combination arrester, type 1+2, 4-pole, with visual function display, for use in TN-S and TT networks.

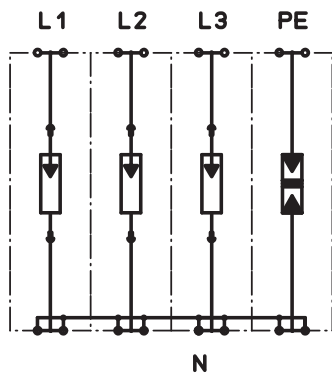
Completely pre-terminated and ready for connection, consisting of:  
 3x MCD 50-B-OS: Type 1+2 (Class B) coordinated lightning current arrester EN 61643-11.  
 1x MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 EN 61643-11 for use in TN-S and TT systems.  
 Interface 0 to 1 according to lightning protection zone concept according to IEC 61312-1 and VDE 0185-305.

- Lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) in total
- Protection level < 1.7 kV allows device protection
- Short-circuit resistance 10 kA, arrester backup fuse to 500 A gL/gG
- Power consumption < 26 mW/pole
- Encapsulated, non-extinguishing spark gap

Application: Industrial systems and buildings with external lightning protection of Classes I to IV.

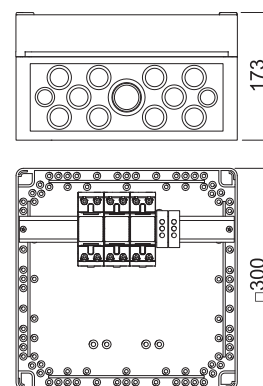
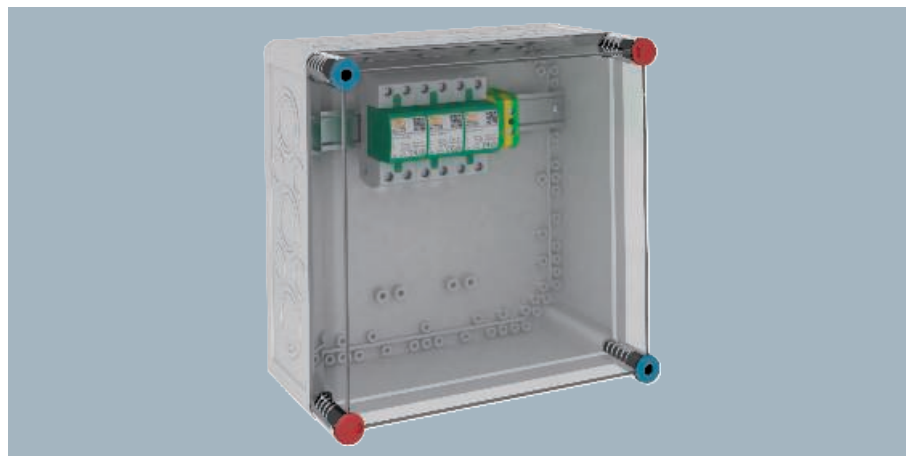
Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3+1-OS	255	3+NPE	1	172.000	5096836

#### Connection options



MCD 50-B 3+1-OS		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	125 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Protection level	$U_p$	< 1,7 kV
Protection level (N-PE)		< 1,5 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity leff	$I_{fi eff}$	10 kA
Follow current quenching capacity (eff) [N-PE]	$I_{fi}$	0.1 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>

## VG housing with MCD 50-B/3



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3-VG	255	3-pole	1	315.000	5096874

Combination arrester, pre-installed in IP65 housing for use in TN-C networks.

VG...: Combination arrester system solution, type 1+2, according to EN 61643-11.

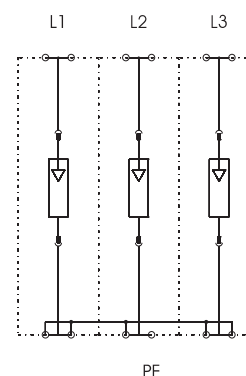
- LightningController MCD 50-B mounted in insulating housing IP 65, sealable housing
- Pulse current 150 kA 10/350  $\mu$ s / 50 kA (10/350) per pole, BET-tested
- Protection level < 1.7 kV
- Encapsulated, non-extinguishing spark gaps
- Suitable for TN-C network systems

Application example: The system solution is used in the pre-meter area according to VDE-AR-N 4100.

### MCD 50-B 3-VG

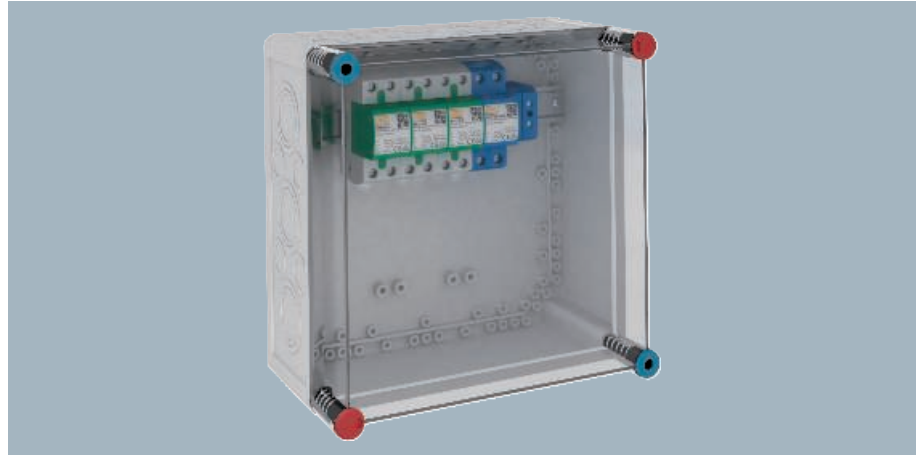
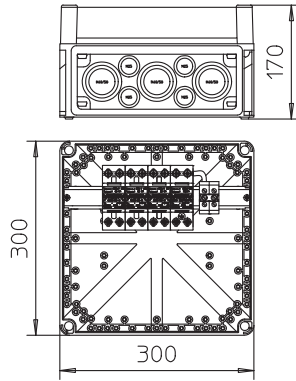
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	150 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Protection level	$U_p$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity $I_{eff}$	$I_{fi eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP54
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>

### Connection options





## VG housing with MCD 50-B/3+1



Combination arrester, pre-installed in IP65 housing for use in TN-S and TT networks.

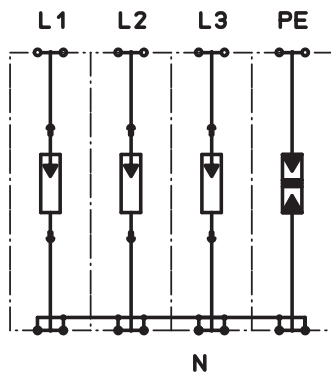
VG...: Lightning arrester system solution type 1+2 according to DIN EN 61643-11.

- LightningController MCD 50-B and MCD 125-B/NPE mounted in insulating housing IP65, sealable housing
- Pulse current 125 kA (10/350  $\mu$ s), BET-tested
- Conforms to requirements of VDE-AR-N 4100
- Protection level < 1.7 kV (L-N) and < 1.5 kV (N-PE)
- Encapsulated, non-extinguishing discharge gap
- Suitable for TN-S and TT network systems

Application example: The system solution is used in the pre-meter area according to VDE-AR-N 4100.

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>MCD 50-B 3+1-VG</b>	255	3+NPE	1	290.000	<b>5096875</b>

### Connection options



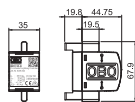
### MCD 50-B 3+1-VG

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I-II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	125 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Protection level	$U_p$	< 1,7 kV
Protection level (N-PE)		< 1,5 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity leff	$I_{fi eff}$	10 kA
Follow current quenching capacity (eff) [N-PE]	$I_{fi}$	25 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP54
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>





## Coordinated Lightning Controller, plug-in arrester



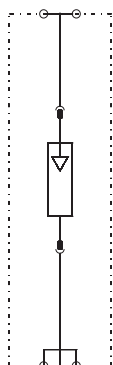
Highest continuous voltage		Pack	Weight	
Type	V	Piece	kg/100 pc.	Item no.
<b>MCD 50-B 0</b>	255	1	19.200	<b>5096822</b>
Version	1-pole			

Combination arrester type 1+2

- Lightning current arresting capacity 50 kA (10/350)
- Protection level < 1.7 kV
- Line current quenching capacity 10 kA
- Encapsulated, non-extinguishing spark gap

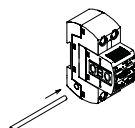
Application: Industrial systems and buildings with external lightning protection of classes I to IV.

### Connection options



MCD 50-B 0		
Nominal voltage	$U_N$	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	50 kA
Total discharge current (10/350)	$I_{total}$	50 kA
Nominal discharge current (8/20)	$I_n$	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Protection level	$U_p$	< 1,7 kV
Response time	$t_A$	<100 ns
Follow current quenching capacity left	$I_{fi eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	$\vartheta$	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm <sup>2</sup>
Connection cross-section, multi-wire		10 - 35 mm <sup>2</sup>
Connection cross-section, flexible		10 - 25 mm <sup>2</sup>

## Accessories for lightning current arrester



Type	Pack	Weight	
MC V3	10	1.700	5096884
MC V4	10	2.300	5096886

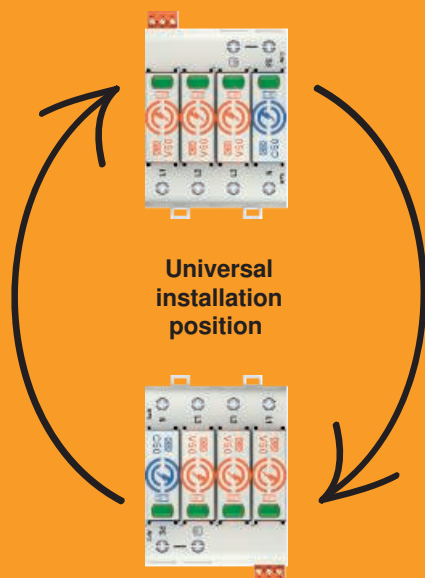
Copper bridge 16 mm<sup>2</sup>, suitable for bridging MC arresters in side channel.

- V3 for 3-pole circuits
- V4 for 4-pole circuits



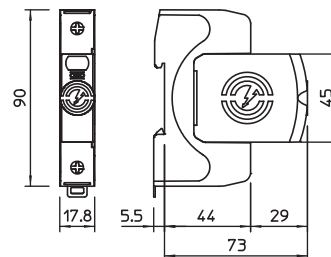
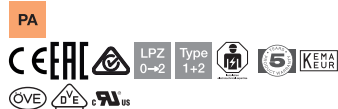
## Combination arrester V50

Surge protection energy technology, arrester, type 1+2



- Type 1+2 SPD:  $I_{imp} = 12.5$  kA per pole and up to 50 kA in total
- Usable in buildings with lightning protection class III + IV
- Protection level:  $< 1.5$  kV, usable in coordination with type 3 SPD
- Quality according to EN 61643-11 certified by an external testing institute
- Universally usable for offices, commercial and residential buildings
- Can be installed universally through 90° labelling
- Usable for system protection up to 160 A without separate fusing
- Locking function with vibration protection
- Optional remote signalling, potential-free changeover (RS)
- Variants in one to four-pole versions
- Operating instructions always available online via QR code

### Combination arrester V50, 1-pole 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-1-280	280	1	IP20	1	16.400	5093500

Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

V50-1-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_c$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

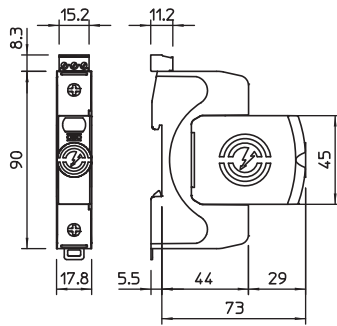
#### Connection options



PA



## Combination arrester V50, 1-pole with FS 280 V



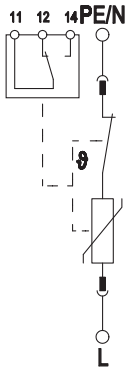
### Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-1+FS-280	280	1	IP20	1	16.600	5093502

### Connection options

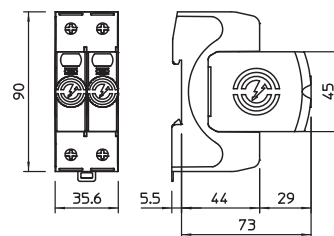
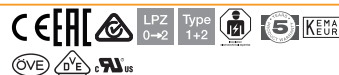


V50-1+FS-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_c$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





## Combination arrester V50, 1-pole + NPE 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-1+NPE-280	280	1+N/PE	IP20	1	32.929	5093522

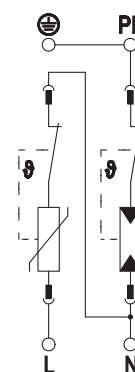
Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

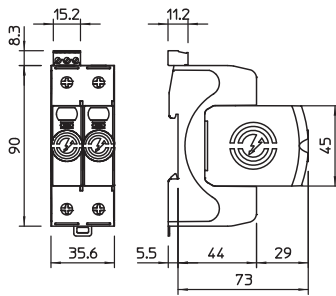
V50-1+NPE-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class III
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350 $\mu$ s)	$I_{total}$ 25 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 2.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Combination arrester V50, 1-pole + NPE with FS 280 V



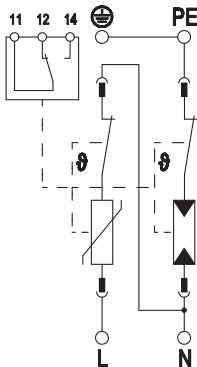
## Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-1+NPE+FS-280	280	1+N/PE	IP20	1	30.600	5093531

## Connection options

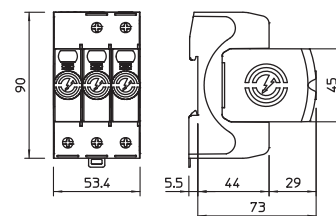


## V50-1+NPE+FS-280

SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I-II
SPD to UL 1449		Type 4
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$	30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Total discharge current (10/350)	$I_{total}$	25 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	80 kA
Protection level [L-N]	$U_p$	1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$	2.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$	0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$	0,8 kV
Max. mains-side overcurrent protection		160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		UL, KEMA, ÖVE, VDE
FM contacts		Changeover
Switching power AC		230 V; 0,5 A
Switching power DC		230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG



## Combination arrester V50, 2-pole + NPE 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-2+NPE-280	280	2+N/PE	IP20	1	44.300	5093524

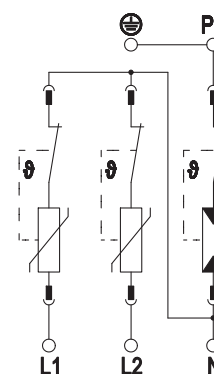
Lightning current combination arrester, type 1+2

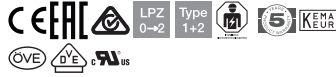
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

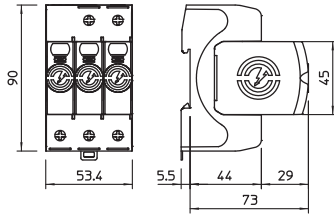
V50-2+NPE-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class III
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 37.5 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 2.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Combination arrester V50, 3-pole 280 V



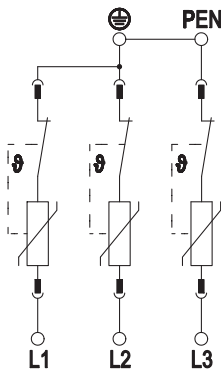
## Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-3-280	280	3	IP20	1	46.500	5093511

## Connection options



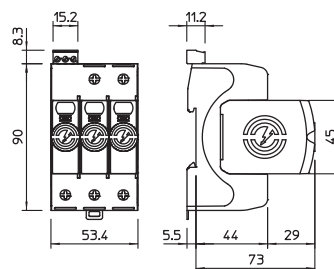
## V50-3-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 37.5 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 120 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0.8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





## Combination arrester V50, 3-pole with FS 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-3+FS-280	280	3	IP20	1	46.900	5093516

Lightning current combination arrester, type 1+2

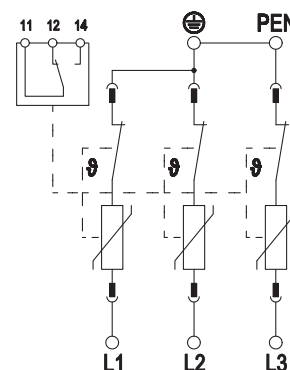
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

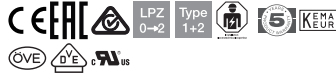
Application: Lightning current equipotential bonding for buildings of class III and IV.

### V50-3+FS-280

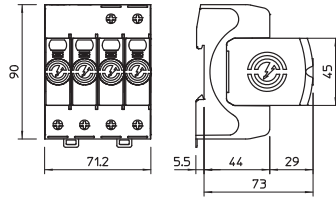
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 37.5 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 120 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Combination arrester V50, 3-pole + NPE 280 V



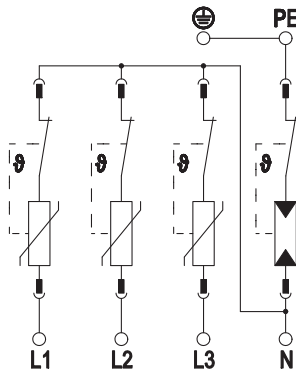
### Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

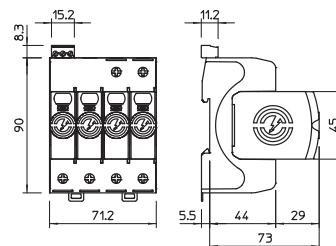
Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
<b>V50-3+NPE-280</b>	280	3+N/PE	IP20	1	58.800	<b>5093526</b>

### Connection options



V50-3+NPE-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 2.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

## Combination arrester V50, 3-pole + NPE with FS 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-3+NPE+FS-280	280	3+N/PE	IP20	1	59.300	5093533

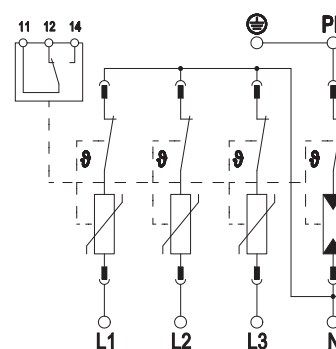
Lightning current combination arrester, type 1+2

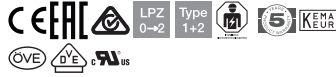
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

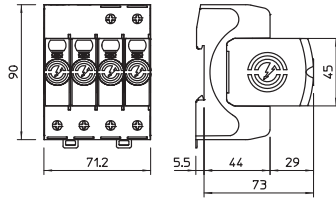
V50-3+NPE+FS-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class III
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 2.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Combination arrester V50, 4-pole 280 V



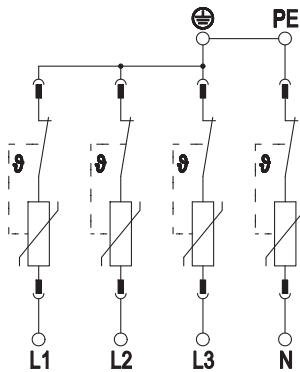
### Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-4-280	280	4	IP20	1	61.000	5093513

### Connection options

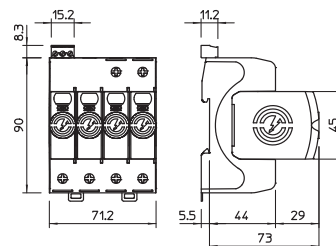


V50-4-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 160 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0.8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





## Combination arrester V50, 4-pole with FS 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V50-4-FS-280	280	4	IP20	1	61.500	5093518

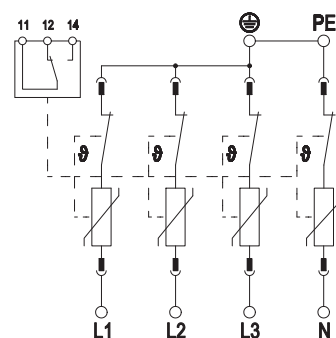
Lightning current combination arrester, type 1+2

- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

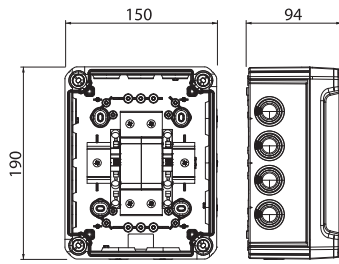
V50-4-FS-280	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 160 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Combination arrester V50, 1-pole + NPE 280 V



Lightning current combination arrester, type 1+2 to DIN EN 61643-11

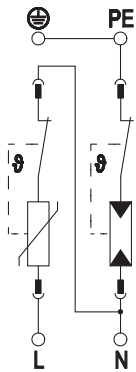
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total

Application: Lightning protection equipotential bonding for buildings of Class III and IV.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	Max. continuous voltage		Pack Piece	Weight kg/100 pc.	Item no.
	AC V	Pole version			
<b>VG-V50-1+NPE-280</b>	280	1+N/PE	1	81.000	<b>5093594</b>

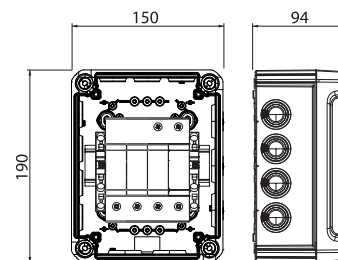
### Connection options



<b>VG-V50-1+NPE-280</b>	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 25 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 50 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP66
Approvals	UL, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## Combination arrester V50, 3-pole + NPE 280 V



Type	Max. continuous voltage AC V	Pole version	Pack Piece	Weight kg/100 pc.	Item no.
<b>VG-V50-3+NPE-280</b>	280	3+N/PE	1	110.000	<b>5093596</b>

Lightning current combination arrester, type 1+2 to DIN EN 61643-11

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total

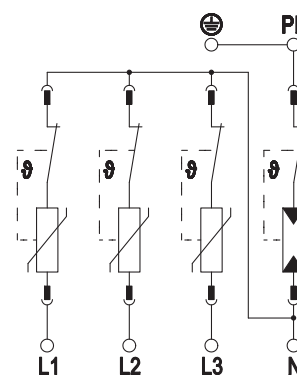
Application: Lightning protection equipotential bonding for buildings of Class III and IV.

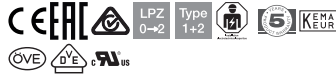
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

### VG-V50-3+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_c$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Total discharge current (10/350)	$I_{total}$ 50 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 50 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP66
Approvals	UL, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

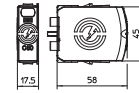
### Connection options





### Plug-in arrester NPE-C50

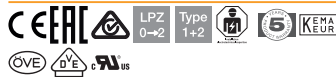
Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
<b>C50-0-255</b>	255	N/PE	IP20	1	7.215	<b>5095609</b>



- Upper part NPE, lightning current combination arrester, type 1+2
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
  - Lightning current discharge capacity up to 50 kA (10/350) in total
  - Modular, plug-in arrester with dynamic cut-off unit and visual status display
  - Locking mechanism with vibration protection and voltage keying
  - Plastic according to UL 94 V-0

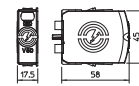
<b>C50-0-255</b>	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Maximum continuous voltage AC	$U_C$ 255 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 50 kA
Protection level [N-PE]	$U_{D/N-PE}$ 1.5 kV
Short-circuit withstand for max. mains-side overcurrent protection	25 kA
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

#### Connection options



### Plug-in arrester V50 280 V

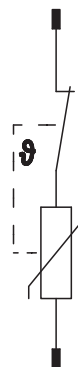
Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
<b>V50-0-280</b>	280	1	IP20	1	8.500	<b>5093508</b>



- Combination arrester, type 1+2
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
  - Lightning current discharge capacity of 12.5 kA (10/350) per pole
  - Modular, plug-in arrester with dynamic cut-off unit and visual status display
  - Locking mechanism with vibration protection and voltage keying
  - Plastic (UL 94 V-0)

<b>V50-0-280</b>	
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Impulse discharge current (10/350 $\mu$ s)	$I_{imp}$ 12.5 kA
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 50 kA
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE

#### Connection options





# Lightning current and surge arrester MCF 35

Surge protective device for energy technology, arrester, type 1 (industry)

The MCF lightning current arresters meet the type 1 requirement class according to IEC 61643-11. These devices protect low-voltage and consumer systems against any type of surges. Several benefits are achieved through the use of the voltage-limiting carbon spark gap. A short response time, a low protection level and high current leakage capability with long service life. In addition, the devices do not produce any line follow current. If circumstances are uncertain and there is a risk of fire from overloads, the cut-off unit disconnects the arrester safely from the mains.

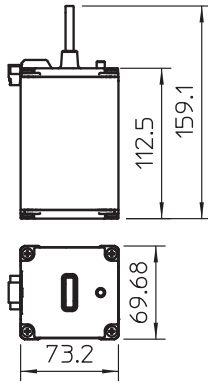
- Lightning current and surge arresters
- High arresting capacity up to 35 kA (10/350) per pin
- Arresters for buildings with lightning protection system
- Visual status display
- With remote signalling
- Simple standard DIN rail mounting
- Labelled connections
- Usable in systems with lightning protection class I-IV



AIG



## Lightning arrester MCF 35, 400/690 V, 1-pole with IR



### Lightning arrester type 1

- For lightning protection equipotential bonding to DIN EN 62305 (IEC 62305)
- Lightning current arresting capacity 35 kA (10/350) per pole
- Follow current extinguishing 50 kAeff, arrester back-up fuse up to 400 A gL/gG
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings
- Cut-off unit with visual indicator
- Remote signalling with potential-free changeover contact

Application: Without exception for 400/690 V network systems

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCF 35-1+FS-440	440	1-pole	1	98.000	5096974

### Connection options



MCF 35-1+FS-440		
Nominal voltage	$U_N$	400 V
Max. continuous operating voltage	$U_C$	440 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Impulse discharge current (10/350)	$I_{imp}$	35 kA
Nominal discharge current (8/20)	$I_n$	35 kA
Protection level	$U_p$	2,5 kV
Follow current quenching capacity leff	$I_{fi,eff}$	50 kA
Maximum back-up fuse		400 A
Protection rating		IP20
Response time	$t_A$	< 100 ns
Temperature range	$\vartheta$	-40 - +85 °C

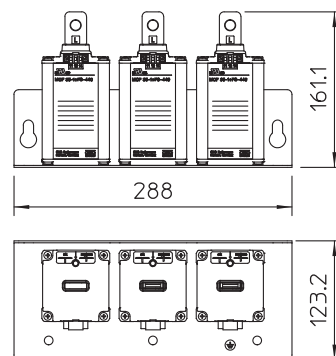


### Lightning arrester MCF 35, 400/690 V, 3-pole with IR



AIG

CE EAC 400 V Type 1 LPZ 0→1 5 500 us



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCF 35-P3+FS-440	440	3-pole	1	400.000	5096976

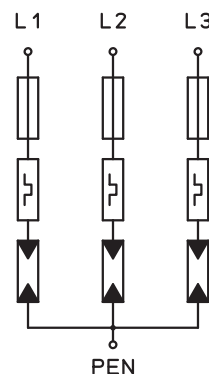
#### Lightning arrester type 1

- Fully assembled 3-pole connection unit
  - For lightning protection equipotential bonding according to DIN EN 62305 (IEC 62305)
  - Lightning current arresting capacity 35 kA (10/350) per pole
  - Line following current quenching 50 kAeff, arrester back-up fuse up to 400 A gL/gG
  - Encapsulated, non-extinguishing spark gap arrester for use in distributor housings
  - Cut-off unit with visual indicator
  - Remote signalling with potential-free changeover contact
  - For finished mounting on busbars and walls
- Application: Without exception for 400/690 V power systems

#### MCF 35-P3+FS-440

Nominal voltage	$U_N$	400 V
Max. continuous operating voltage	$U_C$	440 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Impulse discharge current (10/350)	$I_{imp}$	35 kA
Nominal discharge current (8/20)	$I_n$	35 kA
Protection level	$U_p$	2,5 kV
Follow current quenching capacity Ieff	$I_{fi\ eff}$	50 kA
Maximum back-up fuse		400 A
Protection rating		IP20
Response time	$t_A$	< 100 ns
Temperature range	$\theta$	-40 - +85 °C

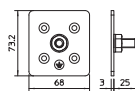
#### Connection options



### Mounting plate, 1-pole, M10

VA

5



Type	Version	Pack Piece	Weight kg/100 pc.	Item no.
MCF-MS-M10	1-pole	1	14.200	5096990

#### Mounting plate with threaded connector M10

- Mounting plate with threaded M10 connector to install the arrester MCF 35-1+FS-440
- M10 bolts for direct installation of the arrester on busbars
- Required screws for installation enclosed

VA

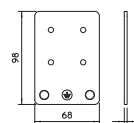


Type	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>MCF-MS-P1</b>	1-pole	1	19.600	<b>5096992</b>

Mounting plate 1-pole

- Mounting plate for installation of the arrester MCF 35-1+FS-440
- Prefabricated hole pattern for mounting the arrester on busbars
- Required screws for installation of the arrester enclosed

Mounting plate, 1-pole



VA

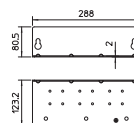


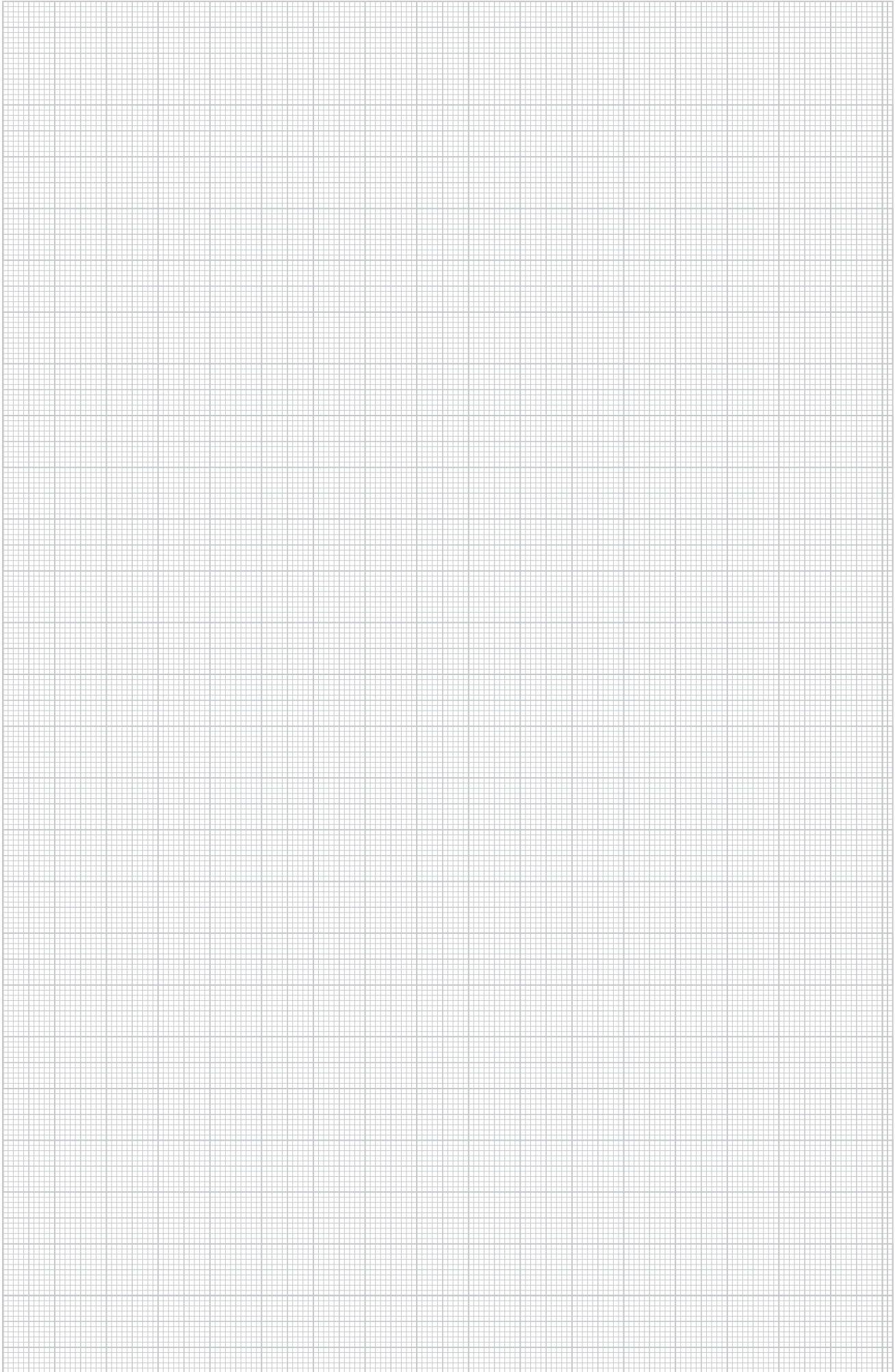
Type	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>MCF-MS-P3</b>	3-pole	1	99.800	<b>5096994</b>

Mounting plate 3-pole

- Mounting plate 3-pole for installation of the arrester MCF 35-1+FS-440
- Prefabricated hole pattern for mounting the arrester on busbars
- Suitable for wall mounting
- Required screws for installation enclosed

Mounting plate, 3-pole

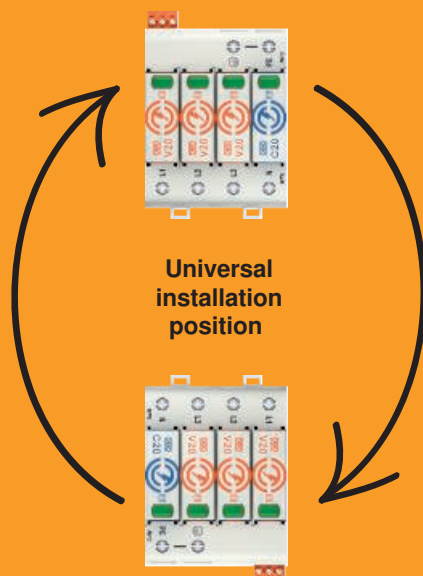






## Surge arrester V20

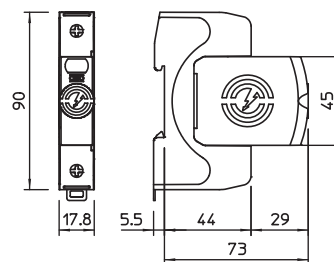
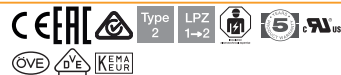
Surge protection energy technology, type 2 arrester



- Type 2 SPD:  $I_n = 20 \text{ kA (L-N) / 40 \text{ kA (N-PE)}$ , up to 60 kA
- Protection level:  $< 1.5 \text{ kV}$ , usable in coordination with type 3 SPD
- Exceeds the increased requirements according to VDE 0100-443
- Quality according to EN 61643-11 certified by an external testing institute
- Universally usable for industry, offices, commercial and residential buildings
- Locking function with vibration protection
- Usable for system protection up to 160 A without separate fusing
- Can be installed universally through 90° labelling
- Optional remote signalling, potential-free changeover (RS)
- Variants in one to four-pole versions
- Operating instructions always available online via QR code



Surge arrester V20, 1-pole, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-1-280	280	1	IP20	1	12.900	5095161

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

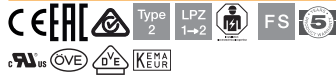
Application: Equipotential bonding in main and sub-distributions.

V20-1-280

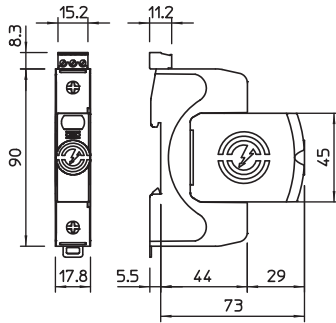
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_c$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 40 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

Connection options





## Surge arrester V20, 1-pole with remote signalling, 280 V



### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-1+FS-280	280	1	IP20	1	13.100	5095281

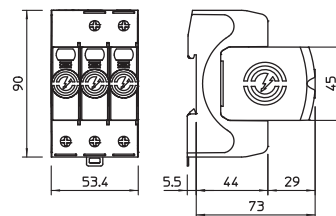
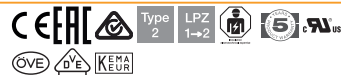
### Connection options



V20-1+FS-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 40 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## Surge arrester V20, 1-pole + NPE, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-1+NPE-280	280	1+N/PE	IP20	1	24.300	5095251

### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

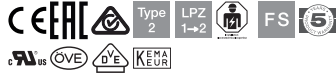
Application: Equipotential bonding in main and sub-distributions.

### V20-1+NPE-280

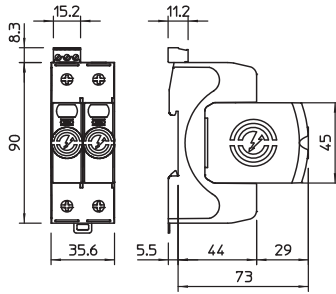
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Surge arrester V20, 1-pole + NPE and remote signalling, 280 V



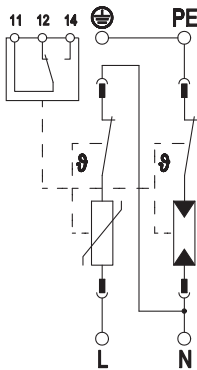
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-1+NPE+FS-280	280	1+N/PE	IP20	1	24.600	5095331

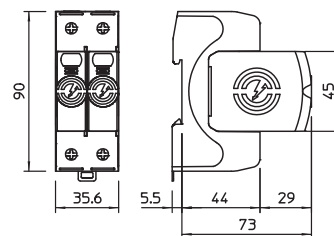
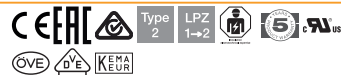
### Connection options



V20-1+NPE+FS-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_o$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{o/L-PE}$ 1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## Surge arrester V20, 2-pole, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-2-280	280	2	IP20	1	25.600	5095162

### Surge arrester, type 2

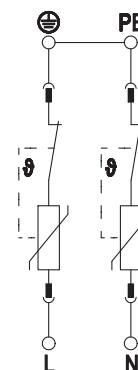
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

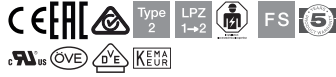
### V20-2-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

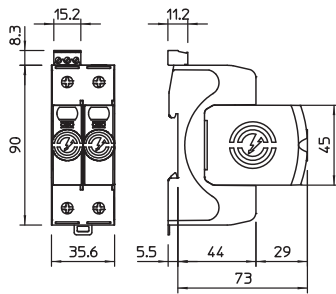
### Connection options







## Surge arrester V20, 2-pole with remote signalling, 280 V



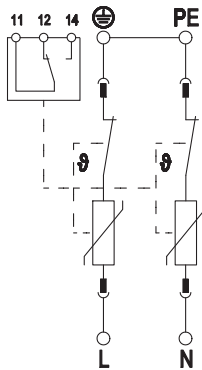
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-2+FS-280	280	2	IP20	1	25.900	5095282

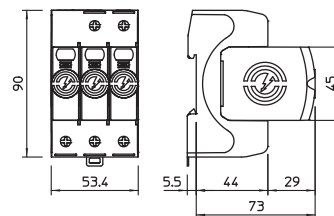
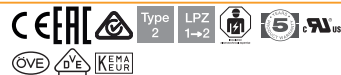
### Connection options



V20-2+FS-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 80 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## Surge arrester V20, 2-pole + NPE, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-2+NPE-280	280	2+N/PE	IP20	1	34.600	5095252

### Surge arrester, type 2

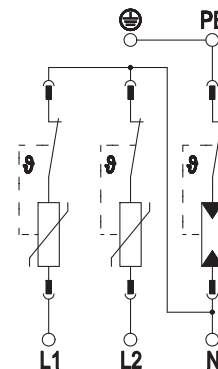
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

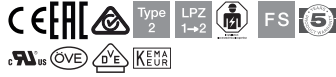
Application: Equipotential bonding in main and sub-distributions.

### V20-2+NPE-280

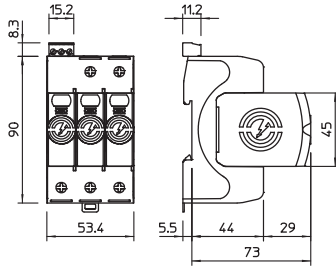
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Surge arrester V20, 2-pole + NPE and remote signalling, 280 V



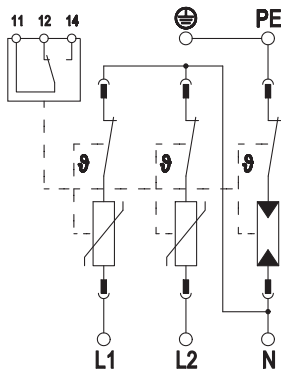
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-2+NPE+FS-280	280	2+N/PE	IP20	1	34.800	5095332

### Connection options

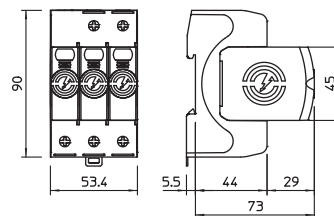
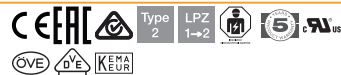


### V20-2+NPE+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_o$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{o/L-PE}$ 1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## Surge arrester V20, 3-pole, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-3-280	280	3	IP20	1	36.000	5095163

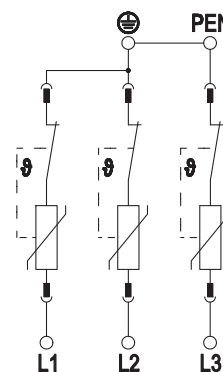
### Surge arrester, type 2

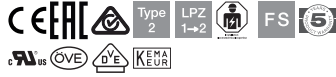
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

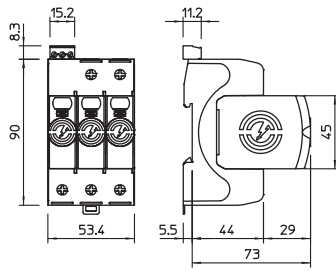
V20-3-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 120 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Surge arrester V20, 3-pole with remote signalling, 280 V



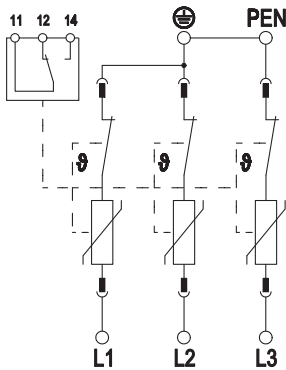
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-3+FS-280	280	3	IP20	1	36.400	5095283

### Connection options

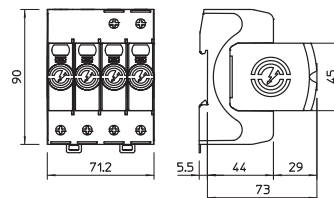
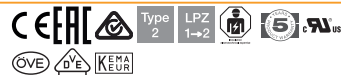


V20-3+FS-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 120 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





## Surge arrester V20, 3-pole + NPE, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-3+NPE-280	280	3+N/PE	IP20	1	45.800	5095253

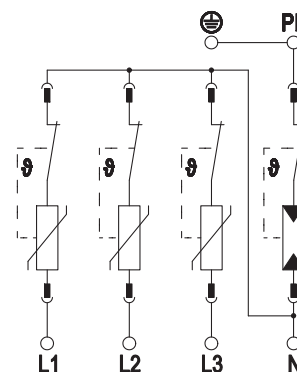
### Surge arrester, type 2

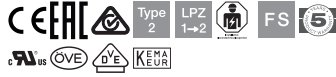
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

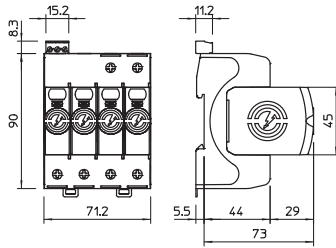
V20-3+NPE-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_c$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_p$ 1.3 kV
Combined voltage protection level [L-PE]	$U_{p/L-PE}$ 1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Surge arrester V20, 3-pole + NPE and remote signalling, 280 V



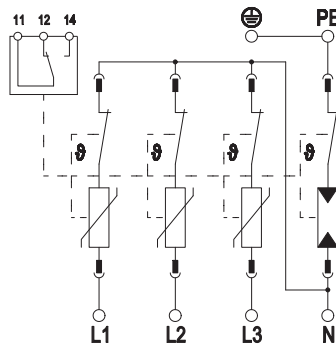
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

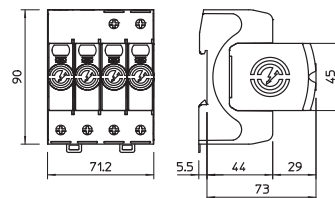
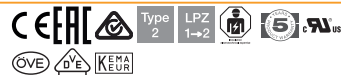
Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-3+NPE+FS-280	280	3+N/PE	IP20	1	46.300	5095333

### Connection options



V20-3+NPE+FS-280		Type 2
SPD to EN 61643-11		Class II
SPD to IEC 61643-11		Type 4
SPD to UL 1449		
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_C$	280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$	60 kA
Protection level [L-N]	$U_p$	1.3 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$	1.5 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$	0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$	1.0 kV
Max. mains-side overcurrent protection		160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection		50 kA eff
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		UL, ÖVE, VDE, KEMA
FM contacts		Changeover
Switching power AC		230 V; 0,5 A
Switching power DC		230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals		0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

## Surge arrester V20, 4-pole, 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-4-280	280	4	IP20	1	47.000	5095164

### Surge arrester, type 2

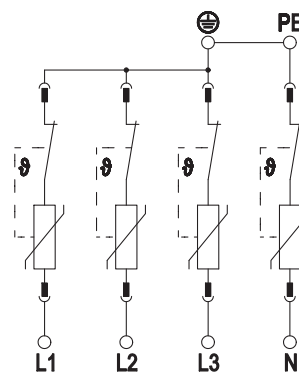
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

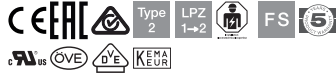
Application: Equipotential bonding in main and sub-distributions.

### V20-4-280

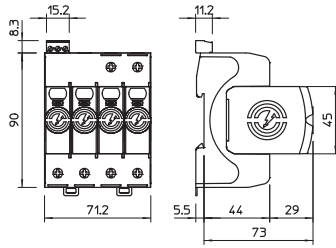
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 160 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1,0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

### Connection options





## Surge arrester V20, 4-pole with remote signalling, 280 V



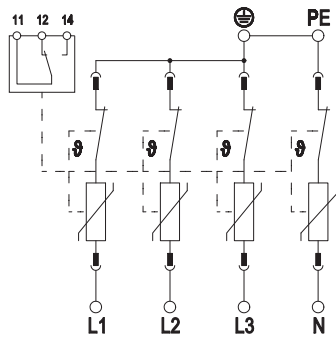
### Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic to UL 94 V-0
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-4+FS-280	280	4	IP20	1	47.500	5095284

### Connection options

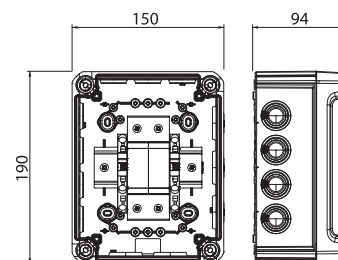


V20-4+FS-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 160 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0.8 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 1.0 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm <sup>2</sup>
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



## System solution, surge arrester V20 in housing, 1-pole + NPE, 280 V

AC power supply



Type	Max. continuous voltage AC V	Pole version	Pack Piece	Weight kg/100 pc.	Item no.
<b>VG-V20-1+NPE-280</b>	280	1+N/PE	1	74.000	<b>5095381</b>

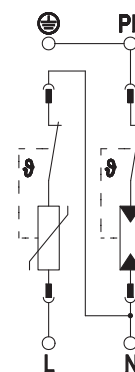
Surge arrester, type 2, according to DIN EN 61643-11

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Arresting capacity to 40 kA (8/20) per pole through high-performance varistors

Application: Equipotential bonding in main and sub-distributors. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

VG-V20-1+NPE-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP66
Approvals	ÖVE, UL
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

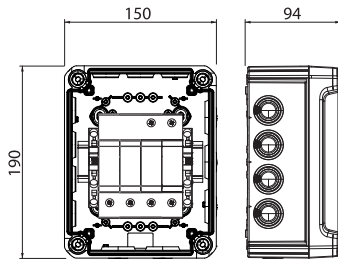
### Connection options







## System solution, surge arrester V20 in housing, 3-pole + NPE, 280 V



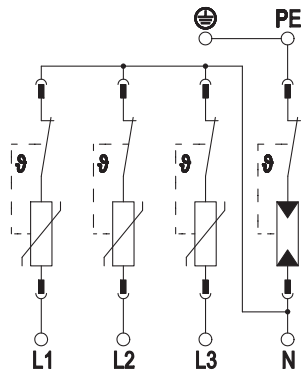
Surge arrester, type 2, according to DIN EN 61643-11

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Arresting capacity to 40 kA (8/20) per pole through high-performance varistors

Application: Equipotential bonding in main and sub-distributors.  
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	Max. continuous voltage AC V	Pole version	Pack Piece	Weight kg/100 pc.	Item no.
VG-V20-3+NPE-280	280	3+N/PE	1	96.000	5095383

### Connection options

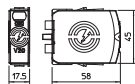


VG-V20-3+NPE-280	
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	$U_n$ 230 V
Maximum continuous voltage AC	$U_C$ 280 V
Nominal discharge current (8/20 $\mu$ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 40 kA
Maximum discharge current (8/20 $\mu$ s) [total]	$I_{total}$ 60 kA
Protection level [L-N]	$U_p$ 1.3 kV
Residual voltage [L-N] @ 1 kA	$U_{res}$ 0,7 kV
Residual voltage [L-N] @ 5 kA	$U_{res}$ 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	$T_u$ -40 - +80 °C
Protection rating	IP66
Approvals	ÖVE, UL
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm <sup>2</sup>
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG





### Plug-in arrester V20 280 V



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-0-280	280	1	IP20	1	5.000	5095364

Surge arrester, type 2

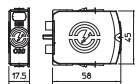
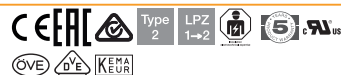
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic (UL 94 V-0)

#### Connection options



V20-0-280		
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
SPD to UL 1449		Type 4
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	280 V
Protection level	$U_p$	1.3 kV
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	40 kA
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		UL, ÖVE, VDE, KEMA

### Plug-in arrester C20



Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
C20-0-255	255	N/PE	IP20	1	3.680	5095600

N-PE surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic (UL 94 V-0)

Application: Equipotential bonding in main and sub-distributors.

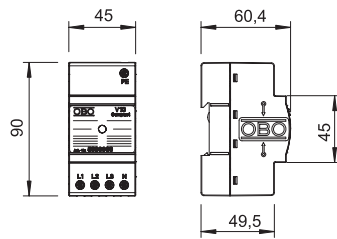
#### Connection options



C20-0-255		
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
SPD to UL 1449		Type 4
Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Maximum continuous voltage AC	$U_c$	255 V
Protection level [N-PE]	$U_{p/N-PE}$	1.3 kV
Nominal discharge current (8/20 $\mu$ s)	$I_{n/L-N}$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	40 kA
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Approvals		UL, ÖVE, VDE, KEMA



## Surge arrester V10 Compact 255 V



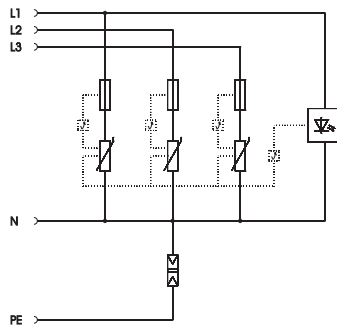
Surge protective device, compact module, type 2+3

- Surge protection in sub-distributors to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Incl. thermal and dynamic cut-off unit and visual function display

Application: Sub/storey distribution as well as device protection in rotational current systems.

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V10 COMPACT 255	255	3+NPE	1	15.800	5093380

### Connection options

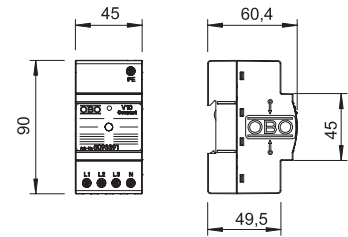


### V10 COMPACT 255

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA
Protection level	$U_d$	< 1,1 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		63 A
Temperature range	$\vartheta$	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 10 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 10 mm <sup>2</sup>



## Surge arrester V10 Compact with audible signalling 255 V



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V10 COMPACT-AS	255	3+NPE	1	15.800	5093391

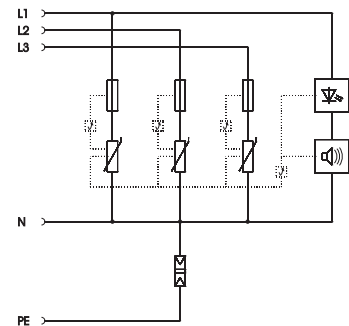
Surge protective device, compact module, type 2+3

- Surge protection in sub-distributors to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- ...-AS version with additional acoustic defect signalling (switchable)

Application: Sub/storey distribution as well as device protection in rotational current systems.

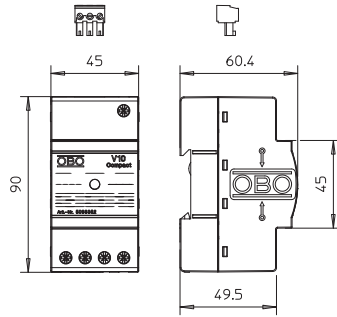
V10 COMPACT-AS		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 μs)	$I_{max}$	20 kA
Protection level	$U_p$	< 1,1 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		63 A
Temperature range	$\vartheta$	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 10 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 10 mm <sup>2</sup>

### Connection options





## Surge arrester V10 Compact with remote signalling 255 V



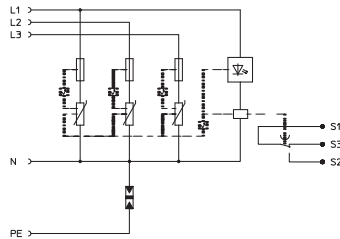
Surge protective device, compact module, type 2+3

- Surge protection in sub-distributors to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- ...-FS version with potential-free changeover contact for remote signalling

Application: Sub/storey distribution as well as device protection in rotational current systems.

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V10 COMPACT-FS	255	3+NPE	1	17.300	5093382

### Connection options

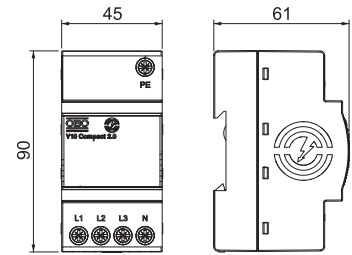


V10 COMPACT-FS		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA
Protection level	$U_p$	< 1,1 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		63 A
Temperature range	$\vartheta$	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 10 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 10 mm <sup>2</sup>





## Surge arrester V10 Compact



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V10 Compact2.0	255	3+NPE	1	15.800	5093381

Surge protective device, compact module, type 2+3

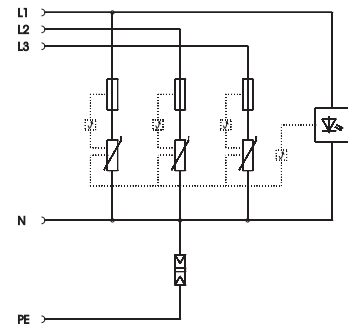
- Surge protection in sub-distributors to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual status display
- Optionally with -AS acoustic signalling or -FS remote signalling

Application: Sub/storey distribution as well as device protection in rotational current systems.

### V10 Compact2.0

Nominal voltage AC (50/60 Hz)	$U_n$	230 V
Max. continuous operating voltage	$U_c$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA
Protection level [L-N]	$U_p$	1.1 kV
Protection level [N-PE]	$U_{p/N-PE}$	1.5 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		63 A
Temperature range	$\vartheta$	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 10 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 10 mm <sup>2</sup>

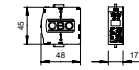
### Connection options





## CombiController V25, upper part 280 V

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 0-280	280	1-pole	1	9.500	5097053

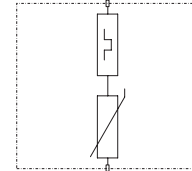


Combination arrester – type 1+2

- Plug-in arrester can be separated from base without tools and current cut-off in base
- Including thermal and dynamic cut-off unit and visual fault display
- High current conductivity and long service life

V25-B+C 0-280		
Nominal voltage	$U_N$	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	$I_{imp}$	7 kA
Total discharge current (10/350)	$I_{total}$	7 kA
Nominal discharge current (8/20)	$I_n$	30 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	30 kA
Protection level	$U_p$	< 0,9 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		160 A
Temperature range	$\vartheta$	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

### Connection options



## Accessories

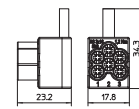


## Connection terminal for through-wiring

Type	Colour	Version	Pack Piece	Weight kg/100 pc.	Item no.
AS 3x16	Light grey	3 x 16 mm <sup>2</sup>	5	2.474	5012010

Connection terminal type: AS 3 x 16  
 Connection cross-section: 3 x 1.5 - 16 mm<sup>2</sup> rigid/ multiple strands  
 3 x 1.5 - 10 mm<sup>2</sup> fine-wire/with wire end sleeve  
 Stripping length: 16 mm  
 Rec. tightening torque: 1.2 Nm  
 Nominal current: 50 A  
 Width: 17.5 mm (1 PU)

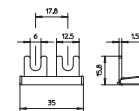
For EMC-optimised V through-wiring to IEC 60364-5-53 (VDE 0100-534).



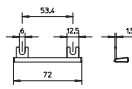
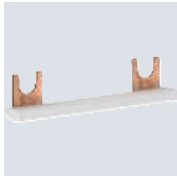
## Copper bridge with step width 17.6 mm

Type	Pack Piece	Weight kg/100 pc.	Item no.
KB MB	10	0.900	5089660

The bridges KB... permit parallel connection of bases and poles of the MultiBase bases.  
 The bridges are available in various widths.



Copper bridge with step width 53.4 mm



Type

KB MB

Pack Piece	Weight kg/100 pc.	Item no.
10	1.470	5089662

The bridges KB... permit parallel connection of bases and poles of the MultiBase bases.  
The bridges are available in various widths.



# Compact surge protection

Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids to protect LED lighting and/or the LED driver.

## Application in:

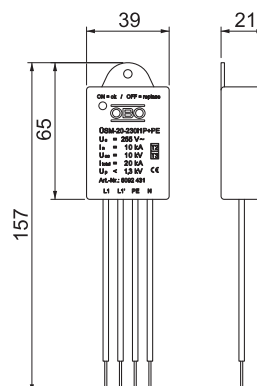
- Cable fuse box in the street lighting pole
- Junction boxes
- Cable ducts
- Underfloor systems
- Electrical equipment

## Surge protective devices type 2+3

- With function display and switch-off of the load current circuit should the SPD fail
- Small construction size for installation in the pole connection box or in front of the driver
- Reduction of the surge voltage to below 1,300 V (protection level)
- Optionally available as IP65 version



### Surge protection for LED systems ÜSM-20-230I1P+PE



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-20-230I1P+PE	255	1-pole + NPE for PCI	1	4.100	5092431

Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of LED lighting.

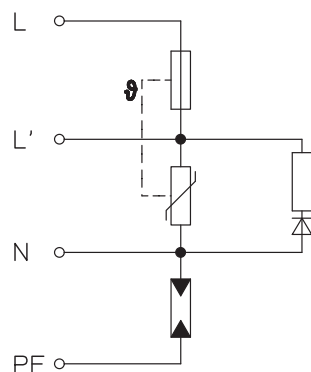
- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Reduction of overvoltage to under 1,300 V or 1,000 V @ 5 kA
- With or without luminaire switch-off in case of defect

Application: In the cable transition box, junction boxes, cable duct to underfloor systems

#### ÜSM-20-230I1P+PE

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA
Protection level	$U_p$	1,3 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Connecting cable length		0.09 m

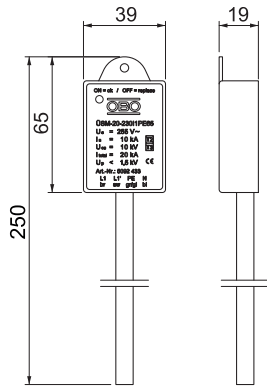
#### Connection options







## Surge protection for LED systems ÜSM-20-230I1PE65



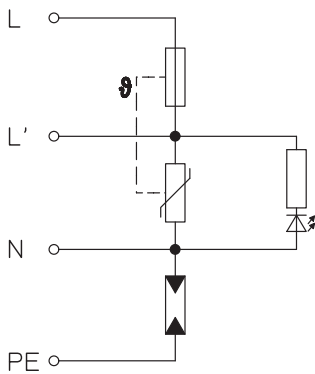
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids.  
Appropriate for the protection of LED lighting.

- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Reduction of overvoltage to under 1,500 V or 1,000 V @ 5 kA
- With or without luminaire switch-off in case of defect

Application: In the cable transition box, junction boxes, cable ducts to underfloor systems

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-20-230I1PE65	255	1-pole + NPE for PC I	1	8.300	5092433

### Connection options

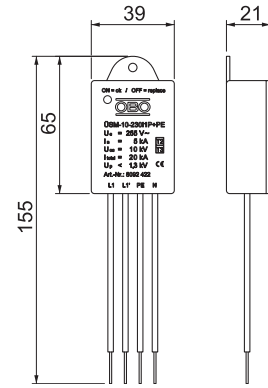


### ÜSM-20-230I1PE65

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA
Protection level	$U_p$	1,5 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP65
Connecting cable length		0.25 m



## Surge protection module ÜSM-10-230I1P+PE



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-10-230I1P+PE	255	1-pole + NPE for PCI	1	3.500	5092422

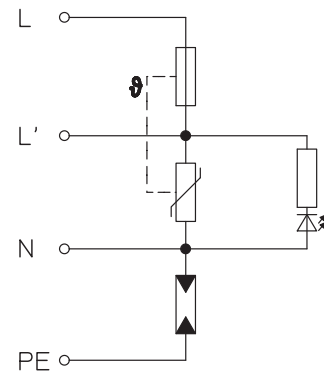
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of electronic devices and LED drivers.

- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- Use in the LED luminaire head upstream of the electronic LED driver
- Protective circuit with a maximum arresting capacity of 10 kA
- Reduction of overvoltage to under 1,300 V (protection level)
- For LED luminaires with PE connection

Application: In the cable transition box, junction boxes, cable duct to underfloor systems

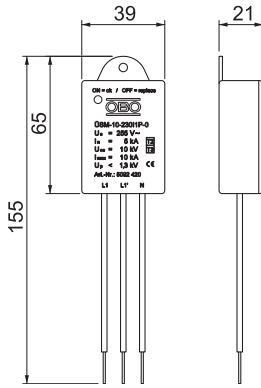
ÜSM-10-230I1P+PE		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	5 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	10 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA
Protection level	$U_p$	1,3 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Connecting cable length		0.09 m

### Connection options





## Surge protection module ÜSM-10-230I1P-0



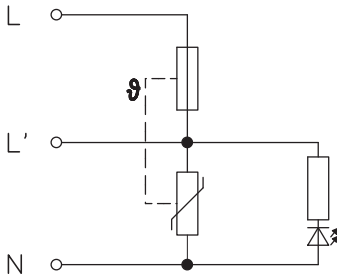
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of electronic devices and LED drivers.

- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- Protective circuit with a maximum arresting capacity of 10 kA
- Reduction of overvoltage to under 1,300 V (protection level)
- For protection insulated luminaires (PC II) without PE connection

Application: In the cable transition box, junction boxes, cable duct to underfloor systems

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-10-230I1P-0	255	1-pole without NPE for PC II	1	3.200	5092420

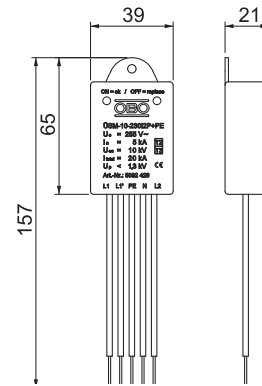
### Connection options



ÜSM-10-230I1P-0		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	5 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	— kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA
Protection level	$U_p$	1,3 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Connecting cable length		0.09 m



## Surge protection module ÜSM-10-230I2P+PE



Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-10-230I2P+PE	255	2-pole + NPE for PCI	1	4.400	5092426

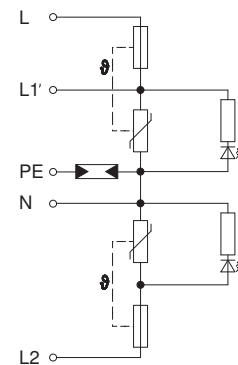
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of electronic devices and LED drivers.

- For luminaires with 2 phases (power reduction)
- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- Protective circuit with a maximum arresting capacity of 10 kA
- Reduction of overvoltage to under 1,300 V (protection level)
- For LED luminaires with PE connection

Application: In the cable transition box, junction boxes, cable duct to underfloor systems

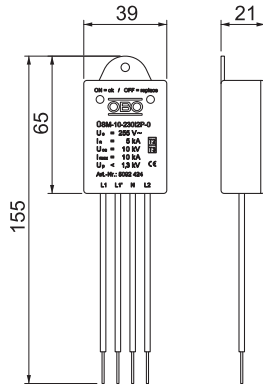
ÜSM-10-230I2P+PE		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	5 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	10 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA
Protection level	$U_p$	1,3 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Connecting cable length		0.09 m

### Connection options





## Surge protection module ÜSM-10-230I2P-0



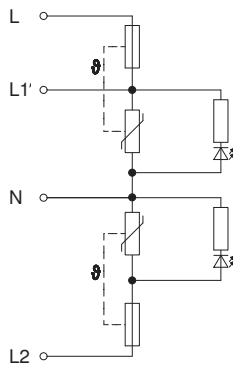
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of electronic devices and LED drivers.

- For luminaires with 2 phases (power reduction)
- With function display and switch-off of the load circuit when an SPD fails
- Small size for the installation in the pole connection box or upstream of the LED driver
- Protective circuit with a maximum arresting capacity of 10 kA
- Reduction of overvoltage to under 1,300 V (protection level)
- For protection insulated luminaires (PC II) without PE connection

Application: In the cable transition box, junction boxes, cable duct to underfloor systems

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-10-230I2P-0	255	2-pole without NPE for SK II	1	4.100	5092424

### Connection options

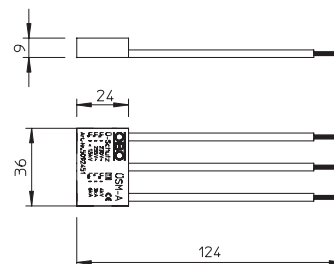


### ÜSM-10-230I2P-0

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	$I_n$	5 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	— kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA
Protection level	$U_o$	1,3 kV
Response time	$t_A$	< 25 ns
Maximum back-up fuse		16 A
Operating temperature range	$T_u$	-40 - +80 °C
Protection rating		IP20
Connecting cable length		0.09 m



Surge protection module 230 V



Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-A	Acoustic	Acoustic operating display	1	1.500	5092451

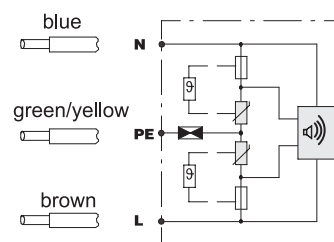
Surge protection module type 3 to DIN EN 61643-11 for 230 V power grids.

- With audible defect signal
- With low construction height
- Halogen-free plastic (UL 94 V-0)
- Y circuit

Application: Universally applicable for all installation systems.

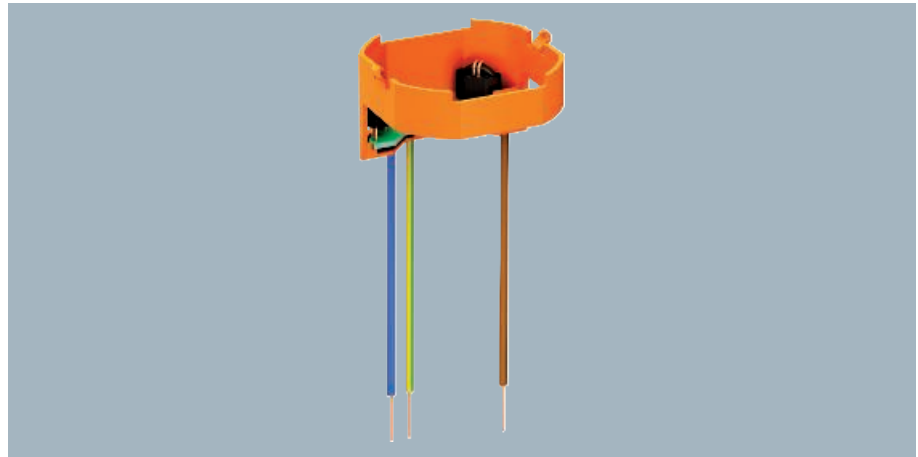
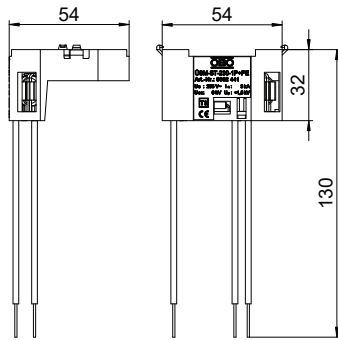
ÜSM-A	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 255 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	$I_n$ 3 kA
Protection level (L-N)	< 1,3 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ < 25 ns
Temperature range	$\vartheta$ -15 - +60 °C
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 6 kA
Rated current	$I_L$ 16 A

Connection options





## Fine power protection 230 V protective contact sockets



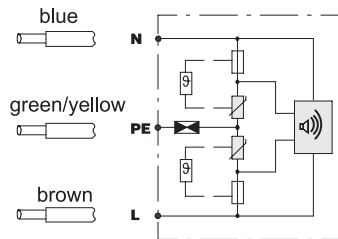
Surge protection / fine power protection, type 3, to EN 61643-11 for protective contact sockets.

- Thermal cut-off unit with acoustic defect signalling
- Y protection circuit for increased safety
- Mounting through snapping onto the support ring of the socket
- Halogen-free plastic (UL 94 V-0)
- Labelling of the socket with supplied sign

Application: For retrofitting on standard Schuko sockets.

Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-ST-230-1P+PE	Acoustic	Acoustic function display	1	1.770	5092441

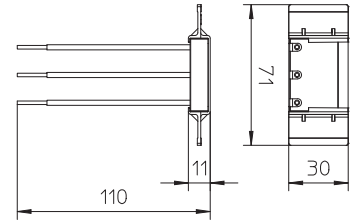
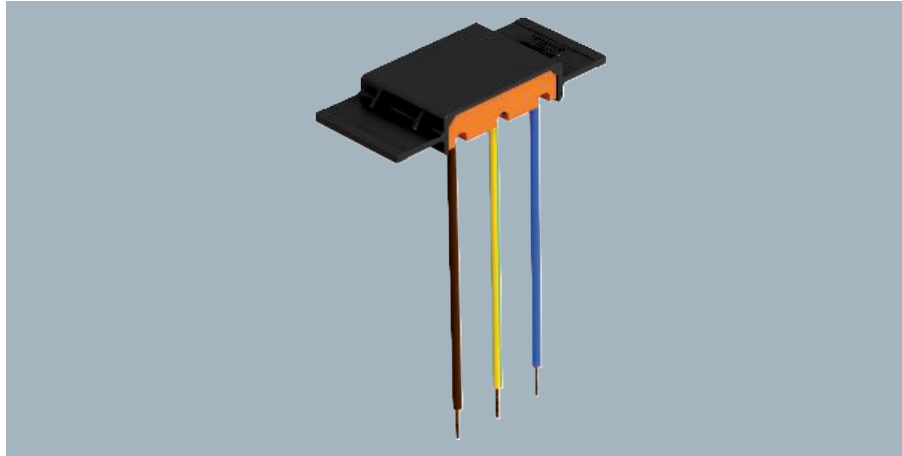
### Connection options



ÜSM-ST-230-1P+PE		
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	$I_n$	3 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA
Protection level (L-N)		< 1,5 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	$t_A$	25 ns
Temperature range	$\vartheta$	-5 - +40 °C



## Surge protection module 230 V with holder for GB2 and GB3 mounting boxes



Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-A-4	Acoustic	Incl. holder with partition function	1	2.000	5092472

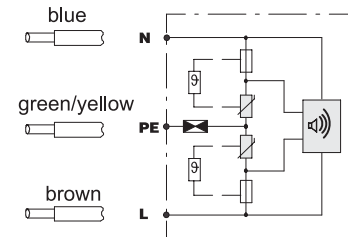
Surge protection module type 3 to DIN EN 61643-11 for 230 V power grids.

- With acoustic defect signal
- With low construction height and Y circuit
- With halogen-free plastic (UL 94 V-0)
- Holder with separating retainer function for GB2 / GB3 mounting boxes and UT3 and UT4 universal supports

Application: Universally applicable for all installation systems.

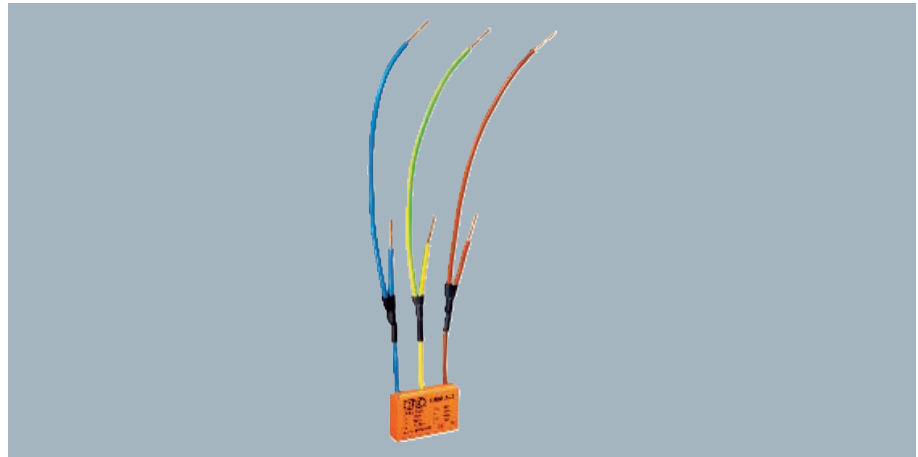
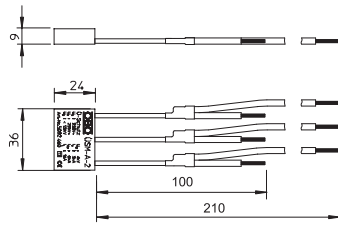
ÜSM-A-4	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 255 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2-3
Nominal discharge current (8/20)	$I_n$ 3 kA
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$ 6 kA
Protection level (L-N)	< 1,3 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ < 25 ns
Temperature range	$\vartheta$ -15 - +60 °C

### Connection options





### Surge protective device 230 V for through wiring



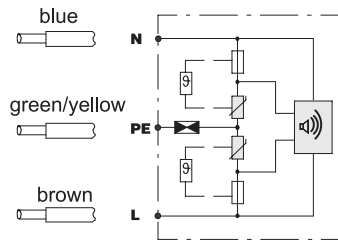
Surge protective device type 3 to DIN EN 61643-11 for 230 V networks.

- With acoustic defect signal
- With 2 strands for continuous wiring
- With low construction height
- Halogen-free plastic (UL 94 V-0)
- Y circuit

Application: Universally applicable for all installation systems.

Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-A-2	Acoustic	V connection	1	2.200	5092460

#### Connection options

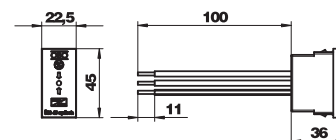


#### ÜSM-A-2

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	$I_n$	3 kA
Protection level (L-N)		< 1,3 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	$t_A$	< 25 ns
Temperature range	$\vartheta$	-15 - +60 °C
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	6 kA
Rated current	$I_L$	16 A



## Fine power protection for Modul 45 with acoustic function display



Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSS 45-O-RW	Visual	Visual function display	1	2.411	6117473

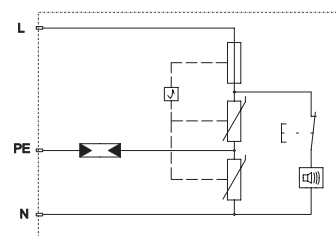
Surge protection / network fine protection, type 3, according to EN 61643-11 for installation in Rapid 45 duct, device installation duct and underfloor systems.

- Version-O with acoustic function display
- Quick and easy mounting
- Low construction width of 22.5 mm
- Colour: Pure white; RAL 9010

Application: The surge protective device secures downstream and nearby sockets.

ÜSS 45-O-RW	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 255 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	$I_n$ 2.5 kA
Protection level (L-N)	< 1,5 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ 25 ns
Temperature range	$\vartheta$ -25 - +45 °C

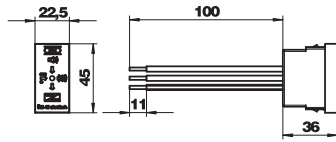
### Connection options







## Surge protection module for Modul 45 with audible signalling



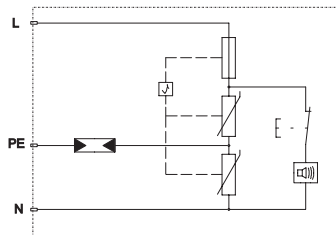
Surge protection / network fine protection, type 3, according to EN 61643-11 for installation in Rapid 45 trunking, device installation trunking and underfloor systems.

- Version-A with acoustic function display (switchable signal tone)
- Quick and easy mounting
- Low construction width of 22.5 mm
- Colour: Pure white; RAL 9010

Application: The surge protection device secures downstream and nearby sockets.

Type	Signalling on device	Version	Pack Piece	Weight kg/100 pc.	Item no.
ÜSS 45-A-RW	Acoustic	Acoustic function display	1	2.800	6117465

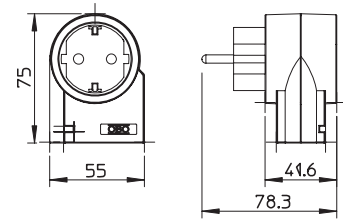
### Connection options



ÜSS 45-A-RW	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 255 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	$I_n$ 2.5 kA
Protection level (L-N)	< 1,5 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ 25 ns
Temperature range	$\vartheta$ -25 - +45 °C



FineController FC-D for protective contact socket



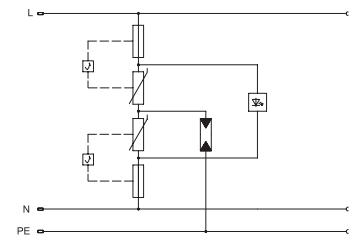
Country	Pack	Weight	Item no.
Type version	Piece	kg/100 pc.	
FC-D EN Pure white	1	11.000	5092800

Type 3 surge protective device to EN 61643-11, intended for use in protective contact sockets.

- Adapter connector
- Cut-off unit and function display
- With increased touch protection

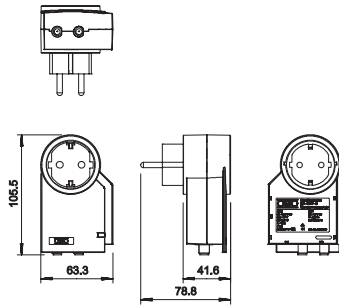
FC-D	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 275 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2-3
Nominal discharge current (8/20)	$I_n$ 3 kA
Protection level (L-N)	< 1,5 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ <25 ns

Connection options





### FineController FC-SAT for SAT systems and receivers



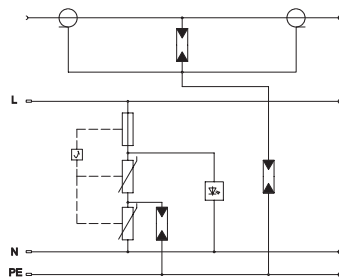
Type 3 combined surge protection to EN 61643-11, designed for use on satellite systems and receivers.

- Adapter connector
- Cut-off unit and function display
- With increased contact protection
- Incl. 0.5 m connection cable in white (double-shielded)
- Maximum continuous voltage, TV connection 72 V DC / 1.5 A (25 °C)
- Limit frequency: type 2.5 GHz (75 Ohm system)

Note: The technical data in the table below refers to the power supply.

Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-SAT-D	EN	Pure white	1	16.000	5092816

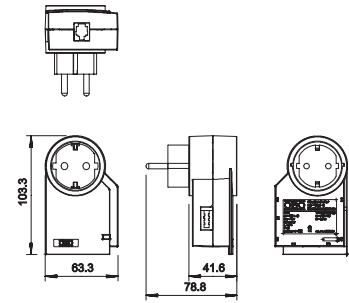
#### Connection options



FC-SAT-D	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 275 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	$I_n$ 3 kA
Protection level (L-N)	< 1,2 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ <25 ns



## FineController FC-TAE for telephone systems and terminals



Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-TAE-D	EN	Pure white	1	18.000	5092824

Type 3 combined surge protection to EN 61643-11, designed for use in telephone systems with TAE connection (telephones upstream of the NTBA/DSL splitter).

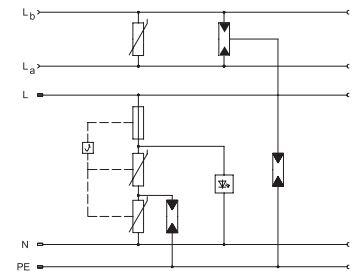
- Adapter connector
- Cut-off unit and function display
- With increased contact protection
- Incl. 0.5 m connection cable TAE / RJ11
- Maximum continuous voltage, TAE connection 200 V DC / 1.5 A (25 °C)
- Limit frequency: type 4 MHz / VDSL up to 46 MBit/s

Note: The technical data in the table below refers to the power supply.

### FC-TAE-D

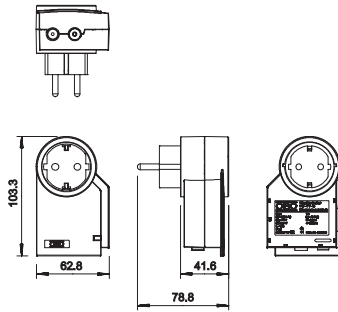
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	$I_n$	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	$t_A$	<25 ns

### Connection options





FineController FC-TV for video, TV and hi-fi systems



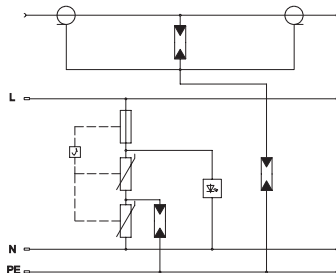
Type 3 combined surge protection to EN 61643-11, designed for use on Schuko sockets and video, TV and hi-fi systems with IEC adapter.

- Adapter connector
- Cut-off unit and function display
- With increased contact protection
- Incl. 0.5 m connection cable in white (double-shielded)
- Maximum continuous voltage, TV connection 72 V DC / 1.5 A (25 °C)
- Limit frequency: type 2.5 GHz (75 Ohm system)

Note: The technical data in the table below refers to the power supply.

Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-TV-D	EN	Pure white	1	17.000	5092808

Connection options

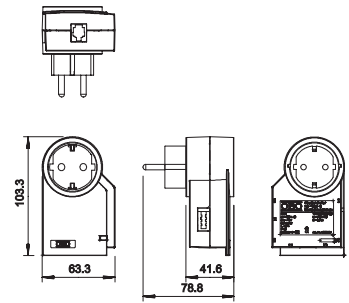


FC-TV-D	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 275 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2-3
Nominal discharge current (8/20)	$I_n$ 3 kA
Protection level (L-N)	< 1,2 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ <25 ns





## FineController FC-ISDN for ISDN telephone systems and terminals



Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-ISDN-D	EN	Pure white	1	18.000	5092812

Type 3 combined surge protection to EN 61643-11 designed for use in ISDN / DSS 1 telephone systems and terminals.

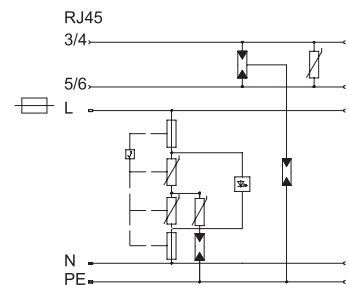
- Adapter connector
- Cut-off unit and function display
- With increased contact protection
- Incl. 0.5 m connection cable RJ12
- Maximum continuous voltage, ISDN connection 6 V DC / 1.5 A (25 °C)
- Limit frequency: type 300 kHz

Note: The technical data in the table below refers to the power supply.

### FC-ISDN-D

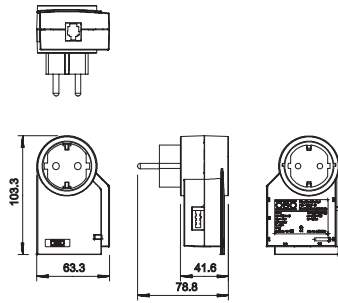
Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	$I_n$	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	$t_A$	<25 ns

### Connection options





### FineController FC-RJ-D for telephone systems with RJ12



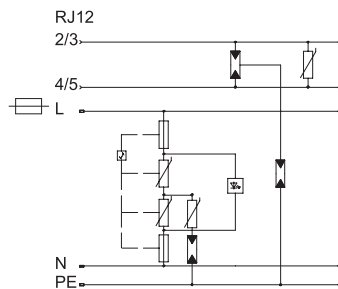
Type 3 combined surge protection to EN 61643-11 designed for use in telephone systems and terminals with RJ12 connection.

- Adapter connector
- Cut-off unit and function display
- With increased contact protection
- Incl. 0.5 m connection cable RJ12
- Maximum continuous voltage, RJ connection 200 V DC / 1.5 A (25 °C)
- Limit frequency: type 4 MHz / DSL-compatible

Note: The technical data in the table below refers to the power supply.

Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-RJ-D	EN	Pure white	1	18.000	5092828

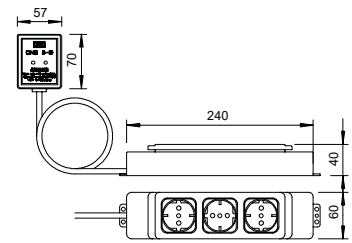
#### Connection options



FC-RJ-D	
Nominal voltage	$U_N$ 230 V
Max. continuous operating voltage	$U_C$ 275 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	$I_n$ 3 kA
Protection level (L-N)	< 1,2 kV
Protection level (N-PE)	< 1,5 kV
Maximum back-up fuse	16 A
Response time	$t_A$ <25 ns



Surge protective device CNS 3 D



Type	Country version	Colour	Connection cable length m	Pack Piece	Weight kg/100 pc.	Item no.
CNS 3-D-D	EN	Black	2	1	65.000	5092701

Surge protective device, type 3, to DIN EN 61643-11, intended for use in protective contact sockets.

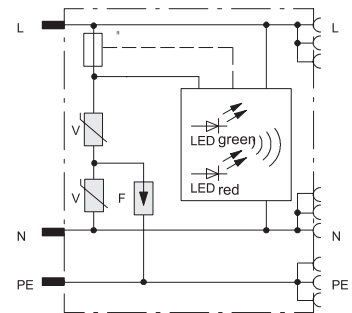
- With visual and audible signalling, function display
- 3-way socket
- Length of connection cable: 2 m
- Y circuit for high electrical safety

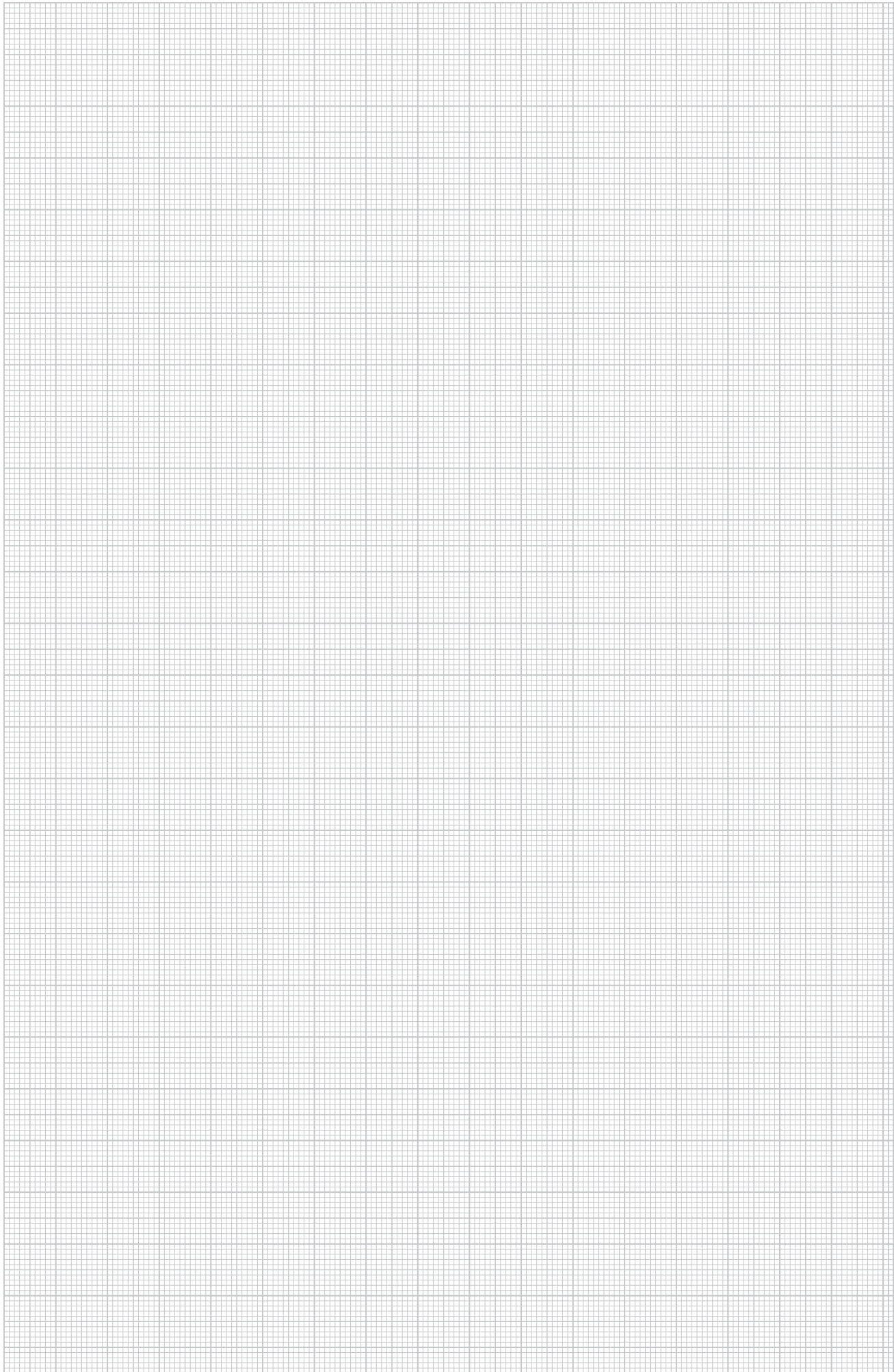
Application: For example, the protection of PCs, printers, copiers, fax machines, etc.

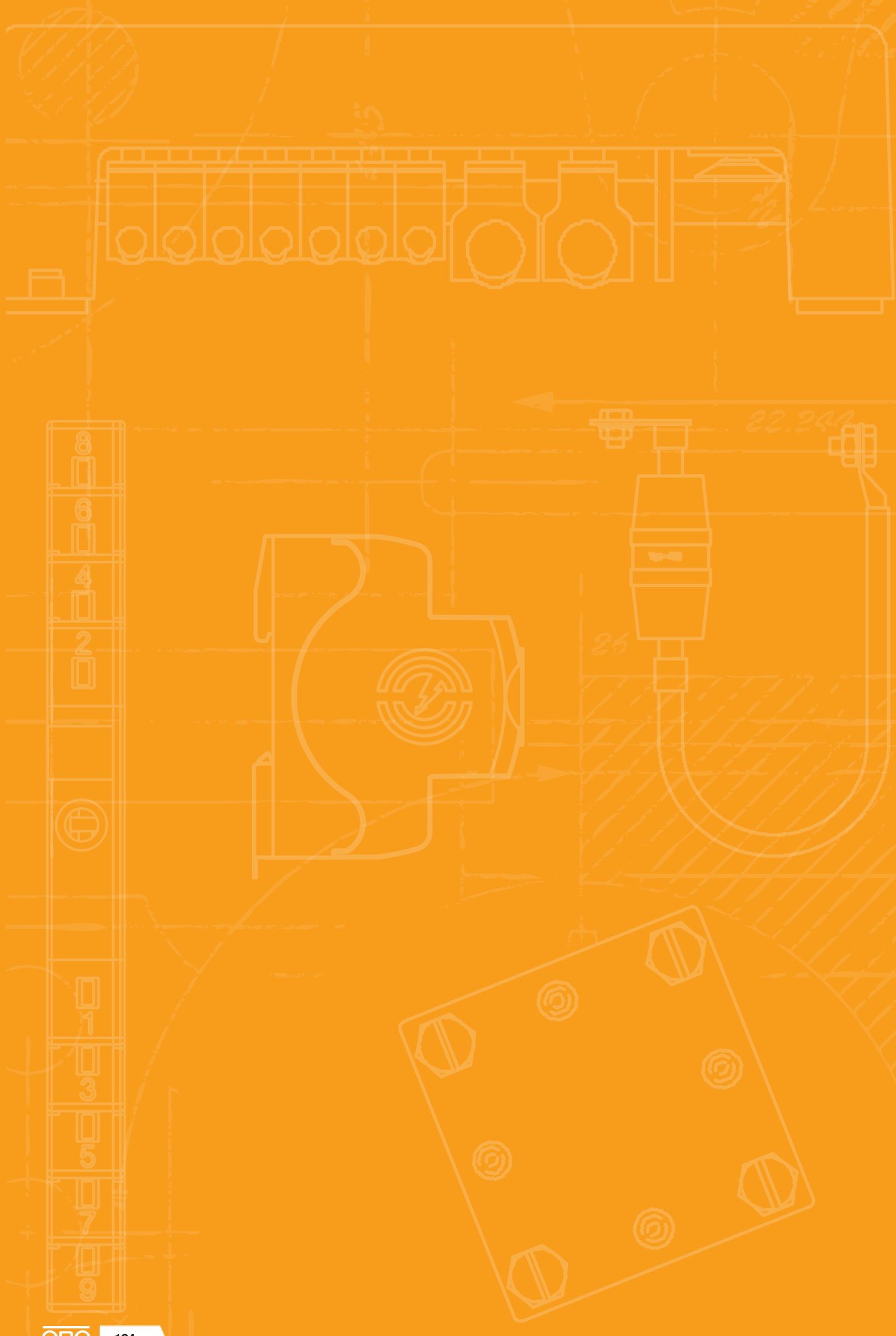
CNS 3-D-D

Nominal voltage	$U_N$	230 V
Max. continuous operating voltage	$U_C$	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	$I_n$	2.5 kA
Protection level (L-N)		< 1,0 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	$t_A$	<25 ns

Connection options







# Photovoltaics



PV systems

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## Surge protective devices for photovoltaic applications V-PV-...

Type 1+2 and type 2 for 1,000 V and 1,500 V DC

- Surge protection according to EN/IEC 60364-7-712 (VDE 0100-712)
- Error-resistant Y circuit with status display
- The FS variant has a potential-free changeover contact for remote signalling



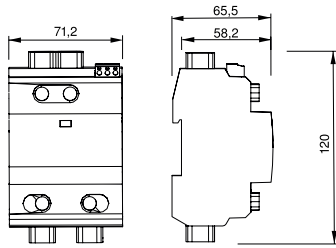
Type 1+2 1000 V



Type 2 1500 V



## PV complete block 1500 V DC



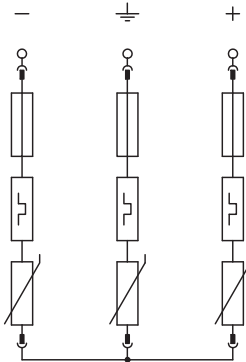
Type 1+2 combination arrester for lightning and surge protection of PV systems.

- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Lightning current and surge protective devices for PV systems.

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T1+2-1500	1500	Y configuration	1	49.200	5094240

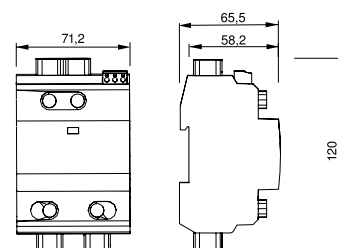
### Connection options



### V-PV-T1+2-1500

U max DC	U <sub>c</sub> DC	1500 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I <sub>imp</sub>	6.25 kA
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,5 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 35 mm <sup>2</sup>

## PV complete block 1500 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T1+2-1500FS	1500	Y configuration + RS	1	49.600	5094242

Type 1+2 combination arrester for lightning and surge protection of PV systems.

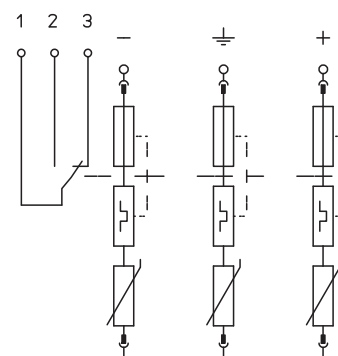
- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Lightning current and surge protective devices for PV systems.

### V-PV-T1+2-1500FS

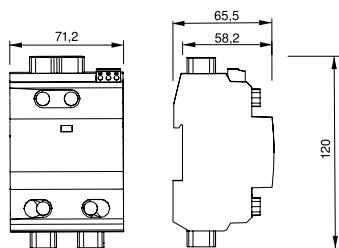
U max DC	U <sub>c</sub> DC	1500 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I <sub>imp</sub>	6.25 kA
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,5 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	ϑ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 35 mm <sup>2</sup>

### Connection options





## PV complete block 1,000 V DC



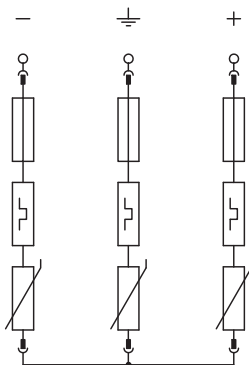
Type 1+2 combination arrester according to EN 50539-11 for lightning and surge protection of PV systems.

- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Lightning current and surge protective devices for PV systems.

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T1+2-1000	1000	Y configuration	1	40.700	5094230

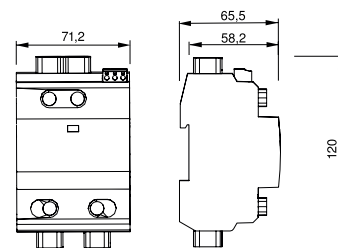
### Connection options



### V-PV-T1+2-1000

U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I <sub>imp</sub>	6.25 kA
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 3,3 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 35 mm <sup>2</sup>

## PV complete block 1,000 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T1+2-1000FS	1000	Y configuration + RS	1	41.200	5094232

Type 1+2 combination arrester according to EN 50539-11 for lightning and surge protection of PV systems.

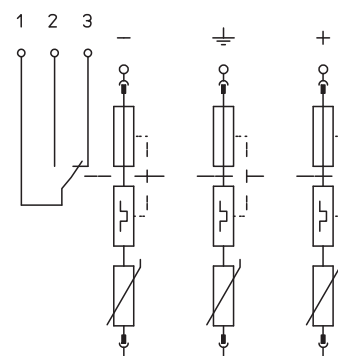
- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Lightning current and surge protective devices for PV systems.

### V-PV-T1+2-1000FS

U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I <sub>imp</sub>	6.25 kA
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>D</sub>	< 3,3 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	ϑ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 35 mm <sup>2</sup>

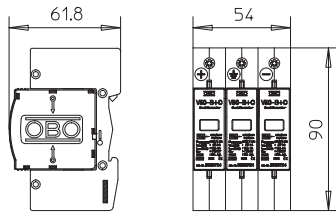
### Connection options







## PV combination arrester V25, 900 V DC



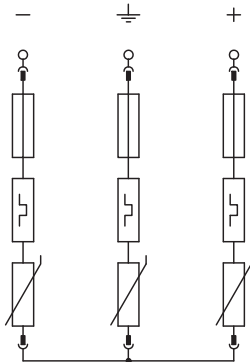
V25 combination arrester, type 1+2, for photovoltaic systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 3.0 kV and  $V_{oc\ max} = 900\ V\ DC$
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 3-PH900	900	3-pole for PV systems	1	42.200	5097447

### Connection options

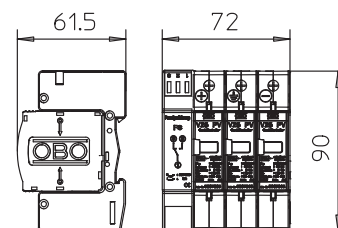


### V25-B+C 3-PH900

U max DC	U <sub>c</sub> DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	I <sub>imp</sub>	7 kA
Nominal discharge current (8/20)	I <sub>n</sub>	30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	50 kA
Protection level	U <sub>p</sub>	< 3,0 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>



## PV combination arrester V25, 900 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 3PHFS900	900	3 pole for PV systems with RS	1	53.500	5097448

V25 combination arrester, type 1+2, for PV systems with FS contact as potential-free changeover

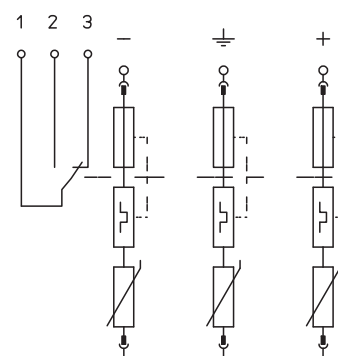
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 3.0 kV and Voc max. = 900 V DC
- With visual display for use in distributor housings

Application: PV systems with lightning protection system

### V25-B+C 3PHFS900

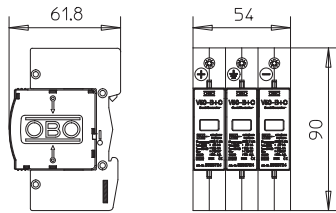
U max DC	U <sub>c</sub> DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I <sub>imp</sub>	7 kA
Nominal discharge current (8/20)	I <sub>n</sub>	30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	50 kA
Protection level	U <sub>p</sub>	< 3,0 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>

### Connection options





## PV combination arrester V50, 600 V DC



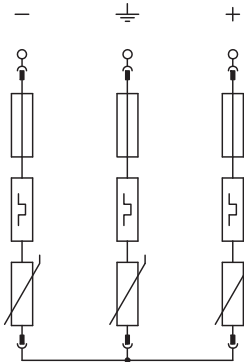
V50 combination arrester, type 1+2, for photovoltaic systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 2.6 kV and  $V_{oc\ max} = 600\ V\ DC$
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

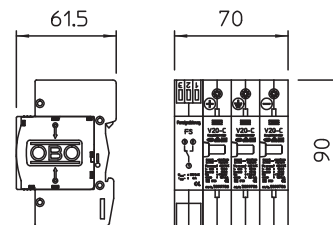
Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3-PH600	600	3-pole for PV systems	1	41.000	5093623

### Connection options



V50-B+C 3-PH600		
U max DC	U <sub>c</sub> DC	600 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	I <sub>imp</sub>	12.5 kA
Nominal discharge current (8/20)	I <sub>n</sub>	30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	50 kA
Protection level	U <sub>b</sub>	< 2,6 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>

## PV combination arrester V50, 600 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3PHFS600	600	3-pole for PV systems with FS	1	49.600	5093625

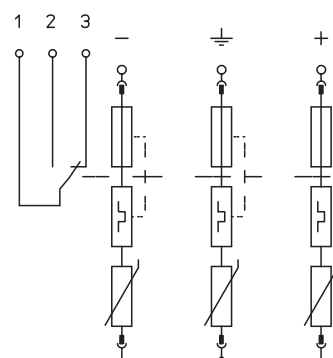
V50 combination arrester, type 1+2, for PV systems with FS contact as potential-free changeover

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC voltage protection level: < 2.6 kV and Voc max. = 600 V DC
- With visual display for use in distributor housings

Application: PV systems with lightning protection system

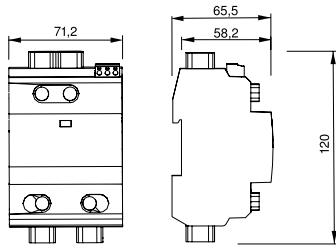
V50-B+C 3PHFS600	
U max DC	U <sub>c</sub> DC 600 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0→2
Impulse discharge current (10/350)	I <sub>imp</sub> 12.5 kA
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>p</sub> < 2,6 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	4
Connection cross-section, rigid	2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire	2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible	2.5 - 25 mm <sup>2</sup>

### Connection options





PV complete block 1500 V DC



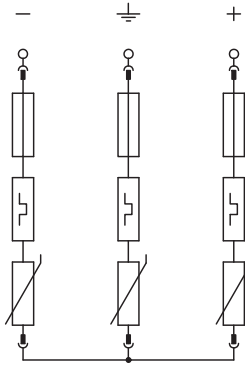
Type 2 surge protection for PV plants.

- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity of 20 kA per pole and up to 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Surge protective devices for PV systems.

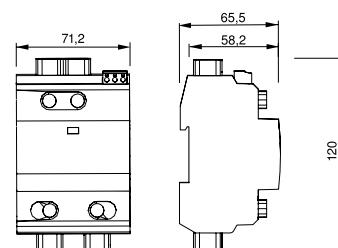
Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T2-1500	1500	Y configuration	1	33.800	5094210

Connection options



V-PV-T2-1500		
U max DC	U <sub>c</sub> DC	1500 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,5 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 35 mm <sup>2</sup>

## PV complete block 1500 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V-PV-T2-1500+FS	1500	Y configuration + RS	1	34.400	5094212

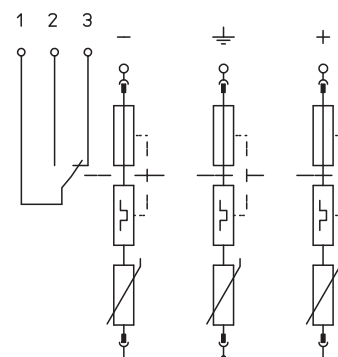
Type 2 surge protection for PV plants.

- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity of 20 kA per pole and up to 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Surge protective devices for PV systems.

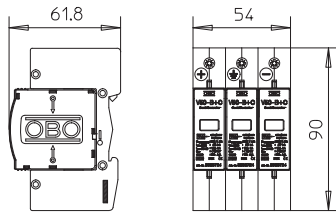
V-PV-T2-1500+FS	
U max DC	U <sub>c</sub> DC 1500 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 4,5 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - 80 °C
Protection rating	IP20
Division unit TE (17.5 mm)	4
Connection cross-section, rigid	2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire	2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible	2.5 - 35 mm <sup>2</sup>

### Connection options





PV surge protection V20, 1000 V DC



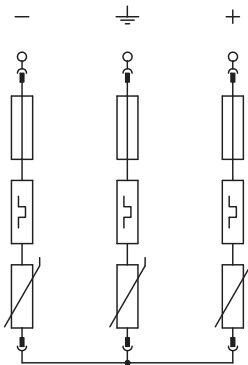
V20 surge arrester, type 2, for photovoltaic systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- V20-C 3-PH-1000 tested to EN 50539-11 (VDE / KEMA)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 4.0 kV and Voc max = 1,000 V DC
- With visual status display for use in distributor housings

Application: PV systems with or without separate lightning protection system

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3-PH-1000	1000	3-pole for PV systems	1	34.519	5094608

Connection options

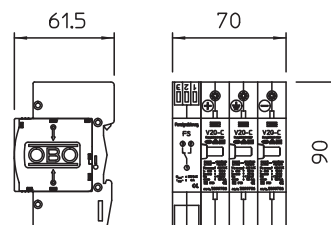


V20-C 3-PH-1000

U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>b</sub>	< 4,0 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>



## PV surge protection V20, 1000 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3PHFS-1000	1000	3-pole for PV systems with FS	1	44.500	5094574

V20 surge arrester, type 2, for photovoltaic systems

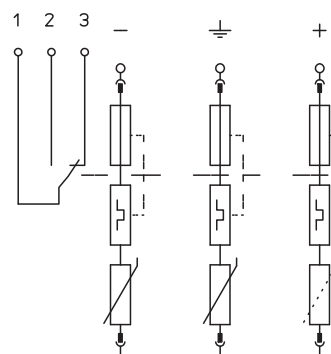
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- V20-C 3-PH-1000 tested to EN 50539-11 (VDE / KEMA)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 4.0 kV and  $V_{oc\ max} = 1,000\ V\ DC$
- With visual status display for use in distributor housings

Application: PV systems with or without separate lightning protection system

### V20-C 3PHFS-1000

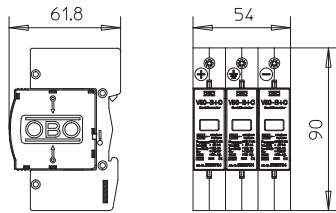
U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,0 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>

### Connection options





PV surge protection V20, 600 V DC



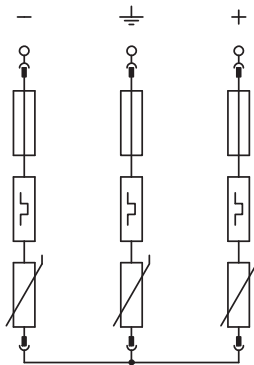
V20 surge arrester, type 2, for PV systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 2.6 kV (Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings

Application: PV systems with or without separate lightning protection system

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3PH-600	600	3-pole for PV systems	1	33.500	5094605

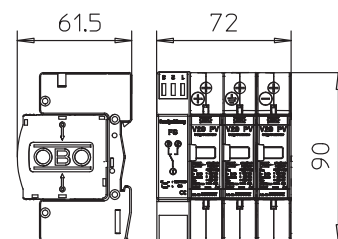
Connection options



V20-C 3PH-600

U max DC	U <sub>c</sub> DC	600 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1-2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>b</sub>	< 2,6 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section, rigid		2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire		2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible		2.5 - 25 mm <sup>2</sup>

## PV surge protection V20, 600 V DC with remote signalling



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3PHFS-600	600	3-pole for PV systems; Y circuit with FS	1	41.500	5094576

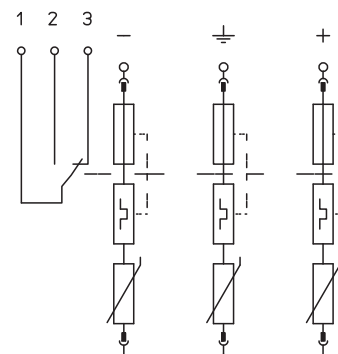
V20 surge arrester, type 2, for PV systems with FS contact as potential-free changeover

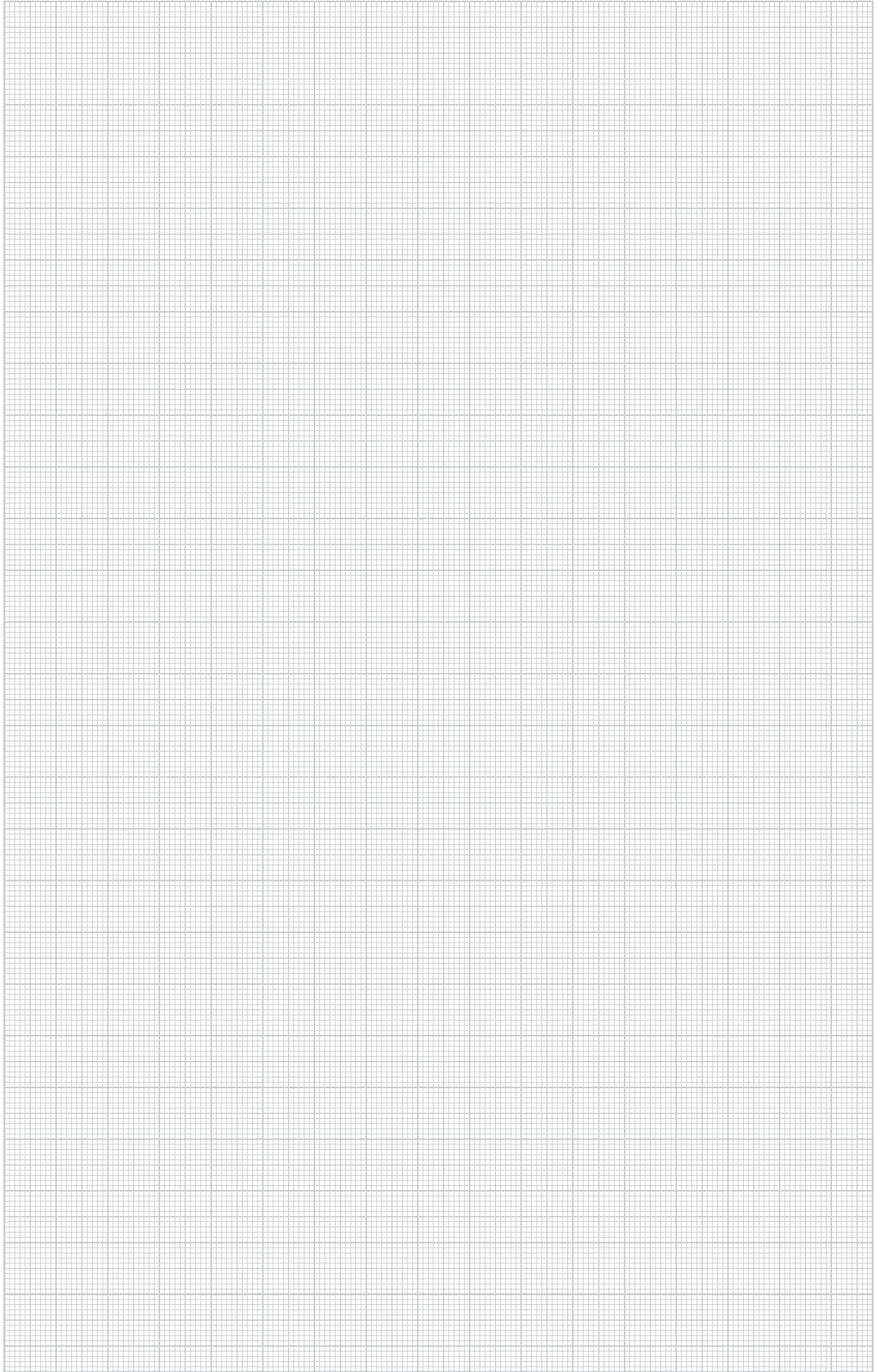
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 2.6 kV (Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings

Application: PV systems with or without separate lightning protection system

V20-C 3PHFS-600	
U max DC	U <sub>c</sub> DC 600 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 2,6 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	4
Connection cross-section, rigid	2.5 - 35 mm <sup>2</sup>
Connection cross-section, multi-wire	2.5 - 35 mm <sup>2</sup>
Connection cross-section, flexible	2.5 - 25 mm <sup>2</sup>

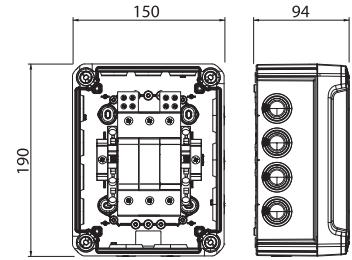
### Connection options





# PV generator connection box

## PV system solution, type 1+2, for inverter with 1 MPP tracker, 900 V DC



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-V25-BC3-PH900	900	Type 1+2 in housing with terminals	1	93.000	5088591

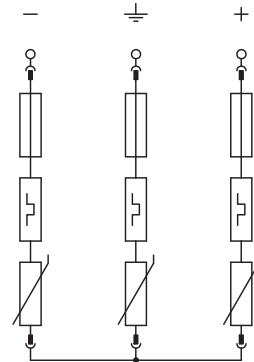
System solution for photovoltaic inverter with 1 separate MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- For each protection device, there are 3 terminal points up to 16 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
- Low DC protection level: < 3.0 kV (Uoc max = 900 V DC with V25-B+C/0-450PV)
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for the use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

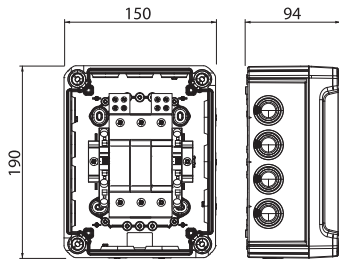
VG-V25-BC3-PH900	
U max DC	U <sub>c</sub> DC 900 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0→2
Impulse discharge current (10/350)	I <sub>imp</sub> 7 kA
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>p</sub> < 3,0 kV
Response time	t <sub>A</sub> < 25 ns
Connection cross-section, rigid	1.5 - 16 mm <sup>2</sup>
Connection cross-section, flexible	1.5 - 10 mm <sup>2</sup>
Temperature range	ϑ -40 - +80 °C
Protection rating	IP66

### Connection options





PV system solution, type 2, for inverter with 1 MPP tracker, 1,000 V DC



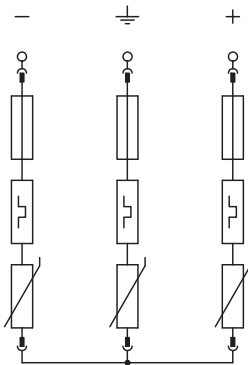
System solution for photovoltaic inverter with 1 separate MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- For each protection device, there are 3 terminal points up to 16 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
- Low DC protection level: < 4.0 kV (U<sub>oc</sub> max = 1,000 V DC with V20-B/0-500PV)
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for the use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-V20-C3-PH1000	1000	Type 2 in housing with terminals	1	87.000	5088593

Connection options



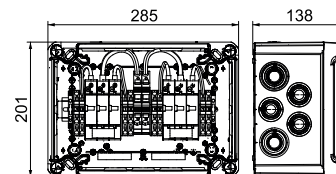
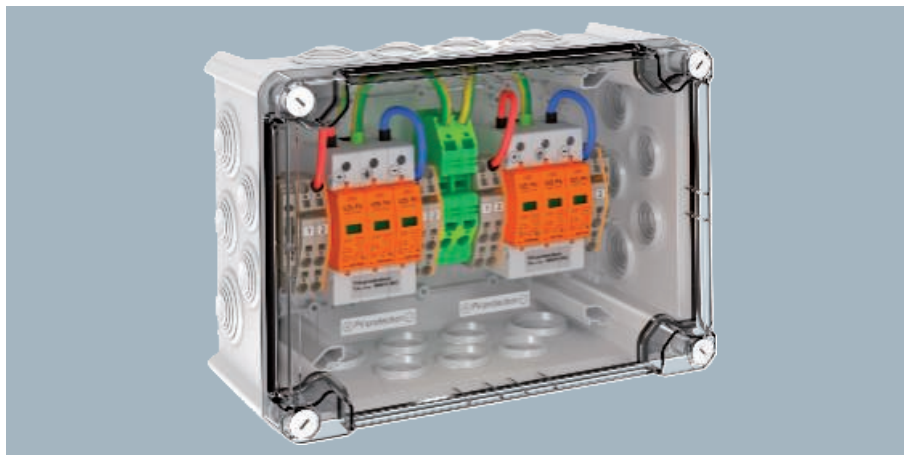
VG-V20-C3-PH1000	
U max DC	U <sub>c</sub> DC 1000 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>b</sub> < 4,0 kV
Response time	t <sub>A</sub> < 25 ns
Connection cross-section, rigid	1.5 - 16 mm <sup>2</sup>
Connection cross-section, flexible	1.5 - 10 mm <sup>2</sup>
Temperature range	ϑ -40 - +80 °C
Protection rating	IP66



# PV generator connection box



## PV system solution, type 1+2, for inverter with 2 MPP trackers, 900 V DC



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-BCPV900K 22	900	For two MPP and with terminal connection	1	220.000	5088566

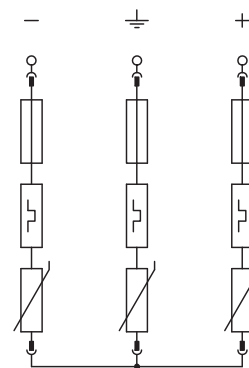
System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with disconnecting device in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Uoc max = 1,000 V DC with V20-C/0-500PV)
- Low DC protection level: < 3.0 kV (Uoc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device, there are 4 terminals up to 6 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for the use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

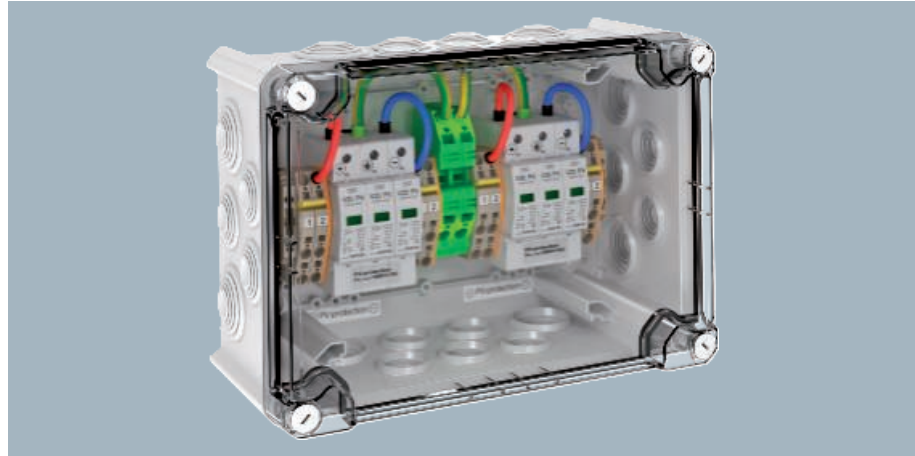
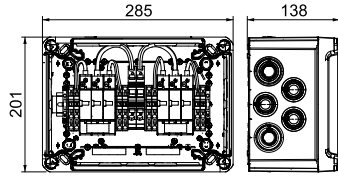
VG-BCPV900K 22	
U max DC	U <sub>c</sub> DC 900 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0-2
Impulse discharge current (10/350 μs)	I <sub>imp</sub> 7 kA
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>p</sub> < 3,0 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	θ -40 - +80 °C
Protection rating	IP66

### Connection options





PV system solution, type 2, for inverter with 2 MPP trackers, 1,000 V DC



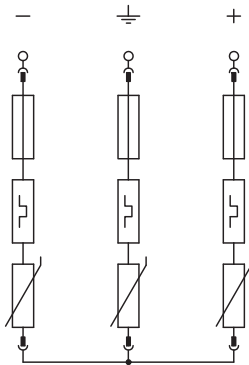
System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V20-B+C/0-500PV)
- Per protection device, there are 4 terminals up to 6 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

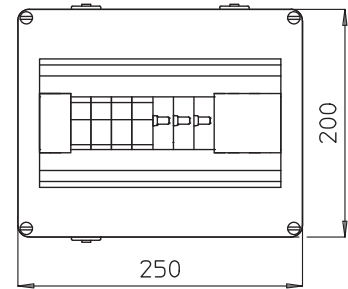
Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-CPV1000K 22	1000	For two MPP and with terminal connection	1	216.600	5088568

Connection options



VG-CPV1000K 22		
U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,0 kV
Response time	t <sub>A</sub>	< 25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP66

## Photovoltaic housing with 4 fuse holders, V25, 900 V



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-BC PV900KS4	900	Type 1+2 in housing with fuse holder (unequipped)	1	205.000	5088640

System solution for photovoltaic fuses (unequipped) for photovoltaic inverters with 1 MPP tracker

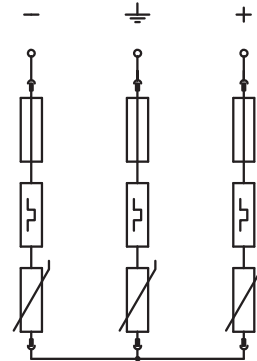
- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- (+) poles protected via 4 photovoltaic fuses 10 x 38 mm (unequipped), 900 V DC protected
- 4 (-) poles via terminal up to 6 mm<sup>2</sup> switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

### VG-BC PV900KS4

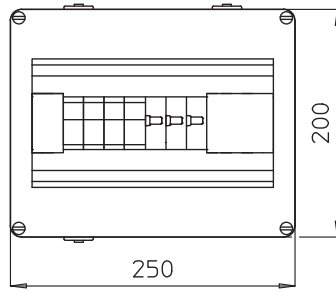
U max DC	U <sub>c</sub> DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I <sub>imp</sub>	7 kA
Nominal discharge current (8/20)	I <sub>n</sub>	30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	50 kA
Protection level	U <sub>p</sub>	< 3,0 kV
Response time	t <sub>A</sub>	< 25 ns
Connection cross-section, rigid		0.5 - 6 mm <sup>2</sup>
Connection cross-section, flexible		0.5 - 6 mm <sup>2</sup>
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 65

### Connection options





Photovoltaic housing with 4 fuses 10 A



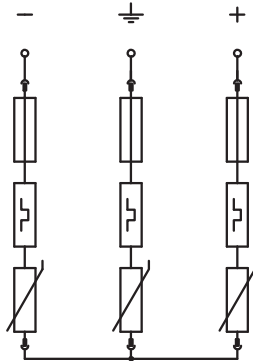
System solution for photovoltaic fuses for photovoltaic inverters with 1 MPP tracker

- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V20-C/0-500PV)
- (+) poles protected via 4 photovoltaic fuses 10x38 mm 10 A, 1,000 V DC protected
- 4 (-) poles via terminal up to 6 mm<sup>2</sup> switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-C DCPH1000-4S	1000	Type 2 in housing with 4 PV fuses (10 A)	1	200.000	5088651

Connection options

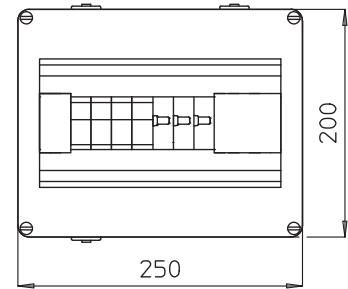


VG-C DCPH1000-4S

U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>b</sub>	< 4,0 kV
Response time	t <sub>A</sub>	< 25 ns
Connection cross-section, rigid		0.5 - 6 mm <sup>2</sup>
Connection cross-section, flexible		0.5 - 6 mm <sup>2</sup>
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 65



## Photovoltaic housing with 4 fuse holders, unequipped



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-C PV1000KS4	1000	Type 2 in housing with fuse holder (unequipped)	1	190.000	5088654

System solution for photovoltaic fuses for photovoltaic inverters with 1 MPP tracker

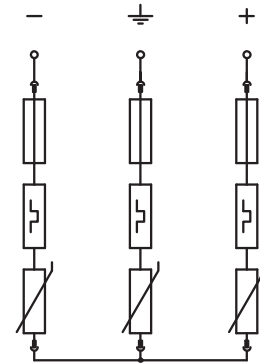
- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V20-C/0-500PV)
- Item no.: 5088654: (+) poles protected via 4 photovoltaic fuses 10 x 38 mm (unequipped), 1,000 V DC protected
- Item no.: 5088640: (+) poles protected via 4 photovoltaic fuses 10 x 38 mm (unequipped), 900 V DC protected
- 4 (-) poles via terminal up to 6 mm<sup>2</sup> switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.  
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

### VG-C PV1000KS4

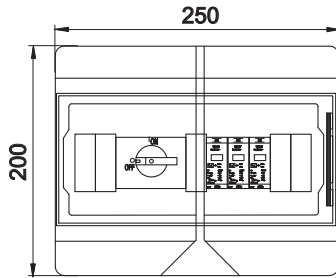
U max DC	U <sub>c</sub> DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 4,0 kV
Response time	t <sub>A</sub>	< 25 ns
Connection cross-section, rigid		0.5 - 6 mm <sup>2</sup>
Connection cross-section, flexible		0.5 - 6 mm <sup>2</sup>
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 65

### Connection options





PV system solution, type 1+2, to 900 V DC with switch disconnector (32 A)

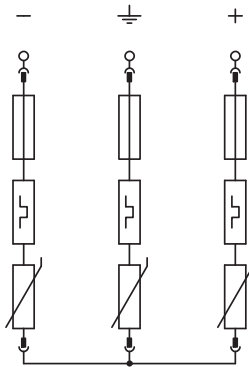


- System solution for circuit breaker photovoltaic inverter with 1 MPP tracker
- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
  - Low DC protection level: <math>< 3.0\text{ kV}</math> ( $V_{oc\ max} = 900\text{ V DC}$  with V25-B+C/0-450PV)
  - Circuit breaker (1,000 V; 32 A) for secure switch-off of the DC string cable
  - Per protection device there is 1 terminal up to 6 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
  - Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-BC DC-TS900	900	Type 1+2 and Benedikt LS32-SMA-A4 DC isolator	1	182.500	5088635

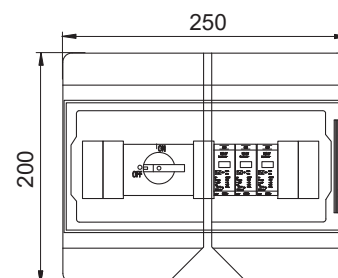
Connection options



VG-BC DC-TS900	
U max DC	U <sub>c</sub> DC 900 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0→2
Impulse discharge current (10/350)	I <sub>imp</sub> 7 kA
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>o</sub> <math>< 3,0\text{ kV}</math>
Response time	t <sub>A</sub> <math>< 25\text{ ns}</math>
Temperature range	θ -40 - +80 °C
Protection rating	IP65
Connection cross-section string	0.5 - 10
Connection cross-section PE	0.5 - 10



## PV system solution, type 2, to 1000 V DC with switch disconnector (32 A)



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
VG-C DC-TS1000	1000	Type 2 and Benedikt LS32-SMA-A4 DC isolator	1	182.500	5088660

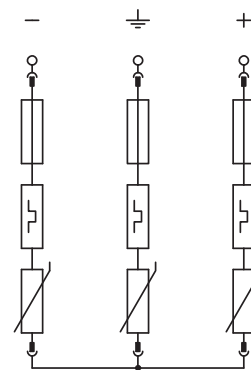
System solution for circuit breaker photovoltaic inverter with 1 MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V2B-B+C/0-500PV)
- Circuit breaker (1,000 V; 32 A) for secure switch-off of the DC string cable
- Per protection device, there is 1 terminal up to 6 mm<sup>2</sup> pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

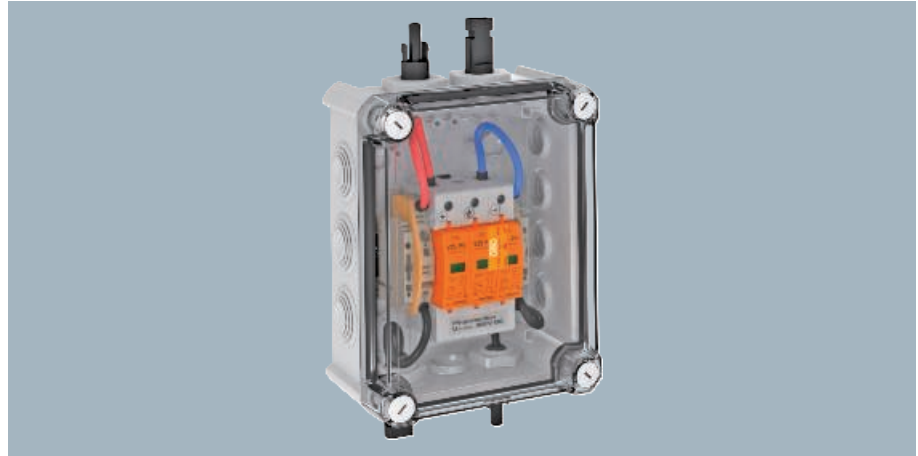
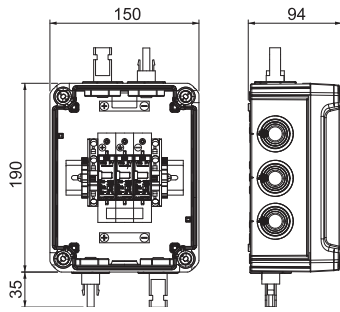
VG-C DC-TS1000	
U max DC	U <sub>c</sub> DC 1000 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 4,0 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP65
Connection cross-section string	0.5 - 10
Connection cross-section PE	2.5 - 35

### Connection options





**PV system solution, type 1+2, with MC4 connector for inverter with 1 MPP tracker, 900 V DC**



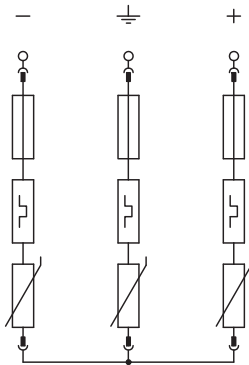
System solution, type 1+2, with MC4 connector for photovoltaic inverter with one MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Type 1+2 combination arrester for lightning protection equipotential bonding to EN 62305 (VDE 0185-305)
- Low DC protection level: < 3.0 kV ( $U_{oc\ max} = 900\ V\ DC$  with V25-B+C/0-450PV)
- One PV string input (MC4 plug connector) at one MPP inverter input, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside

For DC protection of the inverter of photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>VG-BC900S1</b>	900	For one MPP and with MC4 connection	1	105.000	<b>5088564</b>

**Connection options**

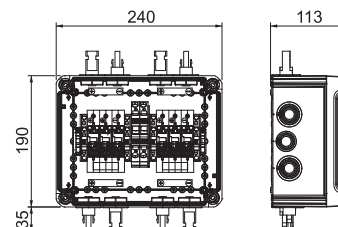
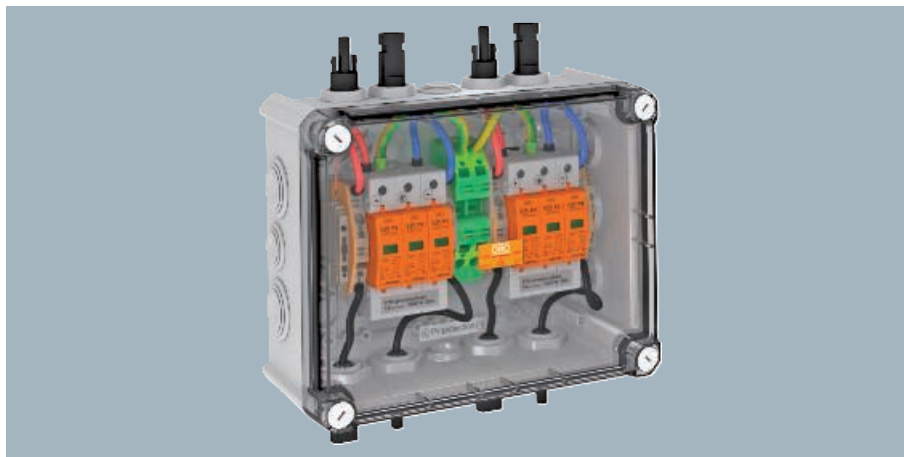


<b>VG-BC900S1</b>	
U max DC	$U_c\ DC$ 900 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0→2
Impulse discharge current (10/350)	$I_{imp}$ 7 kA
Nominal discharge current (8/20)	$I_n$ 30 kA
Maximum discharge current (8/20 $\mu s$ )	$I_{max}$ 50 kA
Protection level	$U_o$ < 3,0 kV
Response time	$t_A$ < 25 ns
Temperature range	$\vartheta$ -40 - +80 °C
Protection rating	IP66

# PV generator connection box



## PV system solution, type 1+2, with MC4 connector for inverter with 2 MPP trackers, 900 V DC



Type	Max. continuous voltage DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>VG-BC900S11</b>	900	For two MPPs and with MC4 connection	1	199.000	<b>5088565</b>

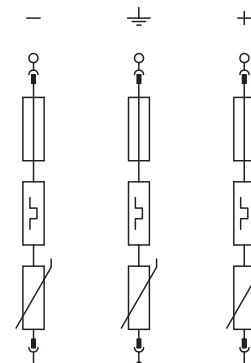
System solution, type 1+2, with MC4 connector for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Type 1+2 combination arrester for lightning protection equipotential bonding to EN 62305 (VDE 0185-305)
- Low DC voltage protection level: < 3.0 kV ( $V_{oc\ max} = 900V\ DC$  with V25-B+C/0-450PV)
- One PV string input (MC4 plug connector) at one MPP inverter input, up to 30A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside

For DC protection of the inverter of photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

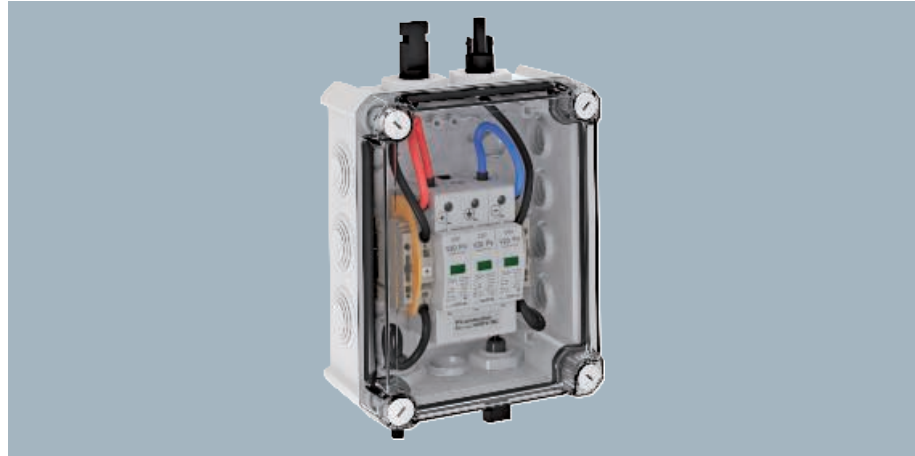
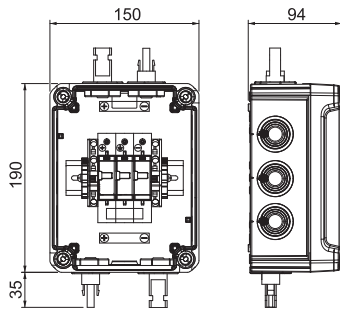
<b>VG-BC900S11</b>	
U max DC	U <sub>c</sub> DC 900 V
SPD to EN 61643-11	Type 1+2
Lightning protection zone LPZ	0-2
Impulse discharge current (10/350)	I <sub>imp</sub> 7 kA
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>p</sub> < 3,0 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP66

### Connection options





PV system solution, type 2, with MC4 connector for inverter with 1 MPP tracker, 1,000 V DC



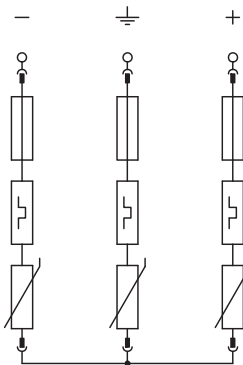
System solution, type 2, with MC4 connector for photovoltaic inverter with 1 MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC voltage protection level: < 4.0 kV (Voc max = 1,000V DC with V20-C/0-500PV)
- One PV string input (MC4 plug connector) at one MPP inverter input, up to 30A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside

For DC protection of the inverter of photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
PVG-C1000S100	1000	For one MPP tracker and with MC4 connection	1	105.000	5088554

Connection options

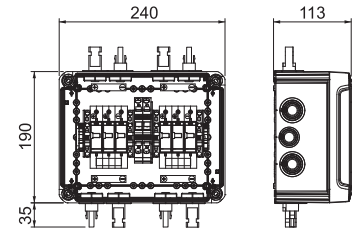
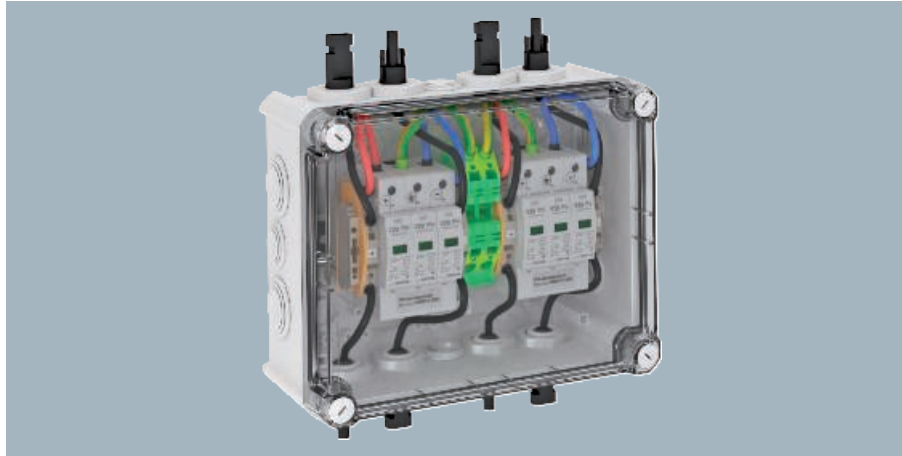


PVG-C1000S100	
U max DC	U <sub>c</sub> DC 1000 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 4,0 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP66

# PV generator connection box



## PV system solution, type 2, with MC4 connector for inverter with 2 MPP trackers, 1,000 V DC



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
PVG-C1000S110	1000	For two MPP trackers and with MC4 connection	1	199.000	5088556

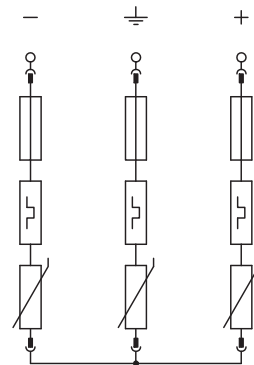
System solution, type 2, with MC4 connector for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC voltage protection level: < 4.0 kV (Voc max = 1,000V DC with V20-C/0-500PV)
- One PV string input (MC4 plug connector) at one MPP inverter input, up to 30A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside

For DC protection of the inverter of photovoltaic systems. If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

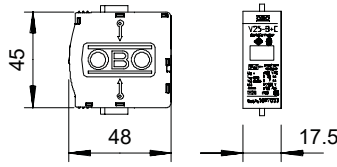
PVG-C1000S110	
U max DC	U <sub>c</sub> DC 1000 V
SPD to EN 61643-11	Type 2
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 4,0 kV
Response time	t <sub>A</sub> < 25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP66

### Connection options





PV CombiController V50, plug-in arrester, type 1+2



CombiController upper part – type 1+2, combination arrester for photovoltaic systems

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC voltage protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Plug-in arrester with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings
- High current carrying capacity with long lifespan

Application: PV systems with lightning protection system

Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 0-300PV	300	1-pole, PV upper part with Y base to 600 V DC	1	8.200	5093726

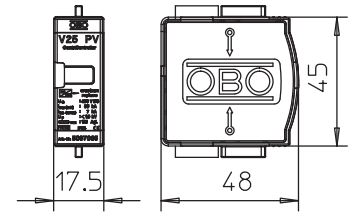
Connection options



V50-B+C 0-300PV		
U max DC	U <sub>c</sub> DC	300 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Nominal discharge current (8/20)	I <sub>n</sub>	30 kA
Impulse discharge current (10/350)	I <sub>imp</sub>	12.5 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	50 kA
Protection level	U <sub>p</sub>	< 1,3 kV
Response time	t <sub>A</sub>	<25 ns
Maximum back-up fuse		125 A
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1



## PV CombiController V25, plug-in arrester, type 1+2



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 0-450PV	450	1-pole, PV upper part with Y base to 900 V DC	1	9.500	5097065

CombiController upper part - type 1+2, combination arrester for photovoltaic systems

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC voltage protection level: < 1.5 kV per pole (Y circuit: 3.0 kV and Voc max = 900 V DC)
- Plug-in arrester with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings
- High current carrying capacity with long lifespan

Application: PV systems with lightning protection system

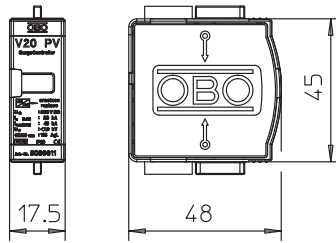
V25-B+C 0-450PV	
U max DC	U <sub>c</sub> DC 450 V
SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
Lightning protection zone LPZ	0→2
Nominal discharge current (8/20)	I <sub>n</sub> 30 kA
Impulse discharge current (10/350)	I <sub>imp</sub> 7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 50 kA
Protection level	U <sub>p</sub> < 1,5 kV
Response time	t <sub>A</sub> < 25 ns
Maximum back-up fuse	160 A
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1

### Connection options





PV SurgeController V20, plug-in arrester, type 2



SurgeController upper part - type 2, surge arrester for photovoltaic systems

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC voltage protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Plug-in arrester with thermodynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- High current carrying capacity with long lifespan

Application example: PV systems with or without separated insulated lightning protection system

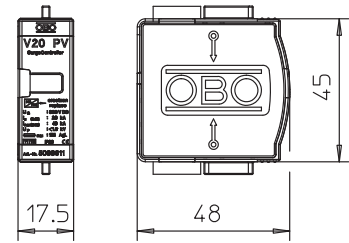
Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>V20-C 0-300PV</b>	300	1-pole, PV upper part with Y base to 600 V DC	1	5.500	<b>5099611</b>

Connection options



V20-C 0-300PV		
U max DC	U <sub>c</sub> DC	300 V
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I <sub>n</sub>	20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	40 kA
Protection level	U <sub>p</sub>	< 1,3 kV
Response time	t <sub>A</sub>	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1

## PV SurgeController V20, plug-in arrester, type 2



Type	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 0-500PV	500	1-pole, PV upper part with Y base to 1,000 V DC	1	6.500	5099708

SurgeController upper part - type 2, surge arrester for photovoltaic systems

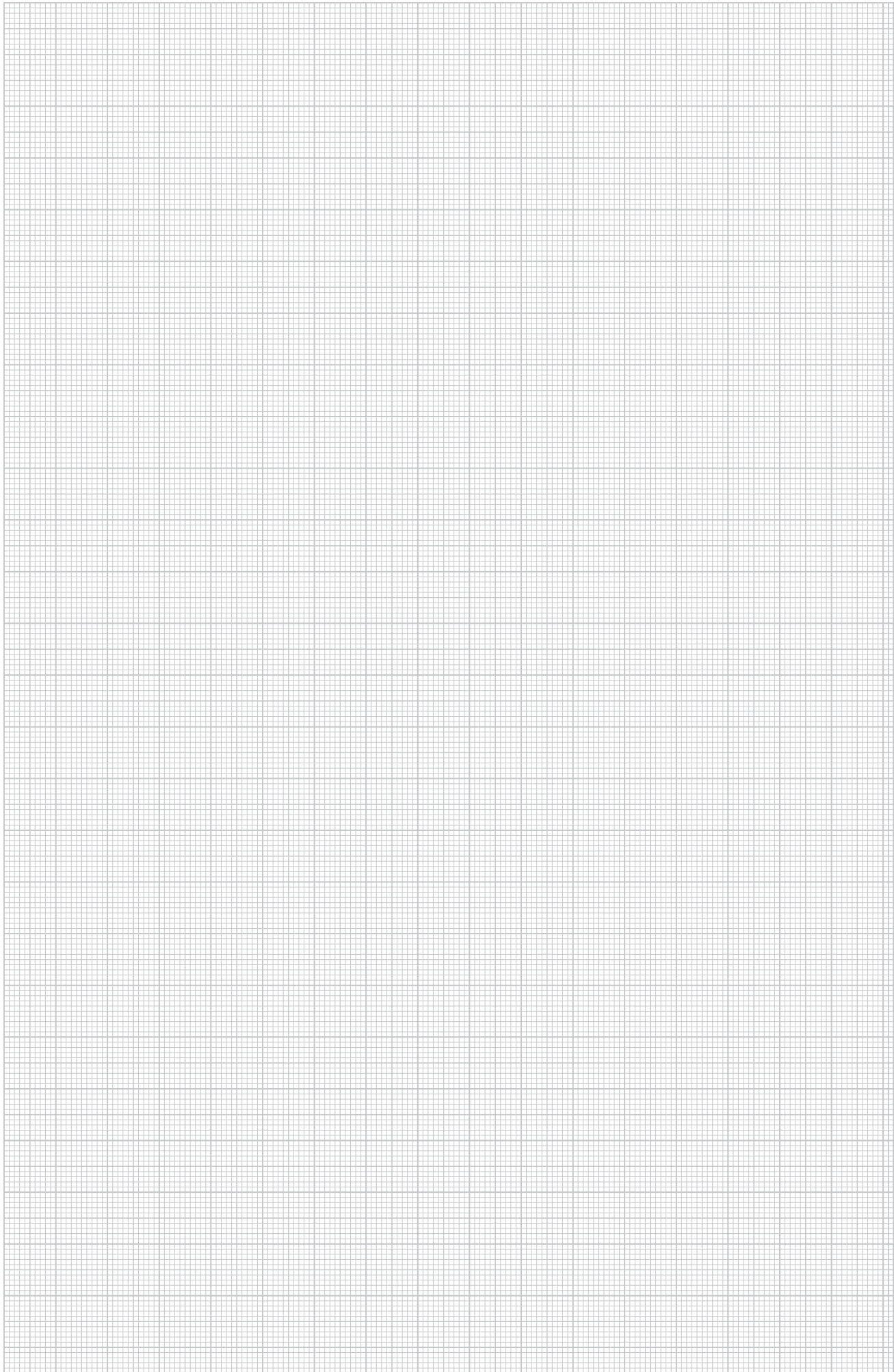
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC voltage protection level: < 2.0 kV per pole (Y circuit: 4.0 kV and Voc max = 1,000 V DC)
- Plug-in arrester with thermodynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- High current carrying capacity with long lifespan

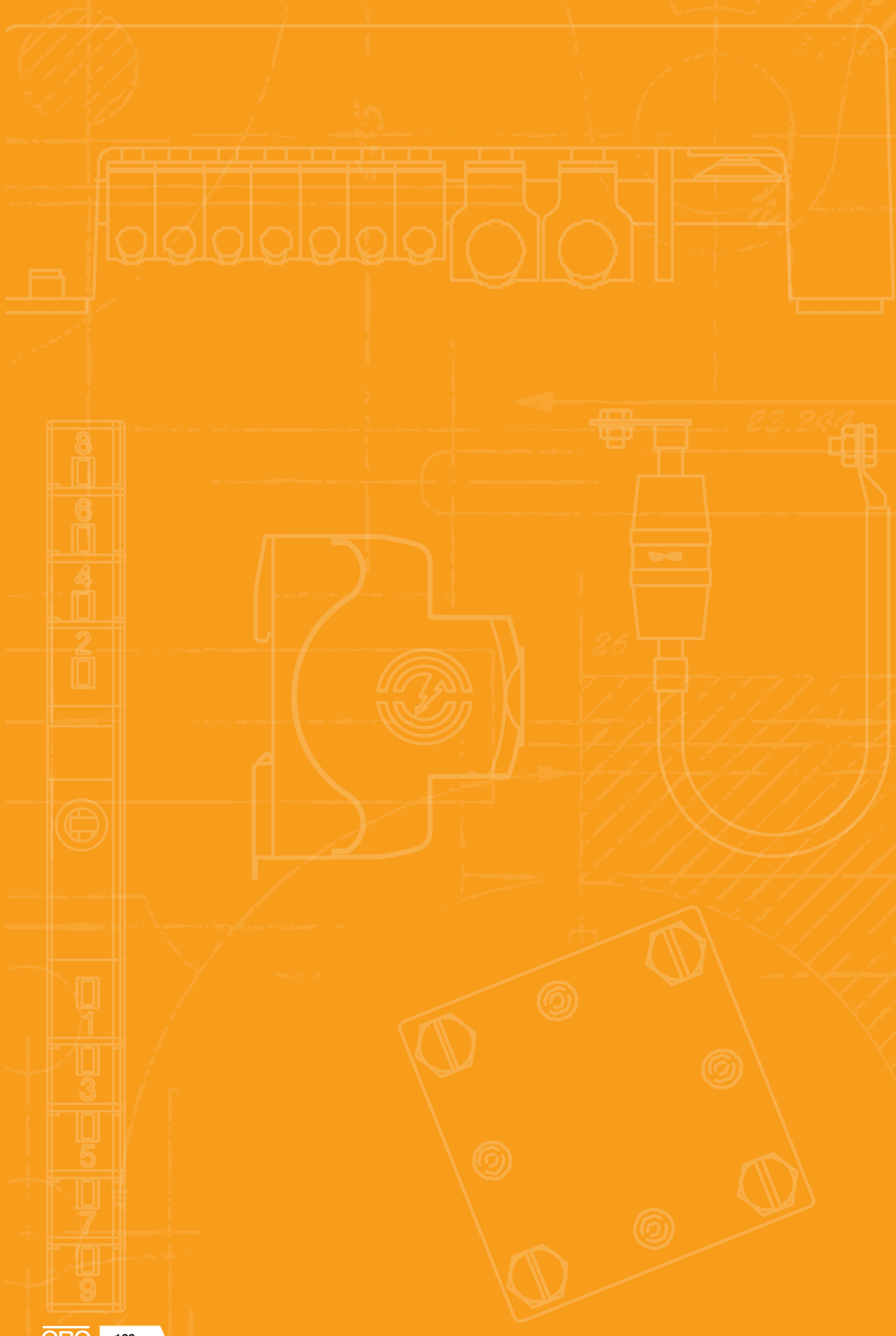
Application example: PV systems with or without separated insulated lightning protection system

V20-C 0-500PV	
U max DC	U <sub>c</sub> DC 500 V
SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
Lightning protection zone LPZ	1→2
Nominal discharge current (8/20)	I <sub>n</sub> 20 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 40 kA
Protection level	U <sub>p</sub> < 2,0 kV
Response time	t <sub>A</sub> < 25 ns
Maximum back-up fuse	125 A
Temperature range	θ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1

### Connection options







# MCR technology



MCR technology

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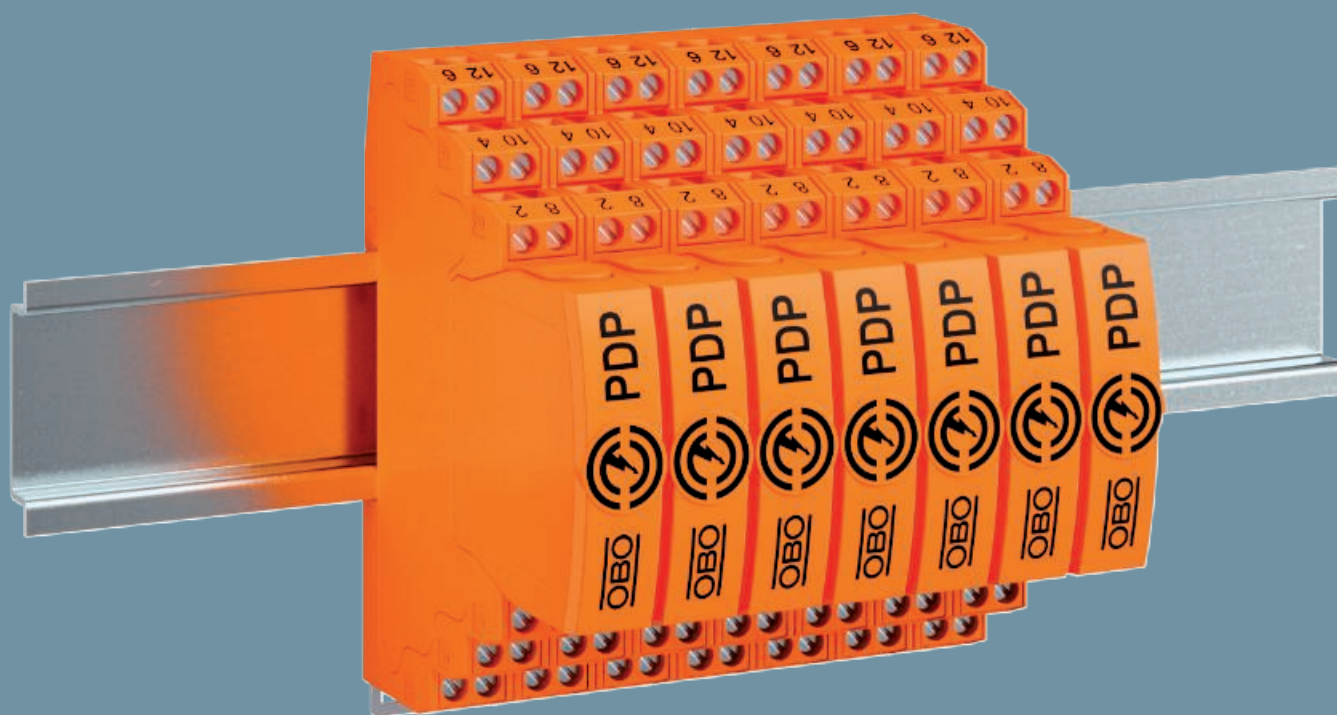


Measuring technology

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## PDP data cable protection device

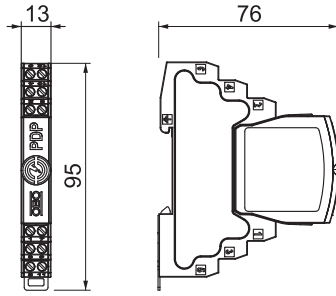
Security for data and control systems in plants and industry with the latest generation of MCR protection

- Series protection device tested according to DIN EN 61643-21 (D1/C2)
- With plug-in covers
- Wide range of uses due to high band width up to 100 MHz
- 4 different voltage variants: 5 V, 12 V, 24 V and 48 V
- Available as 2 and 2x 2-pole versions
- Available for directly and indirectly earthed shielding systems
- Lightning current discharge capacity up to 10 kA  $I_{total}$





## Pluggable data line protection, 2-pole, direct earthing



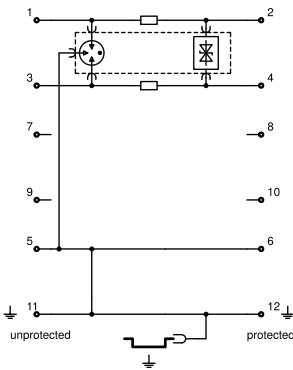
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

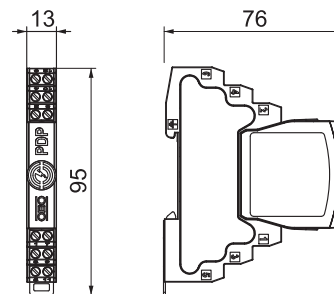
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-5-D</b>	4.2	6	2	1	6.500	<b>5080301</b>

### Connection options



PDP-2-5-D	
Maximum continuous voltage AC	$U_c$ 4.2 V
Maximum continuous voltage DC	$U_c$ 6 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega \pm 5\%$
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	100 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

## Pluggable data line protection, 2-pole, direct earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-12-D</b>	12	16	2	1	6.500	<b>5080303</b>

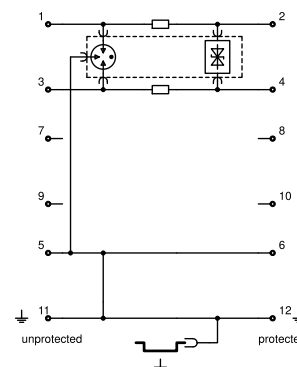
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

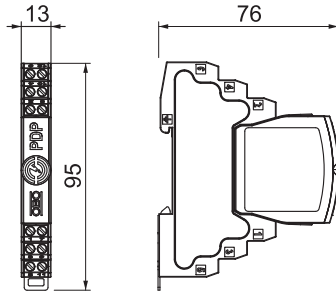
<b>PDP-2-12-D</b>	
Maximum continuous voltage AC	$U_c$ 12 V
Maximum continuous voltage DC	$U_c$ 16 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	$1,2 \Omega \pm 5\%$
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	130 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2-pole, direct earthing



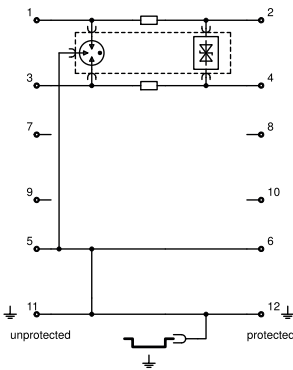
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-24-D</b>	21	30	2	1	6.500	<b>5080305</b>

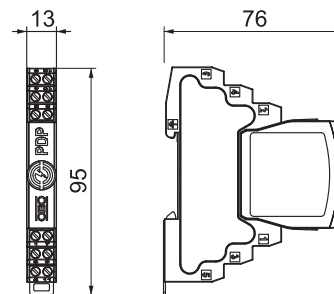
### Connection options



### PDP-2-24-D

Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		2
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega \pm 5\%$
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Pluggable data line protection, 2-pole, direct earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-48-D</b>	37	52	2	1	6.500	<b>5080307</b>

Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

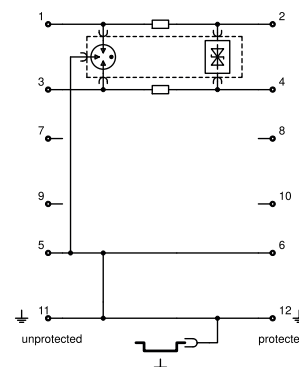
- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2-48-D

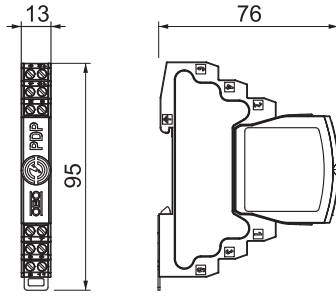
Maximum continuous voltage AC	$U_c$	37 V
Maximum continuous voltage DC	$U_c$	52 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		2
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		$1,2 \Omega \pm 5\%$
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		170 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





## Pluggable data line protection, 2-pole, indirect earthing



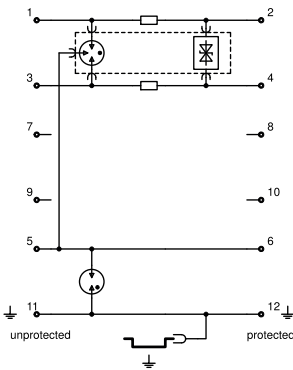
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-5-I</b>	4.2	6	2	1	6.600	<b>5080309</b>

### Connection options

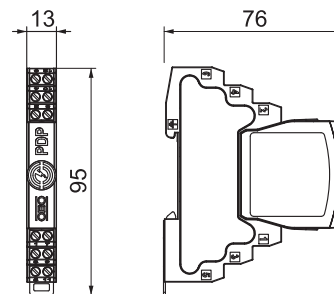


### PDP-2-5-I

Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		2
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21



## Pluggable data line protection, 2-pole, indirect earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-12-I</b>	12	16	2	1	6.600	<b>5080311</b>

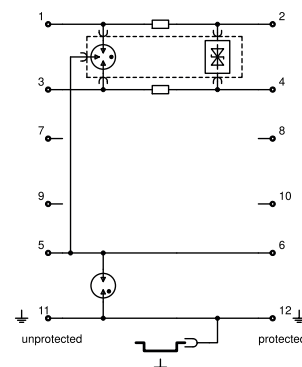
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

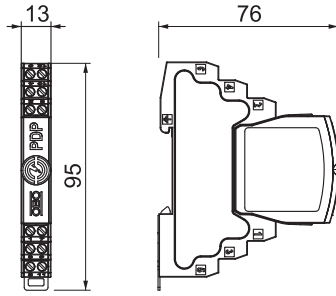
PDP-2-12-I	
Maximum continuous voltage AC	$U_c$ 12 V
Maximum continuous voltage DC	$U_c$ 16 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	130 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2-pole, indirect earthing



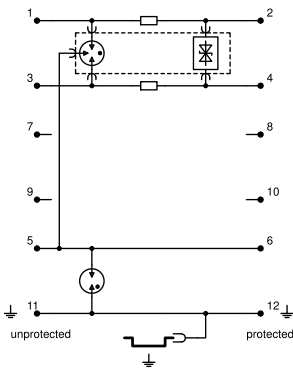
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

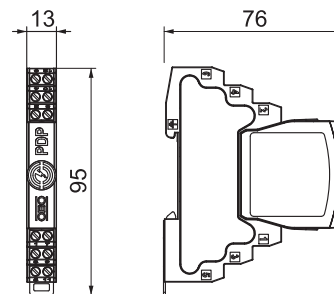
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-24-I</b>	21	30	2	1	6.600	<b>5080313</b>

### Connection options



PDP-2-24-I	
Maximum continuous voltage AC	$U_c$ 21 V
Maximum continuous voltage DC	$U_c$ 30 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	150 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

## Pluggable data line protection, 2-pole, indirect earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2-48-I</b>	37	52	2	1	6.600	<b>5080315</b>

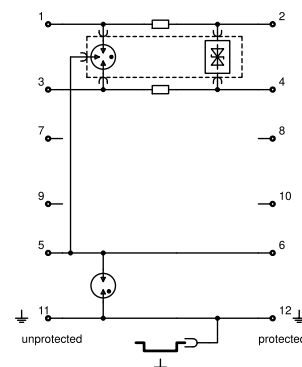
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

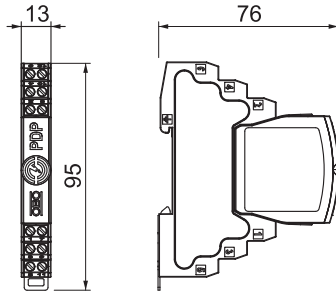
PDP-2-48-I	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 52 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	$1,2 \Omega \pm 5\%$
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	170 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2x2-pole, direct earthing



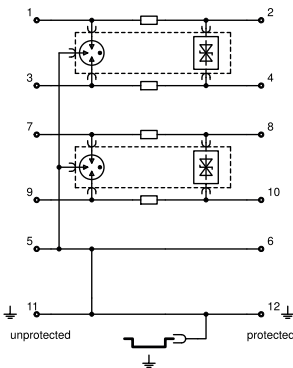
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-5-D</b>	4.2	6	4	1	7.200	<b>5080317</b>

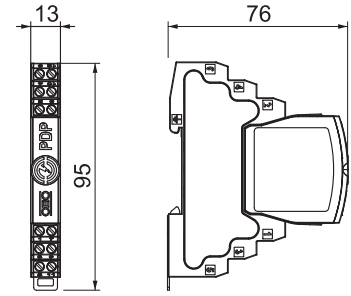
### Connection options



### PDP-2x2-5-D

Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Version		2x2-pole
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Pluggable data line protection, 2x2-pole, direct earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-12-D</b>	12	16	4	1	7.200	<b>5080319</b>

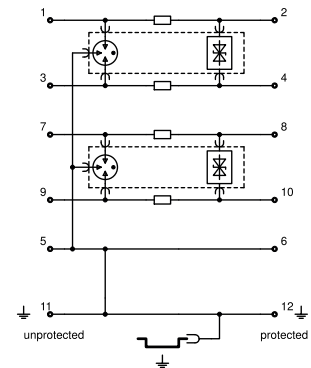
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

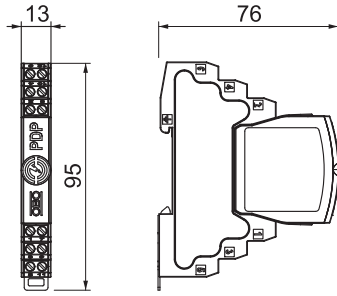
PDP-2x2-12-D	
Maximum continuous voltage AC	$U_c$ 12 V
Maximum continuous voltage DC	$U_c$ 16 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Version	2x2-pole
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	130 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2x2-pole, direct earthing



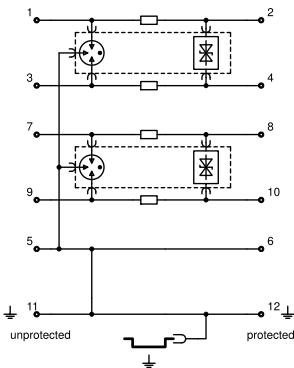
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-24-D</b>	21	30	4	1	7.200	<b>5080321</b>

### Connection options

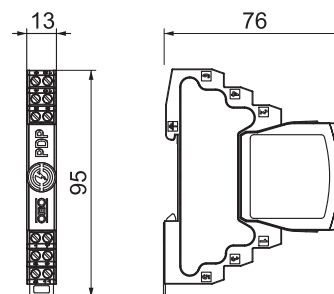


### PDP-2x2-24-D

Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Version		2x2-pole
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21



## Pluggable data line protection, 2x2-pole, direct earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-48-D</b>	37	52	4	1	7.200	<b>5080323</b>

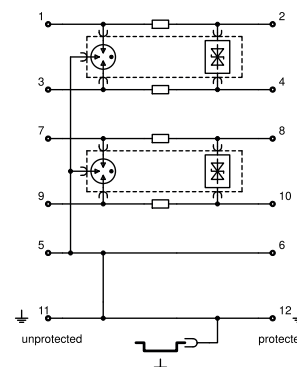
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

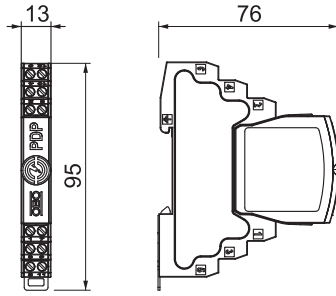
<b>PDP-2x2-48-D</b>	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 52 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Version	2x2-pole
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	170 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2x2-pole, indirect earthing



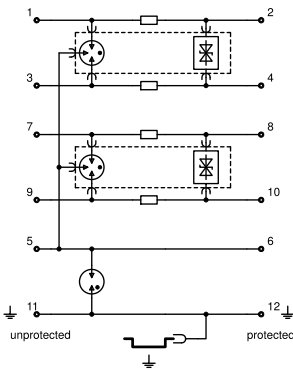
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-5-I</b>	4.2	6	4	1	7.300	<b>5080325</b>

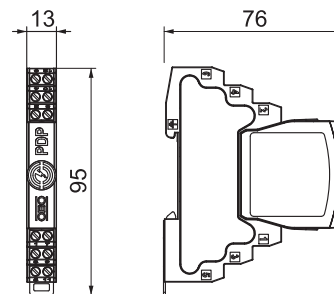
### Connection options



### PDP-2x2-5-I

Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Version		2x2-pole
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Pluggable data line protection, 2x2-pole, indirect earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-12-I</b>	12	16	4	1	7.300	<b>5080327</b>

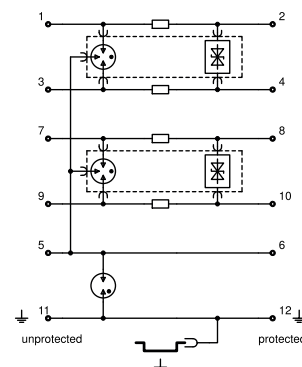
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

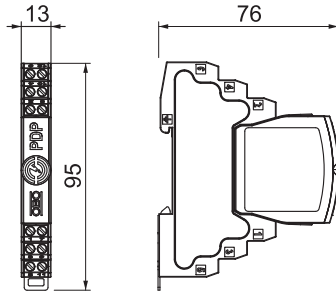
<b>PDP-2x2-12-I</b>	
Maximum continuous voltage AC	$U_c$ 12 V
Maximum continuous voltage DC	$U_c$ 16 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Version	2x2-pole
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	130 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





## Pluggable data line protection, 2x2-pole, indirect earthing



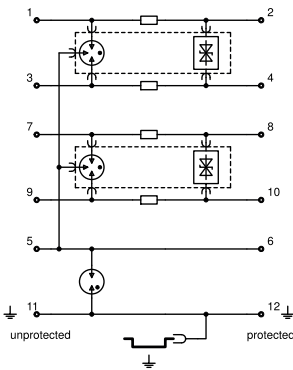
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-24-I</b>	21	30	4	1	7.300	<b>5080329</b>

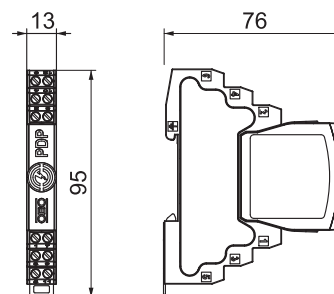
### Connection options



### PDP-2x2-24-I

Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Version		2x2-pole
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega \pm 5\%$
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Pluggable data line protection, 2x2-pole, indirect earthing



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-2x2-48-I</b>	37	52	4	1	7.300	<b>5080331</b>

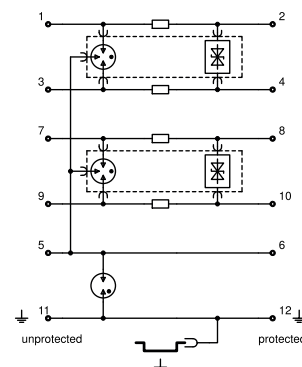
Pluggable data line protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multi-wire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Small installation width of 12.5 mm
- High system availability - no signal interruption without protection module

Application: Universal lightning and surge protection for MCR data transmission devices.

PDP-2x2-48-I	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 52 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Version	2x2-pole
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	170 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

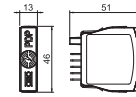
### Connection options





### Plug-in arrester PDP, 2-pole

Type	Max. continuous voltage		Pack Piece	Weight kg/100 pc.	Item no.
	AC V	DC V			
<b>PDP-P-2-5</b>	42	6	1	1.800	<b>5080402</b>
<b>PDP-P-2-12</b>	12	16	1	1.800	<b>5080404</b>
<b>PDP-P-2-24</b>	21	30	1	1.800	<b>5080406</b>
<b>PDP-P-2-48</b>	37	52	1	1.800	<b>5080408</b>



Plug-in arrester, plug-in data protection type 1+2/D1+C2 for use in instrumentation, control and automation equipment

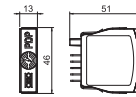
- Protection device for multiwire systems
- Frequency range to 100 MHz
- Small width of 12.5 mm

Application: Universal lightning and surge protection for data transmission devices in MCR technology.



### Plug-in arrester PDP, 2x2-pole

Type	Max. continuous voltage		Pack Piece	Weight kg/100 pc.	Item no.
	AC V	DC V			
<b>PDP-P-2x2-5</b>	4,2	6	1	2.400	<b>5080410</b>
<b>PDP-P-2x2-12</b>	12	16	1	2.400	<b>5080412</b>
<b>PDP-P-2x2-24</b>	21	30	1	2.400	<b>5080414</b>
<b>PDP-P-2x2-48</b>	37	52	1	2.400	<b>5080416</b>



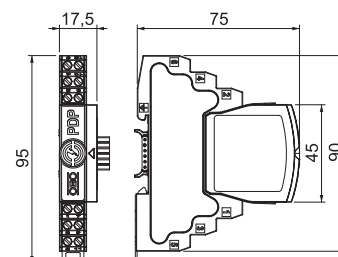
Plug-in arrester, plug-in data protection type 1+2/D1+C2 for use in instrumentation, control and automation equipment

- Protection device for multiwire systems
- Frequency range to 100 MHz
- Small width of 12.5 mm

Application: Universal lightning and surge protection for data transmission devices in MCR technology.



## Connectable data cable protection, 2-pole, direct earthing, with visual signalling, 5 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-5-D-OS	4.2	6	2	1	8.000	5080341

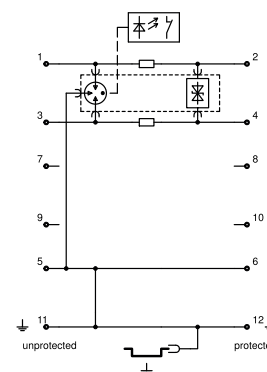
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

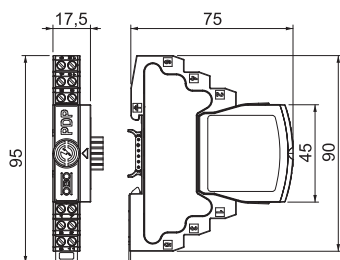
PDP-2-5-D-OS	
Maximum continuous voltage AC	$U_c$ 4.2 V
Maximum continuous voltage DC	$U_c$ 6 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	$1,2 \Omega \pm 5\%$
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	100 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





### Connectable data cable protection, 2-pole, direct earthing, with visual signalling, 12 V



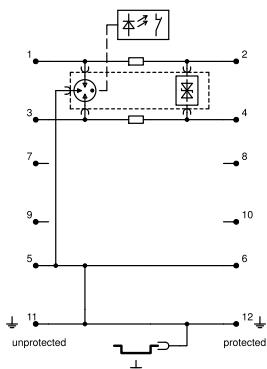
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-12-D-OS	12	16	2	1	8.000	5080343

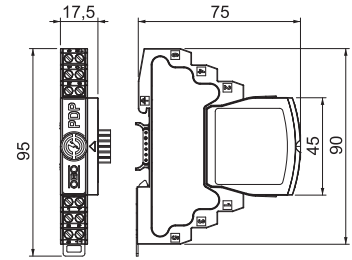
#### Connection options



#### PDP-2-12-D-OS

Maximum continuous voltage AC	$U_c$	12 V
Maximum continuous voltage DC	$U_c$	16 V
Category	Type 1+2 / D1+C2	
Lightning protection zone LPZ	0→2	
Number of poles	2	
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire	1,2 $\Omega$ ± 5%	
Impulse durability wire-wire	10 kV / 5 kA	
Impulse durability wire-earth	10 kV / 5 kA	
Total discharge current (8/20)	20 kA	
Total discharge current (10/350)	2,5 kA	
Protection level wire-wire	130 V	
Protection level wire-earth	850 V	
Frequency range	0 - 100 MHz	
Temperature range	$\vartheta$	-40 - +80 °C
Installation type	DIN rail 35 mm	
Connection system	Terminal	
Protection rating	IP20	
Shielding connection available	Yes	
Shield connection	Direct	
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>	
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>	
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>	
Earthing via:	Connection cable / DIN rail	
Testing standard	IEC 61643-21	

## Connectable data cable protection, 2-pole, direct earthing, with visual signalling, 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-24-D-OS	21	30	2	1	8.000	5080345

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

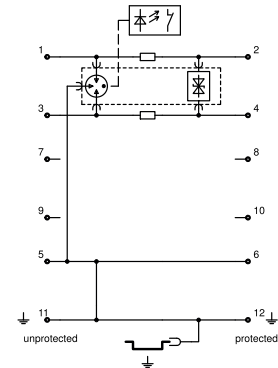
- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2-24-D-OS

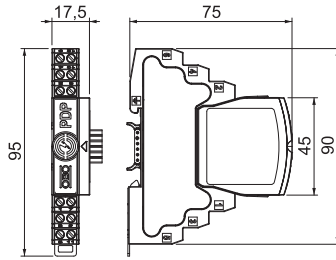
Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		2
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





### Connectable data cable protection, 2-pole, direct earthing, with visual signalling, 24 V



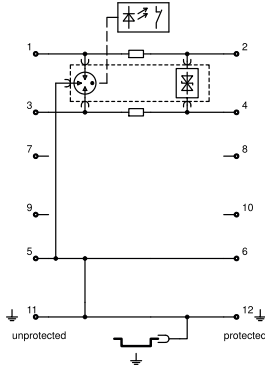
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

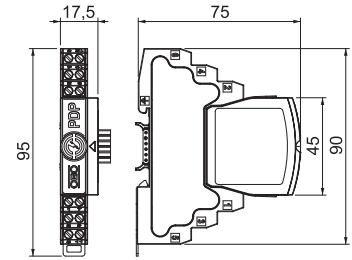
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-48-D-OS	37	52	2	1	8.000	5080347

#### Connection options



PDP-2-48-D-OS	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 52 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ ± 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	170 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

## Connectable data cable protection, 2-pole, indirect earthing, with visual signalling, 5 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-5-I-OS	4.2	6	4	1	8.200	5080349

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

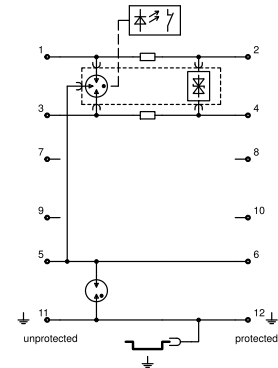
- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2-5-I-OS

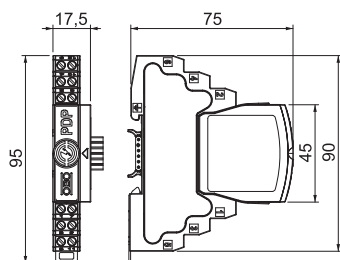
Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ ± 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





### Connectable data cable protection, 2-pole, indirect earthing, with visual signalling, 12 V



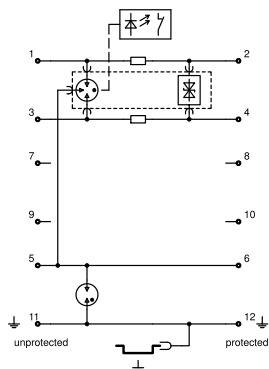
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-12-I-OS	12	16	4	1	8.200	5080351

#### Connection options

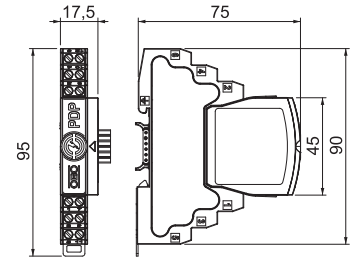


#### PDP-2-12-I-OS

Maximum continuous voltage AC	$U_c$	12 V
Maximum continuous voltage DC	$U_c$	16 V
Category	Type 1+2 / D1+C2	
Lightning protection zone LPZ	0→2	
Number of poles	4	
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire	1,2 $\Omega$ ± 5%	
Impulse durability wire-wire	10 kV / 5 kA	
Impulse durability wire-earth	10 kV / 5 kA	
Total discharge current (8/20)	20 kA	
Total discharge current (10/350)	2,5 kA	
Protection level wire-wire	130 V	
Protection level wire-earth	1600 V	
Frequency range	0 - 100 MHz	
Temperature range	$\vartheta$	-40 - +80 °C
Installation type	DIN rail 35 mm	
Connection system	Terminal	
Protection rating	IP20	
Shielding connection available	Yes	
Shield connection	Indirect	
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>	
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>	
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>	
Earthing via:	Connection cable / DIN rail	
Testing standard	IEC 61643-21	



## Connectable data cable protection, 2-pole, indirect earthing, with visual signalling, 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-24-I-OS	21	30	4	1	8.200	5080353

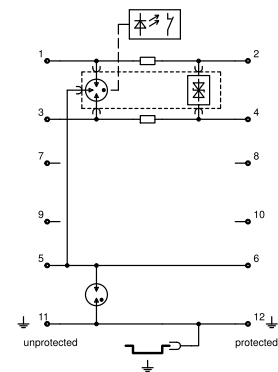
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

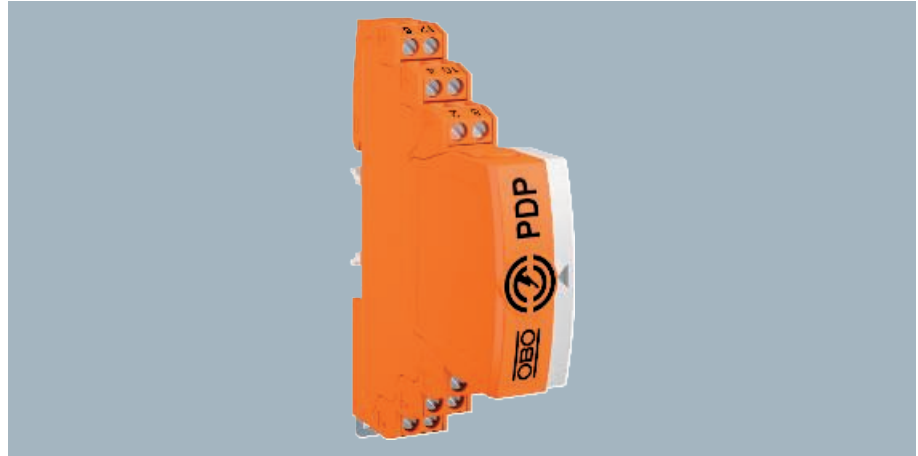
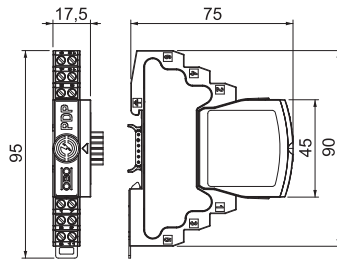
PDP-2-24-I-OS	
Maximum continuous voltage AC	$U_c$ 21 V
Maximum continuous voltage DC	$U_c$ 30 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	4
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	$1,2 \Omega \pm 5\%$
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	150 V
Protection level wire-earth	1600 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Indirect
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Connection options





### Connectable data cable protection, 2-pole, indirect earthing, with visual signalling, 48 V



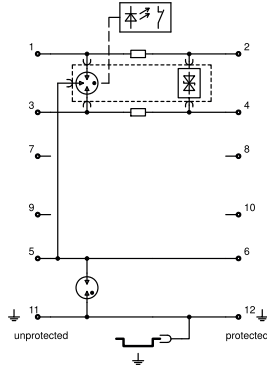
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2-48-I-OS	37	52	4	1	8.200	5080355

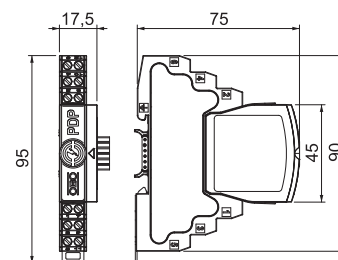
#### Connection options



#### PDP-2-48-I-OS

Maximum continuous voltage AC	$U_c$	37 V
Maximum continuous voltage DC	$U_c$	52 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ ± 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		170 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Connectable data cable protection, 2x2-pole, direct earthing, with visual signalling, 5 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-5-D-OS	4.2	6	4	1	8.600	5080357

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

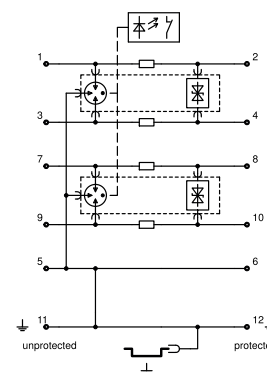
- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2x2-5-D-OS

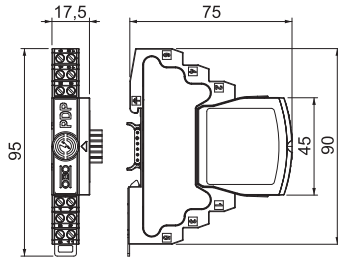
Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





### Connectable data cable protection, 2x2-pole, direct earthing, with visual signalling, 12 V



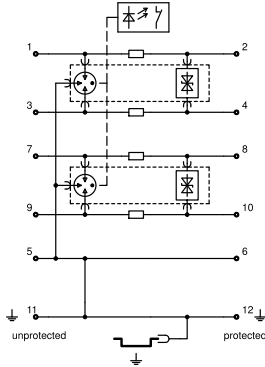
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

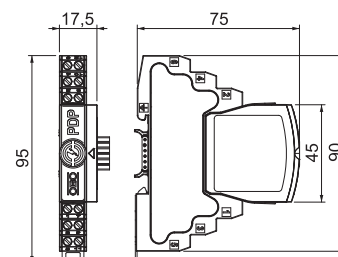
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-12-D-OS	12	16	4	1	8.600	5080359

#### Connection options



PDP-2x2-12-D-OS	
Maximum continuous voltage AC	$U_c$ 12 V
Maximum continuous voltage DC	$U_c$ 16 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	4
Nominal load current AC	$I_L$ 0.43 A
Nominal load current DC	$I_L$ 0.6 A
Series resistance per wire	1,2 $\Omega$ ± 5%
Impulse durability wire-wire	10 kV / 5 kA
Impulse durability wire-earth	10 kV / 5 kA
Total discharge current (8/20)	20 kA
Total discharge current (10/350)	2,5 kA
Protection level wire-wire	130 V
Protection level wire-earth	850 V
Frequency range	0 - 100 MHz
Temperature range	∅ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

## Connectable data cable protection, 2x2-pole, direct earthing, with visual signalling, 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-24-D-OS	21	30	4	1	8.600	5080361

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

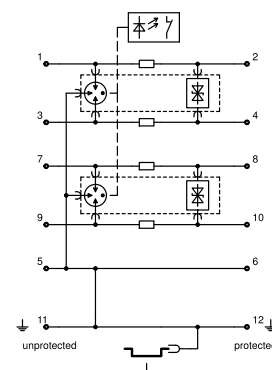
- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2x2-24-D-OS

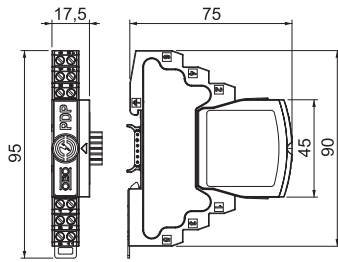
Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		$1,2 \Omega \pm 5\%$
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





### Connectable data cable protection, 2x2-pole, direct earthing, with visual signalling, 48 V



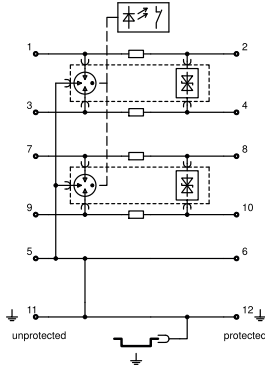
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Direct shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-48-D-OS	37	52	4	1	8.600	5080364

#### Connection options

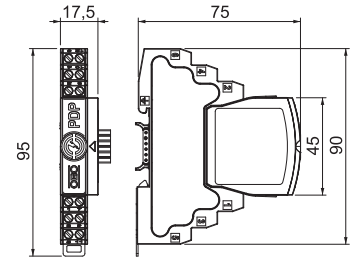


#### PDP-2x2-48-D-OS

Maximum continuous voltage AC	$U_c$	37 V
Maximum continuous voltage DC	$U_c$	52 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		170 V
Protection level wire-earth		850 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21



## Connectable data cable protection, 2x2-pole, indirect earthing, 5 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-5-I-OS	4.2	6	4	1	8.800	5080365

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

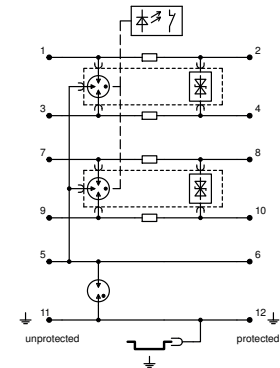
- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2x2-5-I-OS

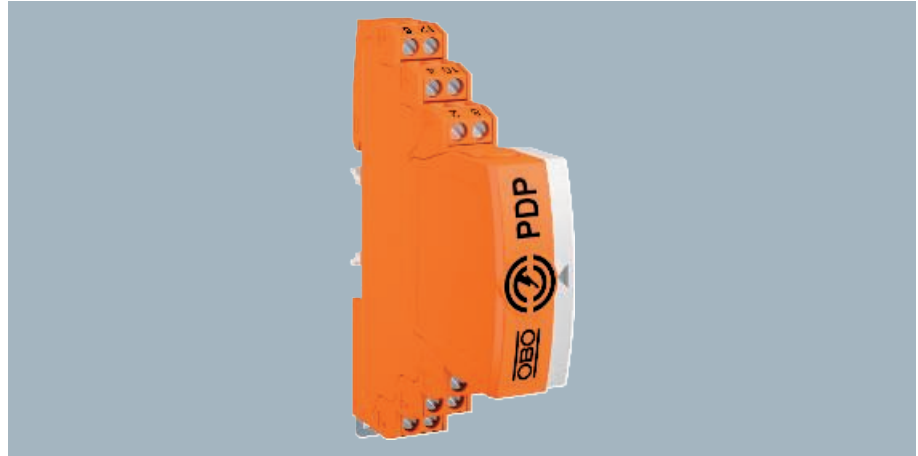
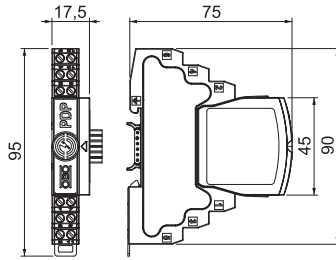
Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		100 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





## Connectable data cable protection, 2x2-pole, indirect earthing, 12 V



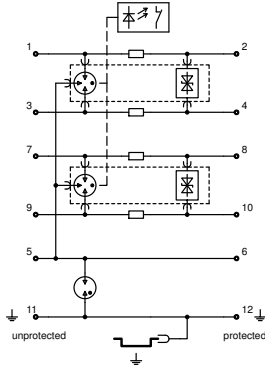
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-12-I-OS	12	16	4	1	8.800	5080367

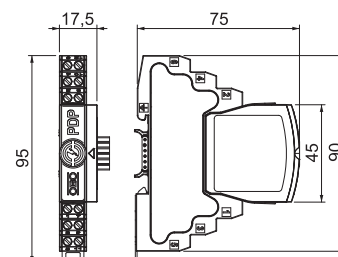
### Connection options



### PDP-2x2-12-I-OS

Maximum continuous voltage AC	$U_c$	12 V
Maximum continuous voltage DC	$U_c$	16 V
Category	Type 1+2 / D1+C2	
Lightning protection zone LPZ	0→2	
Number of poles	4	
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire	1,2 $\Omega$ ± 5%	
Impulse durability wire-wire	10 kV / 5 kA	
Impulse durability wire-earth	10 kV / 5 kA	
Total discharge current (8/20)	20 kA	
Total discharge current (10/350)	2,5 kA	
Protection level wire-wire	130 V	
Protection level wire-earth	1600 V	
Frequency range	0 - 100 MHz	
Temperature range	$\vartheta$	-40 - +80 °C
Installation type	DIN rail 35 mm	
Connection system	Terminal	
Protection rating	IP20	
Shielding connection available	Yes	
Shield connection	Indirect	
Connection cross-section, flexible	0.14 - 1.5 mm <sup>2</sup>	
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>	
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>	
Earthing via:	Connection cable / DIN rail	
Testing standard	IEC 61643-21	

## Connectable data cable protection, 2x2-pole, indirect earthing, 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-24-I-OS	21	30	4	1	8.800	5080369

Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

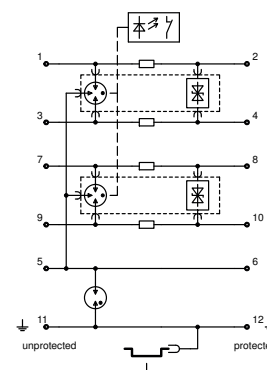
- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

### PDP-2x2-24-I-OS

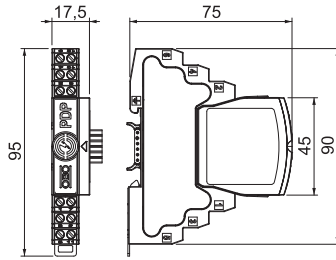
Maximum continuous voltage AC	$U_c$	21 V
Maximum continuous voltage DC	$U_c$	30 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ $\pm$ 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		150 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

### Connection options





## Connectable data cable protection, 2x2-pole, indirect earthing, 48 V



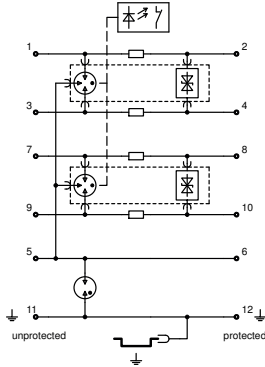
Connectable data cable protection, type 1+2/D1+C2 for use in measurement and control technology

- Protection device for multiwire systems
- Indirect shield earthing
- Frequency range up to 100 MHz
- Earthing via DIN rail or connection cable
- Installation width from 12.5 mm
- High system availability – no signal interruption without protection module
- With visual signalling and option for remote signalling via the PDP-PS power supply

Application: Universal lightning and surge protection for MCR data transmission devices.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
PDP-2x2-48-I-OS	37	52	4	1	8.800	5080371

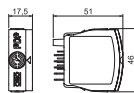
### Connection options



### PDP-2x2-48-I-OS

Maximum continuous voltage AC	$U_c$	37 V
Maximum continuous voltage DC	$U_c$	52 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Nominal load current AC	$I_L$	0.43 A
Nominal load current DC	$I_L$	0.6 A
Series resistance per wire		1,2 $\Omega$ ± 5%
Impulse durability wire-wire		10 kV / 5 kA
Impulse durability wire-earth		10 kV / 5 kA
Total discharge current (8/20)		20 kA
Total discharge current (10/350)		2,5 kA
Protection level wire-wire		170 V
Protection level wire-earth		1600 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Indirect
Connection cross-section, flexible		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Connection cable / DIN rail
Testing standard		IEC 61643-21

## Plug-in arrester PDP, 2-pole, with OS



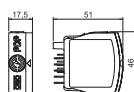
Type	Max. continuous voltage		Pack Piece	Weight kg/100 pc.	Item no.
	AC V	DC V			
<b>PDP-P-2-5-OS</b>	4.2	6	1	2.600	<b>5080422</b>
<b>PDP-P-2-12-OS</b>	12	16	1	2.600	<b>5080424</b>
<b>PDP-P-2-24-OS</b>	21	30	1	2.600	<b>5080426</b>
<b>PDP-P-2-48-OS</b>	37	52	1	2.600	<b>5080428</b>

Cover, plug-in data cable protection, type 1+2/D1+C2, for use in measuring and control technology

- Protection device for multi-wire systems
- Frequency range up to 100 MHz
- Low construction width of 12.5 mm
- With visual signalling and option of remote signalling

Application: Universal lightning and surge voltage protection for data transmission devices in MCR technology.

## Plug-in arrester PDP, 2x2-pole, with OS



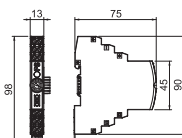
Type	Max. continuous voltage		Pack Piece	Weight kg/100 pc.	Item no.
	AC V	DC V			
<b>PDP-P-2x2-5-OS</b>	4.2	6	1	3.200	<b>5080430</b>
<b>PDP-P-2x2-12-OS</b>	12	16	1	3.200	<b>5080432</b>
<b>PDP-P-2x2-24-OS</b>	21	30	1	3.200	<b>5080434</b>
<b>PDP-P-2x2-48-OS</b>	37	52	1	3.200	<b>5080436</b>

Cover, plug-in data cable protection, type 1+2/D1+C2, for use in measuring and control technology

- Protection device for multi-wire systems
- Frequency range up to 100 MHz
- Low construction width of 12.5 mm
- With visual signalling and option of remote signalling

Application: Universal lightning and surge voltage protection for data transmission devices in MCR technology.

## Power supply for PDP-OS, 5 V



Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-PS</b>	1	5.800	<b>5080452</b>

Power supply for PDP-OS plug-in data cable protection with visual and remote signalling.

- Support of max. 25 PDP-OS
- Suitable for DIN rail mounting
- With visual signalling and option of remote signalling

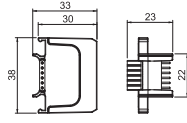
Application: Universal lightning and surge protection for data transmission devices with MCR technology.



Type	Pack Piece	Weight kg/100 pc.	Item no.
<b>PDP-BC</b>	1	0.650	<b>5080454</b>

Bus connector to connect the PDP-PS power supply to the PDP-OS plug-in data cable protection.

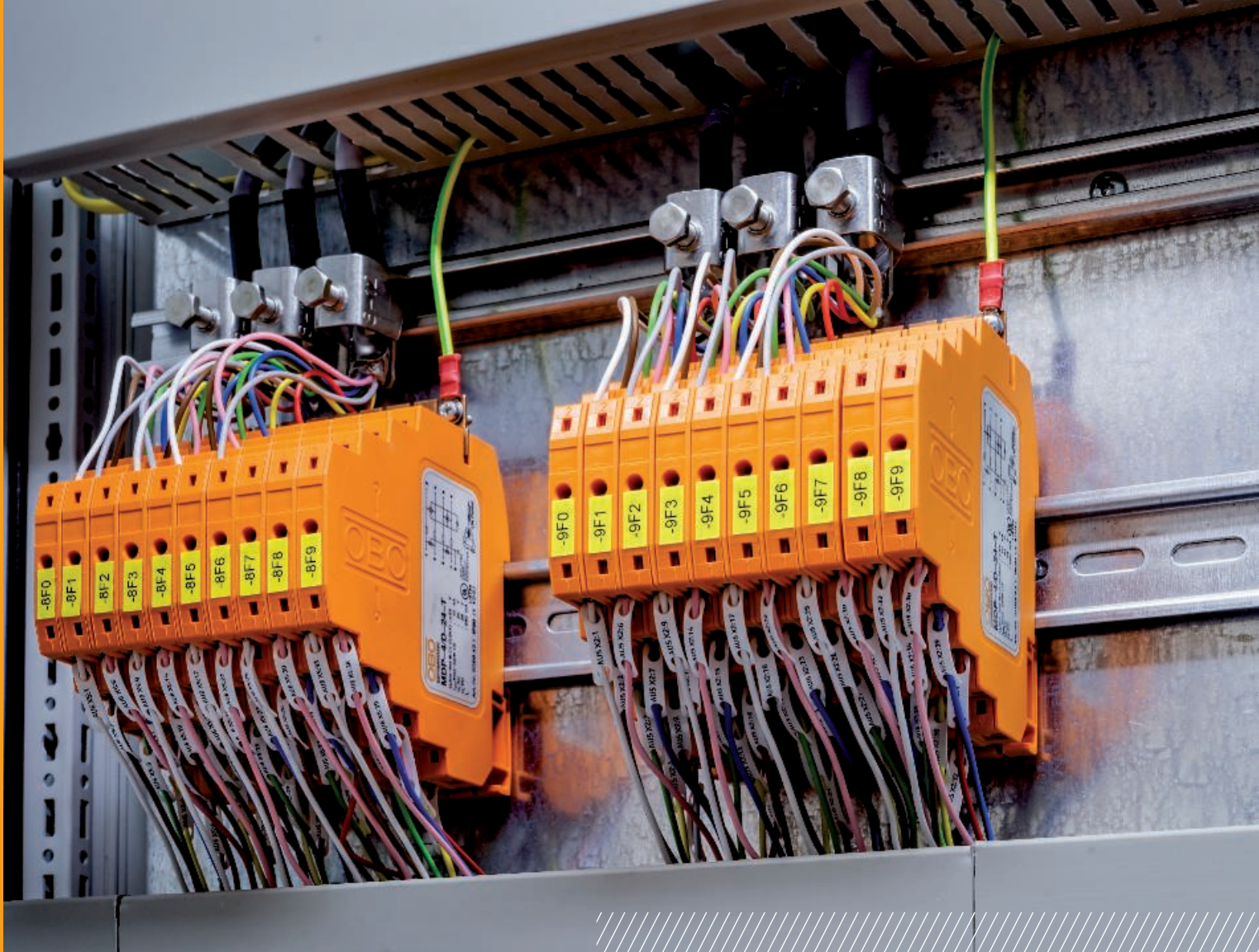
Application: Universal lightning and surge protection for data transmission devices in MCR technology.



### Bus connector for PDP-OS







## MDP family

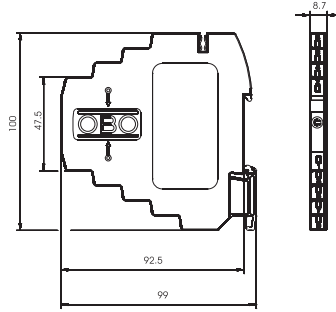
MCR protection for multi-wire systems (testable)

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

- Protection device for multi-wire systems (4-pole)
- Direct shield earthing
- Easy-mounting, screwless connection terminals
- Space-saving width of just 8.7 mm
- Versions with nominal currents up to 10 A
- High frequency bandwidth up to 100 MHz
- UL-listed



Series protection device, 2-pole, 5 V version



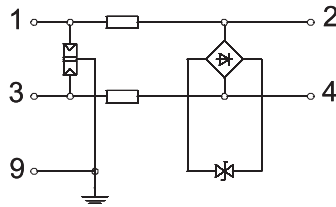
Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

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

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-2 D-5-T</b>	7	10	2	Terminal	1	6.000	<b>5098404</b>

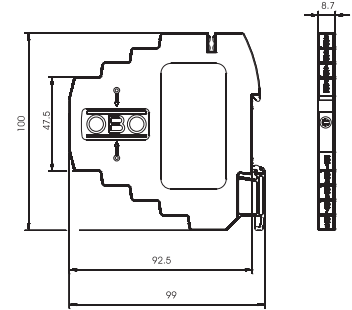
Connection options



**MDP-2 D-5-T**

Maximum continuous voltage AC	$U_c$	7 V
Maximum continuous voltage DC	$U_c$	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		5 kA
Total discharge current (10/350)		D1: 1 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

## Series protection device, 3-pole, 5 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-3 D-5-T</b>	7	10	3	Terminal	1	6.000	<b>5098407</b>

Lightning barrier with test function; 5 V version

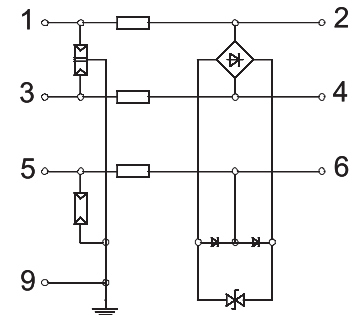
- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

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

### MDP-3 D-5-T

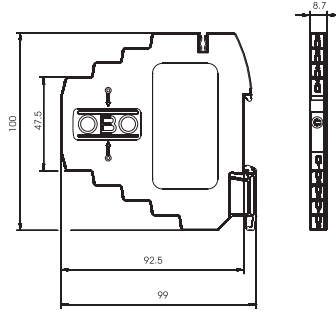
Maximum continuous voltage AC	$U_c$	7 V
Maximum continuous voltage DC	$U_c$	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		7,5 kA
Total discharge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 4-pole, 5 V version



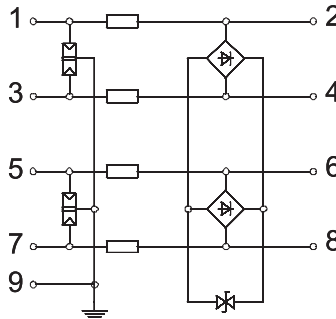
Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

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

Type	Max. continuous AC voltage V	Max. continuous DC voltage V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-5-T</b>	7	10	4	Terminal	1	6.000	<b>5098411</b>

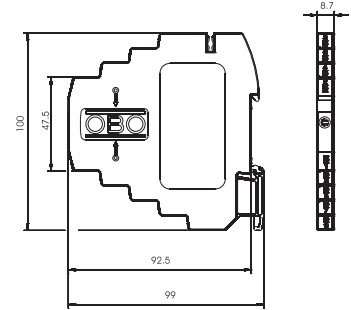
Connection options



**MDP-4 D-5-T**

Maximum continuous voltage AC	$U_c$	7 V
Maximum continuous voltage DC	$U_c$	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

## Series protection device, 2-pole, 24 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-2 D-24-T</b>	20	28	2	Terminal	1	6.000	<b>5098422</b>

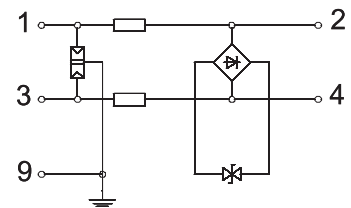
Lightning barrier with test function; 24 V version

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

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

<b>MDP-2 D-24-T</b>	
Maximum continuous voltage AC	$U_c$ 20 V
Maximum continuous voltage DC	$U_c$ 28 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 0.58 A
Series resistance per wire	2,35 $\Omega \pm 5\%$
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	5 kA
Total discharge current (10/350)	D1: 1 kA
Protection level wire-wire	<55 V
Protection level wire-earth	<800 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	DIN rail
Testing standard	IEC 61643-21
Approvals	UL

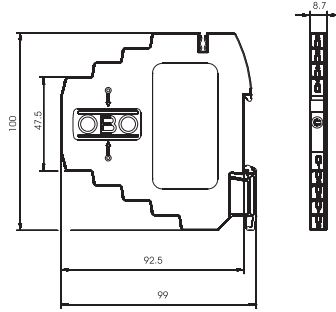
### Connection options







Series protection device, 3-pole, 24 V version



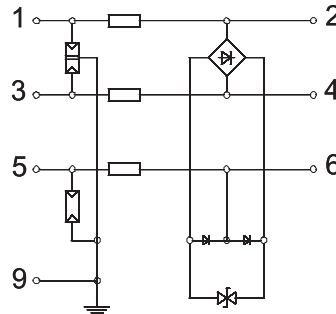
Lightning barrier with test function; 24 V version

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

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

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-3 D-24-T</b>	20	28	3	Terminal	1	6.000	<b>5098427</b>

Connection options

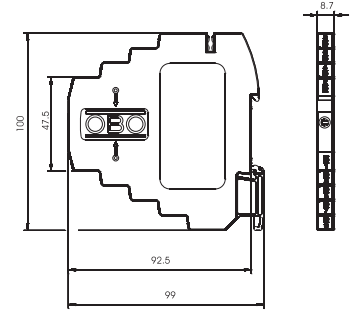


**MDP-3 D-24-T**

Maximum continuous voltage AC	$U_c$	20 V
Maximum continuous voltage DC	$U_c$	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		7,5 kA
Total discharge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL



## Series protection device, 4-pole, 24 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-24-T</b>	20	28	4	Terminal	1	5.800	<b>5098431</b>

Lightning barrier with test function; 24 V version

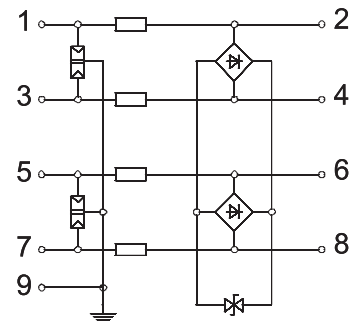
- Rated load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

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

### MDP-4 D-24-T

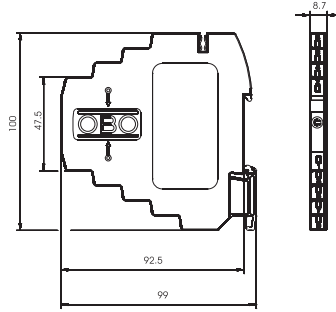
Maximum continuous voltage AC	$U_c$	20 V
Maximum continuous voltage DC	$U_c$	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 2-pole, 48 V version



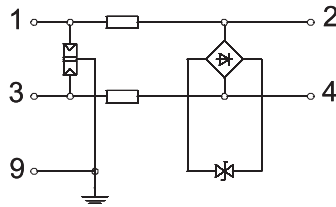
Lightning barrier with test function; 48 V version

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

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

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
MDP-2 D-48-T	41	58	2	Terminal	1	6.000	5098442

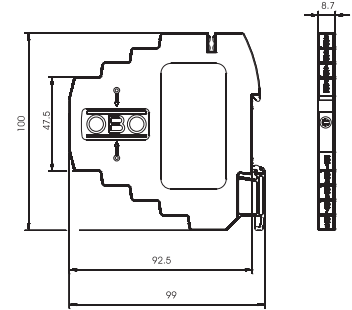
Connection options



MDP-2 D-48-T

Maximum continuous voltage AC	$U_c$	41 V
Maximum continuous voltage DC	$U_c$	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		5 kA
Total discharge current (10/350)		D1: 1 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

## Series protection device, 3-pole, 48 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-3 D-48-T</b>	41	58	3	Terminal	1	6.000	<b>5098446</b>

Lightning barrier with test function; 48 V version

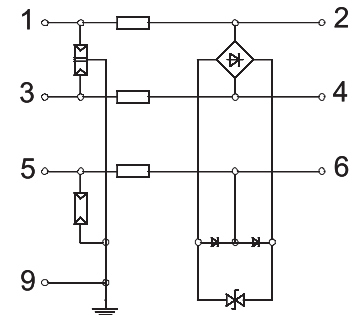
- Rated load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

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

### MDP-3 D-48-T

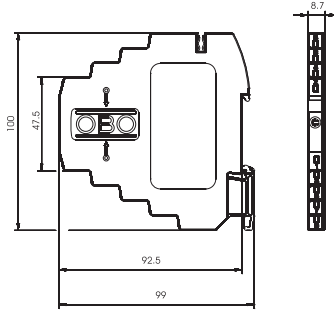
Maximum continuous voltage AC	$U_c$	41 V
Maximum continuous voltage DC	$U_c$	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		7,5 kA
Total discharge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 4-pole, 48 V version



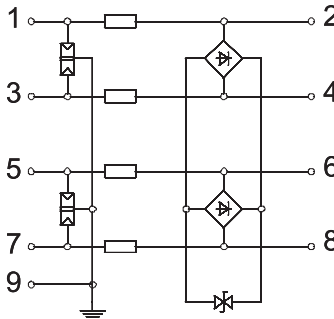
Lightning barrier with test function; 48 V version

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

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

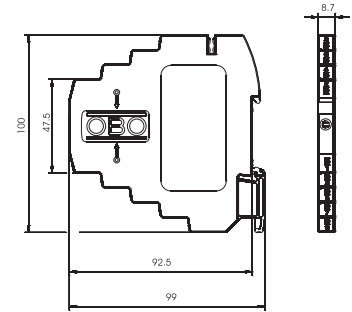
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-48-T</b>	41	58	4	Terminal	1	5.800	<b>5098450</b>

Connection options



MDP-4 D-48-T	
Maximum continuous voltage AC	$U_c$ 41 V
Maximum continuous voltage DC	$U_c$ 58 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	4
Rated current	$I_L$ 0.58 A
Series resistance per wire	2,35 $\Omega \pm 5\%$
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 2 kA
Protection level wire-wire	<95 V
Protection level wire-earth	<800 V
Frequency range	0 - 100 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	DIN rail
Testing standard	IEC 61643-21
Approvals	UL

## Series protection device, 4-pole, 5 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-5-T-10</b>	7	10	4	Terminal	1	7.200	<b>5098413</b>

Lightning barrier with test function; 5 V version

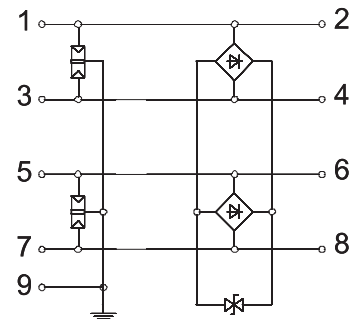
- Rated load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

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

### MDP-4 D-5-T-10

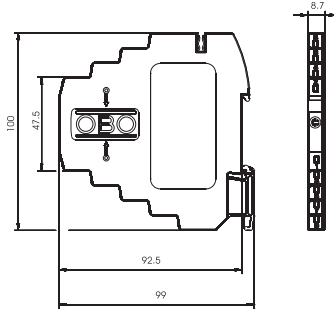
Maximum continuous voltage AC	$U_c$	7 V
Maximum continuous voltage DC	$U_c$	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	10 A
Series resistance per wire		—
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<45 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 2-pole, 12 V version



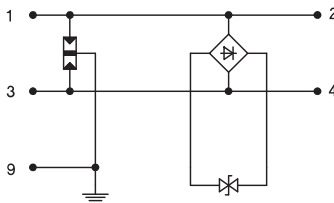
Lightning barrier with test function; 12 V version

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

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

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-2 D-12-T-10</b>	10.5	15	2	Terminal	1	6.000	<b>5098415</b>

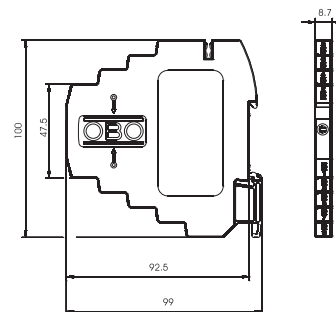
Connection options



MDP-2 D-12-T-10	
Maximum continuous voltage AC	$U_c$ 10.5 V
Maximum continuous voltage DC	$U_c$ 15 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 10 A
Series resistance per wire	—
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20µs)
Total discharge current (8/20)	5 kA
Total discharge current (10/350)	D1: 1 kA
Protection level wire-wire	<55 V
Protection level wire-earth	<800 V
Frequency range	0 - 100 MHz
Temperature range	ϑ -40 - +80 °C
Installation type	DIN rail
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	DIN rail
Testing standard	IEC 61643-21
Approvals	UL



## Series protection device, 4-pole, 12 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-12-T-10</b>	10.5	15	4	Terminal	1	6.000	<b>5098419</b>

Lightning barrier with test function; 12 V version

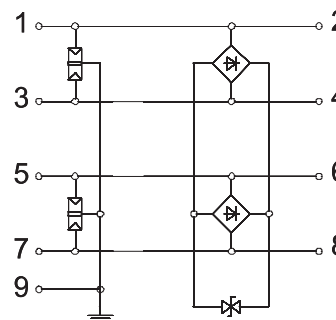
- Rated load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

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

### MDP-4 D-12-T-10

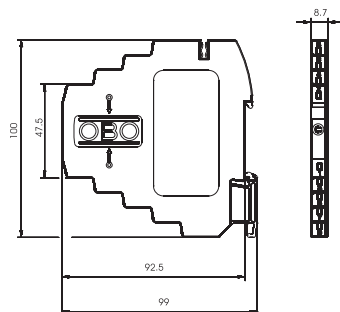
Maximum continuous voltage AC	$U_c$	10.5 V
Maximum continuous voltage DC	$U_c$	15 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	10 A
Series resistance per wire		—
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 2-pole, 24 V version



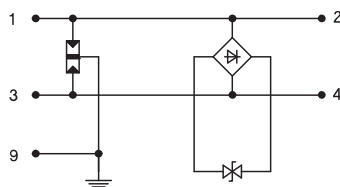
Lightning barrier with test function; 24 V version

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

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

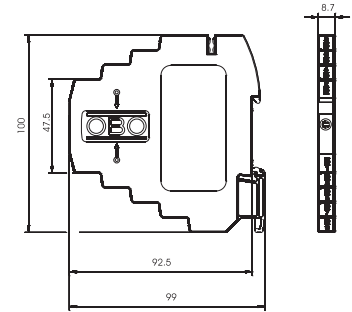
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-2 D-24-T-10</b>	20	28	2	Terminal	1	6.000	<b>5098425</b>

Connection options



MDP-2 D-24-T-10	
Maximum continuous voltage AC	$U_c$ 20 V
Maximum continuous voltage DC	$U_c$ 28 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 10 A
Series resistance per wire	—
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20μs)
Total discharge current (8/20)	5 kA
Total discharge current (10/350)	D1: 1 kA
Protection level wire-wire	<70 V
Protection level wire-earth	<800 V
Frequency range	0 - 100 MHz
Temperature range	ϑ -40 - +80 °C
Installation type	DIN rail
Connection system	Terminal
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	DIN rail
Testing standard	IEC 61643-21
Approvals	UL

## Series protection device, 4-pole, 24 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-24-T-10</b>	20	28	4	Terminal	1	9.810	<b>5098433</b>

Lightning barrier with test function; 24 V version

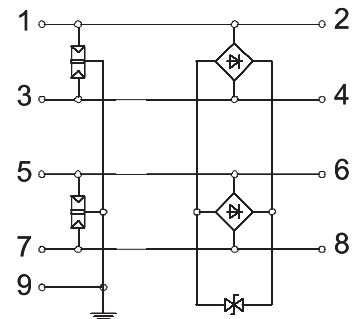
- Rated load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

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

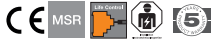
### MDP-4 D-24-T-10

Maximum continuous voltage AC	$U_c$	20 V
Maximum continuous voltage DC	$U_c$	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	10 A
Series resistance per wire		—
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<70 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
Testing standard		IEC 61643-21
Approvals		UL

### Connection options



Cu



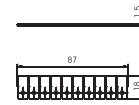
### Earthing strip

Type	Pack Piece	Weight kg/100 pc.	Item no.
VB-MDP 10-MD	1	2.300	5098470

Connecting bridge for 8 mm lightning barriers

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

Application: Parallel switching of the MDP lightning barriers





## FRD/FLD family

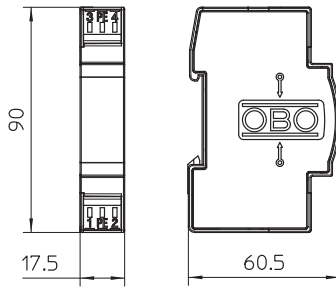
### Basic and combination protection for two-core systems

The use of lightning barriers in two-core wire systems is commonplace. These surge protective devices are used from telecommunication cables through bus systems up to measurement and control technology. Surge protection technology allows flexible protection for all kinds of applications. All the devices have both a low protection level and a high arresting capacity.

- High arresting capacity
- Low noise
- Universal application
- Simple mounting using screwless terminals
- High bandwidth
- UL-listed



## Combination protection for two-core systems with HF applications 5 V



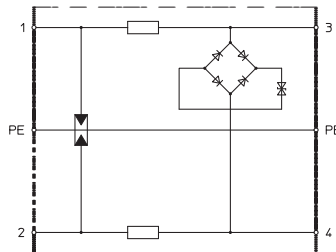
Surge protection for use in measuring, control and regulation systems.

- Basic, medium and fine protection
- Two-stage protection circuit with high lightning current carrying capacity
- High transmission frequency up to 100 MHz
- Suitable for all bus systems (e.g. Profibus)
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid

Application: Multipurpose use on any 35 mm DIN profile rail in every commercially available distribution housing.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
FRD 5 HF	4	6	2	Terminal	1	4.400	5098571

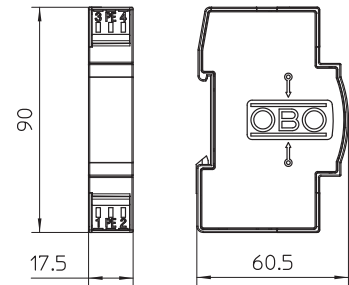
### Connection options



FRD 5 HF	
Maximum continuous voltage AC	$U_c$ 4 V
Maximum continuous voltage DC	$U_c$ 6 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 0.45 A
Series resistance per wire	2,2 $\Omega$ ± 10 %
Impulse durability wire-wire	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Total discharge current (8/20)	18 kA
Total discharge current (10/350)	D1: 6 kA
Protection level wire-wire	<90 V
Protection level wire-earth	<650 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL



## Combination protection for two-core systems with HF applications 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
FRD 24 HF	19	28	2	Terminal	1	4.400	5098575

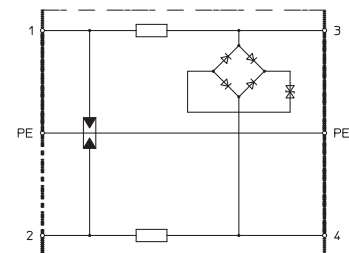
Surge protection for use in measuring, control and regulation systems.

- Basic, medium and fine protection
- Two-stage protection circuit with high lightning current carrying capacity
- High transmission frequency up to 100 MHz
- Suitable for all bus systems (e.g. Profibus)
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid

Application: Multipurpose use on any 35 mm DIN profile rail in every commercially available distribution housing.

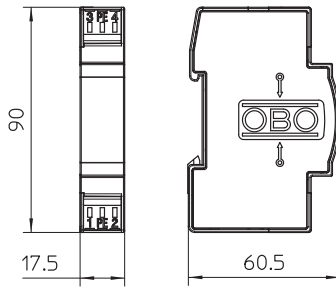
FRD 24 HF	
Maximum continuous voltage AC	$U_c$ 19 V
Maximum continuous voltage DC	$U_c$ 28 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 0.45 A
Series resistance per wire	$2,2 \Omega \pm 10 \%$
Impulse durability wire-wire	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Total discharge current (8/20)	18 kA
Total discharge current (10/350)	D1: 6 kA
Protection level wire-wire	<120 V
Protection level wire-earth	<650 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

### Connection options





Basic protection for two-core systems with HF applications  
120 V

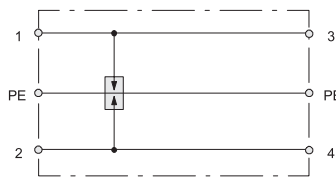


TKS-B: Surge protection for use in measuring, control and regulation systems, as well as telecommunication systems

- Basic protection for lightning protection equipotential bonding
  - High impulse arresting capacity 6 kA (10/350)
  - With installation-friendly, screwless connection terminals
  - In space-saving 17.5 mm grid
- Application: Universal use on 35 mm DIN profile rail in any standard distributor housing.

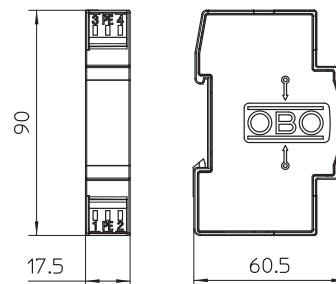
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
TKS-B	120	170	2	Terminal	1	4.400	5097976

Connection options



TKS-B	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 170 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	2
Rated current	$I_L$ 20 A
Impulse durability wire-wire	C2: 18 kV / 9 kA
Impulse durability wire-earth	C2: 18 kV / 9 kA
Total discharge current (8/20)	18 kA
Total discharge current (10/350)	D1: 6 kA
Protection level wire-wire	<950 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Connection cable
Testing standard	IEC 61643-21

## Medium and fine protection FRD for two-core systems 24 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
FRD 24	19	28	2	Terminal	1	5.100	5098514

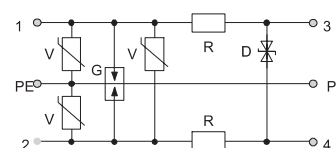
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

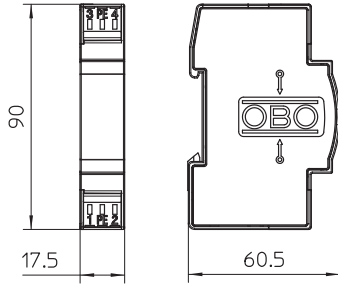
FRD 24	
Maximum continuous voltage AC	$U_c$ 19 V
Maximum continuous voltage DC	$U_c$ 28 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 0.2 A
Series resistance per wire	15 $\Omega$ $\pm$ 10 %
Impulse durability wire-wire	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<60 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

### Connection options





Medium and fine protection FRD for two-core systems 48 V



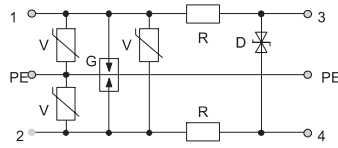
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

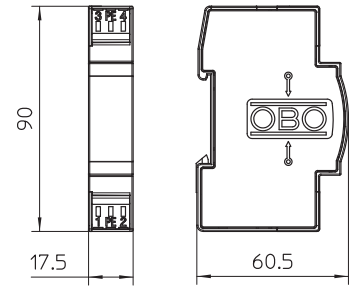
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FRD 48</b>	37	53	2	Terminal	1	5.100	<b>5098522</b>

Connection options



FRD 48	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 53 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 0.2 A
Series resistance per wire	15 $\Omega$ $\pm$ 10 %
Impulse durability wire-wire	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<140 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

## Medium and fine protection FRD for two-core systems 110 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
FRD 110	86	122	2	Terminal	1	5.100	5098557

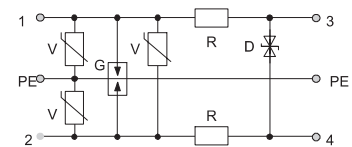
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

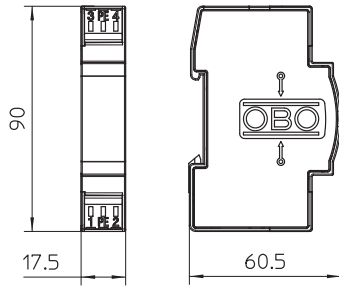
FRD 110	
Maximum continuous voltage AC	$U_c$ 86 V
Maximum continuous voltage DC	$U_c$ 122 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 0.2 A
Series resistance per wire	15 $\Omega$ $\pm$ 10 %
Impulse durability wire-wire	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

### Connection options





## Medium and fine protection FLD for two-core systems 5 V



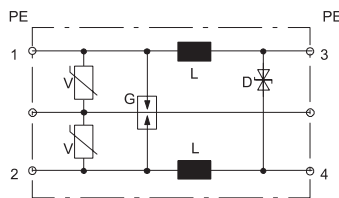
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FLD 5</b>	5	8	2	Terminal	1	5.200	<b>5098600</b>

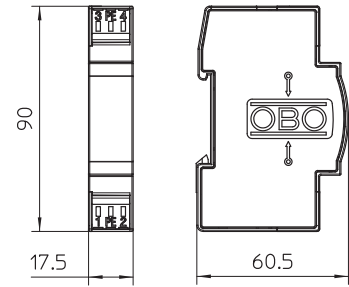
### Connection options



FLD 5	
Maximum continuous voltage AC	$U_c$ 5 V
Maximum continuous voltage DC	$U_c$ 8 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 1 A
Series inductivity per wire	120 $\mu$ H $\pm$ 20 %
Impulse durability wire-wire	C1: 1 kV / 0,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<15 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL



## Medium and fine protection FLD for two-core systems 12 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FLD 12</b>	9	13	2	Terminal	1	5.200	<b>5098603</b>

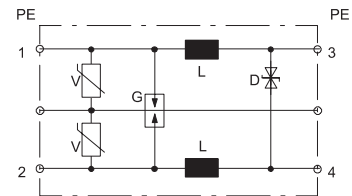
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

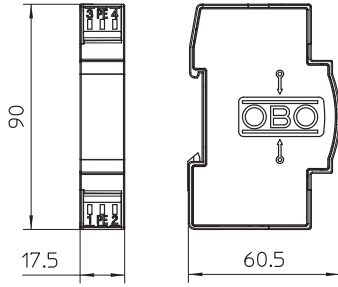
FLD 12	
Maximum continuous voltage AC	$U_c$ 9 V
Maximum continuous voltage DC	$U_c$ 13 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 1 A
Series inductivity per wire	120 $\mu$ H $\pm$ 20 %
Impulse durability wire-wire	C1: 1 kV / 0,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<30 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

### Connection options





## Medium and fine protection FLD for two-core systems 24 V



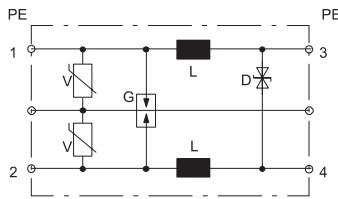
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FLD 24</b>	19	28	2	Terminal	1	5.200	<b>5098611</b>

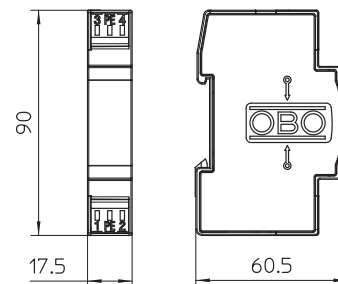
### Connection options



### FLD 24

Maximum continuous voltage AC	$U_c$	19 V
Maximum continuous voltage DC	$U_c$	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	$I_L$	1 A
Series inductivity per wire		120 $\mu$ H $\pm$ 20 %
Impulse durability wire-wire		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 3 kA
Protection level wire-wire		<60 V
Protection level wire-earth		<600 V
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		Terminal
Testing standard		IEC 61643-21
Approvals		UL

## Medium and fine protection FLD for two-core systems 48 V



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FLD 48</b>	37	53	2	Terminal	1	5.200	<b>5098630</b>

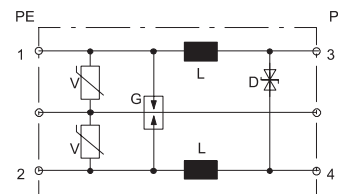
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

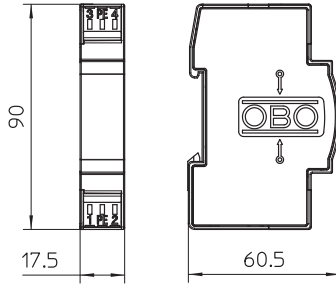
FLD 48	
Maximum continuous voltage AC	$U_c$ 37 V
Maximum continuous voltage DC	$U_c$ 53 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 1 A
Series inductivity per wire	120 $\mu$ H $\pm$ 20 %
Impulse durability wire-wire	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<140 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL

### Connection options





Medium and fine protection FLD for two-core systems 110 V



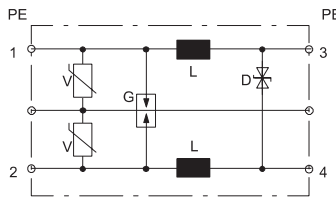
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>FLD 110</b>	86	122	2	Terminal	1	5.200	<b>5098646</b>

Connection options



FLD 110	
Maximum continuous voltage AC	$U_c$ 86 V
Maximum continuous voltage DC	$U_c$ 122 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 1 A
Series inductivity per wire	120 $\mu$ H $\pm$ 20 %
Impulse durability wire-wire	C1: 1 kV / 0,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 3 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<600 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Division unit TE (17.5 mm)	1
Protection rating	IP20
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Earthing via:	Terminal
Testing standard	IEC 61643-21
Approvals	UL



## VF family

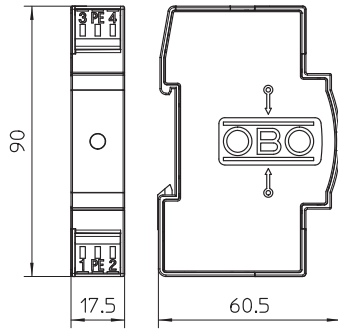
### Protection for 2-pole power supplies

The lightning barriers of type VF are fine protection devices, used for single-phase energy technology systems. Besides the low protection level, these devices also have a visual display, which will indicate defective surge protection. If required, remote signalling is also available using a changeover contact and an NC contact.

- High arresting capacity
- Low noise level
- Usable in AC/DC applications
- Simple mounting using screwless terminals



## MCR protection for 2-pole power supply, 12 V



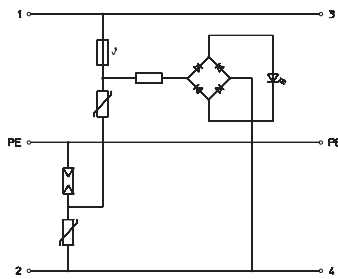
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Type	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
VF12-AC DC	13.5	1	9.000	5097453

### Connection options

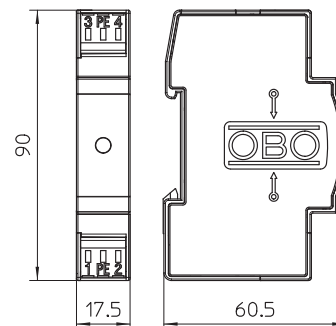


VF12-AC DC	
U max AC	U <sub>c</sub> AC 13.5 V
U max DC	U <sub>c</sub> DC 18 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 2 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<110 V
Protection level wire-earth	<1200 V
Response time	t <sub>A</sub> <25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

# MCR protection for 2-pole power supply



## MCR protection for 2-pole for power supply, 24 V



	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
Type	VF24-AC/DC	34	1	8.000	5097607

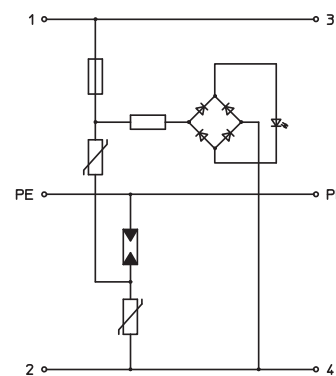
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

VF24-AC/DC		
U max AC	U <sub>c</sub> AC	34 V
U max DC	U <sub>c</sub> DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I <sub>n</sub>	0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	2 kA
Rated current	I <sub>L</sub>	20 A
Protection level wire-wire		<130 V
Protection level wire-earth		<1200 V
Response time	t <sub>A</sub>	<25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>

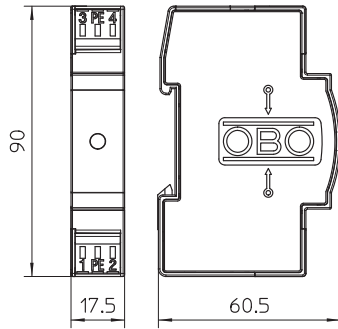
### Connection options







## MCR protection for 2-pole for power supply, 48 V



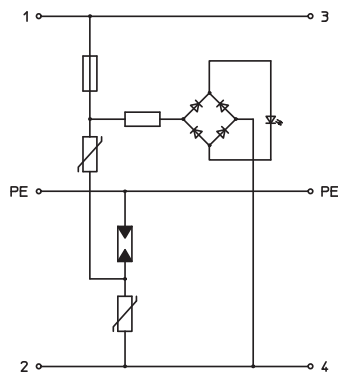
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Type	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
VF48-AC/DC	60	1	8.000	5097615

### Connection options

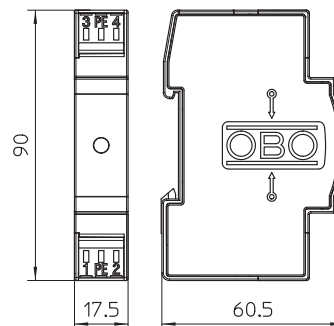


### VF48-AC/DC

U max AC	U <sub>c</sub> AC	60 V
U max DC	U <sub>c</sub> DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I <sub>n</sub>	0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	2 kA
Rated current	I <sub>L</sub>	20 A
Protection level wire-wire		<220 V
Protection level wire-earth		<1200 V
Response time	t <sub>A</sub>	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>

# MCR protection for 2-pole power supply

## MCR protection for 2-pole for power supply, 60 V



	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
Type	VF60-AC/DC	80	1	8.000	5097623

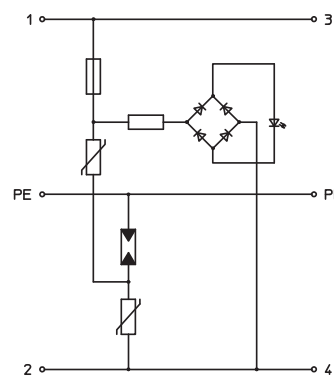
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

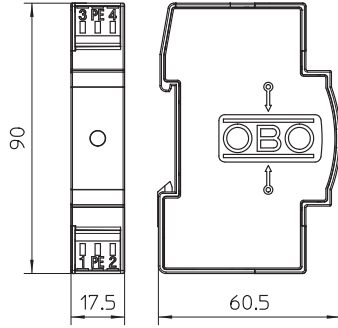
VF60-AC/DC	
U max AC	U <sub>c</sub> AC 80 V
U max DC	U <sub>c</sub> DC 110 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 2 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<280 V
Protection level wire-earth	<1200 V
Response time	t <sub>A</sub> <25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

### Connection options





## MCR protection for 2-pole for power supply, 110 V



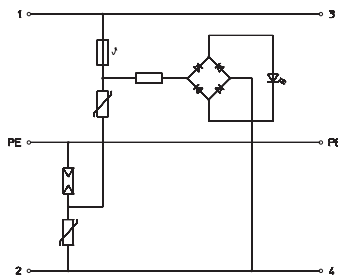
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Type	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
VFD110-AC DC	150	1	8.000	5097631

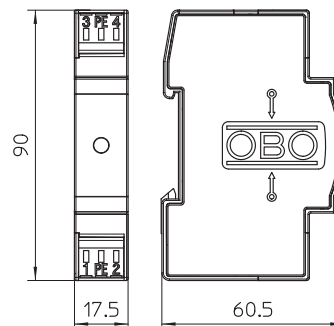
### Connection options



VFD110-AC DC	
U max AC	U <sub>c</sub> AC 150 V
U max DC	U <sub>c</sub> DC 200 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 2 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 6.5 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<500 V
Protection level wire-earth	<1400 V
Response time	t <sub>A</sub> <25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

# MCR protection for 2-pole power supply

## MCR protection for 2-pole for power supply, 230 V



	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
Type				
VF230-AC/DC	255	1	8.000	5097650

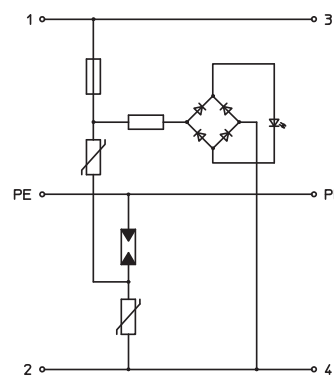
Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

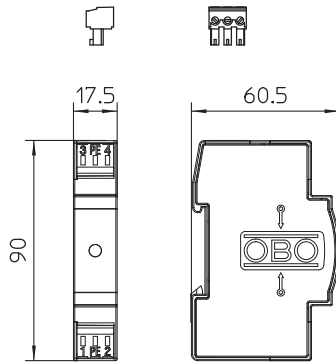
VF230-AC/DC		
U max AC	U <sub>c</sub> AC	255 V
U max DC	U <sub>c</sub> DC	350 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I <sub>n</sub>	2.5 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub>	7 kA
Rated current	I <sub>L</sub>	20 A
Protection level wire-wire		<1000 V
Protection level wire-earth		<1400 V
Response time	t <sub>A</sub>	<25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>

### Connection options





## MCR protection for 2-pole for power supply with remote signalling, 12 V AC/DC



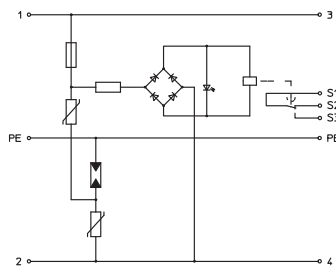
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Type	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
VF12-AC/DC-FS	13.5	1	6.400	5097454

### Connection options

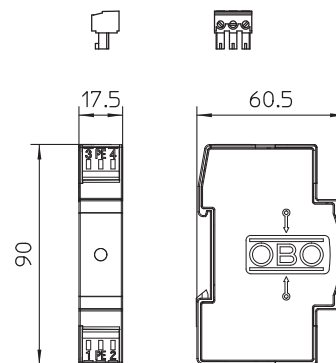


VF12-AC/DC-FS	
U max AC	U <sub>c</sub> AC 13.5 V
U max DC	U <sub>c</sub> DC 18 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2-3
Nominal discharge current (8/20)	I <sub>n</sub> 0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 2 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<110 V
Protection level wire-earth	<1200 V
Response time	t <sub>A</sub> <25 ns
Temperature range	θ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

# MCR protection for 2-pole power supply



## MCR protection for 2-pole power supply with remote signalling, 24 V AC/DC



<b>Type</b>	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	<b>Item no.</b>
	<b>VF24-AC/DC-FS</b>	34	1	6.620

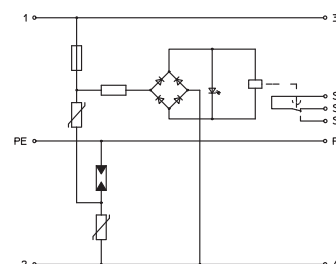
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

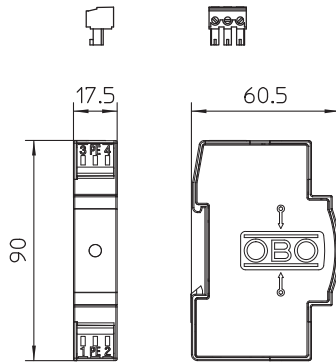
<b>VF24-AC/DC-FS</b>	
U max AC	U <sub>c AC</sub> 34 V
U max DC	U <sub>c DC</sub> 46 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 2 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<160 V
Protection level wire-earth	<1200 V
Response time	t <sub>A</sub> <25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

### Connection options





## MCR protection for 2-pole power supply with remote signalling, 48 V AC/DC



Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

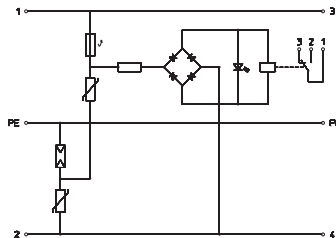
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Highest continuous voltage V

Type	Highest continuous voltage V	Pack Piece	Weight kg/100 pc.	Item no.
VF48-AC/DC-FS	60	1	6.630	5097822

### Connection options



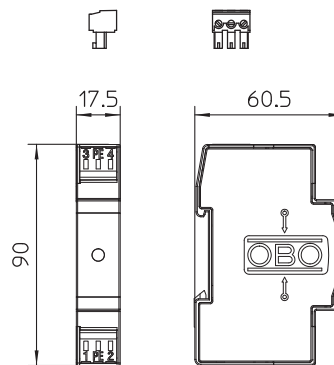
VF48-AC/DC-FS	
U max AC	U <sub>c</sub> AC 60 V
U max DC	U <sub>c</sub> DC 80 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2-3
Nominal discharge current (8/20)	I <sub>n</sub> 0,7 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 2 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<220 V
Protection level wire-earth	<1200 V
Response time	t <sub>A</sub> <25 ns
Temperature range	θ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>



# MCR protection for 2-pole power supply



## MCR protection for 2-pole power supply with remote signalling, 230 V AC



	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
Type	255		1	6.910	5097858
<b>VF230-AC-FS</b>					

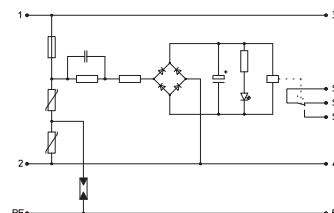
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

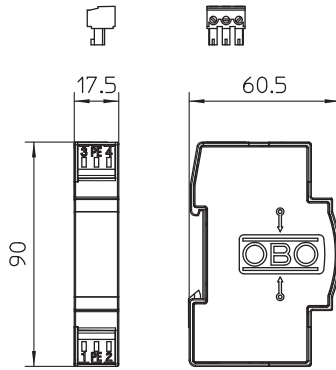
VF230-AC-FS	
U max AC	U <sub>c</sub> AC 255 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 2,5 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 7 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	<1060 V
Protection level wire-earth	<1400 V
Response time	t <sub>A</sub> <25 ns
Temperature range	ϑ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>

### Connection options





MCR protection for 2-pin for power supply with leak current-free remote signalling, 230 V AC/DC

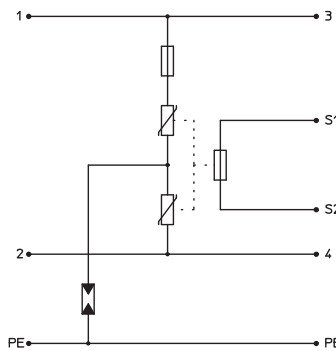


- Type 3 surge protection/fine network protection to EN 61643-11 with leak current-free remote signalling
- With remote signalling: potential-free NC contact for function monitoring
  - With installation-friendly, screwless connection terminals
  - In space-saving 17.5 mm grid
  - Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Type	U max	U max	Pack	Weight	Item no.
	AC	DC			
VF2-230-AC/DC-FS	255 V	350 V	1 Piece	6.000 kg/100 pc.	5097939

Connection options



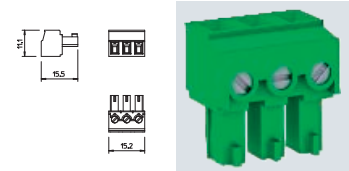
VF2-230-AC/DC-FS	
U max AC	U <sub>c</sub> AC 255 V
U max DC	U <sub>c</sub> DC 350 V
SPD to EN 61643-11	Type 3
SPD to IEC 61643-11	Class III
Lightning protection zone LPZ	2→3
Nominal discharge current (8/20)	I <sub>n</sub> 2,5 kA
Maximum discharge current (8/20 μs)	I <sub>max</sub> 7 kA
Rated current	I <sub>L</sub> 20 A
Protection level wire-wire	< 1000 V
Protection level wire-earth	< 1400 V
Response time	t <sub>A</sub> <25 ns
Temperature range	θ -40 - +80 °C
Protection rating	IP 20
Division unit TE (17.5 mm)	1
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>



Replacement connector for VF remote signalling

Type	Version	Pack	Weight	Item no.
VF-FS	3-pole	25 Piece	0.320 kg/100 pc.	5098475

Replacement telephony connector, 3-pin version, for VF variant





IP65 – suitable for outdoor use

Tested to EN/IEC 62561-6

Lightning strike and surge counter can count up to 999 lightning occurrences noting date and time

Exchangeable lithium battery with a lifespan of up to 5 years

Metering range 1 to 100 kA

## LSC I+II lightning strike and surge counter

Lightning strike and surge counter for the recording of lightning and impulse currents with date and time

The LSC I+II lightning current meter measures and permanently saves lightning and pulse currents (10/350), (8/20) and saves this event together with the date and time. This ensures constant monitoring in order to notice if any lightning has struck the lightning protection system or whether there have been any surge voltages in the system. If a lightning or surge voltage event has occurred, then the entire lightning protection system must be maintained according to VDE 0185-305 (IEC 62305).



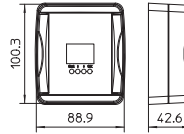
Lightning strike and surge counter



Type	Measuring range	Pack Piece	Weight kg/100 pc.	Item no.
LSC I-II	1 kA - 100 kA	1	32.500	5091722

The LSC I-II lightning current meter measures and permanently saves pulse currents, together with the date and time. This ensures constant monitoring in order to notice if any lightning has struck the lightning protection system. Should this be the case, then the lightning protection system must be maintained according to VDE 0185-305 (IEC 62305).

- Saving and display of time and date
- Usable both inside and outside due to its protection class of IP65
- Cable clip for round conductor or flat conductor
- Direct mounting on the conductor or the PE conductor of the surge protective device
- Long lifespan of the internal lithium batteries
- LCD display
- Internal battery
- Tested according to VDE 0185-561-6 (IEC 62561-6)



Testing devices



ISOLAB measuring system arrester tester

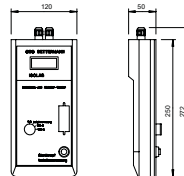
Type	Country version	Nom. V	Measuring range	Pack Piece	Weight kg/100 pc.	Item no.
ISOLAB	D/GB	6	0V - 999V	1	75.000	5096812

To test the insulation resistance to DIN VDE 0100 Part 610 and the characteristic curve behaviour of the following surge voltage and lightning current arresters:

- V10-C and V20-C: Uc Tolerance range
  - 75 V -> 110 V - 130 V
  - 150 V -> 215 V - 265 V
  - 280 V -> 385 V - 475 V
  - 320 V -> 460 V - 560 V
  - 335 V -> 460 V - 560 V
  - 385 V -> 560 V - 680 V
  - 440 V -> 645 V - 785 V
  - 550 V -> 820 V - 1,000 V

- V25-B+C and V50-B+C: Uc Tolerance range
  - 150 V -> 215 V - 265 V
  - 280 V -> 385 V - 475 V
  - 320 V -> 460 V - 560 V
  - 385 V -> 560 V - 680 V

- Varistor arresters of other manufacturers can be tested for 1 or 3 mA characteristic curve behaviour
- Battery operation
- Measuring cables contained in the scope of delivery.



Testing unit for lightning barriers

Type	Pack Piece	Weight kg/100 pc.	Item no.
LFC	1	164.500	5096786

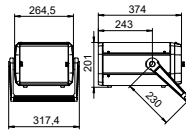
OBO Life Control allows function control of the MDP lightning barriers. The lightning barriers can be checked while installed. Life Control will not have any influences on the measuring signal. Life Control possesses an integrated OLED with visual and acoustic defect signalling. A separate LED inside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



## Card reader



### Card reader PCS-CS..



Type	Country version	Nom. V	Measuring range	Measuring tolerances	Pack Piece	Weight kg/100 pc.	Item no.
PCS-CS-D	EN	230	3--120 kA	<2 kA (<2%)	1	750.000	5091683

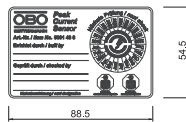
Magnetic card reader for reading and analysing PCS cards.

- Inc. rechargeable battery for 4 h continuous, no-mains operation
- Large, clear display

## Magnetic cards and holders



### Magnetic card PCS

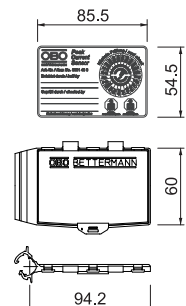


Type	Pack PU	Weight kg/100 PUs	Item no.
PCS	1	5.000	5091438

Peak Current Sensor (PCS) card for recording pulsed/lightning currents. A continuous check of whether lightning has struck the lightning protection system and how high the most recent lightning current was in kA can be carried out easily by the system operator, a specialist lightning protection company or by a surveyor. Here, the printed maintenance circuit and the labelling panels support the maintenance work of the entire lightning protection system, which must be performed at defined intervals according to VDE 0185-305-3 (IEC/EN 62305-3).

- Contents = 10 pieces
- Digital evaluation via the PCS card reading device
- Can be used in addition to the OBO lightning current meter LSC I+II
- With separate labelling panels: "Erected by", "Tested by", "Card code"
- Integrated maintenance circuit (year/month)

### Magnetic card and holder MK-B



Type	Pack PU	Weight kg/100 PUs	Item no.
MK-B	1	31.000	5091322

PCS magnetic card to record pulsed/lightning currents including holder

- Holder can be leaded
- For mounting on round conductor Rd 8-10
- Simple holder mounting through clamping
- 1 PU = 10 units

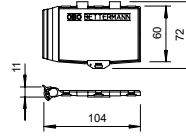


Magnetic card holder PCS-H

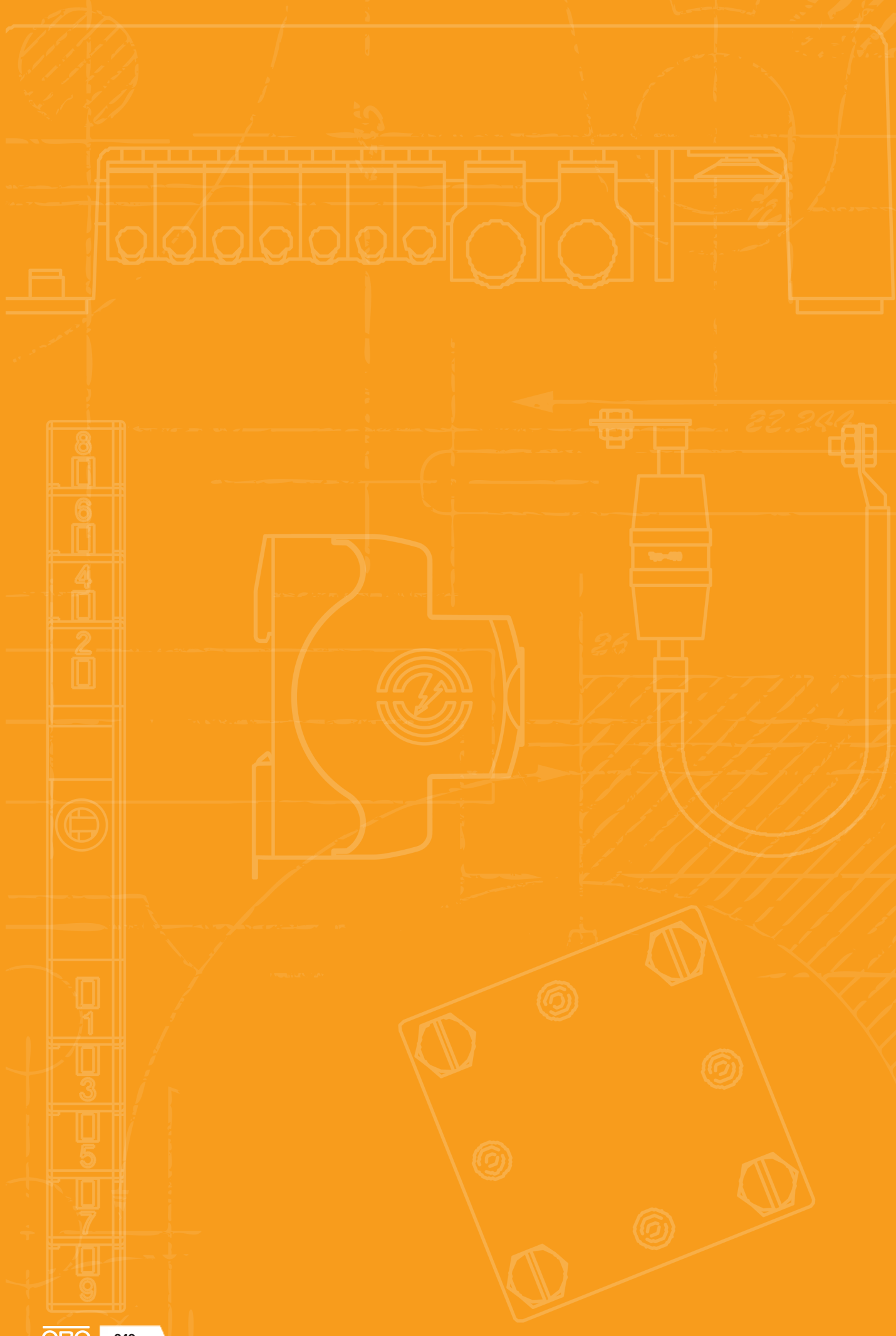
Type	Pack PU	Weight kg/100 PUs	Item no.
PCS-H	1	31.000	5091527

Magnetic card holder for mounting PCS cards.

- Sealable holder
- For installing on round conductor Rd 8-10
- Simple holder installation by means of clamp
- 1 PU = 10 pieces









# Ex area



Surge protection

244



Spark gaps

254





## MDP EX family

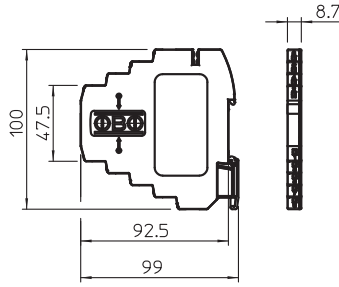
### MCR protection for Ex areas

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

- Protection device for multi-wire systems (4-pole)
- Direct shield earthing
- Easy-mounting, screwless connection option
- Space-saving width of just 8.7 mm
- Ex-tested for intrinsically safe measuring circuits
- High frequency bandwidth up to 100 MHz



Series protection device, 4-pole, 5 V version



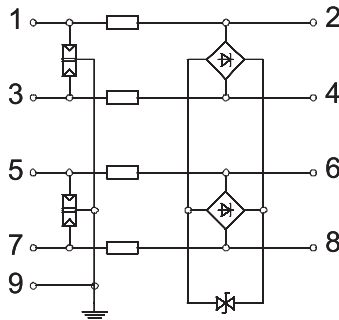
Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0–100 MHz
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

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

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-5-EX</b>	7	10	4	1	5.800	<b>5098412</b>

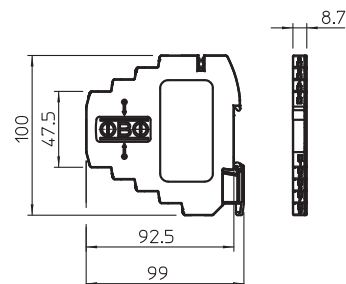
Connection options



**MDP-4 D-5-EX**

Maximum continuous voltage AC	$U_c$	7 V
Maximum continuous voltage DC	$U_c$	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		< 35 V
Protection level wire-earth		< 800 V
Frequency range		0-100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21
Approvals		UL

## Series protection device, 4-pole, 24 V version



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-24-EX</b>	20	28	4	1	5.800	<b>5098432</b>

### Lightning barrier for intrinsically safe measuring circuits

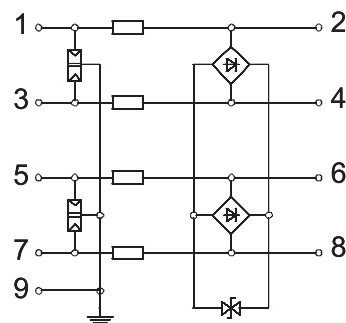
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0–100 MHz
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

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

### MDP-4 D-24-EX

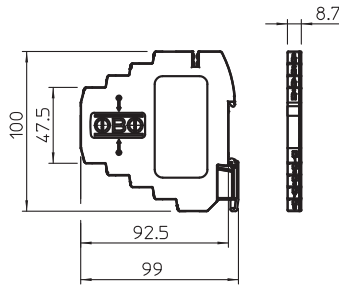
Maximum continuous voltage AC	$U_c$	20 V
Maximum continuous voltage DC	$U_c$	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		4
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		< 55 V
Protection level wire-earth		< 800 V
Frequency range		0-100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21
Approvals		UL

### Connection options





Series protection device, 4-pole, 48 V version



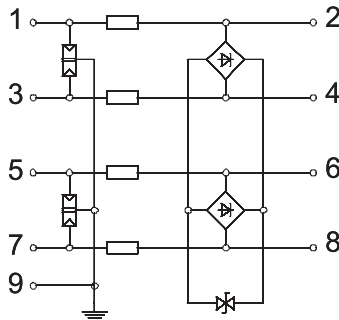
Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0–100 MHz
- ATEX approval: II 2(1) G Ex ia [ja Ga] IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

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

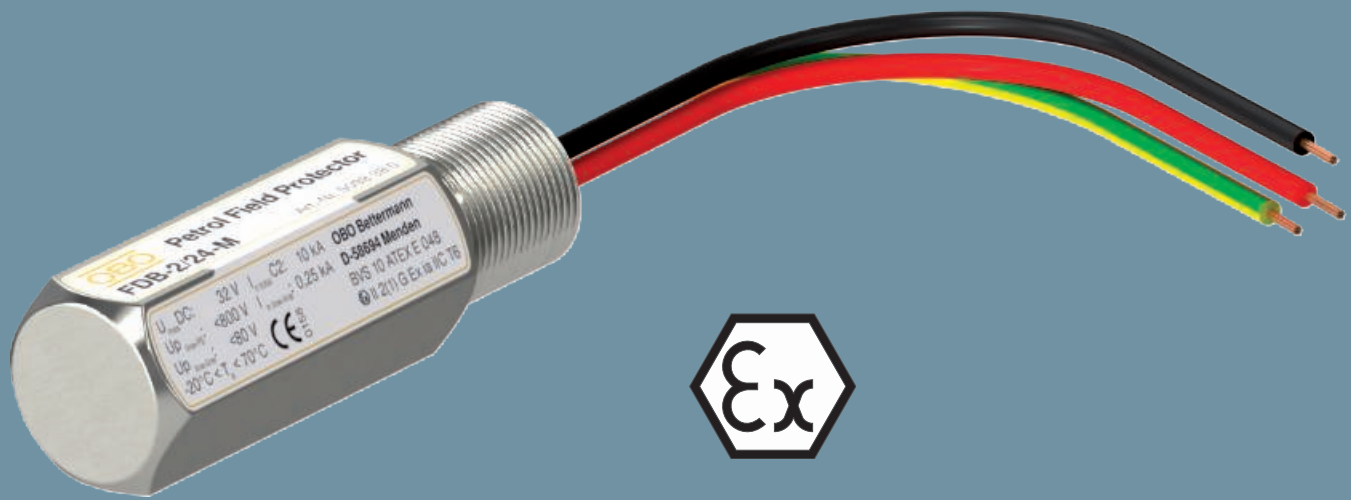
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>MDP-4 D-48-EX</b>	41	58	4	1	5.800	<b>5098452</b>

Connection options



**MDP-4 D-48-EX**

Maximum continuous voltage AC	$U_c$	41 V
Maximum continuous voltage DC	$U_c$	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	$I_L$	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		< 95 V
Protection level wire-earth		< 800 V
Frequency range		0-100 MHz
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1.5 mm <sup>2</sup>
Connection cross-section, rigid		0.14 - 2.5 mm <sup>2</sup>
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ja Ga] IIC T4 Gb
Testing standard		IEC 61643-21
Approvals		UL



# Petrol Field Protector FDB

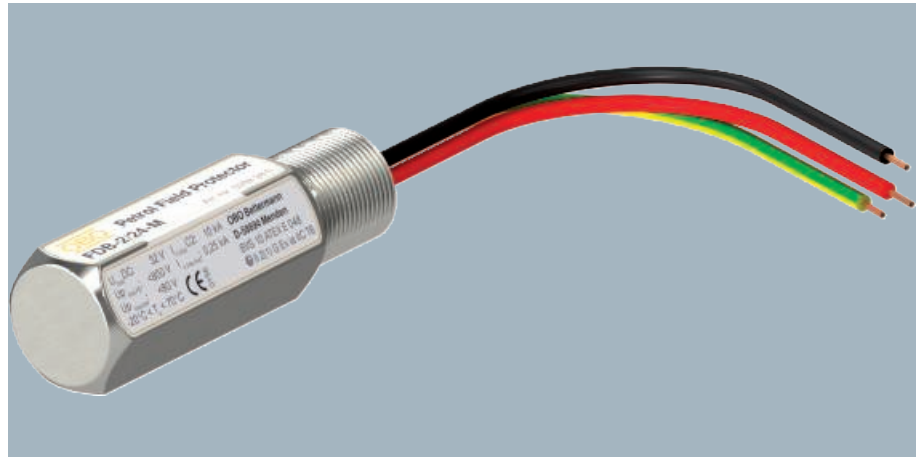
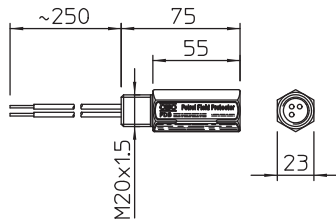
## MCR protection for explosive areas

With the Petrol Field Protector for data cable protection devices, OBO Bettermann can offer a surge protective device for sensors in potentially explosive areas. The Petrol Field Protector permits two or three-pole protection of all kinds of sensors. The protection device can be fastened directly on the sensor and wired in using the appropriate metric or NPT thread. The robust VA housing means that aggressive atmospheres are no problem. The intrinsic safety of the Petrol Field Protector has been independently tested and certified. The Petrol Field Protector is your partner for safety-relevant applications in which effective surge protection must be guaranteed.

- For potentially explosive areas
- Two or three-pole protection of various sensors
- Metric or NPT thread
- Robust VA housing
- High arresting capacity



Protection for field devices, 2-pole, 24 V, metric



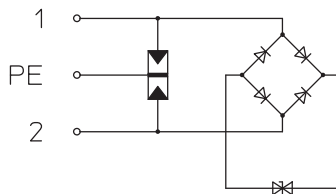
Petrol Field Protector FDB for intrinsically safe measuring circuits and bus systems

- Metric connection technology
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)

Application: Flow sensors, temperature sensors

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>FDB-2 24-M</b>	22	32	2-pole; metric	1	18.500	<b>5098380</b>

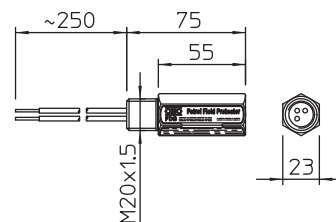
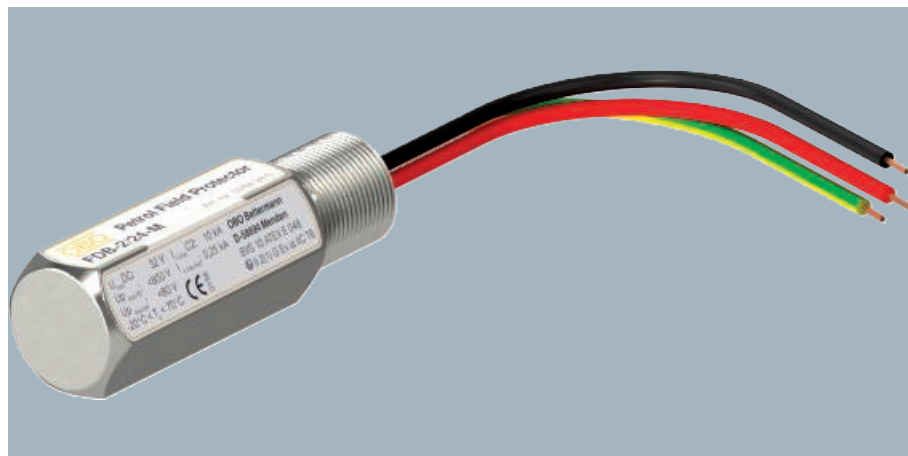
Connection options



FDB-2 24-M	
Maximum continuous voltage AC	$U_c$ 22 V
Maximum continuous voltage DC	$U_c$ 32 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1-3
Number of poles	2
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<80 V
Protection level wire-earth	<800 V
Temperature range	$\vartheta$ -20 - +70 °C
Installation type	Screw-on
Protection rating	IP65/67
Mounting of input / output	M20 x 1.5 external thread
Mounting of field / device side:	Connection cable 1.5 mm <sup>2</sup> Length ~ 250 mm
Earthing via:	Connection cable
Housing material	V2A
EX approval	II 2(1)G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)
Testing standard	IEC 61643-21



## Protection for field devices, 3-pole, 24 V, metric



Type	Max. continuous voltage AC	Max. continuous voltage DC	Version	Pack Piece	Weight kg/100 pc.	Item no.
	V	V				
<b>FDB-3 24-M</b>	22	32	3-pole; metric	1	19.000	<b>5098382</b>

Petrol Field Protector FDB for intrinsically safe measuring circuits and bus systems

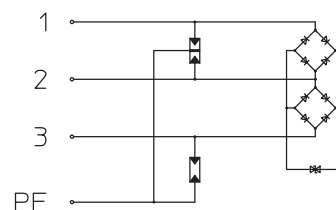
- Metric connection technology
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)

Application: Flow sensors, temperature sensors

### FDB-3 24-M

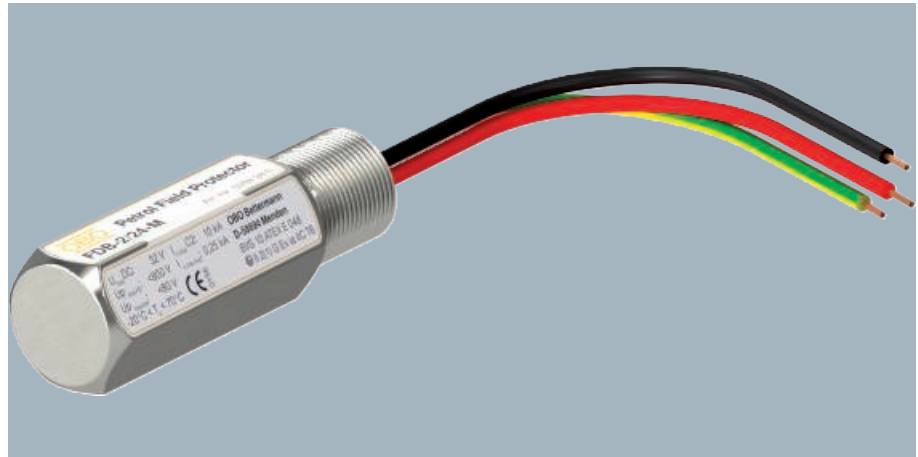
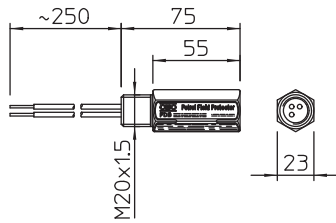
Maximum continuous voltage AC	$U_c$	22 V
Maximum continuous voltage DC	$U_c$	32 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1-3
Number of poles		3
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Protection level wire-wire		<80 V
Protection level wire-earth		<800 V
Temperature range	$\theta$	-20 - +70 °C
Installation type		Screw-on
Protection rating		IP65/67
Mounting of input / output		M20 x 1.5 external thread
Mounting of field / device side:		Connection cable 1.5 mm <sup>2</sup> Length ~ 250 mm
Earthing via:		Connection cable
Housing material		V2A
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)
Testing standard		IEC 61643-21

### Connection options





Protection for field devices, 2-pole, 24 V, NPT



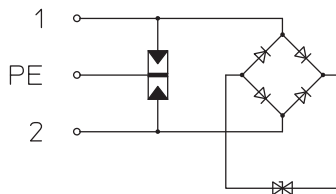
Petrol Field Protector FDB for intrinsically safe measuring circuits and bus systems

- NPT connection technology
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)

Application: Flow sensors, temperature sensors

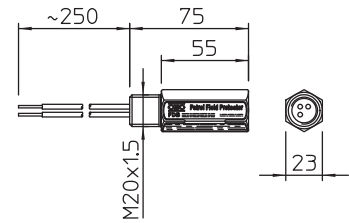
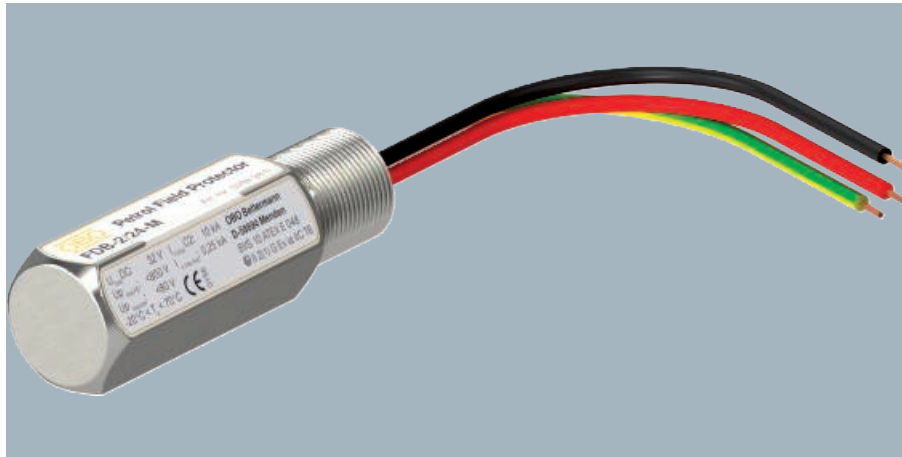
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>FDB-2 24-N</b>	22	32	2-pole; NPT	1	19.000	<b>5098390</b>

Connection options



FDB-2 24-N	
Maximum continuous voltage AC	$U_c$ 22 V
Maximum continuous voltage DC	$U_c$ 32 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1-3
Number of poles	2
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<80 V
Protection level wire-earth	<800 V
Temperature range	$\vartheta$ -20 - +70 °C
Installation type	Screw-on
Protection rating	IP65/67
Mounting of input / output	1/2" NPT
Mounting of field / device side:	Connection cable 1.5 mm <sup>2</sup> Length ~ 250 mm
Earthing via:	Connection cable
Housing material	V2A
EX approval	II 2(1)G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)
Testing standard	IEC 61643-21

## Protection for field devices, 3-pole, 24 V, NPT



Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
<b>FDB-3 24-N</b>	22	32	3-pole; NPT	1	19.500	<b>5098392</b>

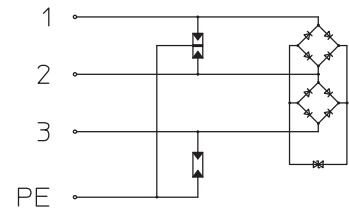
Petrol Field Protector FDB for intrinsically safe measuring circuits and bus systems

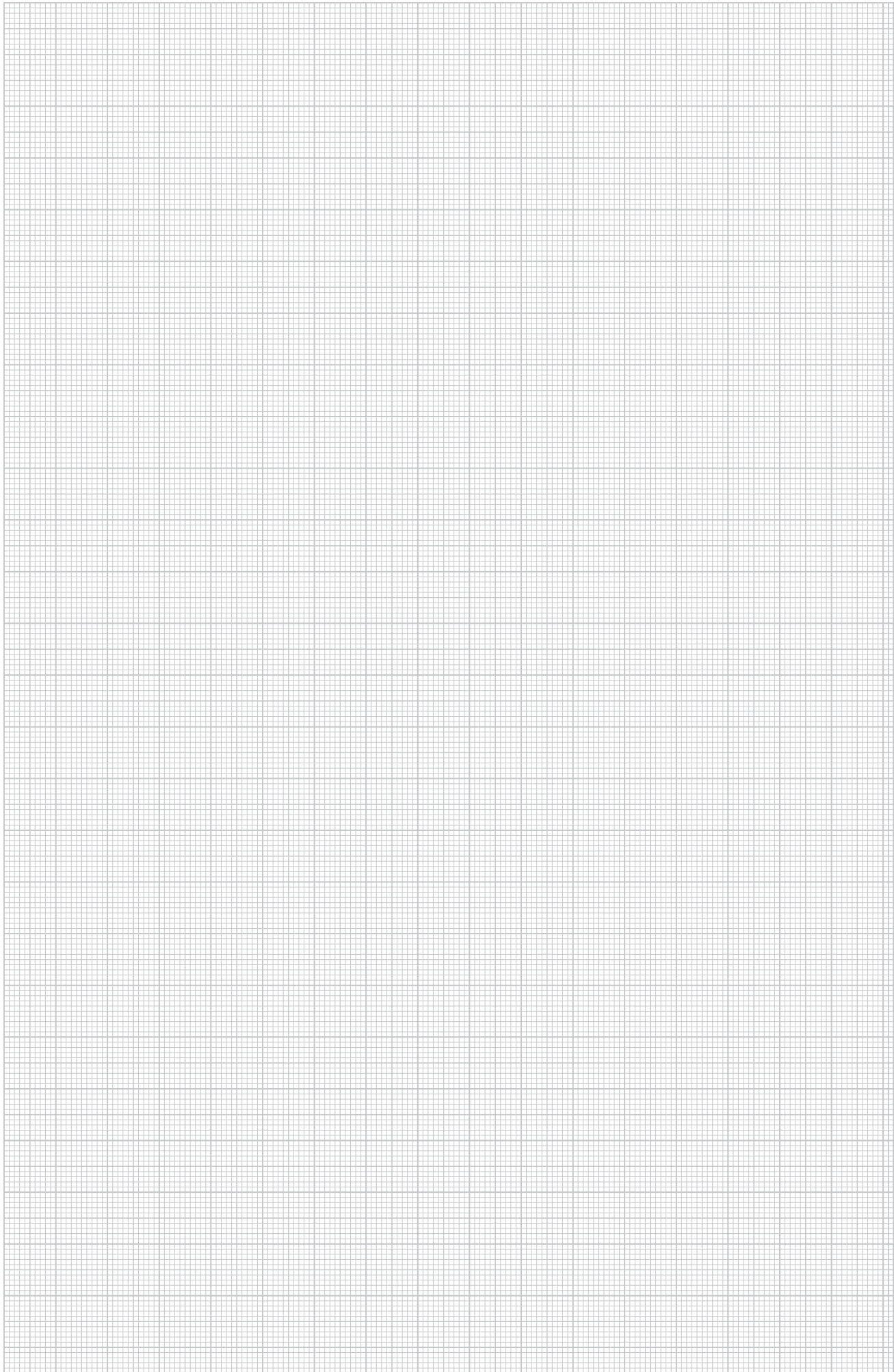
- NPT connection technology
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)

Application: Flow sensors, temperature sensors

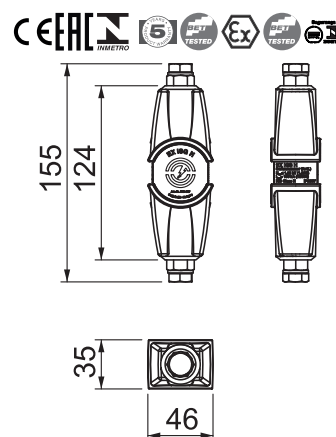
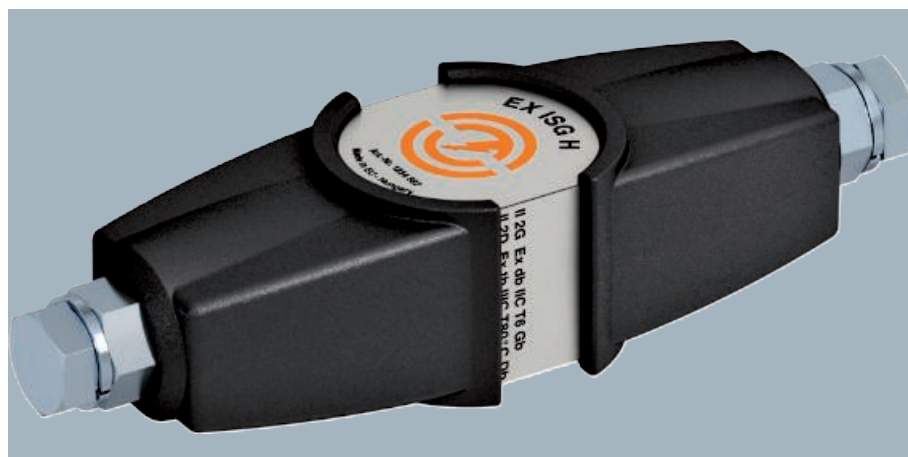
FDB-3 24-N	
Maximum continuous voltage AC	$U_c$ 22 V
Maximum continuous voltage DC	$U_c$ 32 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1→3
Number of poles	3
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<80 V
Protection level wire-earth	<800 V
Temperature range	$\theta$ -20 - +70 °C
Installation type	Screw-on
Protection rating	IP65/67
Mounting of input / output	1/2" NPT
Mounting of field / device side:	Connection cable 1.5 mm <sup>2</sup> Length ~ 250 mm
Earthing via:	Connection cable
Housing material	V2A
EX approval	II 2(1)G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)
Testing standard	IEC 61643-21

### Connection options





## EX ISG H spark gap



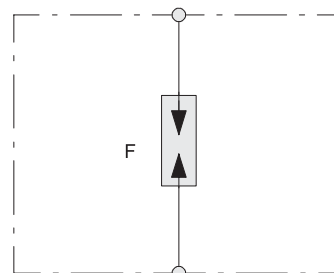
Type	Pack Piece	Weight kg/100 pc.	Item no.
EX ISG H	1	41.360	5240030

- Spark gap to VDE 0185-561-3 (IEC 62561-3)
- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2 G Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: II 2 D Ex td IIC T80 °C Db IP67
- Ex certificate to IECEx
- Labelling to IEC 60079-0/-1: Ex db IIC T6 Gb
- Labelling to IEC 60079-0/-31: Ex td IIC T80 °C Db IP67
- Ex certificate to INMETRO
- Labelling to ABNT NBR IEC 60079-0/-1: Ex db IIC T6 Gb
- Labelling to ABNT NBR IEC 60079-31: Ex tb IIC T80 °C Db IP67

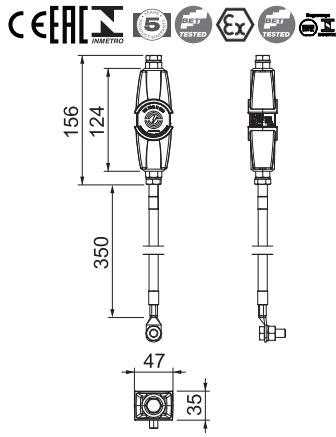
Application: In potentially explosive areas zones 1/21 and 2/22, indirect bridging of insulating flanges and insulating glands, e.g. in cathodic, corrosion-protected (KKS) systems.

EX ISG H		
Connecting cable length		0 m
Rated impulse sparkover voltage	$U_{r,imp}$	1.25 kV
Rated DC withstand voltage	$U_{wDC}$	354 V
Rated power frequency withstand voltage	$U_{wAC}$	250 V
Power frequency spark-over voltage	$U_{AS}$	0.56 kV
Impulse discharge current (10/350)	$I_{imp}$	100 kA
Nominal discharge current (8/20)	$I_n$	100 kA
Lightning current carrying capacity		H/100 kA
Temperature range	$\vartheta$	-20 - +60 °C

### Connection options



EX ISG H spark gap, with one cable

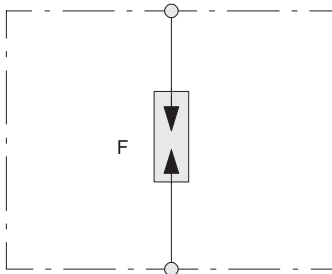


- Spark gap to VDE 0185-561-3 (IEC 62561-3)
- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2 G Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: II 2 D Ex td IIIC T80 °C Db IP67
- Ex certificate to IECEx
- Labelling to IEC 60079-0/-1: Ex db IIC T6 Gb
- Labelling to IEC 60079-0/-31: Ex td IIIC T80 °C Db IP67
- Ex certificate to INMETRO
- Labelling to ABNT NBR IEC 60079-0/-1: Ex db IIC T6 Gb
- Labelling to ABNT NBR IEC 60079-31: Ex tb IIIC T80 °C Db IP67

Application: In potentially explosive areas zones 1/21 and 2/22, indirect bridging of insulating flanges and insulating glands, e.g. in cathodic, corrosion-protected (KKS) systems.

Type	Pack Piece	Weight kg/100 pc.	Item no.
EX ISG H 350	1	57.260	5240031

Connection options



EX ISG H 350		
Connecting cable length		0.35 m
Rated impulse sparkover voltage	$U_{f\ imp}$	1.25 kV
Rated DC withstand voltage	$U_{wDC}$	354 V
Rated power frequency withstand voltage	$U_{wAC}$	250 V
Power frequency spark-over voltage	$U_{AS}$	0.56 kV
Impulse discharge current (10/350)	$I_{imp}$	100 kA
Nominal discharge current (8/20)	$I_n$	100 kA
Lightning current carrying capacity		H/100 kA
Temperature range	$\vartheta$	-20 - +60 °C

Connection components

Cu

Type	Dimension mm	Pack Piece	Weight kg/100 pc.	Item no.
AL EX ISG 100	100	1	9.600	5240102
AL EX ISG 200	200	1	12.300	5240104
AL EX ISG 300	300	1	15.200	5240106

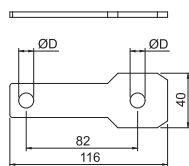
UV-resistant connection cable (copper 25 mm<sup>2</sup>) for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces. With cable shoe for M10 bolts on both sides, on one side with M10 bolt, nuts and spring ring.

Connection cable – AL EX ISG



## Connection clamp AB EX ISG, straight

St FT

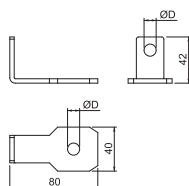


Type	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Version			
AB EX ISG S M10	11	For M10 bolt	2	9.000	5240360
AB EX ISG S M12	14	For M12 bolt	2	8.900	5240362
AB EX ISG S M16	18	For M16 bolt	2	8.600	5240366
AB EX ISG S M20	22	For M20 bolt	2	8.200	5240370
AB EX ISG S M24	26	For M24 bolt	2	7.800	5240374

Connection clamp for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces.

## Connection clamp AB EX ISG, angled

St FT

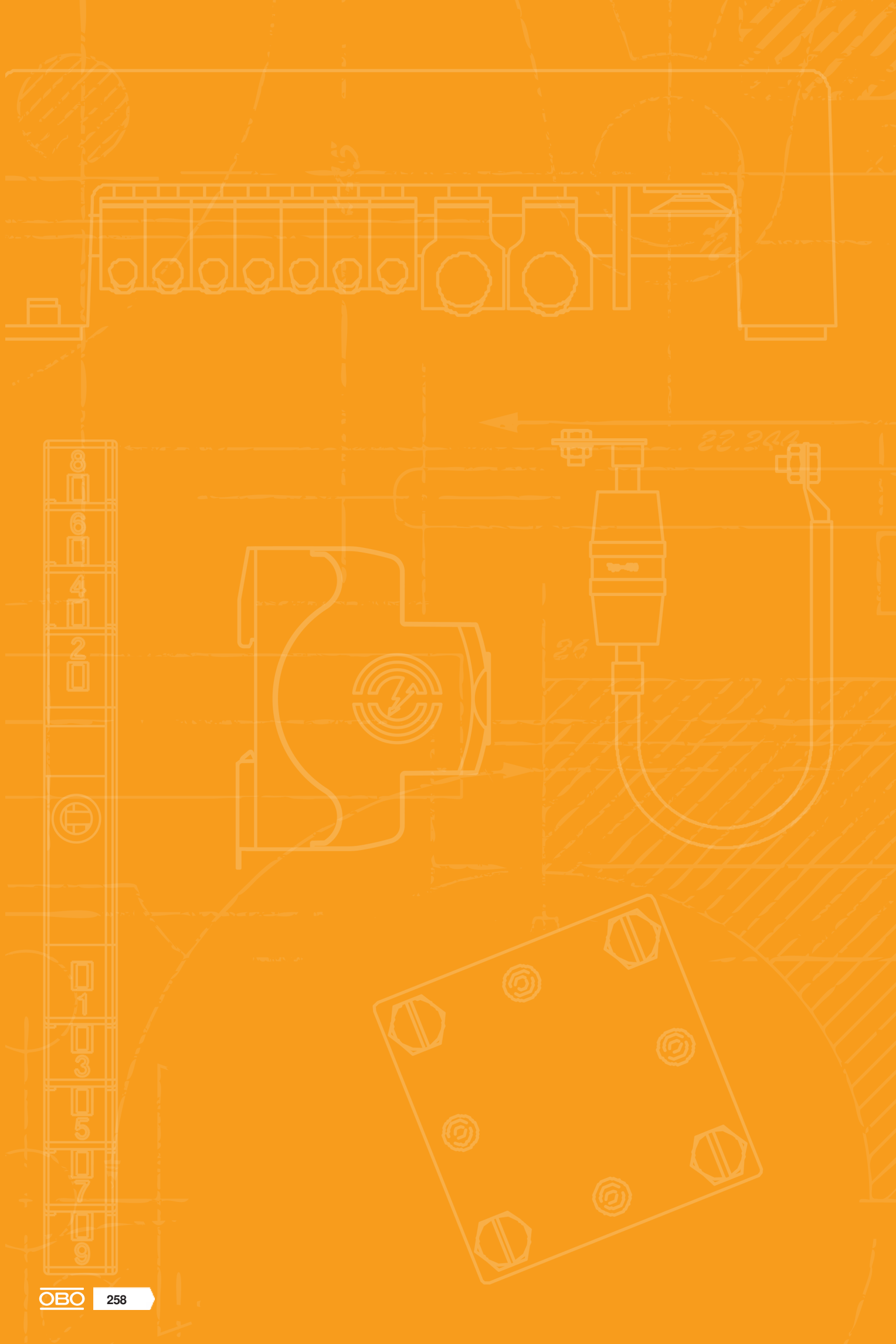


Type	Drill hole		Pack Piece	Weight kg/100 pc.	Item no.
	Ø mm	Version			
AB EX ISG SW M10	11	For M10 bolt	2	10.900	5240380
AB EX ISG SW M12	14	For M12 bolt	2	10.800	5240382
AB EX ISG SW M16	18	For M16 bolt	2	10.500	5240386
AB EX ISG SW M20	22	For M20 bolt	2	10.100	5240390
AB EX ISG SW M24	26	For M24 bolt	2	9.700	5240394

Connection clamp for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces.







# Data and information technology



Data technology

260



Transmission and reception units

286





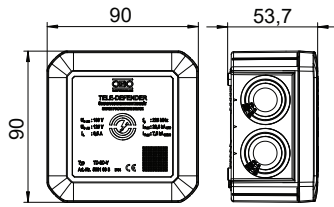
## Tele Defender

Combined protection device for VDSL, ISDN and DSL systems

The data cable protection devices for telecommunications applications are available as combination protection and fine protection. Depending on the application, from DSL through to analogue communication, the devices are used for direct intermediate switching into the data cable, meaning that they can easily be retrofitted in existing installations. The devices differ in their connection technology and transmission cable and are thus optimised for their appropriate applications, in order to cause the lowest attenuation level possible.

- Low protection level at a high current load
- "Push-in" clamps for quick installation
- Bandwidth-optimised for secure transmission up to 225 MHz
- Surface mounting

## Combination protection device TD-2D-V for VDSL systems



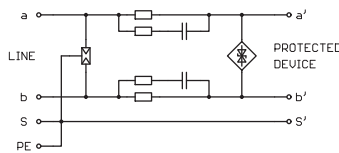
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
- "Push-in" clamps for quick installation
- Bandwidth-optimised for secure transmission up to 225 MHz
- Surface mounting

Application: Ideal for all DSL systems, IP connections, ISDN or analogue telecommunications

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>TD-2D-V</b>	125	180	2	Terminal	1	9.500	<b>5081698</b>

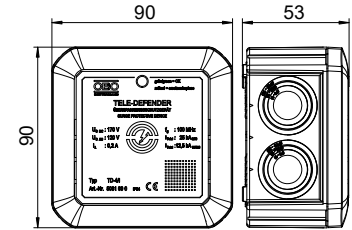
## Connection options



## TD-2D-V

Maximum continuous voltage AC	$U_C$	125 V
Maximum continuous voltage DC	$U_C$	180 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	$I_L$	0.5 A
Capacity (wire-wire)		<10 pF
Capacity (wire-earth)		<20 pF
Series resistance per wire		2,2 $\Omega$ $\pm$ 5 %
Impulse durability wire-wire		C2: 15 kV / 7,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 15 kV / 7,5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		22,5 kA
Total discharge current (10/350)		D1: 7,5 kA
Protection level wire-wire		<350 V
Protection level wire-earth		<600 V
Frequency range		0 - 225 MHz
Insertion loss	$S_{21}$	<3 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Surface-mounted
Connection system		Terminal
Protection rating		IP54
Shielding connection available		Yes
Connection cross-section, flexible		0.14 - 1 mm <sup>2</sup>
Connection cross-section, multi-wire		0.14 - 1 mm <sup>2</sup>
Connection cross-section, rigid		0.08 - 1.5 mm <sup>2</sup>
Testing standard		IEC 61643-21

Combination protection device TD-4/I for ISDN and DSL systems



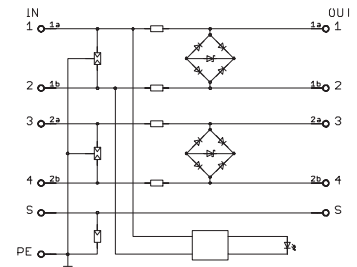
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>TD-4/I</b>	120	170	4	Terminal	1	11.000	<b>5081690</b>

Data cable protection device for telecommunications equipment

- Low protection level at a high current load
  - "Push-in" terminals for quick installation
  - Bandwidth-optimised for secure transmission
  - Surface mounting
  - Visual function display
- Application: DSL systems, IP connections, ISDN or analogue telecommunications

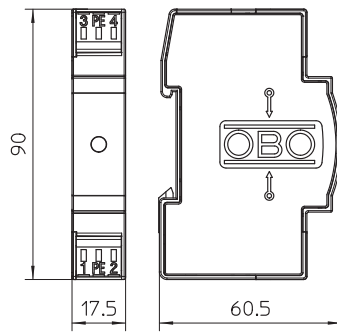
TD-4/I	
Maximum continuous voltage AC	$U_C$ 120 V
Maximum continuous voltage DC	$U_C$ 170 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	4
Rated current	$I_L$ 0.2 A
Capacity (wire-wire)	<50 pF
Capacity (wire-earth)	<10 pF
Series resistance per wire	$9 \Omega \pm 10 \%$
Impulse durability wire-wire	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{Imo}$ 2.5 kA
Total discharge current (8/20)	25 kA
Total discharge current (10/350)	D1: 12,5 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<650 V
Protection level, shield-earth (S-PE)	850 V
Frequency range	0 - 100 MHz
Insertion loss	$S_{21}$ $\leq 3$ dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Surface-mounted
Connection system	Terminal
Protection rating	IP54
Shielding connection available	Yes
Connection cross-section, flexible	0.14 - 0.75 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 0.75 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 0.75 mm <sup>2</sup>
Testing standard	IEC 61643-21

Connection options





## Combination protection device TD-2/D-HS for ISDN and DSL systems



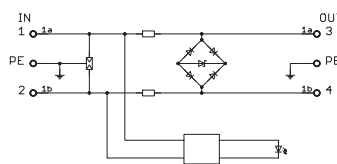
### Data cable protection devices for telecommunication systems

- Low protection level at high current load
- Screwless terminals or connectable
- Bandwidth-optimised for secure transmission
- Quick mounting onto DIN rail for a telephone line
- Visual function display

Application: DSL systems, ISDN or analogue telecommunication

Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
TD-2/D-HS	120	170	2	Terminal	1	4.800	5081694

### Connection options



TD-2/D-HS	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 170 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0→3
Number of poles	2
Rated current	$I_L$ 0.2 A
Capacity (wire-wire)	<50 pF
Capacity (wire-earth)	<50 pF
Series resistance per wire	9 $\Omega$ $\pm$ 10 %
Impulse durability wire-wire	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 18 kV / 9 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	D1: 5 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<650 V
Frequency range	0 - 75 MHz
Insertion loss	$S_{21}$ $\leq$ 3 dB
Temperature range	$\theta$ -40 - +80 °C
Installation type	DIN rail 35 mm
Connection system	Terminal
Protection rating	IP20
Shielding connection available	No
Connection cross-section, flexible	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, multi-wire	0.14 - 2.5 mm <sup>2</sup>
Connection cross-section, rigid	0.14 - 2.5 mm <sup>2</sup>
Testing standard	IEC 61643-21





## Tele Defender

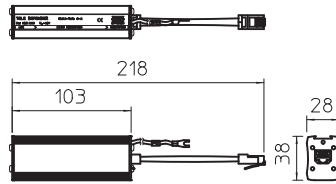
Combination and fine protection devices RJ11-Tele and RJ45 Tele for analogue cables

The data cable protection devices for telecommunications applications are available as combination protection and fine protection. Depending on the application, from DSL through to analogue communication, the devices are used for direct intermediate switching into the data cable, meaning that they can easily be retrofitted in existing installations. The devices differ in their connection technology and transmission cable and are thus optimised for their appropriate applications, in order to cause the lowest attenuation level possible.

- In aluminium housing
- With two-stage protection circuit
- Simple mounting
- Inc. 150 mm connecting cable with RJ 11 and/or RJ 45 connectors
- Optimised bandwidth for TC systems
- DIN rail mounting



Fine protection device TELE 4-F for ISDN RJ11



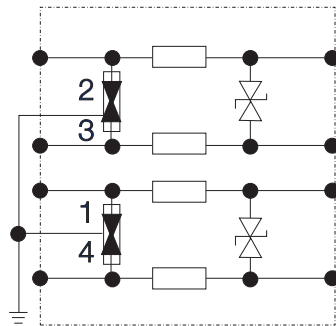
Data line protection device for analogue telecommunications systems

- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: For analogue telecommunication systems

Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>RJ11-TELE 4-F</b>	Fine protection, 4 wires	RJ11	1	14.000	5081977

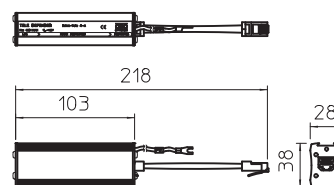
Connection options



RJ11-TELE 4-F	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 170 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1-3
Number of poles	4
Series resistance per wire	$2,2 \Omega \pm 10 \%$
Total discharge current (8/20)	4 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<600 V
Protection level, wire-earth at 1 kV/ $\mu$ s (C3)	$U_p$ <245 V
Frequency range	0 - 18 MHz
Insertion loss	$S_{21}$ $\leq 3$ dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ11
Protection rating	IP40
Earthing via:	Connection cable
Testing standard	IEC 61643-21



## Combination protection device TELE 4-C for ISDN RJ11



Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
<b>RJ11-TELE 4-C</b>	Combi protection, 4 wires	RJ11	1	14.000	<b>5081975</b>

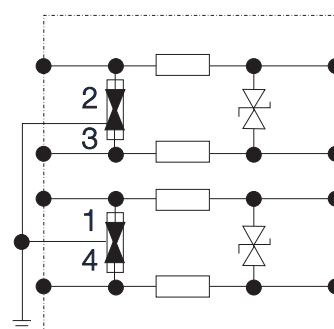
Data line protection device for analogue telecommunications systems

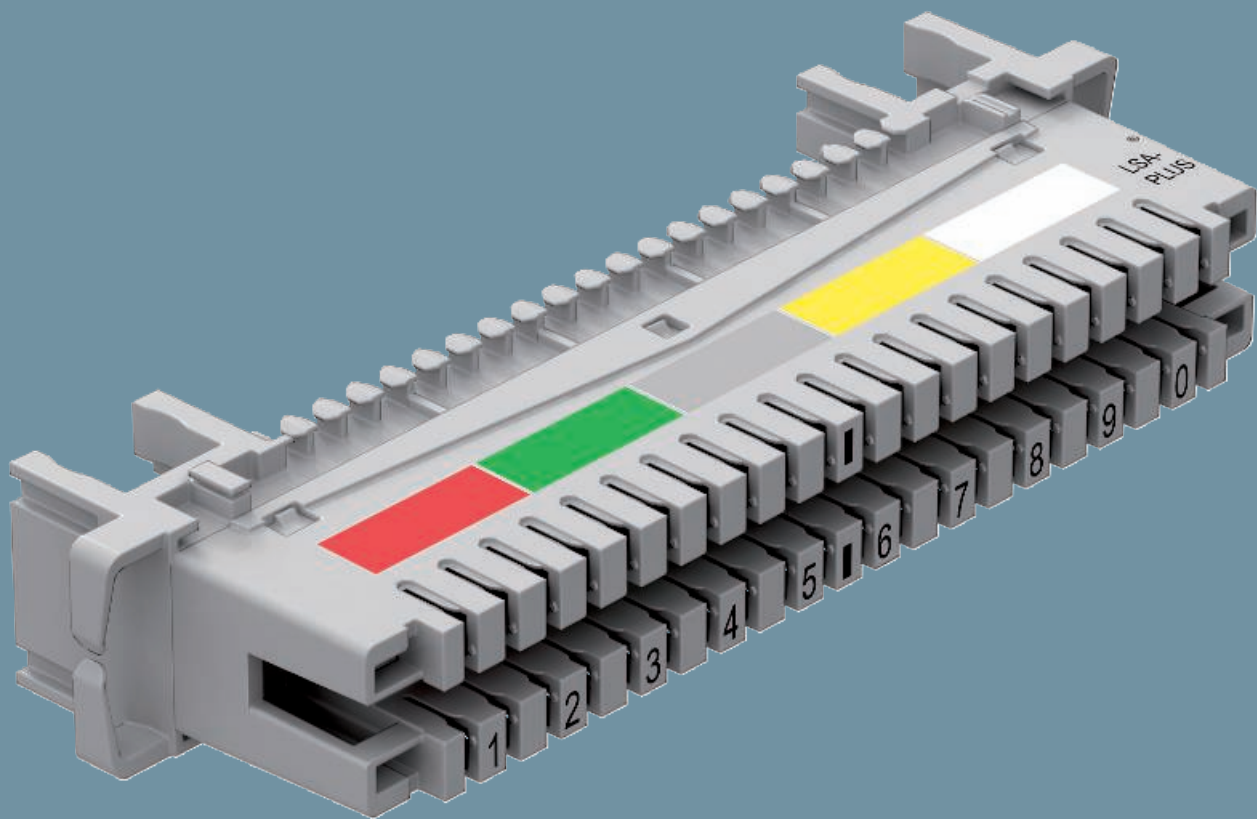
- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: For analogue telecommunication systems

RJ11-TELE 4-C	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 170 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	4
Series resistance per wire	$8,2 \Omega \pm 10 \%$
Total discharge current (8/20)	4 kA
Total discharge current (10/350)	1,5 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<600 V
Protection level, wire-earth at 1 kV/ $\mu$ s (C3)	$U_p$ <245 V
Frequency range	0 - 12 MHz
Insertion loss	$S_{21}$ $\leq 3$ dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ11
Protection rating	IP40
Earthing via:	Connection cable
Testing standard	IEC 61643-21

### Connection options





## LSA-Plus technology Basic and fine protection

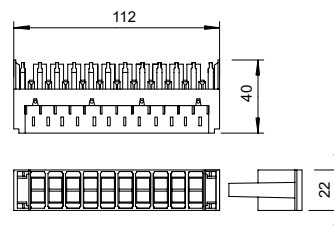
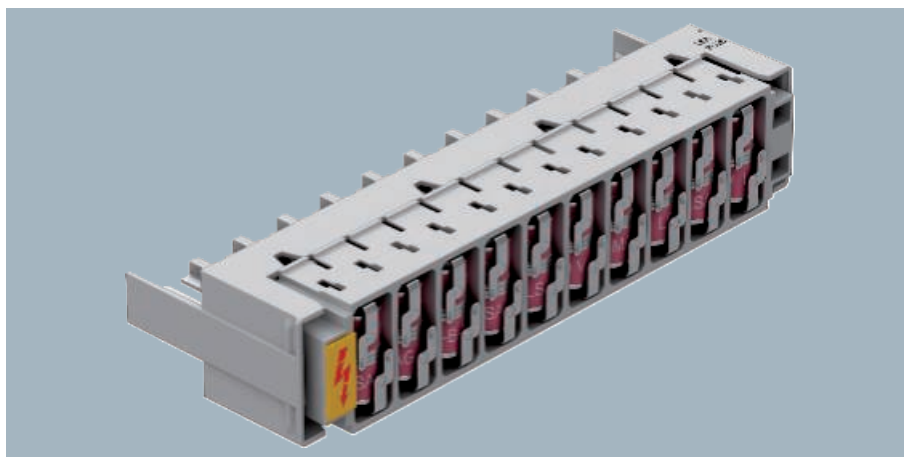
Surge protective devices for industrial telecommunications applications

In particular with multi-wire cable systems, such as telecommunications distribution systems, the LSA surge voltage components offer rapid, adequate protection. The LSA system offers both basic protection modules and fine protection modules to protect up to ten two-core wires per connection strip. These are split up into separating and connection strips and must be selected according to the application.

- Simple installation
- Protection up to ten two-core wires
- Low protection level
- High arresting capacity
- High broadband in basic protection
- Wide range of uses



LSA basic protection magazine



Type	Installation type	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
LSA-B-MAG	LSA-Plus, connectable	20	1	8.600	5084020

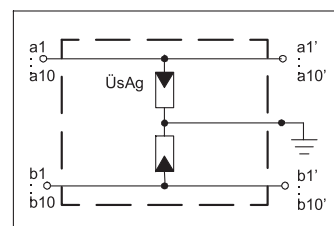
LSA basic protection magazine for use in multi-core data cable systems, MCR systems and telephone switchboards.

- Basic protection
- Equipped with 20 gas arresters
- Max. voltage: 180 V

Application: Directly on LSA-Plus separating strips or connection rails (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2).

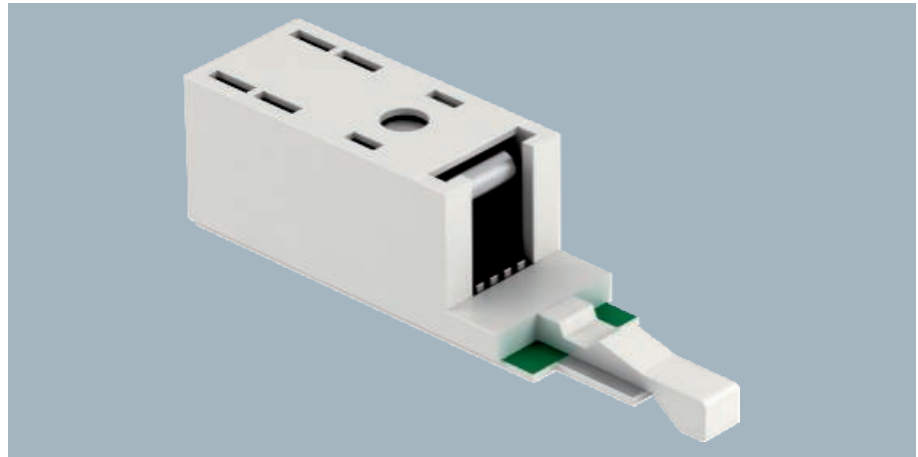
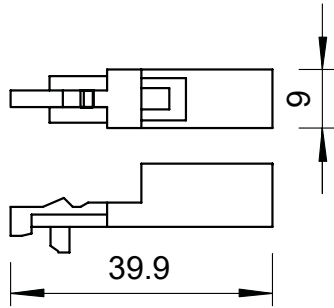
LSA-B-MAG	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 180 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	20
Rated current	$I_L$ 1 A
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	1 kA
Protection level @ C1	<750 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	LSA-Plus, connectable
Connection system	Other
Protection rating	IP20
Testing standard	IEC 61643-21

Connection options





## Combination protection device LSA BF 180



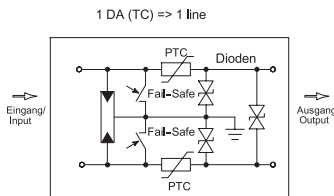
LSA basic and fine protection, for application in MCR systems

- Basic and fine protection
- Coarse protection using fail-safe technology.
- With PTC protection components against overcurrent.
- Max. voltage: 180 V

Application: Directly on LSA-Plus separating strip or connection rails with earthing rail (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2), and OBO LSA-E (5084 03 2))

Type	Installation type	Number of poles	Pack Piece	Weight kg/100 pc.	Item no.
<b>LSA-BF-180</b>	LSA-Plus, connectable	2	1	0.500	<b>5084024</b>

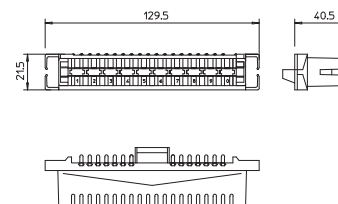
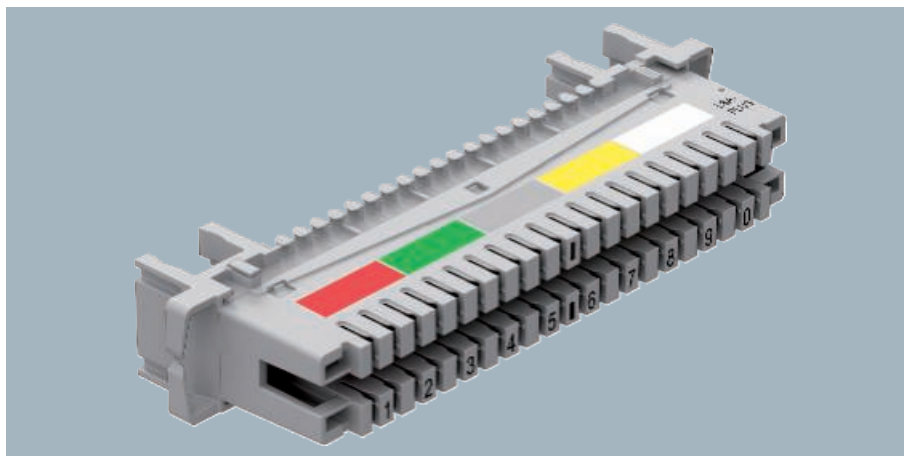
### Connection options



LSA-BF-180	
Maximum continuous voltage AC	$U_c$ 120 V
Maximum continuous voltage DC	$U_c$ 180 V
Category	Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ	0-3
Number of poles	2
Rated current	$I_L$ 0.12 A
Impulse durability wire-wire	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	5 kA
Total discharge current (10/350)	0,5 kA
Protection level wire-wire	<300 V
Protection level wire-earth	<300 V
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	LSA-Plus, connectable
Connection system	Other
Protection rating	IP20
Testing standard	IEC 61643-21



LSA connection strip

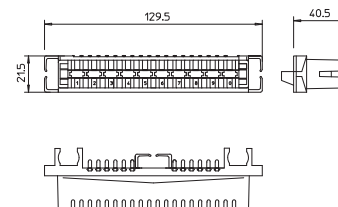
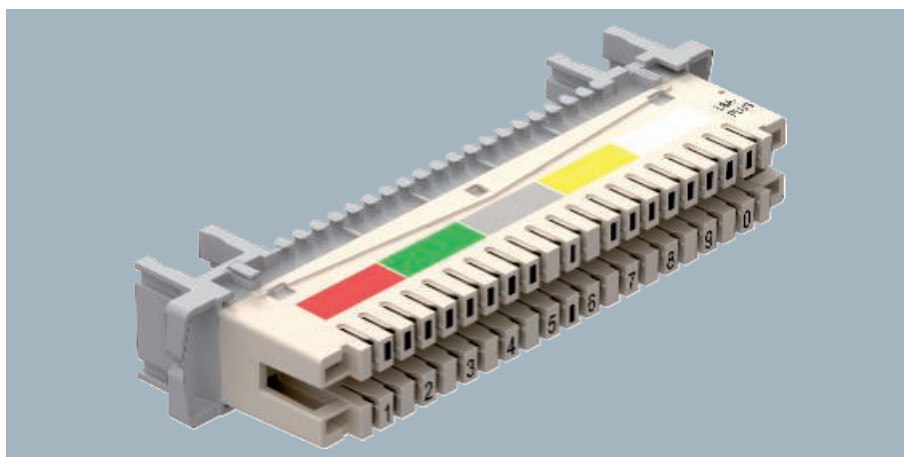


Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
LSA-A-LE1	Grey	1	5.100	5084008

LSA connection strip 2/10 for attaching 10 double-cores.

- For use with protection element LSA-B-MAG
- Fastening to mounting trough LSA-M
- Colour: Grey
- Clampable cross-sections 0.14–0.5 (AWG 26-20)

LSA separating strip



Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
LSA-T-LE1	White	1	5.400	5084012

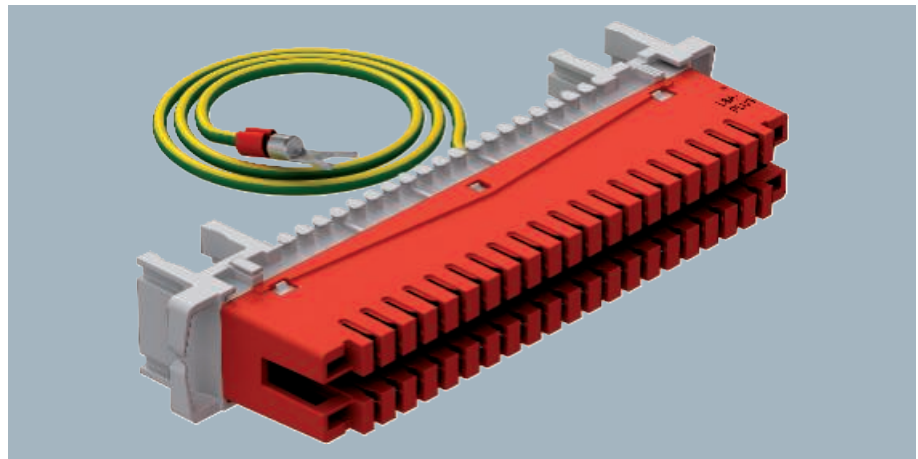
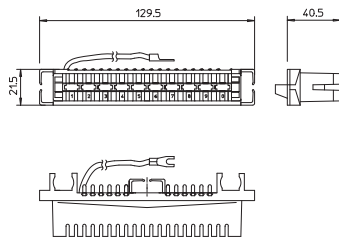
LSA separating strip 2/10 for attaching up to 10 double-cores.

- For use with protection element LSA-BF-180; LSA-BF-24; LSA-B-MAG
- Fastening to mounting trough LSA-M
- Colour: White
- Clampable cross-sections 0.14–0.5 mm<sup>2</sup> (AWG 26-20)





LSA earthing strip



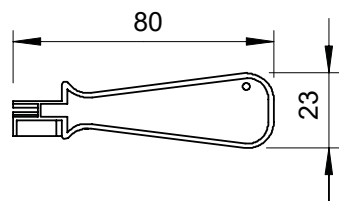
LSA earthing strip, 40-pole for connecting earthing cables or screens to the earth connection.

- Complete with connection line, green-yellow, 1.5 mm<sup>2</sup>
- Colour: Red

Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
LSA-E-LEI	Red	1	6.500	5084016



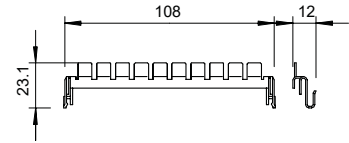
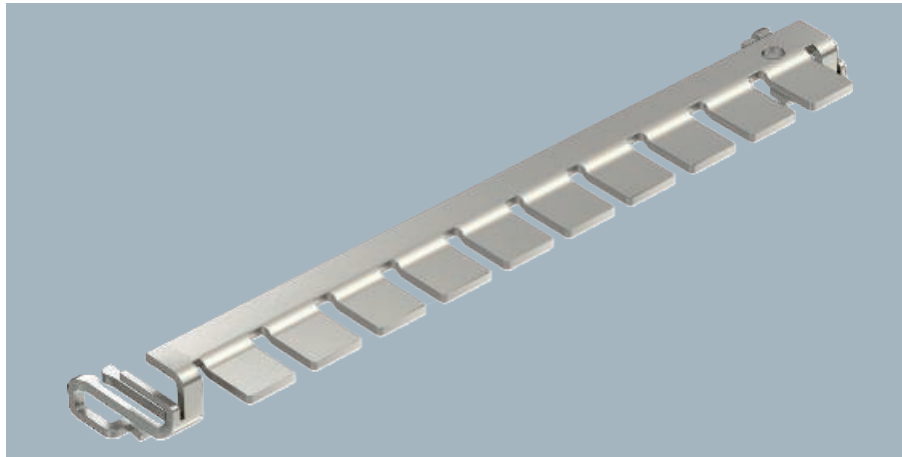
LSA simple tool



Simple tool for the soldering, bolting and stripping-free connection of cores, without cutter.

Type	Pack Piece	Weight kg/100 pc.	Item no.
LSA-TOOL	1	0.600	5084040

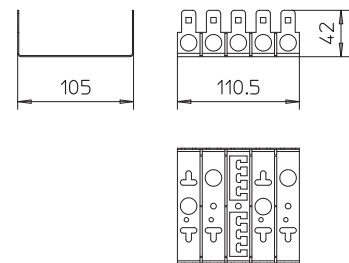
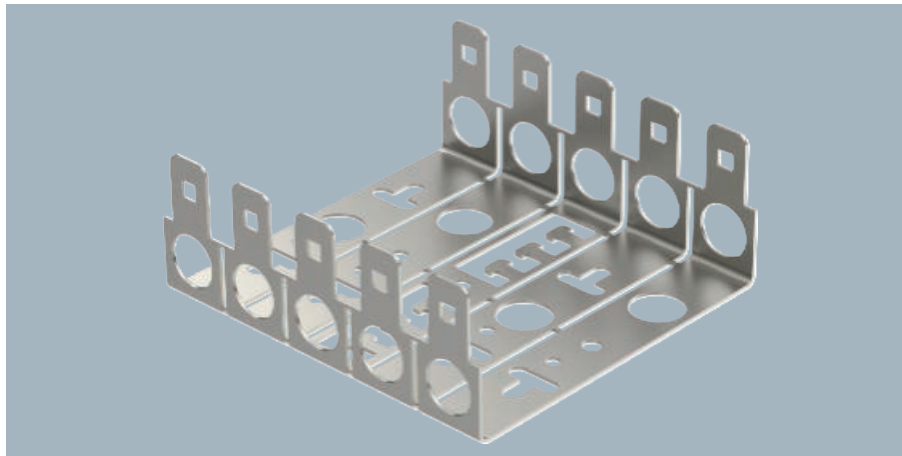
## LSA earthing rail



Type	Pack Piece	Weight kg/100 pc.	Item no.
LSA-E	1	1.275	5084032

Earth rail as earth connection between surge protectors LFS-BF... (1 DA) and distributor connector LSA-...-LEI.

## LSA installation trough



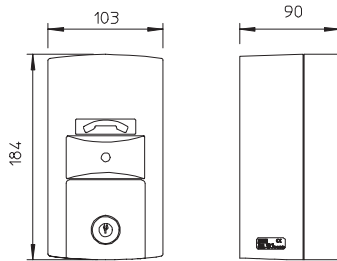
Type	Pack Piece	Weight kg/100 pc.	Item no.
LSA-M	1	7.800	5084036

Installation trough for 5 connection rails or separating strips. Grid 22.5 mm.  
Depth: 22 mm; 30 mm; 50 mm



LSA protective housing

PA



Protective housing for an LSA 10 DA bar

- Protective housing for 10 wire pairs
- Housing can be locked
- Incl. key
- 4x cable fixing
- Light grey

Type	Colour	Pack Piece	Weight kg/100 pc.	Item no.
LSA-G	Light grey	1	57.500	5084048





## Net Defender

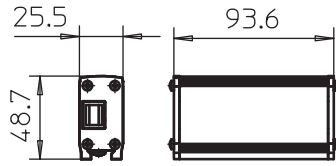
Surge protection for data and network technology  
PoE++ or 4PPoE Standard (IEEE 802.3bt)

The "Net Defender" permits the use of Power over Ethernet with nominal currents of up to 1 A and optimised surge protection in the channel up to 10 GBit/s. This corresponds to a Channel Performance according to ISO/IEC 11801 Amd. 2 of Class EA or CAT 6A to TIA/ANSI. Of course, reverse compatibility is also guaranteed. To ensure easy installation, the "Net Defender" can be snapped directly onto the DIN rail and uses it to create the necessary equipotential bonding. Alternatively, terminal protection using a separately connectable earthing line is possible.

- Connectable protection device
- High-performance surge protection
- Usable in the "Channel Link" up to 10 GBit
- Supports Power over Ethernet to 1 A
- Testing protocol available



## Surge protection for high-speed networks up to 10 GBit (Class EA/CAT6A)



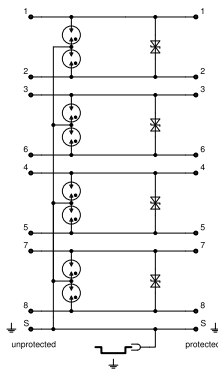
Data cable protection device for high-speed networks

- Protection class: Fine protection
- High-quality RJ45 sockets
- Low protection level at high current load
- Earthing via DIN rail or connection cable
- Support of Power over Ethernet ++ (PoE++/4PPoE) to 1 A in accordance with IEEE 802.3
- Tested transmission quality in networks up to 10 GBit/s (Class EA) or CAT6
- Rapid installation through plug-in version
- Incl. DIN rail fastening set and earthing cable

Application example: 10 GBit Ethernet, 10/100 MBit Ethernet, PoE applications, IP camera systems, ISDN S0 interfaces

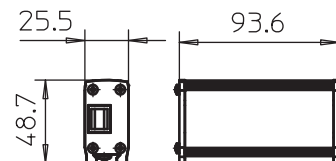
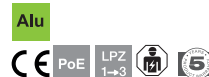
Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
ND-CAT6A/EA	Fine protection, 8 wires + shield	RJ45 8(8)	1	16.600	5081800

### Connection options



ND-CAT6A/EA	
Maximum continuous voltage AC	$U_c$ 41 V
Maximum continuous voltage DC	$U_c$ 58 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1-3
Channel performance ISO/IEC	Class EA
Channel performance Ansi/EA	CAT 6A
Number of poles	8
Rated current	$I_L$ 1 A
Impulse durability wire-wire	C1: 0,3 kV / 0,15 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 2 kV / 1 kA (8/20 $\mu$ s)
Total discharge current (8/20)	7 kA
Protection level wire-wire	<120 V
Protection level wire-earth	<700 V
Frequency range	0 - 500 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ45 8(8)
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

### Surge protection for high-speed networks up to 1 GBit (Class ND-CAT6/E-F)



Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
ND-CAT6/E-F	Fine protection, 8 wires + shield	RJ45 8(8)	1	16.380	5081802

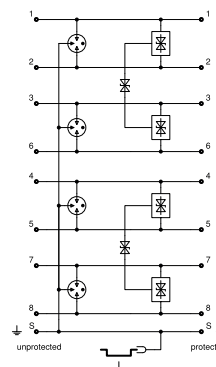
Data cable protection device for high-speed networks

- High-quality RJ45 sockets
- Low protection level at high current load
- Earthing via DIN rail or connection cable
- Support of Power over Ethernet ++ (PoE++/4PPoE) to 1 A in accordance with IEEE 802.3
- Tested transmission quality in networks up to 1 GBit/s (Class E) or CAT6
- Fast installation through plug-in version
- Incl. DIN rail fastening set and earthing cable

Application example: 1 GBit Ethernet, 10/100 MBit Ethernet, PoE applications, IP camera systems, ISDN S0 interfaces

ND-CAT6/E-F	
Maximum continuous voltage AC $U_c$	41 V
Maximum continuous voltage DC $U_c$	58 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1→3
Channel performance ISO/IEC	Class E
Channel performance Ansi/EA	CAT 6
Number of poles	8
Rated current $I_L$	1 A
Impulse durability wire-wire	C1: 0,3 kV / 0,15 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 3 kV / 1,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	5 kA
Protection level wire-wire	<40 V
Protection level wire-earth	<900 V
Frequency range	0 - 250 MHz
Temperature range $\vartheta$	-40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ45 8(8)
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21

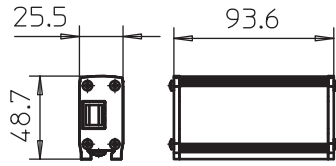
#### Connection options



Alu



## Surge protection for high-speed networks up to 1 GBit (Class ND-CAT6/E-B)

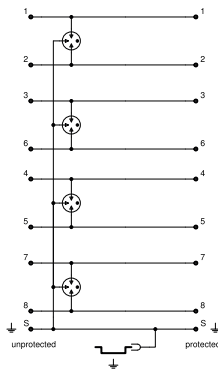


- Data cable protection device for high-speed networks
- Protection class: Basic protection
  - High-quality RJ45 sockets
  - Low protection level at high current load
  - Earthing via DIN rail or connection cable
  - Support of Power over Ethernet ++ (PoE++/4PPoE) to 1 A in accordance with IEEE 802.3
  - Tested transmission quality in networks up to 1 GBit/s (Class E) or CAT6
  - Rapid installation through plug-in version
  - Incl. DIN rail fastening set and earthing cable

Application example: 1 GBit Ethernet, 10/100 MBit Ethernet, PoE applications, IP camera systems, ISDN S0 interfaces

Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
ND-CAT6/E-B	Basic protection, 8 wires + shield	RJ45 8(8)	1	16.220	5081804

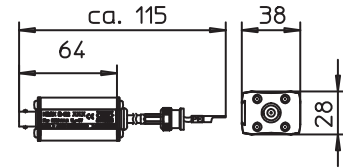
### Connection options



ND-CAT6/E-B	
Maximum continuous voltage AC	$U_c$ 46 V
Maximum continuous voltage DC	$U_c$ 65 V
Category	Type 1 / D1
Lightning protection zone LPZ	0-1
Channel performance ISO/IEC	Class E
Channel performance Ansi/EA	CAT 6
Number of poles	8
Rated current	$I_L$ 1 A
Impulse durability wire-wire	C2: 3 kV / 1,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 3 kV / 1,5 kA (8/20 $\mu$ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<1100 V
Protection level wire-earth	<900 V
Frequency range	0 - 250 MHz
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ45 8(8)
Protection rating	IP20
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable / DIN rail
Testing standard	IEC 61643-21



### Combination arrester for 10Base2-/10Base5 networks



Type	Version	Conne- tion system	Pack Piece	Weight kg/100 pc.	Item no.
<b>KOAX B-E2 MF-C</b>	Combi protection	BNC	1	10.300	<b>5082430</b>

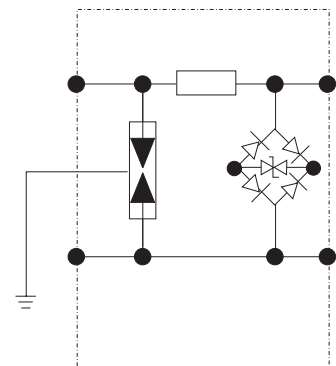
Data line protection device for coaxial Ethernet network systems

- In aluminium housing
- BNC connector m/f
- Simple mounting with adapter plug
- Two-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Protecting video signals; cameras and/or CCTV units, Cheapernet, 10BASE2, 10BASE5

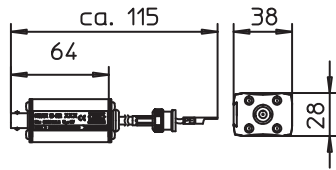
KOAX B-E2 MF-C		
Maximum continuous voltage AC	$U_c$	4,2 V
Maximum continuous voltage DC	$U_c$	6,2 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		1
Rated current	$I_L$	0,3 A
Series resistance per wire		4,7 $\Omega$ $\pm$ 10%
Wave resistance	$Z_L$	75 $\Omega$
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$	1 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		2 kA
Protection level wire-wire		<75 V
Protection level wire-earth		<600 V
Frequency range		0 - 68 MHz
Insertion loss	$S_{21}$	$\leq$ 1,7 dB
Return loss	$S_{11}$	$\geq$ 14 dB
Temperature range	$\vartheta$	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

#### Connection options





Fine protection for 10Base2-/10Base5 networks



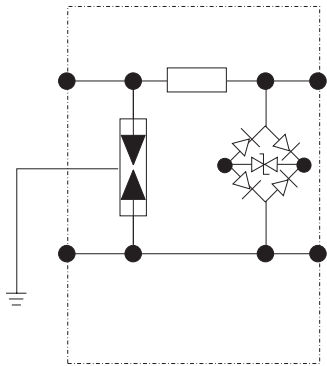
Data line protection device for coaxial Ethernet network systems

- In aluminium housing
- BNC connector m/f
- Simple mounting with adapter plug
- Two-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Protecting video signals; cameras and/or CCTV units, Cheapernet, 10BASE2, 10BASE5

Type	Version	Conne- tion system	Pack Piece	Weight kg/100 pc.	Item no.
KOAX B-E2 MF-F	Fine protection	BNC	1	9.800	5082432

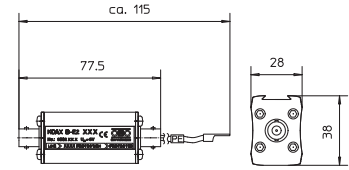
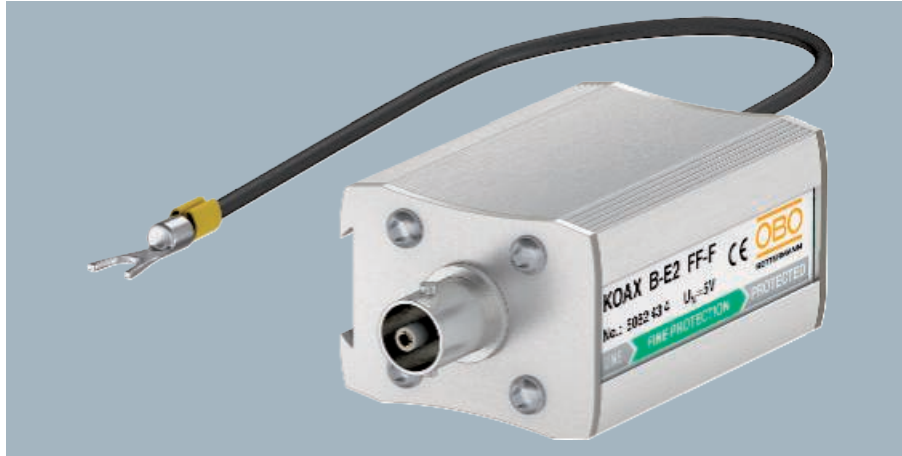
Connection options



KOAX B-E2 MF-F

Maximum continuous voltage AC	$U_C$	4.2 V
Maximum continuous voltage DC	$U_C$	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		1
Rated current	$I_L$	1 A
Wave resistance	$Z_L$	75 $\Omega$
Impulse durability wire-wire		C1: 1 kV / 0,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Protection level wire-wire		<40 V
Protection level wire-earth		<600 V
Frequency range		0 - 70 MHz
Insertion loss	$S_{21}$	$\leq 1$ dB
Return loss	$S_{11}$	$\geq 14$ dB
Temperature range	$\vartheta$	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

## Data cable protection device for coaxial TV / camera systems



Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
KOAX B-E2 FF-F	Fine protection	BNC	1	14.400	5082434

Data cable protection device for coaxial TV / camera systems

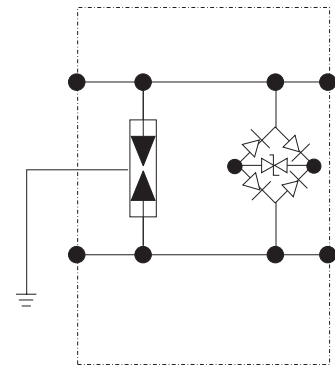
- In aluminium housing
- BNC connector socket/socket
- Simple mounting with adapter plug
- Two-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Protection of CCTV, video signals; cameras and/or TV systems

### KOAX B-E2 FF-F

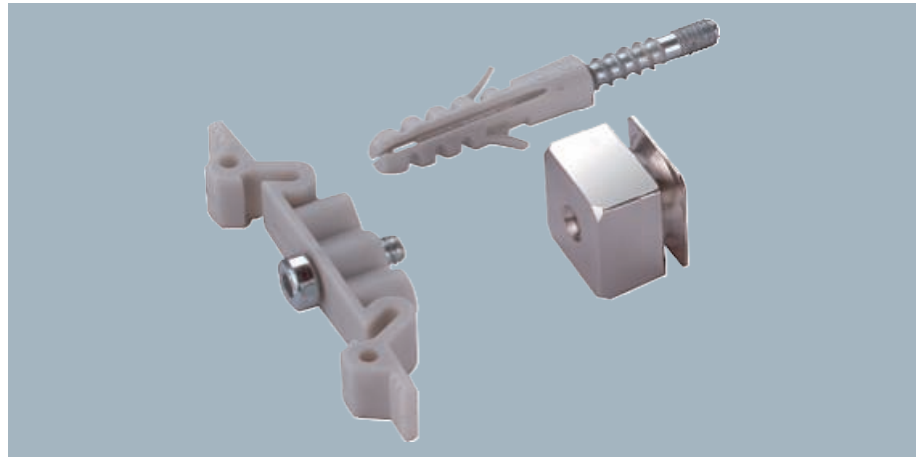
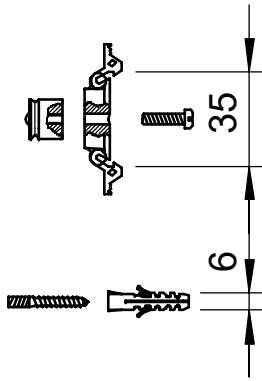
Maximum continuous voltage AC	$U_c$	4.2 V
Maximum continuous voltage DC	$U_c$	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		1
Rated current	$I_L$	1 A
Wave resistance	$Z_L$	75 $\Omega$
Impulse durability wire-wire		C1: 1 kV / 0,5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Total discharge current (8/20)		10 kA
Protection level wire-wire		<40 V
Protection level wire-earth		<600 V
Frequency range		0 - 160 MHz
Insertion loss	$S_{21}$	$\leq 1,7$ dB
Return loss	$S_{11}$	$\geq 14$ dB
Temperature range	$\vartheta$	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

### Connection options





Fastening set for DIN profile rail



DLS-BS: The fastening set is designed for a DIN rail and wall mounting and can be used for the data cable protection devices listed below:

- Coax N-E5/...
- Coax B-E2/...
- RJ 11-Tele/4...
- RJ 45 S-...

Type	Version	Pack Piece	Weight kg/100 pc.	Item no.





## PND combination protection devices for CCTV

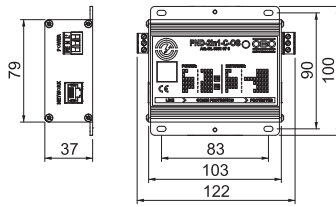
Protection of power, data and control cables in just one device

- Three-pin connection for the power interface
- Simple installation with adapter plug
- Two-stage protection circuit
- Can be used in lightning protection zones 1 to 3 to protect CCTV, video signals; (IP) cameras and TV systems
- With LED operating display on the top side of the housing as remote signalling
- RJ45 connection for the data interface or screw terminals and BNC connection for the data and video interface





## Combined protection device 2in1 for CCTV camera systems



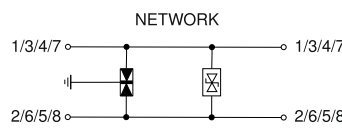
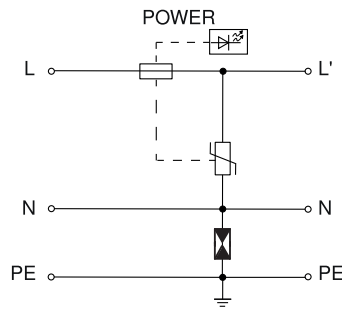
Combination protection device for IP-based TV/camera systems

- Protection of power and data interface in a single device
- In aluminium housing
- Simple mounting with adapter plug
- Two-stage protection circuit
- Three-pole power connection for the power interface
- RJ45 connection for the data interface
- With LED operation display (OS)
- Incl. DIN rail fastening set

Application: Protection of CCTV, video signals, (IP) cameras and/or TV systems

Type	Maximum continuous voltage (L-N) V	Maximum discharge current (8/20 μs) kA	Pack Piece	Weight kg/100 pc.	Item no.
<b>PND-2in1-C-OS</b>	255	10	1	27.000	<b>5081070</b>

### Connection options

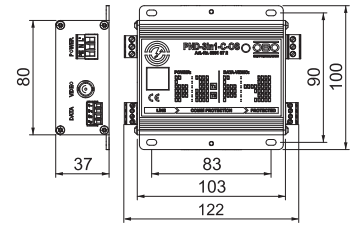


PND-2in1-C-OS		
Temperature range	θ	-20 - +80 °C
Installation type		Installation
Protection rating		IP20
Earthing via:		Connection cable / DIN rail
Lightning protection zone LPZ		1→3
Power		
SPD to IEC 61643-11		Class II+III
SPD to EN 61643-11		Type 2+3
Maximum continuous voltage (L-N)	$U_c$	255 V
Rated current	$I_L$	16 A
Protection level	$U_p$	<1,3 kV
Idle voltage	$U_{oc}$	10 kV
Nominal discharge current (8/20 μs)	$I_{n/L-N}$	5 kA
Maximum discharge current (8/20 μs)	$I_{max}$	10 kA
Network		
Maximum continuous voltage AC	$U_c$	5.65 V
Maximum continuous voltage DC	$U_c$	8 V
Category		Type 1+2+3 / D1+C2+C1
Impulse durability wire-wire		C1: 0,3 kV / 0,15 kA (8/20μs)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20μs)
Protection level wire-wire		<40 V
Protection level wire-earth		<450 V
Frequency range		0 - 100 MHz
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21





## Combined protection device 3in1 for CCTV camera systems



Type	Maximum continuous voltage (L-N) V	Maximum discharge current (8/20 μs) kA	Pack Piece	Weight kg/100 pc.	Item no.
<b>PND-3in1-C-OS</b>	255	10	1	29.900	<b>5081072</b>

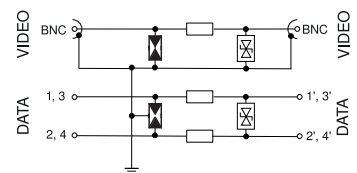
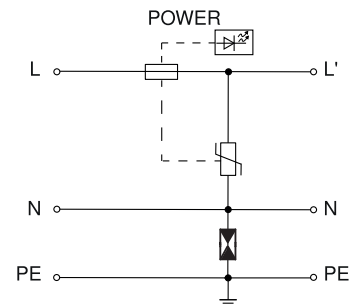
Combination protection device for coaxial TV/camera systems

- Protection of power and data interfaces in a single device
- In aluminium housing
- Simple mounting with adapter
- Two-stage protection circuit
- Three-pole power connection for the power interface
- With LED operation display (OS)
- Incl. DIN rail fastening set

Application: Protection of CCTV, video signals, cameras and/or TV systems

<b>PND-3in1-C-OS</b>	
Lightning protection zone LPZ	1-3
Earthing via:	Connection cable / DIN rail
Protection rating	IP20
Power	
SPD to IEC 61643-11	Class II+III
SPD to EN 61643-11	Type 2+3
Maximum continuous voltage (L-N)	$U_c$ 255 V
Rated current	$I_L$ 16 A
Protection level	$U_p$ <1,3 kV
Nominal discharge current (8/20 μs)	$I_{n/L-N}$ 5 kA
Maximum discharge current (8/20 μs)	$I_{max}$ 10 kA
Data	
Maximum continuous voltage AC	$U_c$ 5.65 V
Maximum continuous voltage DC	$U_c$ 8 V
SPD to IEC 61643-21	Class I+II / D1+C2
Category	Type 1+2 / D1+C2
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20μs)
Impulse current (10/350)	$I_{imp}$ 1 kA
Protection level wire-earth	<450 V
Protection level wire-wire	<65 V
Frequency range	0-100 MHz
Video	
Maximum continuous voltage AC	$U_c$ 5.65 V
Maximum continuous voltage DC	$U_c$ 8 V
SPD to IEC 61643-21	Class I+II / D1+C2
Category	Type 1+2 / D1+C2
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20μs)
Impulse current (10/350)	$I_{imp}$ 1 kA
Protection level wire-wire	<90 V
Protection level wire-earth	<150 V
Frequency range	0-100 MHz
Screen connection	Yes
Screening	Direct
Temperature range	ϑ -20 - +80 °C

### Connection options









## DS family

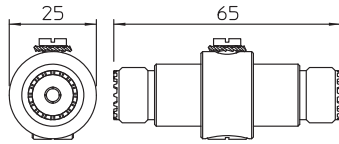
Coaxial protection devices for S-UHF, BNC, N, TNC, F and SMA connection

The coaxial protection devices of type DS offer optimum protection of sensitive systems, based on coaxial plug connections. The low insertion attenuation and low return attenuation at different wave resistances offer ideal protection for any application. In accordance with their structure, the protection devices are switched into the application in series, and are connected to the local equipotential bonding. The direct shield earthing avoids reducing of the shield performance.

- Coaxial protection devices
- Optimum protection for sensitive systems
- Low insertion attenuation and low return loss at different wave resistances
- High bandwidth



## Coaxial protection devices for S-UHF connection: male/female

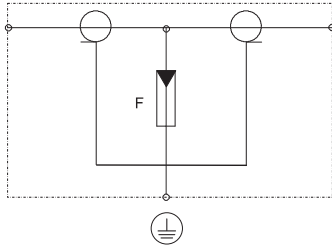


### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350  $\mu$ s)
- Simple installation (adapter plug), m = male/f = female connector
- Various plug combinations
- With UHF connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
S-UHF M/W	UHF	0-1,3 GHz	1	7.000	5093023

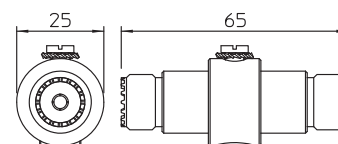
### Connection options



S-UHF M/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 $\Omega$
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	5 kA
Protection level	<800 V
Frequency range	0 - 1,3 GHz
Insertion loss	$S_{21}$ $\leq$ 0,2 dB
Return loss	$S_{11}$ $\geq$ 14 dB
Temperature range	$\vartheta$ -40 - +80 $^{\circ}$ C
Installation type	Connector/cable adapter
Connection system	UHF
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21



## Coaxial protection devices for S-UHF connection: female/female



Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
S-UHF W/W	UHF	0-1,3 GHz	1	7.000	5093015

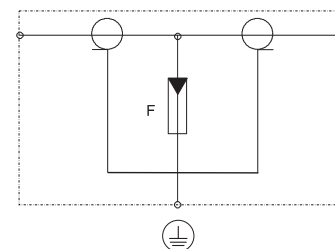
### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = male/f = female connector
- Various plug combinations
- With UHF connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

### S-UHF W/W

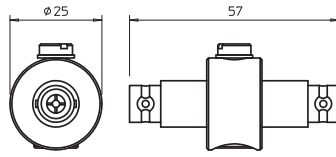
Maximum continuous voltage AC	$U_c$	130 V
Maximum continuous voltage DC	$U_c$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	$I_L$	10 A
Wave resistance	$Z_L$	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 1,3 GHz
Insertion loss	$S_{21}$	≤0,2 dB
Return loss	$S_{11}$	≥14 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		UHF
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

### Connection options





### Coaxial protection device for BNC connection: male/female

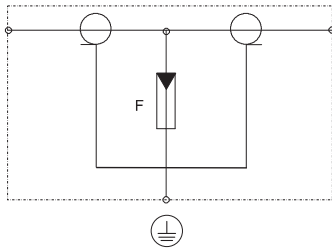


#### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Type	Conne- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
<b>DS-BNC M/W</b>	BNC	0-2,2 GHz	1	6.500	<b>5093252</b>

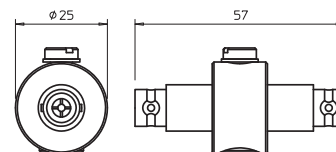
#### Connection options



DS-BNC M/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 Ω
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	5 kA
Protection level	<800 V
Frequency range	0 - 2,2 GHz
Insertion loss	$S_{21}$ ≤0,95 dB
Return loss	$S_{11}$ ≥14 dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	BNC
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21



## Coaxial protection device for BNC connection: female/female



Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-BNC W/W	BNC	0-2,2 GHz	1	6.000	5093236

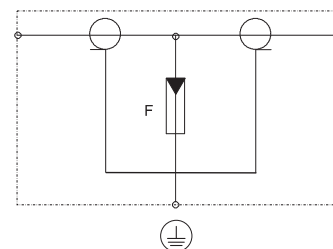
### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

### DS-BNC W/W

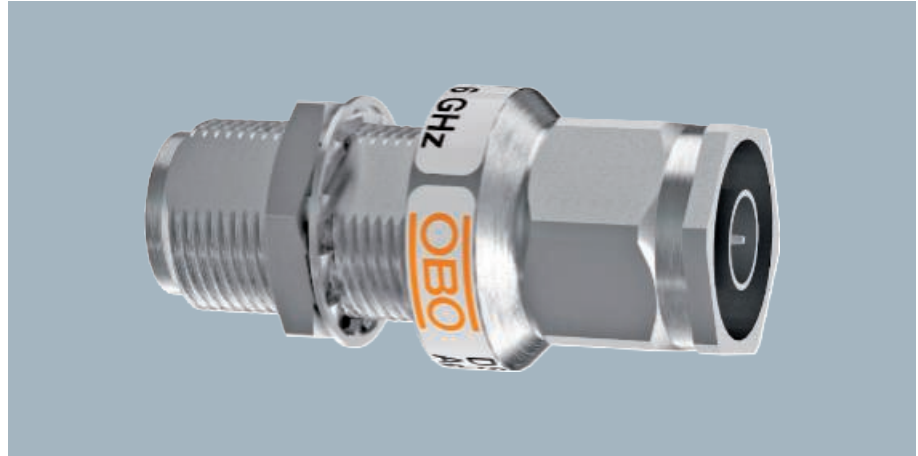
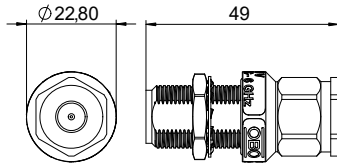
Maximum continuous voltage AC	$U_c$	130 V
Maximum continuous voltage DC	$U_c$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	$I_L$	10 A
Wave resistance	$Z_L$	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2,2 GHz
Insertion loss	$S_{21}$	≤0,95 dB
Return loss	$S_{11}$	≥14 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

### Connection options





## Coaxial protection device for N connection up to 6 GHz: male/female



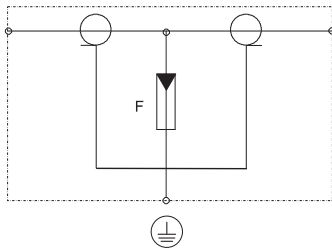
Coaxial data cable protection devices for transmission and reception technology

- With N-Connector, male/female
- High impulse current load capacity: 2.5 kA (10/350)
- Simple mounting (adapter), m = connector, w = socket
- Low protection level at high current loads
- Optimum transmission behaviour:
  - Low reflection behaviour
  - Bandwidth-optimised for secure transmission up to 6 GHz
- Available in 50 Ω technology

Application: For example: SAT-TV C band, WiMAX, WLAN applications, DVB-T2

Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-N-6 M/W	N	0-6 GHz	1	7.830	5093998

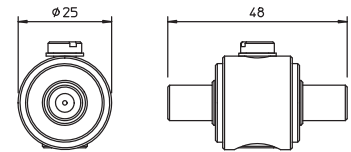
### Connection options



DS-N-6 M/W	
Maximum continuous voltage AC	$U_c$ 50 V
Maximum continuous voltage DC	$U_c$ 70 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 Ω
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Protection level	<750 V
Frequency range	0 - 6 GHz
Insertion loss	$S_{21}$ ≤0,1 dB
Return loss	$S_{11}$ ≥22 dB
Temperature range	ϑ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	N
Protection rating	IP65/67
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21



## Coaxial protection device for F connection: male/female



Type	Con- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-F M/W	F	0-3,4 GHz	1	9.000	5093275

### Coaxial data cable protection devices

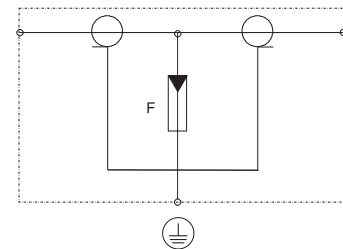
- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With F connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T(2)

### DS-F M/W

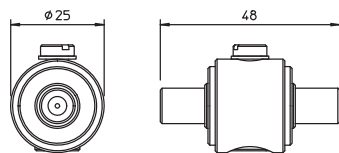
Maximum continuous voltage AC	$U_c$	130 V
Maximum continuous voltage DC	$U_c$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	$I_L$	5 A
Wave resistance	$Z_L$	75 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$	1 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		2 kA
Protection level		<800 V
Frequency range		0 - 3,4 GHz
Insertion loss	$S_{21}$	≤0,9 dB
Return loss	$S_{11}$	≥14 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		F
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

### Connection options





### Coaxial protection device for F connection: female/female



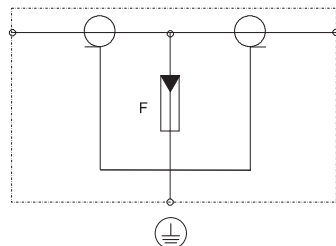
#### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350  $\mu$ s)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With F connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T(2)

Type	Conne- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-F W/W	F	0-3,4 GHz	1	9.000	5093272

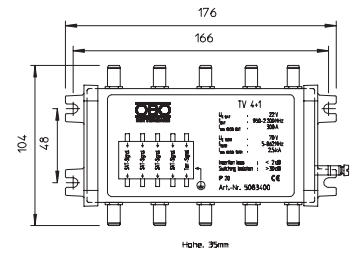
#### Connection options



DS-F W/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	1
Rated current	$I_L$ 5 A
Wave resistance	$Z_L$ 75 $\Omega$
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$ 1 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	2 kA
Protection level	<800 V
Frequency range	0 - 3,4 GHz
Insertion loss	$S_{21}$ $\leq$ 0,9 dB
Return loss	$S_{11}$ $\geq$ 14 dB
Temperature range	$\vartheta$ -40 - +80 $^{\circ}$ C
Installation type	Connector/cable adapter
Connection system	F
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21



## Coaxial protection device for SAT and cable multi-switch



Type	Connec- tion system	Frequency range	Connec- tion system	Pack Piece	Weight kg/100 pc.	Item no.
TV 4+1	F	0,5-2,8 GHz	F	1	37.000	5083400

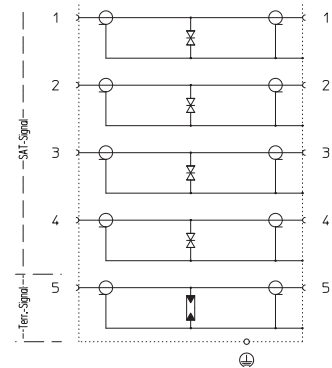
Coaxial data line protection for TV reception systems

- Protects up to four SAT lines
- Protects one terrestrial line, e.g. DVB-T.
- Simple mounting using screws and holder
- With F-connector
- Optimum transmission behaviour with 75 Ohm technology.

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T receivers

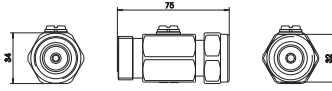
TV 4+1	
Maximum continuous voltage Vc   SAT inputs	U <sub>C</sub> 22 V
Maximum continuous voltage Vc   terrestrial input	U <sub>C</sub> 70 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1-3
Number of poles	5
Rated current	I <sub>L</sub> 2 A
Wave resistance	Z <sub>L</sub> 75 Ω
Nominal discharge current   SAT inputs	I <sub>n</sub> 300 A
Lightning impulse current   terrestrial input	I <sub>imp</sub> 1 kA
Protection level   SAT inputs at In	U <sub>p</sub> <45 V
Protection level   Terrestrial input at In	<500 V
Frequency range	0,5 - 2,8 GHz
Insertion loss	S <sub>21</sub> ≤3 dB
Return loss	S <sub>11</sub> >30 dB
Temperature range	θ -40 - +80 °C
Installation type	Surface-mounted
Connection system	F
Protection rating	IP10
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable
Testing standard	IEC 61643-21

### Connection options





Coaxial protection device for 7/16 connection: male/female



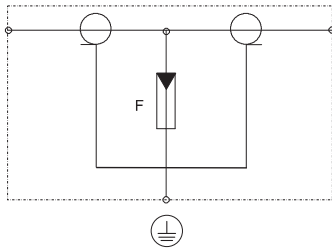
Coaxial data protection device

- Basic protection
- Simple mounting (adapter)
- Optimum transmission
- High pulse load capacity
- With 7/16 connector

Application: to protect mobile telephony applications.

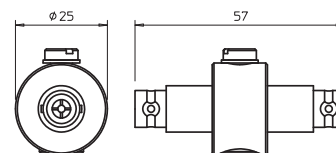
Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-7 16 M/W	7/16	0-3GHz	1	35.500	5093171

Connection options



DS-7 16 M/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 $\Omega$
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	5 kA
Protection level	<800 V
Frequency range	0 - 3 GHz
Insertion loss	$S_{21}$ $\leq$ 0,95 dB
Return loss	$S_{11}$ $\geq$ 14 dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	7/16
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21

## Coaxial protection device for BNC connection: male/male



Type	Conne- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
<b>DS-BNC M/M</b>	BNC	0-2.2 GHz	1	7.000	<b>5093260</b>

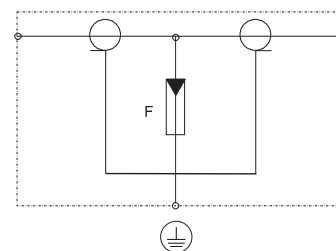
### Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

### DS-BNC M/M

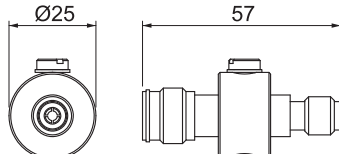
Maximum continuous voltage AC	$U_c$	130 V
Maximum continuous voltage DC	$U_c$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	$I_L$	10 A
Wave resistance	$Z_L$	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2,2 GHz
Insertion loss	$S_{21}$	≤0,95 dB
Return loss	$S_{11}$	≥14 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

### Connection options





Coaxial protection device for TNC connection: male/female

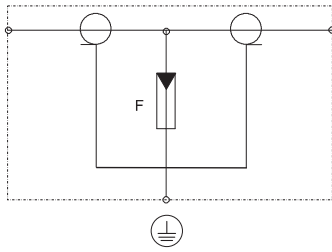


Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 µs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With TNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

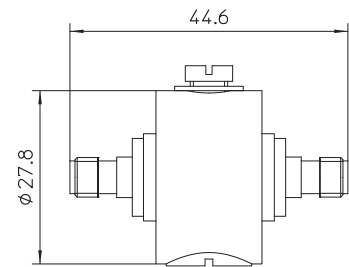
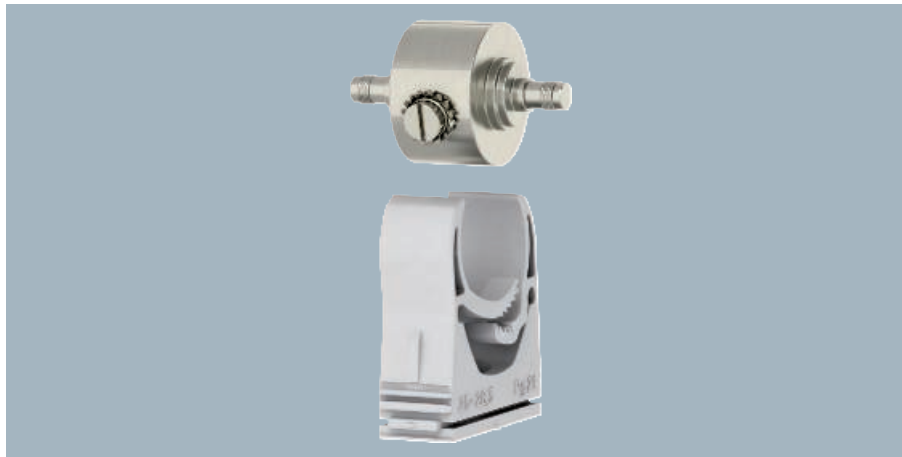
Type	Conne- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-TNC M/W	TNC	0-4 GHz	1	7.953	5093270

Connection options



DS-TNC M/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0-2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 Ω
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20µs)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20µs)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	5 kA
Protection level	<800 V
Frequency range	0 - 4 GHz
Insertion loss	$S_{21}$ ≤0,5 dB
Return loss	$S_{11}$ ≥14 dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	TNC
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21

## Coaxial protection device for SMA connection: female/female



Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-SMA W/W	SMA	0-3,7 GHz	1	7.500	5093277

### Coaxial data cable protection devices

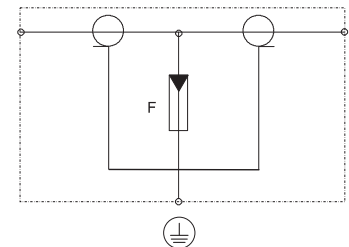
- High pulse current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter connector), m = connector, f = socket
- Optimised transmission behaviour
- 5-year guarantee
- With SMA connector
- Including OBO Multi-Quick clip 25-28 for simple installation
- 50 Ω technology

Application: Radio and data technology with SMA connector

### DS-SMA W/W

Maximum continuous voltage AC	$U_C$	130 V
Maximum continuous voltage DC	$U_C$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	$I_L$	10 A
Wave resistance	$Z_L$	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3,7 GHz
Insertion loss	$S_{21}$	≤0,2 dB
Return loss	$S_{11}$	≥14 dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		SMA
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

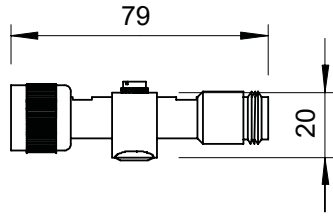
### Connection options







Coaxial protection device for N connection: female/female

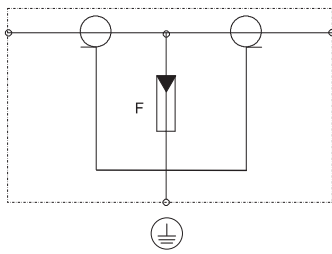


Coaxial data cable protection devices

- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With N connector
- Including OBO M25 Quick clip for simple installation

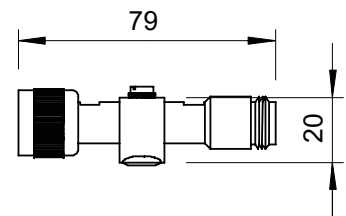
Type	Con- tion system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-N W/W	N	0-3 GHz	1	11.500	5093988

Connection options



DS-N W/W	
Maximum continuous voltage AC	$U_c$ 130 V
Maximum continuous voltage DC	$U_c$ 185 V
Category	Type 1+2 / D1+C2
Lightning protection zone LPZ	0→2
Number of poles	1
Rated current	$I_L$ 10 A
Wave resistance	$Z_L$ 50 $\Omega$
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$ 2.5 kA
Total discharge current (8/20)	10 kA
Total discharge current (10/350)	5 kA
Protection level	<800 V
Frequency range	0 - 3 GHz
Insertion loss	$S_{21}$ $\leq$ 0,62 dB
Return loss	$S_{11}$ $\geq$ 14 dB
Temperature range	$\vartheta$ -40 - +80 °C
Installation type	Connector/cable adapter
Connection system	N
Protection rating	IP40
Shielding connection available	Yes
Shield connection	Direct
Testing standard	IEC 61643-21

## Coaxial protection device for N connection: male/female



Type	Connection system	Frequency range	Pack Piece	Weight kg/100 pc.	Item no.
DS-N M/W	N	0-3 GHz	1	12.200	5093996

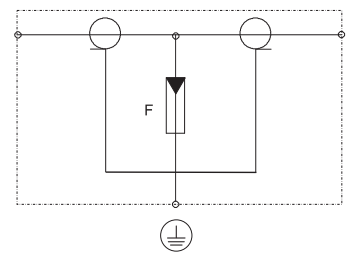
### Coaxial data cable protection devices

- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With N connector
- Including OBO M25 Quick clip for simple installation

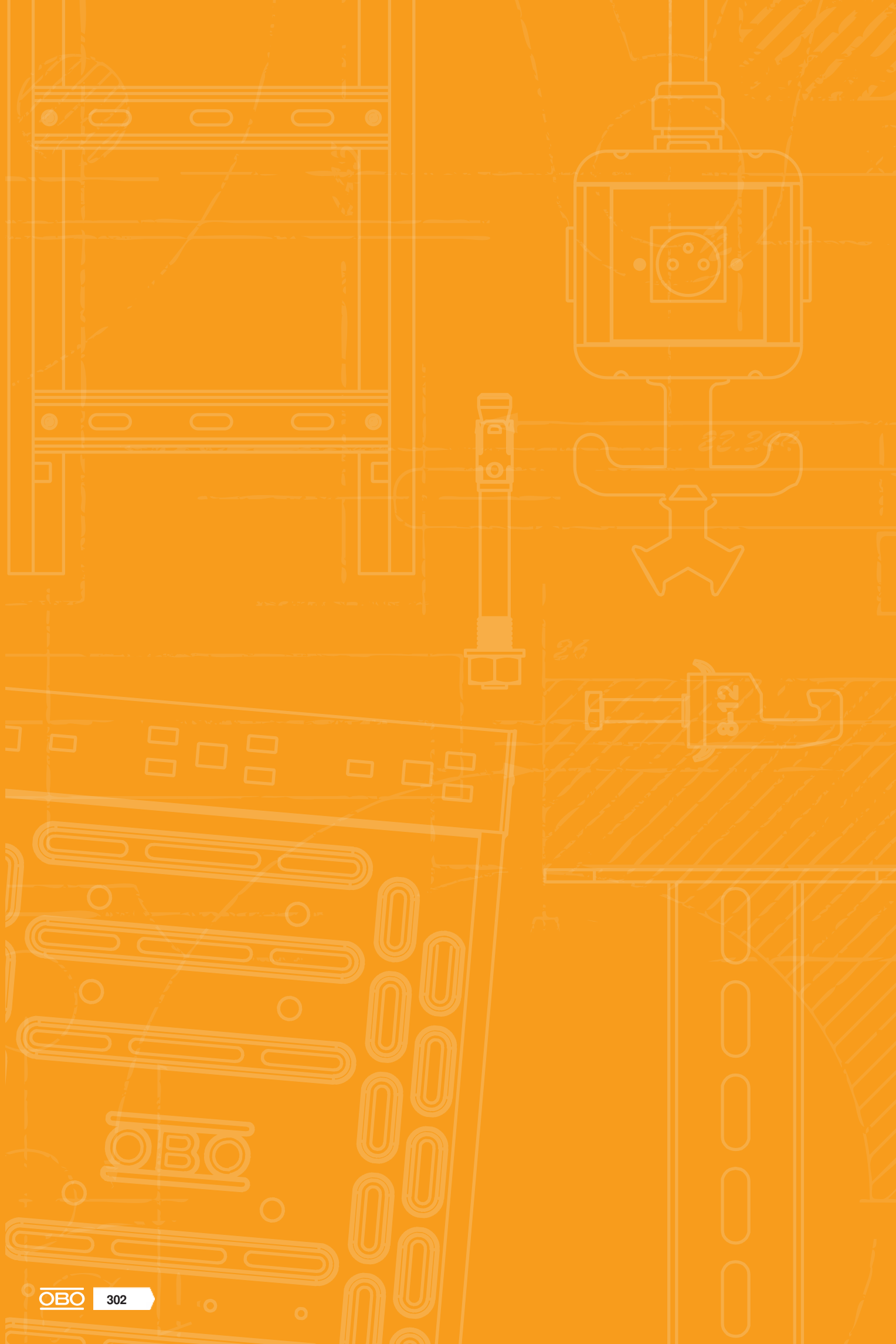
### DS-N M/W

Maximum continuous voltage AC	$U_c$	130 V
Maximum continuous voltage DC	$U_c$	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	$I_L$	10 A
Wave resistance	$Z_L$	50 $\Omega$
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 $\mu$ s)
Impulse discharge current (10/350)	$I_{imp}$	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3 GHz
Insertion loss	$S_{21}$	$\leq 0,62$ dB
Return loss	$S_{11}$	$\geq 14$ dB
Temperature range	$\vartheta$	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21







### Connection options














































# Directories

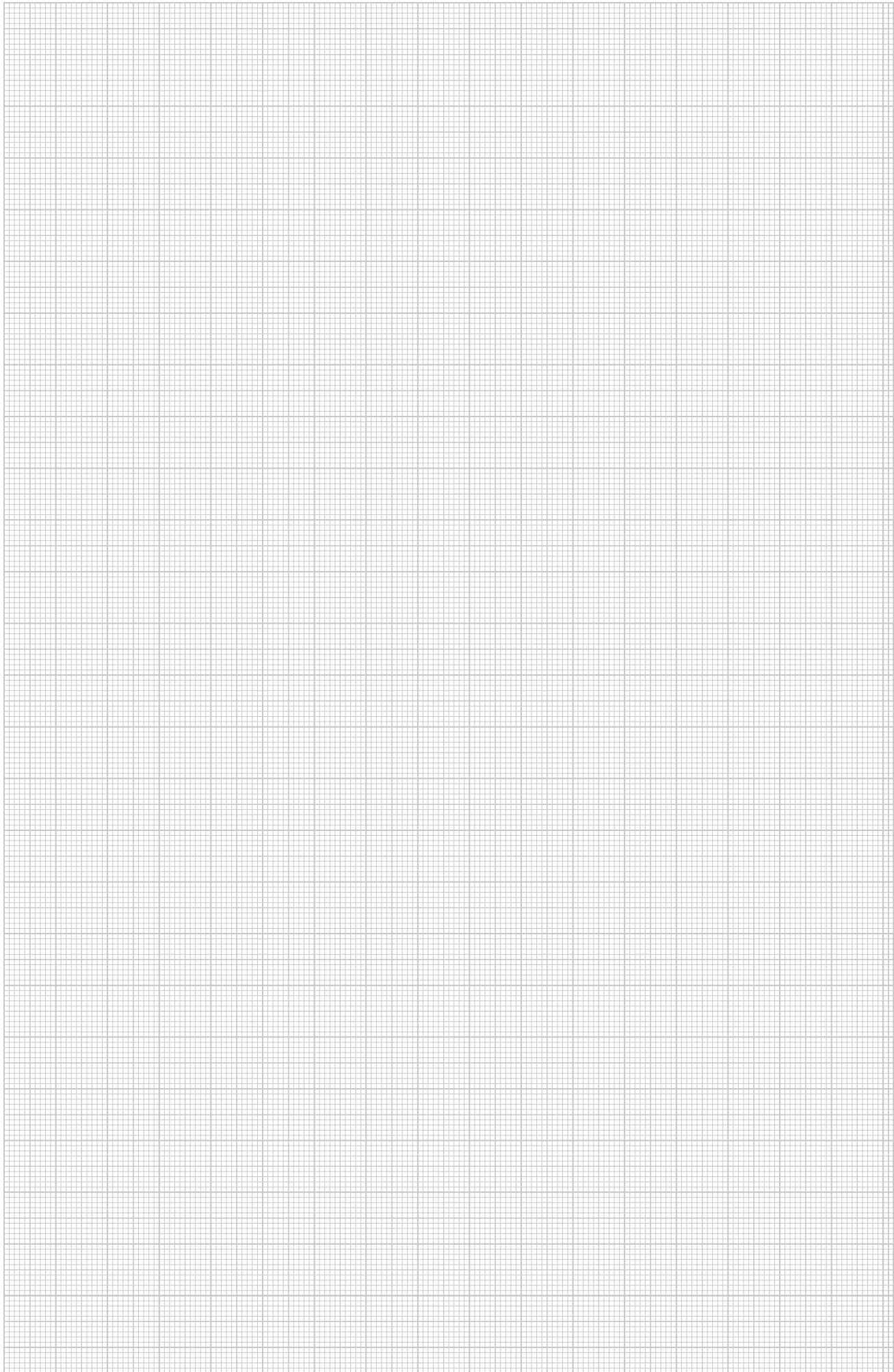
	Test marks	304
	Pictogram explanation	306
	Alphabetical table of contents	310
	Numeric directory	312
	Type listing	314
	For the latest general conditions of sale and delivery please see <a href="http://obo.de/vlb">obo.de/vlb</a> .	



# Test marks

	American Bureau of Shipping, USA		Underwriters Laboratories Inc., USA + CSA, Canada
	AENOR, Producto Certificado, Spain		Österreichischer Verband für Elektrotechnik, Austria
	STOWARZYSZENIE ELEKTRYKÓW POLSKICH, Poland		ISTITUTO ITALIANO DEL MARCHO DI QUALITÀ, Italy
	Lightning current-tested		RINA 1861, Ship Classification, Certification and Services
	Lightning current-tested, Class H (100 kA)		Underwriters Laboratories Inc., USA
	CEBEC, Belgium		SEMKO An Inchcape Testing Services Company, Sweden
	Canadian Standards Association, Canada		Eidgenössisches Starkstrominspektorat, Switzerland
	DEMKO, Danmarks Elektriske Materielkontrol, Denmark		South African Bureau of Standards
	Deutsches Institut für Bautechnik Berlin, Germany		Shock-tested, Bundesamt für Zivilschutz, Germany
	Det Norske Veritas		Sähköarkastuskeskus Elinspektionscentralen Electrical Inspectorate, Finland
	ENEC Austria		Underwriters Laboratories Inc., USA
	ATEX certificate for explosive areas		Underwriters Laboratories Inc., USA
	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, Czech Republic		Verband der Elektrotechnik, Elektronik, Informationstechnik e.V., Germany
	FIMKO, Finland		German Association of Electricians, tested safety
	Forschungs- und Materialprüfungsanstalt, Germany		5-year warranty
	Russia, GOST The State Committee for Standards		
	Test marks for technical resources, VDE Prüf- und Zertifizierungsinstitut Offenbach, Germany		
	Halogen-free; without chlorine, fluorine and bromine		
	INMETRO, Brazil		
	KEMA-KEUR, Netherlands		
	Indication of metric products		
	MAGYAR ELEKTROTECHNIKAI ELLENŐRZŐ INTÉZET Budapest, Hungary		
	NEMKO, Norway		
	AFNOR Quality symbol of the French standardisation institute		
































# Pictogram explanation






## Surfaces

	Strip galvanised
	Strip galvanised/plastic-coated
	Strip galvanised zinc/aluminium, double dip
	Bright
	Bright, reworked
	Anodised
	Hot-dip galvanised
	Electrogalvanised
	Electrogalvanised/plastic-coated
	Electrogalvanised, yellow-chromatised
	Electrogalvanised, yellow passivated
	Electrogalvanised, transparently passivated
	Primed
	Painted
	Welding primed
	Hot-dip galvanised
	Hot-dip galvanised 85 µm
	Copper-plated
	Nickel-plated
	Galvanised, Deltatone 500
	Galvanised, MAGNI 565
	Zinc-aluminium coated, Galfan
	Zinc scale






## Conformity symbol

	Communautés Européennes, EC declaration of conformity according to EC directives
	RoHS-conformant



















## Quality marks

	Halogen-free; without chlorine, fluorine and bromine
	Flame resistant 650 °C
	Flame resistant 750 °C
	Flame resistant 960 °C
	UV-resistant




## Specific product symbols

	Diameter 60 mm
	Diameter 68 mm
	Protection device to DIN EN 61643-11 or IEC 61643-11
	Transition from LPZ 2 to LPZ 3
	Acoustic signalling



## Applications

	Remote signalling
	Acoustic signalling
	Integrated Service Digital Network, ISDN applications
	Digital Subscriber Line, DSL applications
	Analogue telecommunication
	Category 5 TwisterPair
	Channel Performance to American EIA/TIA standard
	Measuring, controlling and regulating systems
	TV applications
	SAT-TV applications
	MultiBase base
	LifeControl
	Intrinsically safe protection device for potentially explosive areas
	Channel Performance to ISO/IEC 11801
	Power over Ethernet
	230/400 V system
	Protection rating IP 54
	Protection rating IP 65







## Lightning protection classes

	Protection device to DIN EN 61643-11 or IEC 61643-11
	Combination protection device made of type 1 and type 2
	Protection device to DIN EN 61643-11 or IEC 61643-11






## Lightning protection classes

	Protection device to DIN EN 61643-11 or IEC 61643-11
	Protection device to DIN EN 61643-11 or IEC 61643-11



## Lightning protection zone

	Transition from LPZ 0 to LPZ 1
	Transition from LPZ 0 to LPZ 2
	Transition from LPZ 0 to LPZ 3
	Transition from LPZ 1 to LPZ 2
	Transition from LPZ 1 to LPZ 3
	Transition from LPZ 2 to LPZ 3



## BSS maintenance of electrical function installation

	Fire-tested systems
	Escape route ceiling mounting with pressure clip
	OBO Grip, wall routing type
	OBO Grip, ceiling routing type
	Pressure clip for maintenance of electrical function, ceiling mounting




## BSS anchor

	Fire protection anchor
	Fire protection bolt tie

## BSS test marks/material class

	Maintenance of electrical function class E30
	Maintenance of electrical function class E90














## Clamp clip base shapes

	Clamp clip for C profile rail, slot width 11–12 mm
	Clamp clip for C profile rail, slot width 16–17 mm
	Clamp clip for C profile rail, slot width 18–22 mm



## Diameter

	Diameter 60 mm
	Diameter 68 mm
	Diameter 70 mm
	Diameter 74 mm





## Entries

	4 cable entries
	6 cable entries
	7 cable entries
	8 cable entries
	9 cable entries
	10 cable entries
	12 cable entries
	10 cable entries ECO
	12 cable entries ECO
	14 cable entries ECO
	16 cable entries
	18 cable entries ECO
	24 cable entries






## Gland thread

	Thread metric
	Thread Pg





## Entry size

	M20 entry
	M25 entry
	M32 entry
	M40 entry

## KTS side heights










	Cable tray, side height 35 mm
	Cable tray, side height 60 mm
	Cable tray, side height 85 mm
	Mesh cable tray, side height 35 mm
	Mesh cable tray, side height 55 mm

## Materials




	Flat steel
	Angular steel
	U steel
	Round material

# Pictogram explanation



## Nominal cross-section

	Nominal cross-section 1.5 mm <sup>2</sup>
	Nominal cross-section 1.5–2.5 mm <sup>2</sup>
	Nominal cross-section 2.5 mm <sup>2</sup>
	Nominal cross-section 2.5–4 mm <sup>2</sup>
	Nominal cross-section 4 mm <sup>2</sup>
	Nominal cross-section 4–6 mm <sup>2</sup>
	Nominal cross-section 6 mm <sup>2</sup>
	Nominal cross-section 10 mm <sup>2</sup>
	Nominal cross-section 16 mm <sup>2</sup>












## Nominal voltage

	Nominal voltage 400 V
	Nominal voltage 500 V
	Nominal voltage 660 V





## Polarity

	3-pole
	5-pole
	7-pole
	8-pole
	10-pole
	12-pole



## Slot widths

	Slot width 7.5 mm
	Slot width 11 mm
	Slot width 11–12 mm
	Slot width 12 mm
	Slot width 15 mm
	Slot width 16 mm
	Slot width 16.5 mm
	Slot width 16–17 mm
	Slot width 17 mm
	Slot width 18 mm
	Slot width 22 mm
	Slot width 35 mm











## Screw heads

	Philips screw
	Torx screw
	Phillips screw
	Pozidriv










## Firing devices

	Bolt-firing tool
	Nail device





## Protection rating

	Protection rating IP 20
	Protection rating IP 30
	Protection rating IP 31
	Protection rating IP 44
	Protection rating IP 54
	Protection rating IP 55
	Protection rating IP 65
	Protection rating IP 66
	Protection rating IP 67
	Protection rating IP 68

## Metals

	Aluminium
	Aluminium/steel
	Stainless steel, rustproof
	Stainless steel, rustproof
	Stainless steel, rustproof
	Copper
	Brass
	Steel
	Malleable iron
	Die-cast zinc

## Plastics

	Acrylonitrile butadiene styrene
	Duroplast, Aminoplast, type 131.5
	Duroplast, melamine resin, type 150
	Ethylene vinyl acetate



## Plastics

<b>FA</b>	Fibre-proof material DIN 28091
<b>GFK</b>	Fibreglass-reinforced plastic
<b>NBR SBR</b>	Rubber mixture
<b>NBR</b>	Nitrile rubber
<b>PETR</b>	Petrolatum
<b>PA</b>	Polyamide
<b>PA/ GF</b>	Polyamide, fibreglass reinforced
<b>PBPT</b>	Polybutylene terephthalate
<b>PC</b>	Polycarbonate
<b>PE</b>	Polyethylene
<b>PP</b>	Polypropylene
<b>PP/GF</b>	Polypropylene, fibreglass reinforced
<b>PS</b>	Polystyrene
<b>PVC</b>	Polyvinylchloride
<b>ZELL PE</b>	Cellular polyethylene



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6745913	<b>5080416</b>	179				6776368	<b>5096900</b>	44	6521166	<b>5240104</b>	255
6745937	<b>5080422</b>	196	5390671	<b>5093015</b>	288	6585588	<b>5096950</b>	32	6521173	<b>5240106</b>	255
6745944	<b>5080424</b>	196	5390732	<b>5093023</b>	287	6585595	<b>5096950</b>	33	6524181	<b>5240360</b>	256
6745951	<b>5080426</b>	196	5030881	<b>5093171</b>	295	6585564	<b>5096953</b>	33	6524181	<b>5240362</b>	256
6745968	<b>5080428</b>	196	5390978	<b>5093236</b>	290	6585571	<b>5096961</b>	34	6524242	<b>5240366</b>	256
6745975	<b>5080430</b>	196	5391036	<b>5093252</b>	289	6608805	<b>5096963</b>	35	6524259	<b>5240370</b>	256
6745982	<b>5080432</b>	196	5391098	<b>5093260</b>	296	6608812	<b>5096971</b>	36	6524273	<b>5240374</b>	256
6745999	<b>5080434</b>	196	5087250	<b>5093270</b>	297	5990116	<b>5096973</b>	37	6524297	<b>5240377</b>	256
6746002	<b>5080436</b>	196	5022619	<b>5093272</b>	293	6608782	/pc. <b>5096974</b>	75	6524433	<b>5240380</b>	256
6742158	<b>5080452</b>	196	5022732	<b>5093275</b>	292	5995012	<b>5096975</b>	38	6524457	<b>5240382</b>	256
6742165	<b>5080454</b>	197	5867050	<b>5093277</b>	298	5995012	/pc. <b>5096976</b>	76	6524464	<b>5240386</b>	256
			5076551	<b>5093380</b>	97	6608799	<b>5096977</b>	39	6524471	<b>5240390</b>	256
6676965	<b>5081070</b>	283	6862566	<b>5093381</b>	100		/pc. <b>5096977</b>		6117611	<b>6117465</b>	115
6676972	<b>5081072</b>	284				6487325	<b>5096981</b>	46	6117673	<b>6117473</b>	114
	/pc.		6098583	<b>5093382</b>	99	6608768	<b>5096982</b>	40			
6034352	<b>5081690</b>	262	5299448	<b>5093391</b>	98	6608775	<b>5096985</b>	41			
6087723	<b>5081694</b>	263	6412952	<b>5093500</b>	60	6608744	<b>5096988</b>	42			
6427444	<b>5081698</b>	261	6412969	<b>5093502</b>	61		/pc.				
5614364	<b>5081800</b>	275	6159598	<b>5093508</b>	73	6487332	<b>5096987</b>	47			
6532766	<b>5081802</b>	276	6159604	<b>5093511</b>	65	6608751	<b>5096988</b>	43			
6532773	<b>5081804</b>	277	6159628	<b>5093513</b>	69		/pc.				
6415656	<b>5081975</b>	266	6159642	<b>5093516</b>	66	5995029	<b>5096990</b>	76			
6415663	<b>5081977</b>	265	6159659	<b>5093518</b>	70	5995036	<b>5096992</b>	77			
			6159666	<b>5093522</b>	62	5995043	<b>5096994</b>	77			
5685333	<b>5082382</b>	281	6159680	<b>5093524</b>	64						
6415717	<b>5082430</b>	278	6159697	<b>5093526</b>	67	5394099	<b>5097053</b>	101			
6415724	<b>5082432</b>	279	6159703	<b>5093531</b>	63	5708896	<b>5097065</b>	156			
6415731	<b>5082434</b>	280	6159710	<b>5093533</b>	68	5478683	<b>5097447</b>	131			
			6423217	<b>5093594</b>	71	5709121	<b>5097448</b>	132			
5022978	<b>5083400</b>	294	6423224	<b>5093596</b>	72	5578116	<b>5097453</b>	227			
			5478546	<b>5093623</b>	133	5736561	<b>5097454</b>	233			
5525134	<b>5084008</b>	270	5709022	<b>5093625</b>	134	5578123	<b>5097455</b>	228			
5525196	<b>5084012</b>	270	5708841	<b>5093726</b>	155	5578130	<b>5097607</b>	229			
5525257	<b>5084016</b>	271	5962243	<b>5093988</b>	299	5578147	<b>5097615</b>	229			
5525318	<b>5084020</b>	268	5805991	<b>5093996</b>	300	5578154	<b>5097623</b>	230			
5525370	<b>5084024</b>	269	6463831	<b>5093998</b>	291	5578161	<b>5097631</b>	231			
5525493	<b>5084032</b>	272				5578185	<b>5097650</b>	232			
5525554	<b>5084036</b>	272	6603695	<b>5094210</b>	135	5812258	<b>5097820</b>	234			
5525615	<b>5084040</b>	271	6603701	<b>5094212</b>	136	5578215	<b>5097822</b>	235			
5110750	<b>5084048</b>	273	6603718	<b>5094230</b>	129	5578260	<b>5097858</b>	236			
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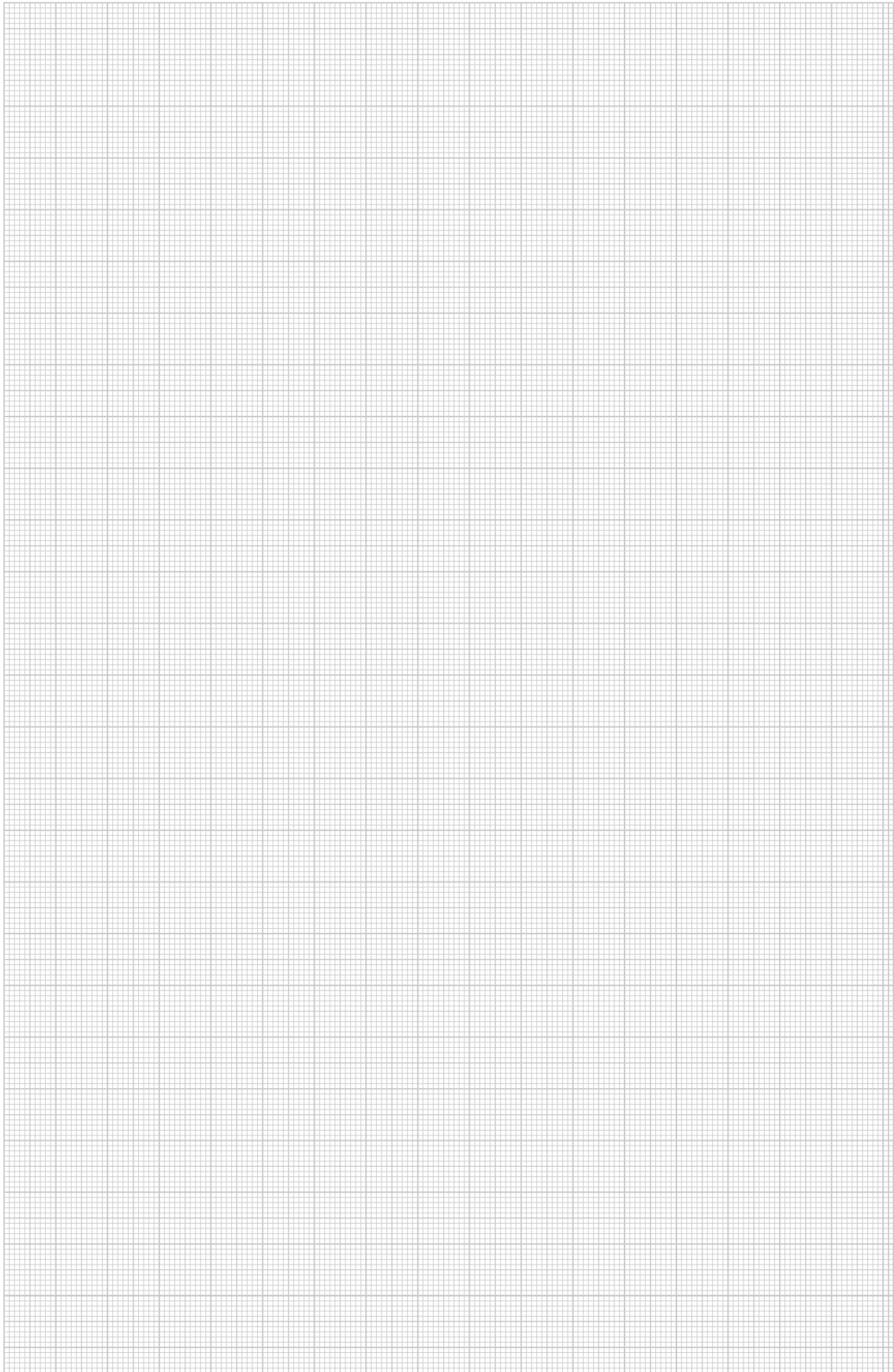
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PND-3in1-C-OS	6676972	5081072	284	VF12-AC/DC-FS	5736561	5097454	233
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S-UHF M/W	5390732	5093023	287	VF48-AC/DC	5578130	5097615	229
S-UHF W/W	5390671	5093015	288	VF48-AC/DC-FS	5812258	5097822	235
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