SAFETY AND PROTECTION INSTALLATIONS

Surge protection

OBO BETTERMANN

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.

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

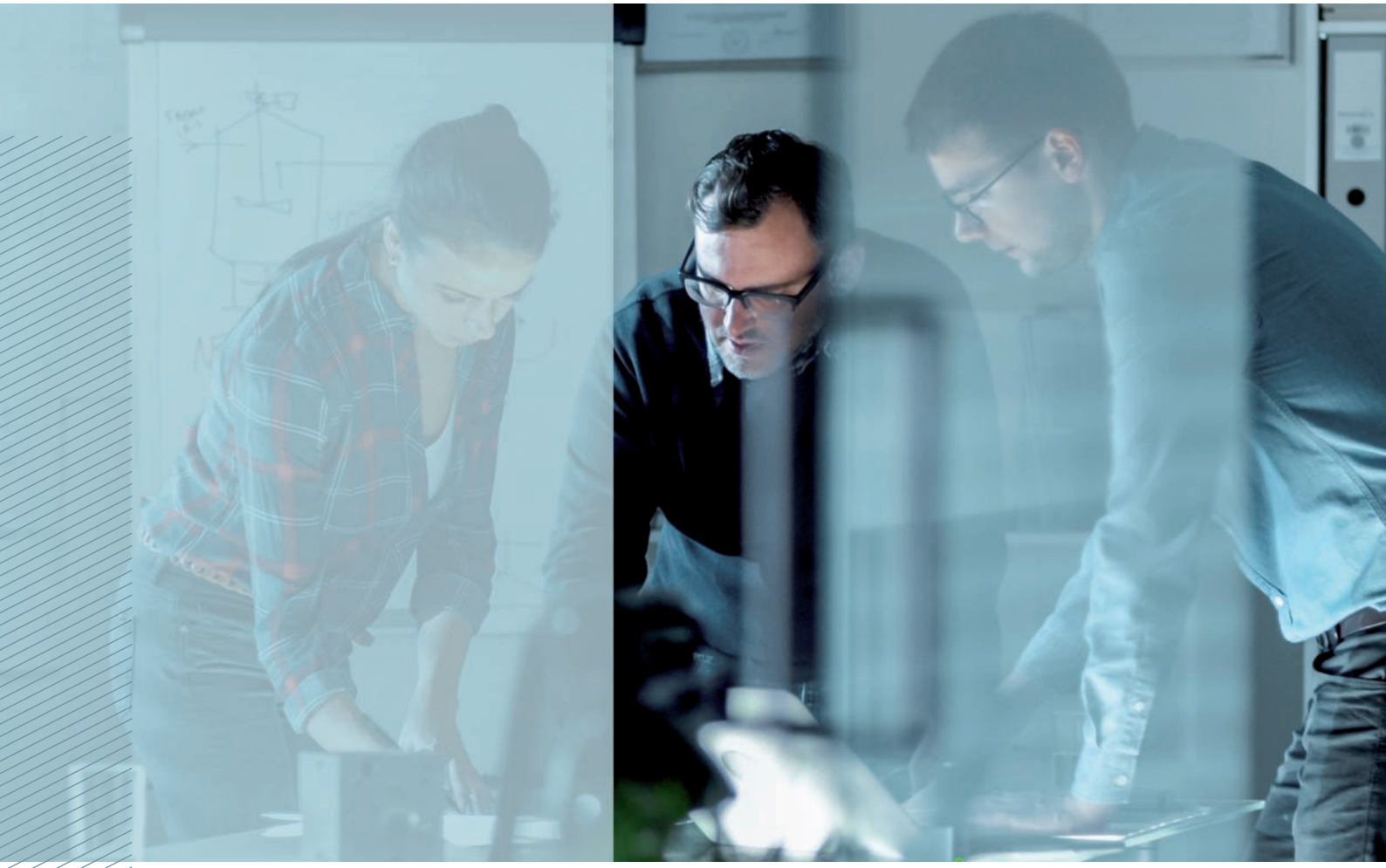
- Cable routing systems
- Device installation ducts, trunking and poles
- Floor installation systems and underfloor applications
- Installation systems

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.

OBO Support *& contact*



You have a problem? We have the solution!

OBO Bettermann is more than the sum of its products. In any situation, we are the reliable partner right buy your side. You have a problem? We have the solution!

It doesn't matter in which area of industry our support is needed – from industrial and plant engineering to private, public and administrative buildings, as well as in the areas of mobility and renewable energies – we have everything that you need.

OBO can not only provide the entire electro-technical infrastructure with the best possible products. We can also support you with sound expert knowledge and more than 100 years of experience, right from the planning phase through to the realisation of your projects. OBO – solutions you can rely on.

What is OBO Support?

Every OBO product carries a plus inside it, which only a branded product can offer. It is developed, manufactured and tested with a high level of competence, from the idea right through to the final check. In addition, our specialists are available for consultation and can offer you assistance and training courses for products at any time.

Together with you, we plan your project and help you choose the right products, and are also available to you at any time should you need us. From flawless logistics through to practical information – we can provide support at every level. We can offer security through certificates on the conformity of our products with the most important standards and directives.

We are as flexible as you are – because we know how practical people work and what is important to them. Each step is a plus – that is the OBO Support concept.

You can contact our Customer Service department on:

Customer Service

Tel.:+49 23 73 89 - 17 00

Monday–Thursday
07.30–17.00

Friday
07.30–15.00

export@obo.de

Service – OBO can help
Everywhere and in every project phase:
- Highly competent hotline
- Product and system information, digitally or printed
- Selection and planning aids on the web, as an app, as a CAD application or in printed form
- 2D and 3D product data for planning
- Field service, branch offices and subsidiaries in 60 countries
- Engineering services for major projects

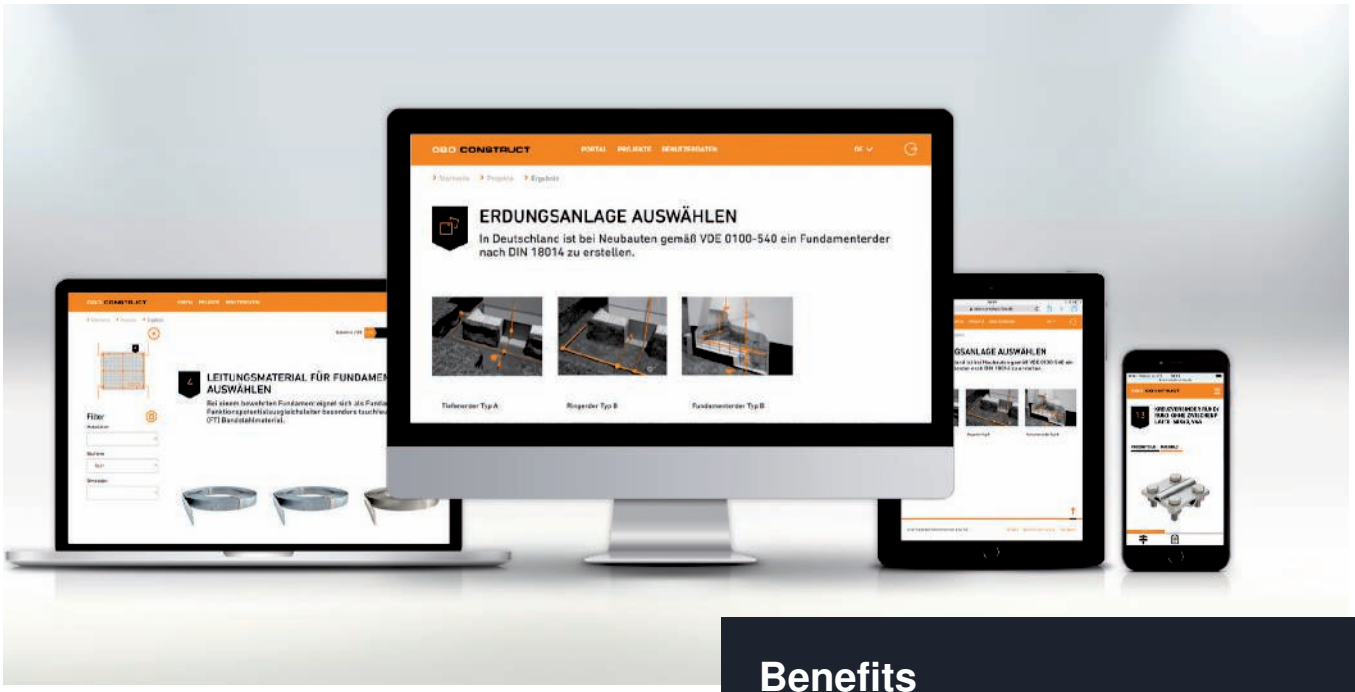
Training courses from OBO
- Seminars and workshops
- Local consultation and training courses
- Planner days

Handling – OBO delivers reliably
With optimised delivery processes:
- Reliable logistics
- Practical transport systems and packaging
- Loading gear handling and disposal concepts

Certification and guarantee
OBO offers safety. Our products fulfil the most important country-specific regulations:
- Conformity (e.g. IEC, VDE, CE, KEMA, KEUR, UL)
- Certification (e.g. DIN EN, DGNB)
- 5-year guarantee for surge protection products
- Guarantee management

Planning aids

OBO Construct planning aids



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

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.

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

RAL GÜTEZEICHEN
Blitzschutz
RAL-GZ 642/5

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
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

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.

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.

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.

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.

- 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

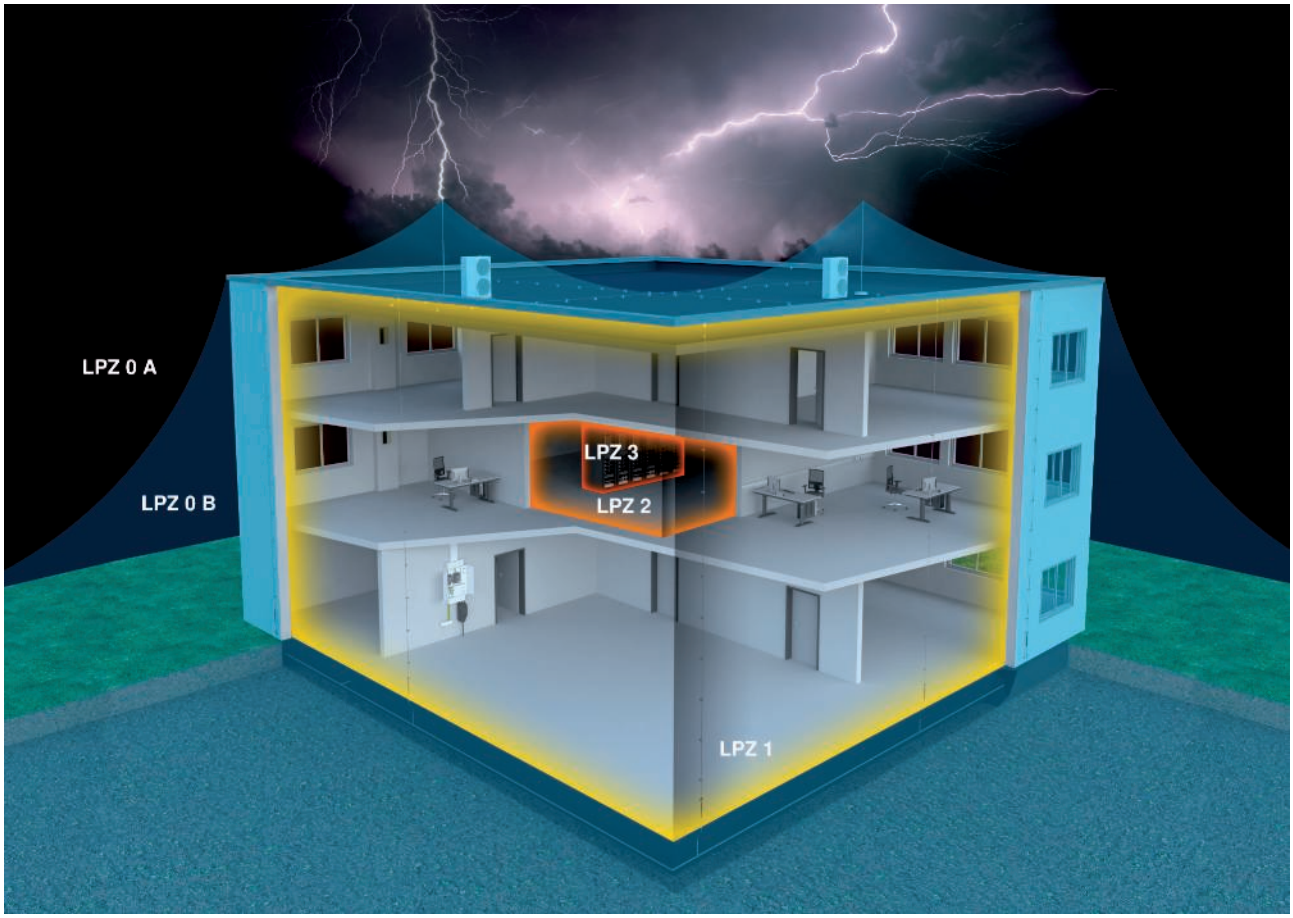
Standard	German supplement	Contents
VDE 0185-305-1 (IEC 62305-1)		Protection against lightning – Part 1: General principles
VDE 0185-305-2 (IEC 62305-2)		Protection against lightning – Part 2: Risk management
	1	Lightning risk in Germany
	2	Calculation aids for estimating the risk of damage for buildings
	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
Hüingser Ring 52
58710 Menden
GERMANY

durch die / by the

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute

für das / for the

Acceptance Program

Zertifikat
Mitteilung über die Bewertung des Qualitätssicherungssystems

2 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 Qualitätssicherung bezogen auf den Produktionsprozess
Anhang VII - Modul E: Konformität mit dem Baumuster auf der Grundlage der Qualitätssicherung bezogen auf das Produkt

3 Nummer des Zertifikates: BVS 16 ATEX ZQS/E310

4 Produktkategorie: Geräte und Komponenten
Gerätegruppe II, Kategorien 1G, 2G: Transienten- und Blitzschutz-Systeme

Confirmation

Herewith we confirm, that

OBO BETTERMANN GmbH & Co. KG
Hüingser 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.
- Director -

Düsseldorf, February 3rd, 2017

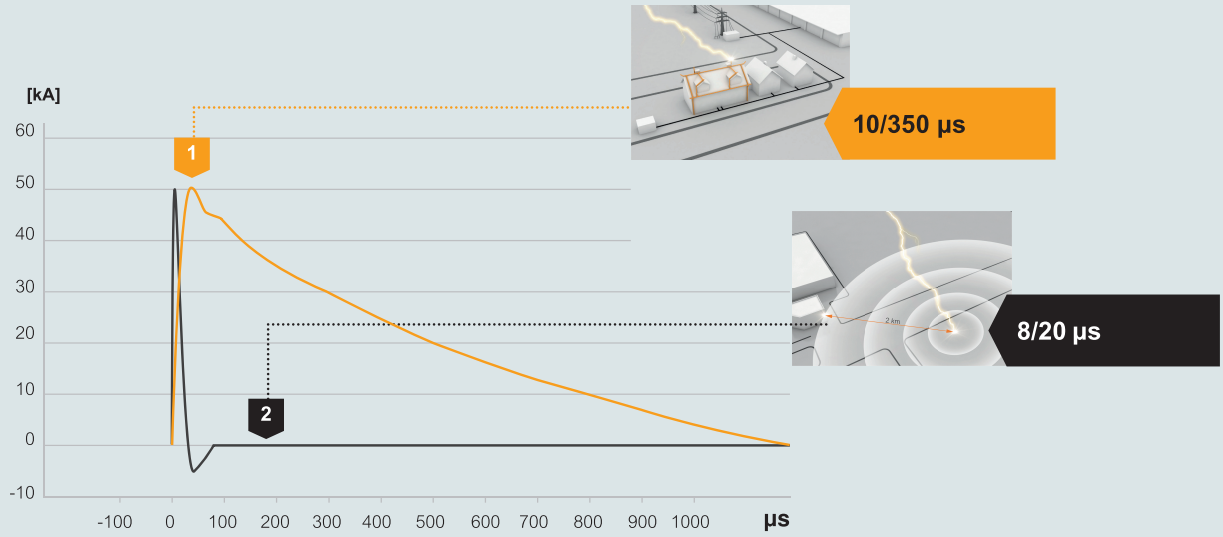
Mark Huckshold

Industrieverband Feuerverzinken e.V.
Mörsenbroicher Weg 200
40470 Düsseldorf

Mitglied der European General Galvanizers Association EGGA - BIC DEUTDEDBDUE - IBAN DE42 3007 0024 0589 1643 00

Fachzertifizierer

Types of pulse and their characteristics

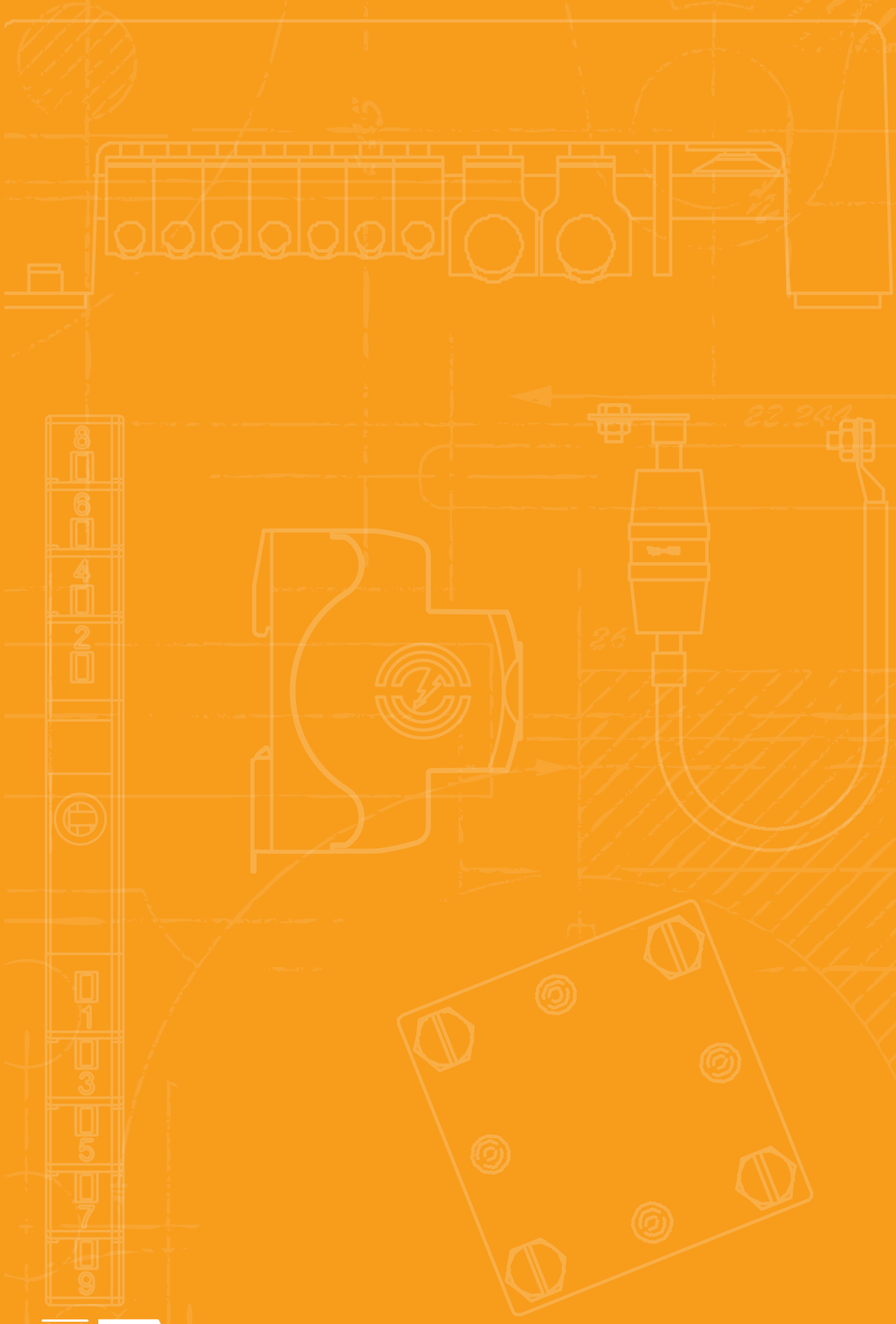


1	Pulse shape 1: Direct lightning strike, 10/350 µs simulated lightning pulse
2	Pulse shape 2: Remote lightning strike or switching operation, 8/20 µs simulated current pulse (surge voltage)

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

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)

T1 T2 DVE

- **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**

Combination arrester MCF Compact

Surge protection energy technology, arrester, type 1+2

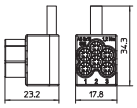
- Type 1 + 2 SPD: I_{imp} = 25 kA per pole and up to 100 kA in total
- Protection level: < 1.5 kV, usable in coordination with type 3 SPD
- Usable in buildings with lightning protection class 1–4
- Quality according to EN 61643-11 certified by an external testing institute
- Universally usable for industry, 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)

Connection terminal for through-wiring

Type	Colour	Version	Pack Piece	Weight kg/100 pc.	Item no.
AS 3x16	Light grey	3 x 16 mm²	5	2.474	**5012010**

Connection terminal type: AS 3 x 16
Connection cross-section: 3 x 1.5 - 16 mm² rigid/ multiple strands
3 x 1.5 - 10 mm² 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)

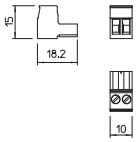
For EMC-optimised V through-wiring to IEC 60364-5-53 (VDE 0100-534).



Remote signalling replacement connector for MultiBase

Type	Version	Pack Piece	Weight kg/100 pc.	Item no.
MB-FS	2-pole	25	0.310	**5096693**

Replacement telephony connector, 2-pole version, for MultiBase base



Combination arrester MCD 50

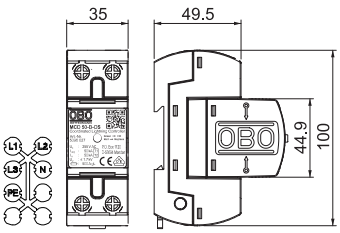
Surge protective device for energy technology, arrester, type 1 (industry)

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

Type 1+2 | LPZ 0→2 | 230/400 V System

Combination arrester, 1-pole with function display



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

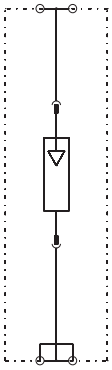
MCD 50-B-OS: Coordinated lightning current arrester, type 1+2 to EN 61643-11 with visual function display. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305.

- Arresting capacity 50 kA (10/350 µs) per pole
- Power consumption < 26 mW/pole
- Protection level < 1.7 kV, allows device protection
- Line follow current quenching 25 kA Ipeak
- 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.

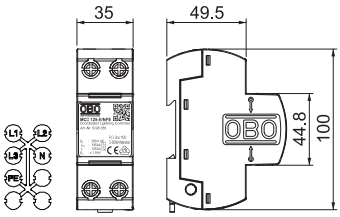
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B-OS	255	1-pole		1	34.800	**5096852**

Connection options



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 leff	$I_{fi\ eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Combination arrester, 1-pole NPE



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
MCD 125-B NPE	255	NPE		1	50.900	**5096865**

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

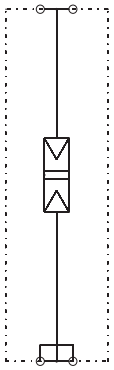
MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 to EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

- Arresting capacity 125 kA (10/350 µs)
- 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.

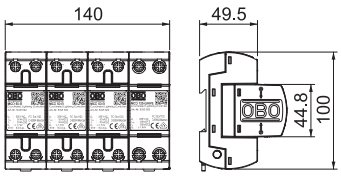
MCD 125-B NPE		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	125 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (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	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Connection options



Type 1+2 | LPZ 0→2 | 230/400 V System

Combination arrester, 3-pole + NPE



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

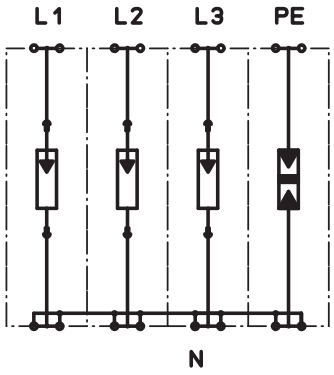
Completely pre-terminated and ready for connection, consisting of:
3x MCD 50-B: Coordinated lightning current arrester, type 1+2 to EN 61643-11 and
1x MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 to EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to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

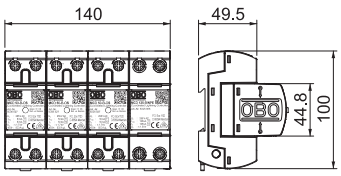
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 3+1	255	3 + NPE		1	168.000	**5096879**

Connection options



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 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	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Combination arrester, 3-pole + NPE with function display



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**

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

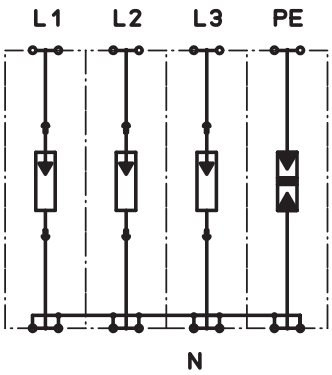
Completely pre-terminated and ready for connection, consisting of:
3x MCD 50-B-OS: Type 1+2 (Class B) coordinated lightning current arrester EN 61643-11.
1x MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 EN 61643-11 for use in TN-S and TT systems.
Interface 0 to 1 according to lightning protection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

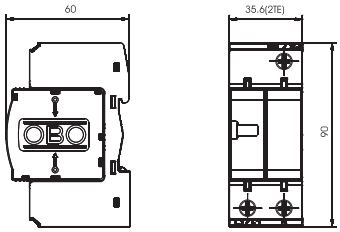
MCD 50-B 3+1-OS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge 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	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Connection options



CE EAC Type 1+2 LPZ 0→2

Combination arrester V25, 1-pole + NPE 280 V



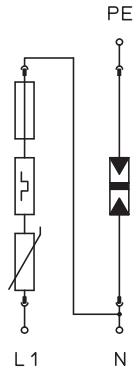
Combination arrester, lightning and surge arrester type 1+2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Universally suitable for TN-S and TT systems
- Plug-in arrester with dynamic cut-off unit
- Visual function display
- Voltage protection level < 0.9 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Labelled connections

Application example: Buildings with open-wire power supply or for setting up lightning protection equipotential bonding in residential buildings.

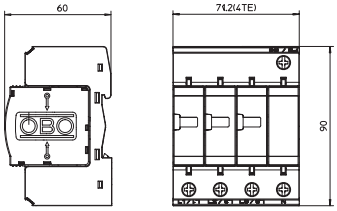
Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 1+NPE	280	1-pole complete with NPE	1	28.000	**5094457**

Connection options



V25-B+C 1+NPE		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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}	14 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 0,9 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		160 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Combination arrester V25, 3-pole + NPE 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 3+NPE	280	3-pole complete with NPE		1	51.000	**5094463**

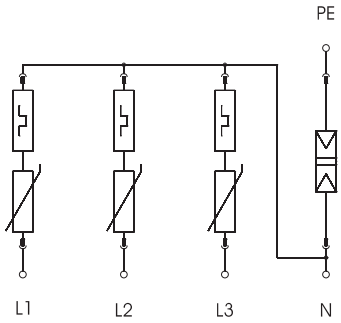
Combination arrester, lightning and surge arrester type 1+2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Universally suitable for TN-S and TT systems
- Plug-in arrester with dynamic cut-off unit
- Visual function display
- Voltage protection level < 0.9 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Labelled connections

Application example: Buildings with open-wire power supply or for setting up lightning protection equipotential bonding in residential buildings.

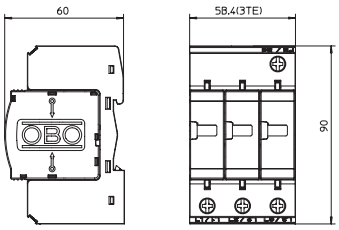
V25-B+C 3+NPE		
Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	7 kA
Total discharge current (10/350)	I_{total}	25 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	50 kA
Protection level	U_p	<0,9 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		160 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Type 1+2 LPZ 0→2

Combination arrester V25, 3-pole 385 V



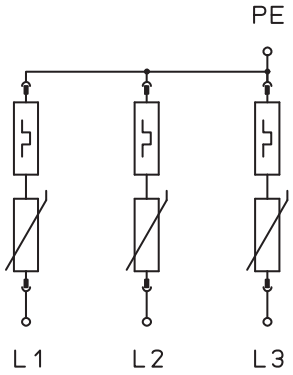
Combination arrester, lightning and surge arrester type 1+2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- For TN systems
- Plug-in arrester with dynamic cut-off unit
- With visual function display
- Voltage protection level < 1.5 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Labelled connections

Application example: Buildings with open-wire power supply or for setting up lightning protection equipotential bonding in residential buildings.

Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 3-385	385	3-pole complete		1	42.000	**5094437**

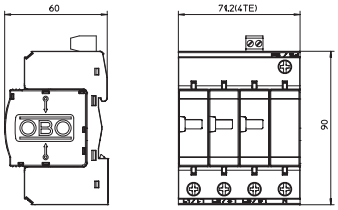
Connection options



V25-B+C 3-385		
Nominal voltage	U_N	350 V
Max. continuous operating voltage	U_C	385 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}	21 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	90 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	<1,5 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		160 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Main distributor

Surge arrester V10 3-pole + NPE with remote signalling 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V10-C 3+NPE+FS	280	3 + NPE		1	37.900	**5094931**

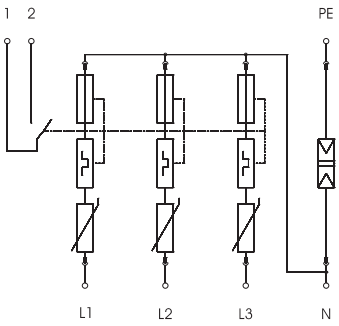
Surge arrester, type 2+3

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN-S and TT network systems
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- Version ...-FS with remote signalling and potential-free NO contact for function monitoring
- High current conductivity and long service life
- Labelled connections

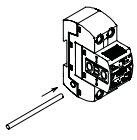
Application example: Residential buildings, single-family homes

V10-C 3+NPE+FS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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]	$I_{Total\ 8/20}$	40 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		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Accessories for lightning current arrester



Type	Pack Piece	Weight kg/100 pc.	Item no.
MC V3	10	1.700	**5096884**
MC V4	10	2.300	**5096886**

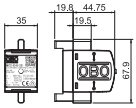
Copper bridge 16 mm², suitable for bridging MC arresters in side channel.

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

Type 1+2 | LPZ 0→2 | 230/400 V System

CoordinatedLightningController, plug-in arrester with function display

Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
MCD 50-B 0-OS	255	1-pole		1	19.500	**5096827**



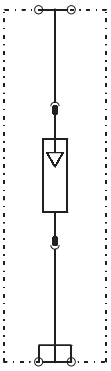
Combination arrester, type 1+2, plug-in arrester with visual display.

- Lightning current arresting capacity 50 kA (10/350)
- Power consumption < 26 mW/pole
- Protection level < 1.7 kV
- Line current quenching capacity 10 kA
- Encapsulated, non-extinguishing spark gap

Application: Installations of surge protection devices, type 1+2, in a distribution.

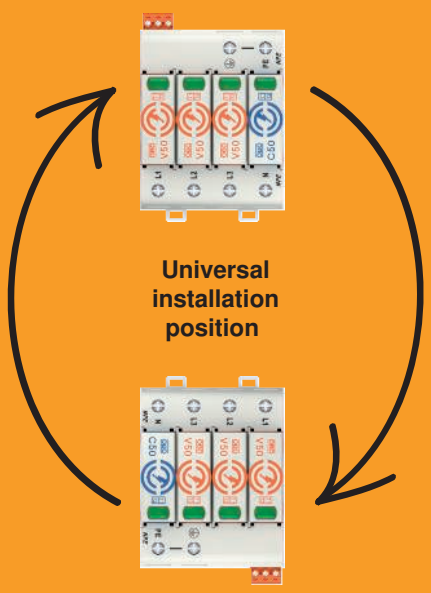
MCD 50-B 0-OS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (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 leff	$I_{fi\ eff}$	10 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Approvals		VDE
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Connection options



Combination arrester V50

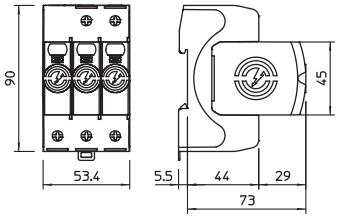
Surge protection energy technology, arrester, type 1+2



Universal installation position

- Type 1 + 2 SPD: Imp = 12.5 kA per pole and up to 50 kA in total
- Usable in buildings with lightning protection class III + IV
- Protection level: < 1.3 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
- System protection up to 160 A usable without separate fusing
- Locking function with vibration protection
- Optional remote signalling, potential-free changeover contact
- Variants in one to four-pole versions
- Operating instructions always available online via QR code

Combination arrester V50, 3-pole 280 V



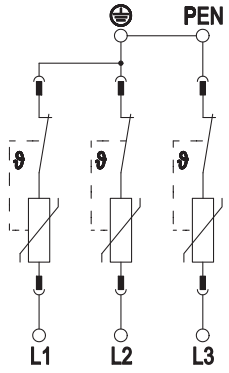
Lightning current combination arrester, type 1+2

- 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**

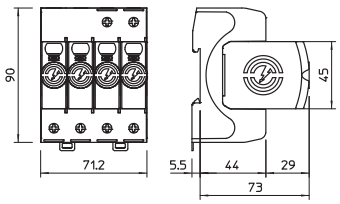
Connection options



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 µs)	$I_{n\ /\ L\text{-}N}$	30 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Impulse discharge current (10/350 µs)	I_{imp}	12.5 kA
Total discharge current (10/350)	I_{total}	37.5 kA
Maximum discharge current (8/20 µs) [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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

Main distributor

Combination arrester V50, 3-pole + NPE 280 V



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

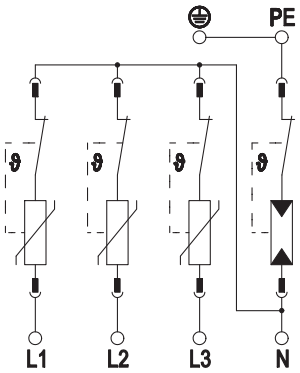
Lightning current combination arrester, type 1+2

- 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-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 µs)	$I_{n\ /\ L\text{-}N}$	30 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Impulse discharge current (10/350 µs)	I_{imp}	12.5 kA
Total discharge current (10/350)	I_{total}	50 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	80 kA
Protection level [L-N]	U_p	1.3 kV
Combined voltage protection level [L-PE]	$U_{p\ /\ L\text{-}PE}$	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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

Connection options



Lightning current and surge arrester MCF 35

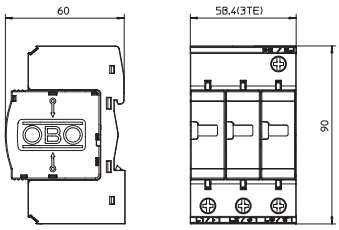
Surge protective device for energy technology, arrester, type 1 (industry)

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

Lightning current and surge arrester, 3-pole

Type 1+2 | LPZ 0→2 | Mu



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3-280	280	3-pole		1	42.300	**5093627**

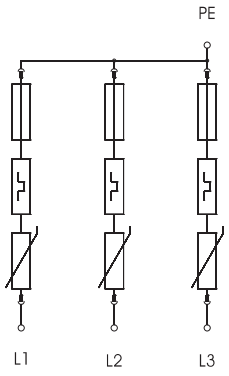
Combination arrester, lightning and surge arrester type 1+2 to DIN EN 61643-11.

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity 12.5 kA (10/350) per pole
- For TN-C systems
- With new Multibase base with multi-connection terminals
- Complete unit, consisting of upper part and base, pre-mounted and ready for connection
- Plug-in arrester with dynamic cut-off unit
- With visual function display
- Protection level < 1.3 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- Labelled connections

Application: Lightning protection equipotential bonding in buildings, even those with external lightning protection of Class III and IV, and in standard distributor housings.

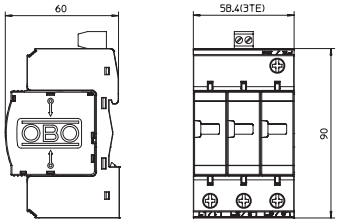
V50-B+C 3-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	12.5 kA
Total discharge current (10/350)	I_{total}	37.5 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	90 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Type 1+2 | LPZ 0→2 | Mu | FS

Lightning current and surge arrester, 3-pole with remote signalling



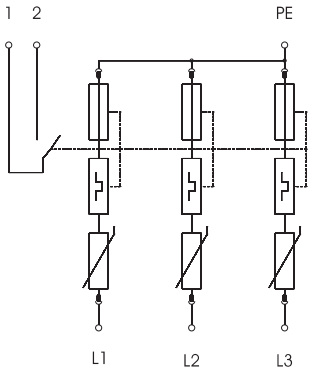
Combination arrester, lightning and surge arrester type 1+2 to DIN EN 61643-11.

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity 12.5 kA (10/350) per pole
- Universally suitable for TN-C systems
- With new Multibase base with multi-connection terminals
- Complete unit, consisting of upper part and base, pre-mounted and ready for connection
- Arrester, connectable with dynamic cut-off unit
- With visual function display
- Protection level < 1,3 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- Labelled connections
- FS variant with remote signalling contact (potential-free NO contact)

Application: Equipotential bonding in buildings, even those with external lightning protection of Class III and IV, and in standard distributor housings.

Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3+FS280	280	3-pole + FS		1	43.000	**5093643**

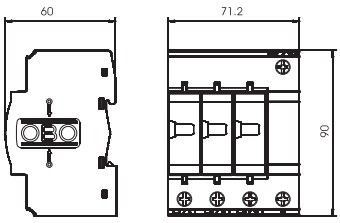
Connection options



V50-B+C 3+FS280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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}	12.5 kA
Total discharge current (10/350)	I_{total}	37.5 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	90 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Lightning current and surge arrester, 3-pole + NPE

Type 1+2 | LPZ 0→2 | Mu



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3+NPE	280	3+NPE		1	55.000	**5093654**

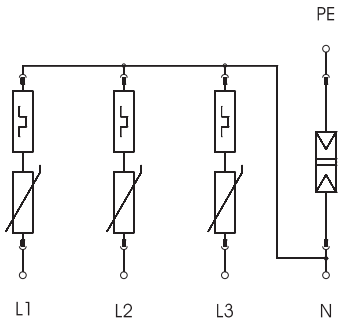
Combination arrester, lightning and surge arrester type 1+2 to DIN EN 61643-11.

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and 50 kA (10/350) in total
- Universally suitable for TN and TT systems
- With new Multibase base with multi-connection terminals
- Complete unit, consisting of upper part and base, pre-mounted and ready for connection
- Arrester, connectable with dynamic cut-off unit
- With visual function display
- Protection level < 1.3 kV
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- Labelled connections

Application: Equipotential bonding in buildings, even those with external lightning protection of the Classes III and IV, and in standard distributor housings.

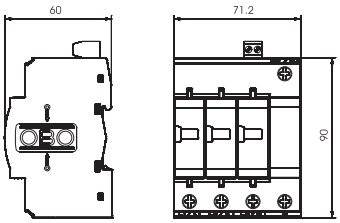
V50-B+C 3+NPE		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	12.5 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	50 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



CE EAC Type 1+2 LPZ 0→2 Mu FS

Lightning current and surge arrester, 3-pole + NPE with remote signalling



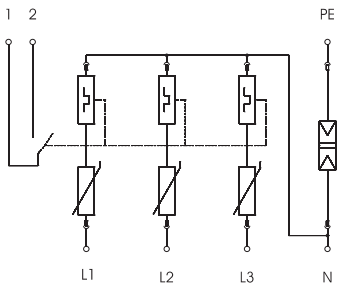
Combination arrester, lightning and surge arrester type 1+2 to DIN EN 61643-11.

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity 12.5 kA (10/350) per pole
- Universally suitable for TN and TT systems
- With Multibase base with multi-connection terminals
- Complete unit, consisting of upper part and base, pre-mounted and ready for connection
- Arrester, connectable with dynamic cut-off unit
- With visual function display
- Protection level < 1.3
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- Labelled connections
- FS variant with remote signalling contact (potential-free NO contact)

Application: Equipotential bonding in buildings, even those with external lightning protection of Class III and IV, and in standard distributor housings.

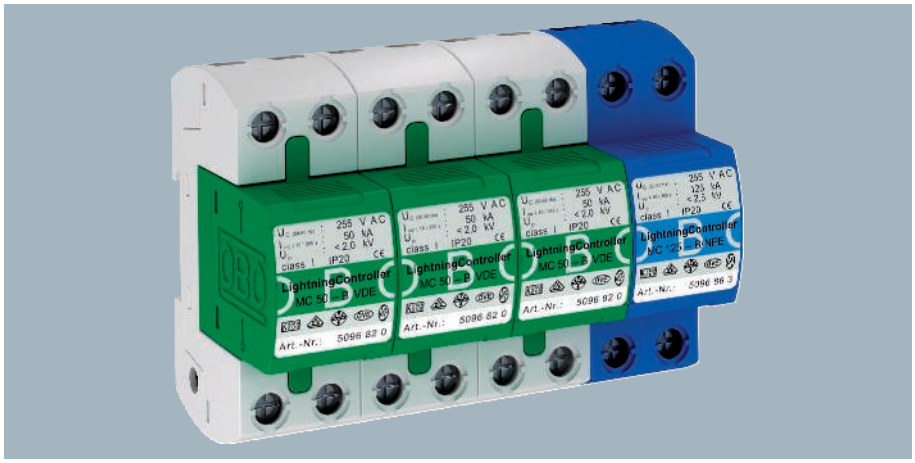
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 3+NPE+FS	280	3+NPE + FS		1	55.000	**5093662**

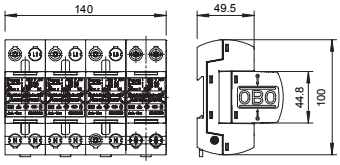
Connection options



V50-B+C 3+NPE+FS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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}	12.5 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	50 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Lightning current arrester, 3-pole + NPE





Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
MC 50-B 3+1	255	3 + NPE		1	168.000	**5096878**

LightningController set, 4-pole, for use in TN-S and TT networks:

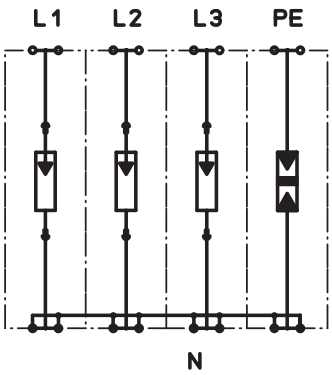
Completely pre-terminated and ready for connection, consisting of:
MC 50-B VDE: Lightning arrester, type 1 to EN 61643-11 for interface 0 to 1 (LPZ) according to lightning protection zone concept to IEC 61312-1 and DIN VDE 0185-305.
MC 125-B/NPE: N-PE spark gap, type 1 to IEC 61643 for use in TN-S and TT systems.

- Meets VDE-AR-N 4100
- Cover and base, plug-in cover
- Arresting capacity 50 kA (10/350 µs) per pole
- Protection level < 2,0 kV
- Line following current quenching 25 kA Ipeak
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: can be used in standard distributor housings

Application example: Industrial systems, lightning current arresters in accordance with VDE-AR-N 4100 for the pre-meter area.
Note: Requires as a decoupling length for surge protection 5 m of cable.

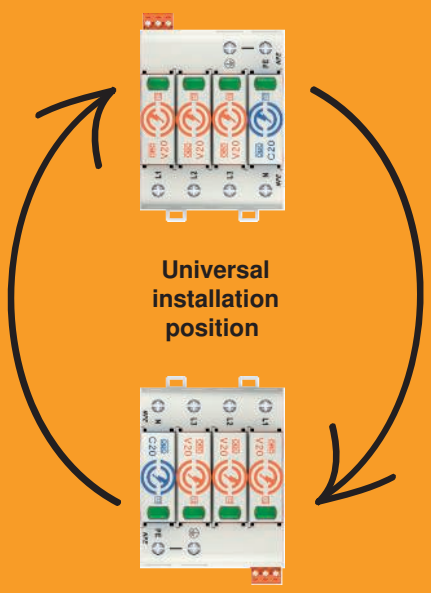
MC 50-B 3+1		
Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	125 kA
Protection level	U_p	< 2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Connection cross-section, rigid		10 - 50 mm²
Connection cross-section, multi-wire		10 - 35 mm²
Connection cross-section, flexible		10 - 25 mm²

Connection options



Surge arrester V20

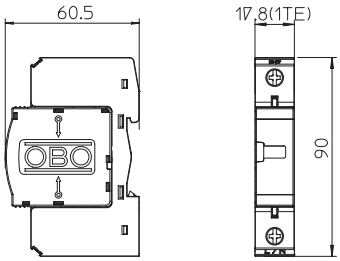
Surge protection energy technology, type 2 arrester



Universal installation position

- Type 2 SPD: In = 20 kA (L-N) / 40 kA (N-PE), up to 60 kA
- Protection level: < 1.5 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
- System protection up to 160 A usable without separate fusing
- Can be installed universally through 90° labelling
- Optional remote signalling, potential-free changeover contact
- Variants in one to four-pole versions
- Operating instructions always available online via QR code

Surge arrester, 1-pole 280 V



Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

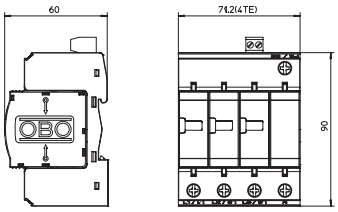
Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 1-280	280	1-pole		1	12.000	**5094618**

Connection options

V20-C 1-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 1-pole + NPE with remote signalling 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 1+NPE+FS	280	1+NPE + FS		1	22.500	**5094760**

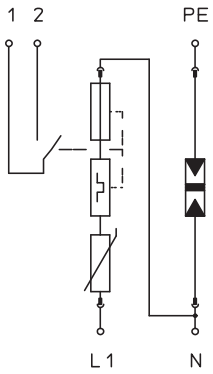
Surge arrester, type 2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN and TT network systems
- Plug-in cover; cover can be separated from base without tools
- With remote signalling and potential-free NO contact for function monitoring
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

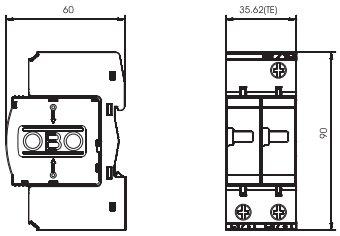
Application example: Residential buildings, single-family homes and industrial

V20-C 1+NPE+FS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester, 2-pole 280 V



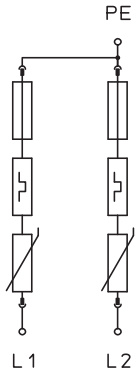
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 2-280	280	2-pole		1	22.700	**5094621**

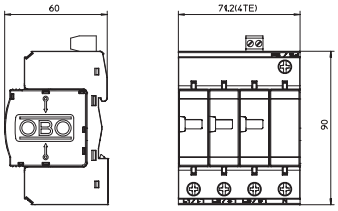
Connection options



V20-C 2-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Main distributor/sub-distributor

Surge arrester, 3-pole + NPE with remote signalling 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3+NPE+FS	280	3+NPE + FS		1	43.300	**5094765**

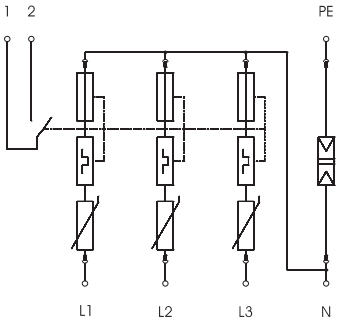
Surge arrester, type 2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN and TT network systems
- Plug-in cover; cover can be separated from base without tools
- With remote signalling and potential-free NO contact for function monitoring
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

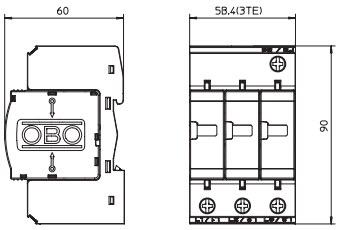
Application example: Residential buildings, single-family homes and industrial

V20-C 3+NPE+FS		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	50 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester, 3-pole 280 V



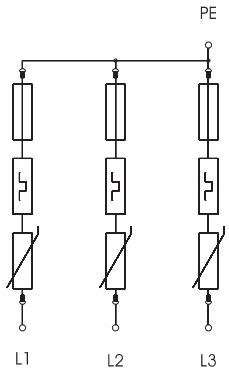
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

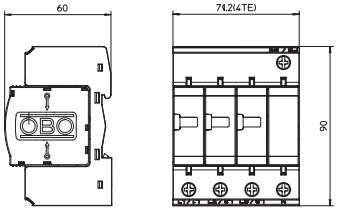
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3-280	280	3-pole		1	33.500	**5094624**

Connection options



V20-C 3-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 3-pole + NPE 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3+NPE-280	280	3+NPE		1	41.700	**5094656**

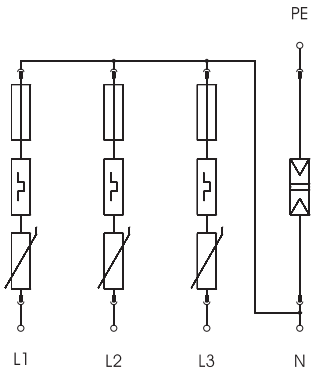
Surge arrester, type 2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN and TT network systems
- Plug-in upper part; upper part can be separated from base without tools
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

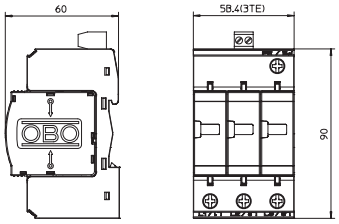
Application example: Residential buildings, single-family homes and industrial

V20-C 3+NPE-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	50 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester, 3-pole with remote signalling 280 V



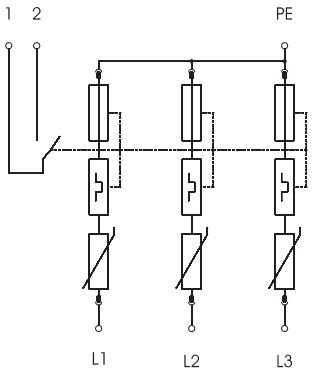
Surge arrester, type 2

- Complete unit consisting of cover and base, pre-mounted and ready for connection
- Suitable for TN network systems
- Plug-in upper part; upper part can be separated from base without tools
- With remote signalling and potential-free NO contact for function monitoring
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

Application example: Residential buildings, single-family homes and industrial

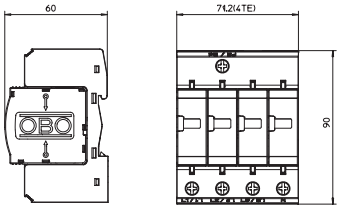
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3+FS-280	280	3-pole + FS		1	33.700	**5094731**

Connection options



V20-C 3+FS-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 4-pole 280 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 4-280	280	4-pole		1	43.000	**5094627**

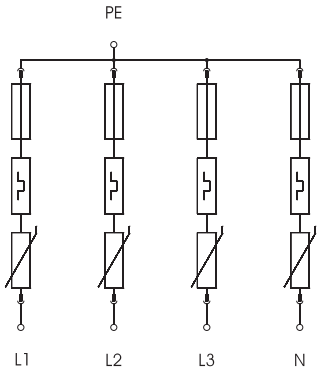
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

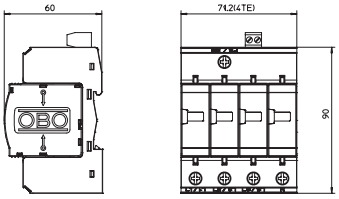
Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

V20-C 4-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	80 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester, 4-pole with remote signalling 280 V



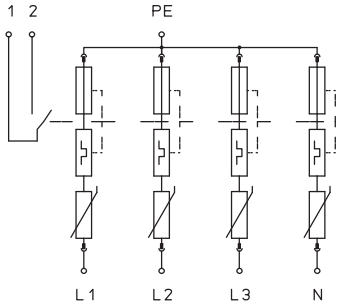
Surge arrester, type 2

- Complete unit consisting of cover and base, pre-mounted and ready for connection
- Suitable for TN network systems
- Plug-in upper part; upper part can be separated from base without tools
- With remote signalling and potential-free NO contact for function monitoring
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

Application example: Residential buildings, single-family homes and industrial

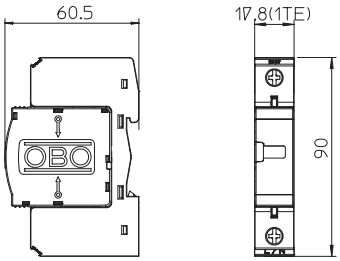
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 4+FS-280	280	4-pole + FS		1	43.000	**5094734**

Connection options



V20-C 4+FS-280		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	80 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 1-pole 385 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 1-385	385	1-pole		1	12.500	**5094703**

Surge arrester, type 2

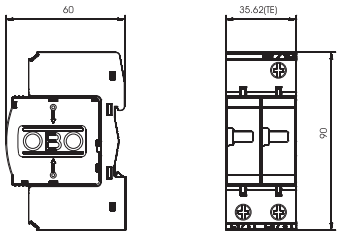
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

V20-C 1-385		
Nominal voltage	U_N	350 V
Max. continuous operating voltage	U_C	385 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,7 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options

Surge arrester, 2-pole 385 V



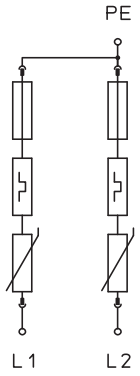
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

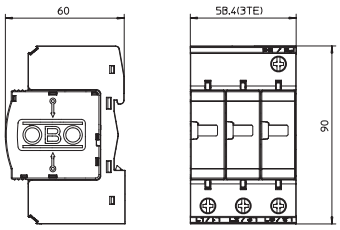
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 2-385	385	2-pole		1	23.700	**5094704**

Connection options



V20-C 2-385		
Nominal voltage	U_N	350 V
Max. continuous operating voltage	U_C	385 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,7 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 3-pole 385 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3-385	385	3-pole		1	34.500	**5094705**

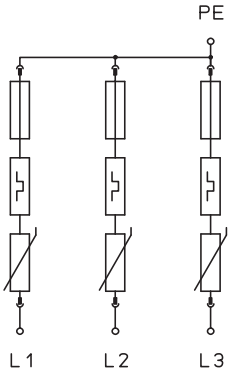
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

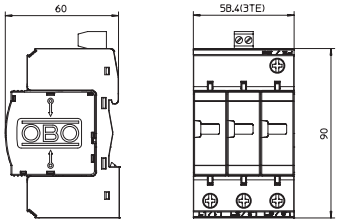
V20-C 3-385		
Nominal voltage	U_N	350 V
Max. continuous operating voltage	U_C	385 V
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,7 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Type 2 | LPZ 1→2 | FS

Surge arrester, 3-pole with remote signalling 385 V



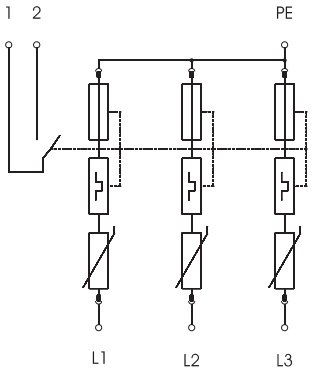
Surge arrester, type 2

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN network systems
- Plug-in cover; cover can be separated from base without tools
- With remote signalling and potential-free NO contact for function monitoring
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life
- Labelled connections

Application example: Residential buildings, single-family homes and industrial

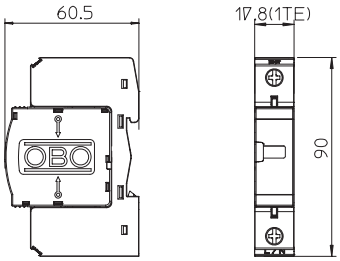
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3+FS-385	385	3-pole + FS		1	34.700	**5094780**

Connection options



V20-C 3+FS-385		
Nominal voltage	U_N	350 V
Max. continuous operating voltage	U_C	385 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,7 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester, 3-pole 550 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 3-550	550	3-pole		1	36.000	**5094715**

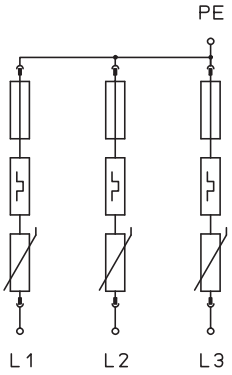
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

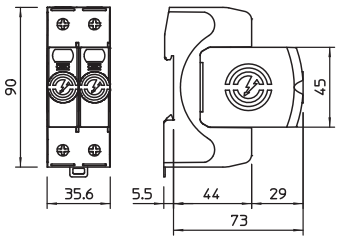
Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

V20-C 3-550		
Nominal voltage	U_N	500 V
Max. continuous operating voltage	U_C	550 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_n	15 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	45 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 2,4 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		3
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester V20, 2-pole, 150 V



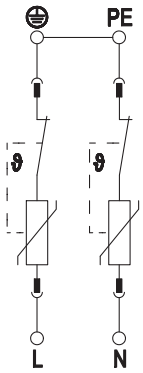
Surge arrester, type 2

- 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.

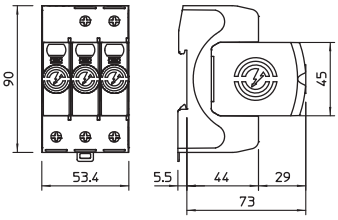
Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-2-150	150	2	IP20		1	23.600	**5095152**

Connection options



V20-2-150		
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	120 V
Maximum continuous voltage AC	U_C	150 V
Nominal discharge current (8/20 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	80 kA
Protection level [L-N]	U_p	0.8 kV
Residual voltage [L-N] @ 1 kA	U_{res}	0,5 kV
Residual voltage [L-N] @ 5 kA	U_{res}	0,6 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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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**

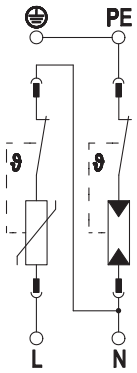
Surge arrester, type 2

- 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

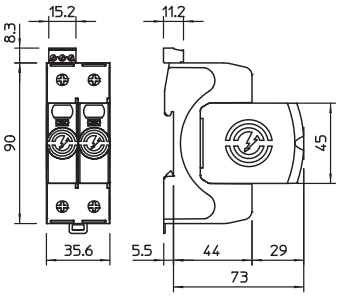
Application: Equipotential bonding in main and sub-distributions.

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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	60 kA
Protection level [L-N]	U_p	1.3 kV
Combined voltage protection level [L-PE]	$U_{p\ /\ L\text{-}PE}$	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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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



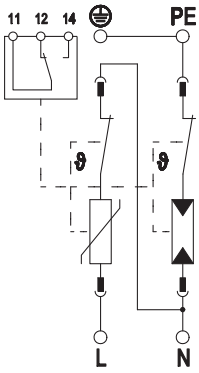
Surge arrester, type 2

- 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.

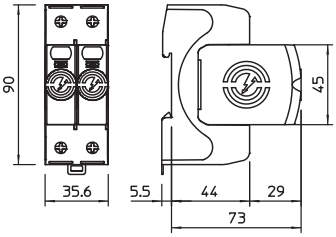
Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-1+NPE+FS-280	280	1+N/PE	IP20		1	24.600	**5095331**

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 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	60 kA
Protection level [L-N]	U_p	1.3 kV
Combined voltage protection level [L-PE]	$U_{p\,/\,L\text{-}PE}$	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 mm²
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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**

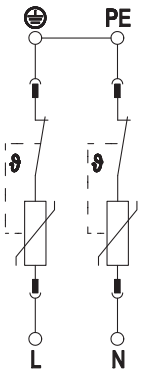
Surge arrester, type 2

- 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

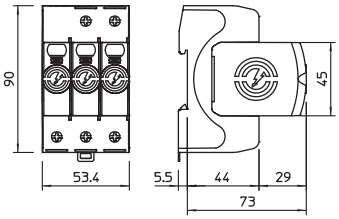
Application: Equipotential bonding in main and sub-distributions.

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 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 280 V



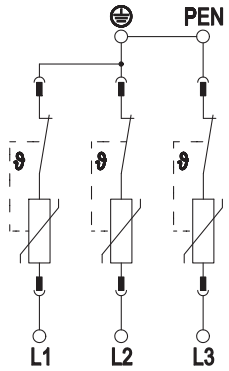
Surge arrester, type 2

- 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.
V20-3-280	280	3	IP20		1	36.000	**5095163**

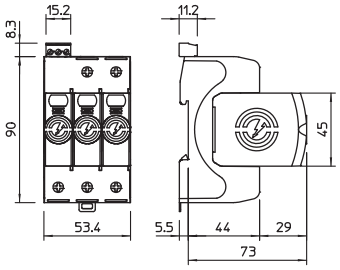
Connection options



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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

Main distributor/sub-distributor

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



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**

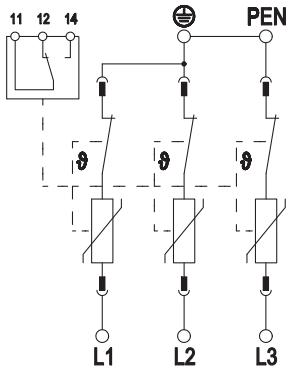
Surge arrester, type 2

- 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

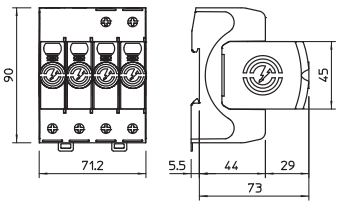
Application: Equipotential bonding in main and sub-distributions.

V20-3+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 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [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 mm²
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 280 V



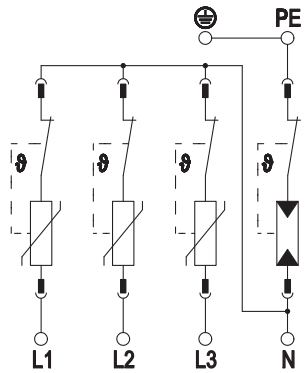
Surge arrester, type 2

- 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.

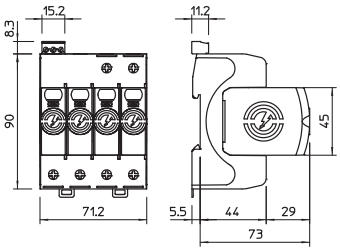
Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-3+NPE-280	280	3+N/PE	IP20		1	45.800	**5095253**

Connection options



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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	60 kA
Protection level [L-N]	U_p	1.3 kV
Combined voltage protection level [L-PE]	$U_{p\ /\ L\text{-}PE}$	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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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 and remote signalling, 280 V



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**

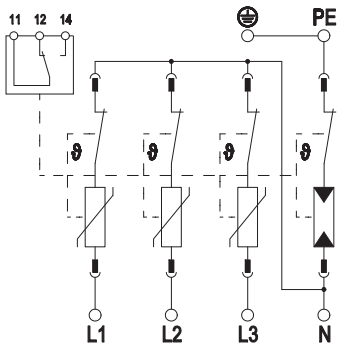
Surge arrester, type 2

- 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

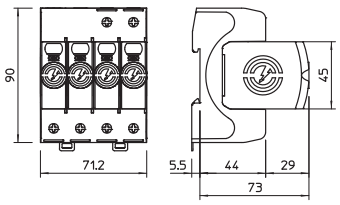
Application: Equipotential bonding in main and sub-distributions.

V20-3+NPE+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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	60 kA
Protection level [L-N]	U_p	1.3 kV
Combined voltage protection level [L-PE]	$U_{p\ /\ L\text{-}PE}$	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 mm²
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 280 V



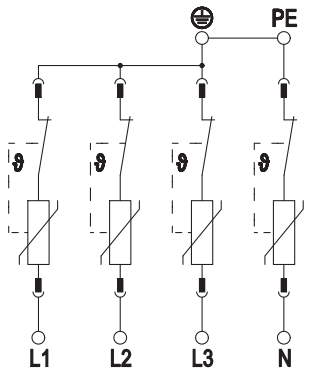
Surge arrester, type 2

- 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.

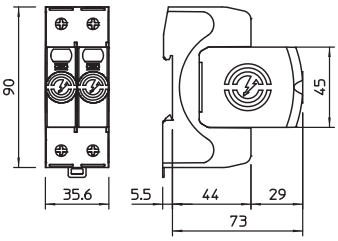
Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-4-280	280	4	IP20		1	47.000	**5095164**

Connection options



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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 385 V



Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-2-385	385	2	IP20		1	26.400	**5095192**

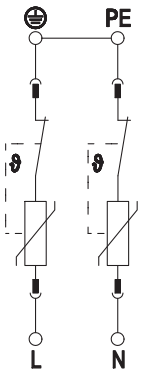
Surge arrester, type 2

- 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

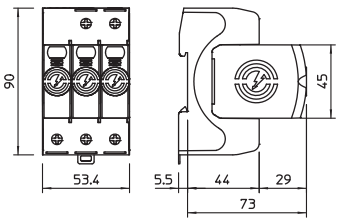
Application: Equipotential bonding in main and sub-distributions.

V20-2-385		
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	350 V
Maximum continuous voltage AC	U_C	385 V
Nominal discharge current (8/20 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	80 kA
Protection level [L-N]	U_p	1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res}	1,2 kV
Residual voltage [L-N] @ 5 kA	U_{res}	1,4 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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 385 V



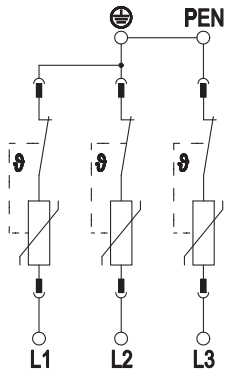
Surge arrester, type 2

- 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.
V20-3-385	385	3	IP20		1	35.600	**5095193**

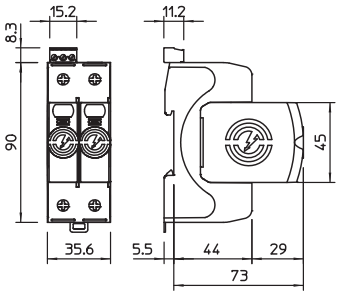
Connection options



V20-3-385		
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	350 V
Maximum continuous voltage AC	U_C	385 V
Nominal discharge current (8/20 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	120 kA
Protection level [L-N]	U_p	1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res}	1,2 kV
Residual voltage [L-N] @ 5 kA	U_{res}	1,4 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 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

Main distributor/sub-distributor

Surge arrester V20, 3-pole with remote signalling, 385 V



Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-3+FS-385	385	3	IP20		1	37.600	**5095303**

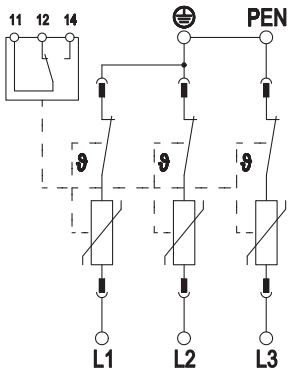
Surge arrester, type 2

- 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

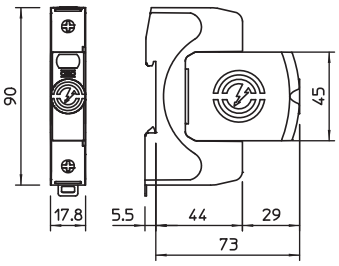
Application: Equipotential bonding in main and sub-distributions.

V20-3+FS-385		
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	350 V
Maximum continuous voltage AC	U_C	385 V
Nominal discharge current (8/20 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	120 kA
Protection level [L-N]	U_p	1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res}	1,2 kV
Residual voltage [L-N] @ 5 kA	U_{res}	1,4 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 mm²
Connection cross-section, FM terminals		21 - 16 AWG
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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, 440 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

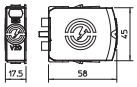
Application: Equipotential bonding in main and sub-distributions.

Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-1-440	440	1	IP20		1	13.600	**5095201**

Connection options

V20-1-440		
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	400 V
Maximum continuous voltage AC	U_C	440 V
Nominal discharge current (8/20 µs)	$I_{n\,/\,L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	40 kA
Protection level [L-N]	U_p	2 kV
Residual voltage [L-N] @ 1 kA	U_{res}	1,5 kV
Residual voltage [L-N] @ 5 kA	U_{res}	1,8 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
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
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**

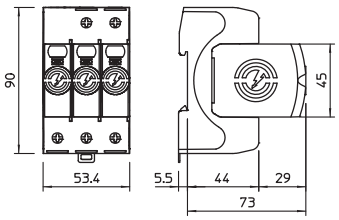
Surge arrester, type 2

- 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 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Operating temperature range	T_u	-40 - +80 °C
Protection rating		IP20
Approvals		UL, ÖVE, VDE, KEMA

Surge arrester V20, 3-pole, 550 V



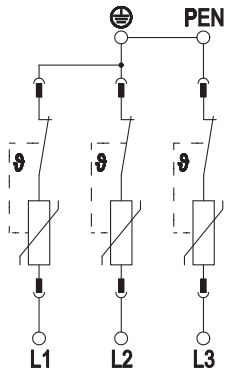
Surge arrester, type 2

- 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.

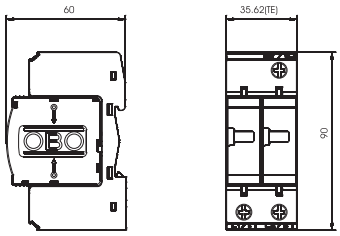
Type	Max. continuous voltage AC V	Pole version	Protection rating		Pack Piece	Weight kg/100 pc.	Item no.
V20-3-550	550	3	IP20		1	38.100	**5095213**

Connection options



V20-3-550		
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	400 V
Maximum continuous voltage AC	U_C	550 V
Nominal discharge current (8/20 µs)	$I_{n\ /\ L\text{-}N}$	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Maximum discharge current (8/20 µs) [total]	I_{total}	120 kA
Protection level [L-N]	U_p	2.4 kV
Residual voltage [L-N] @ 1 kA	U_{res}	1,7 kV
Residual voltage [L-N] @ 5 kA	U_{res}	2,1 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
Conductor cross-section, flexible (fine-wire)		1.5 - 35 mm²
Conductor cross-section, rigid (single wire/multi-wire)		1.5 - 35 mm²
Conductor cross-section, flexible (fine-wire)		16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)		16 - 2 AWG

Surge arrester, 2-pole 550 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 2-550	550	2-pole		1	24.300	**5094714**

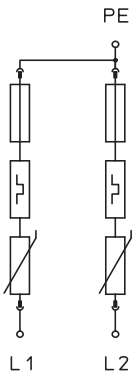
Surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Plug-in arrester with dynamic cut-off unit and visual function display
- High-performance varistor technology

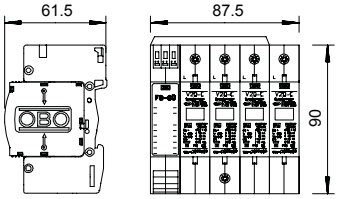
Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.

V20-C 2-550		
Nominal voltage	U_N	500 V
Max. continuous operating voltage	U_C	550 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_n	15 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	30 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 2,4 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Connection options



Surge arrester, 4-pole with fuse monitoring 280 V

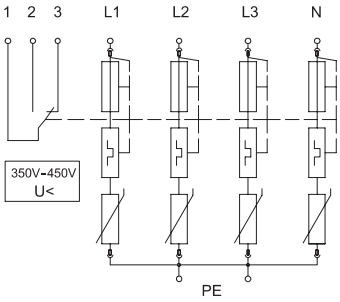


Surge arrester, type 2, ready for connection with remote signalling and voltage monitoring

- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN network systems
- With voltage monitoring of phases and function monitoring of arrester upper parts
- With remote signalling and potential-free changeover contact
- Plug-in upper part; upper part can be separated from base without tools
- Incl. thermal and dynamic cut-off unit
- With visual display of defects
- High current conductivity and long service life

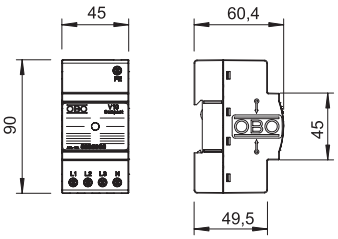
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 4+FS-SÜ	280	4-pole		1	56.500	**5096278**

Connection options



V20-C 4+FS-SÜ		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	280 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_n	20 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	80 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm²
Connection cross-section, multi-wire		2.5 - 35 mm²
Connection cross-section, flexible		2.5 - 25 mm²

Surge arrester V10 Compact 255 V



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

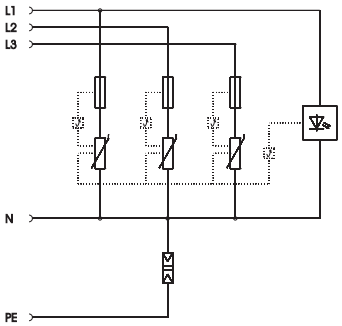
Surge protective device, compact module, type 2+3

- 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

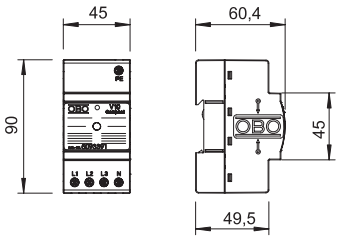
Application: Sub/storey distribution as well as device protection in rotational current systems.

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 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	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm²
Connection cross-section, multi-wire		2.5 - 10 mm²
Connection cross-section, flexible		2.5 - 10 mm²

Connection options



Surge arrester V10 Compact with audible signalling 255 V



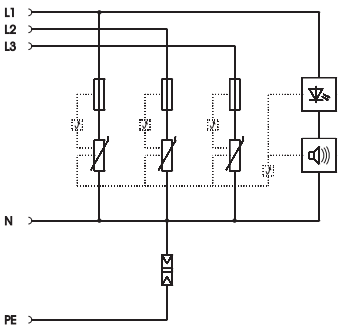
Surge protective device, compact module, type 2+3

- 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
- ...-AS version with additional acoustic defect signalling (switchable)

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

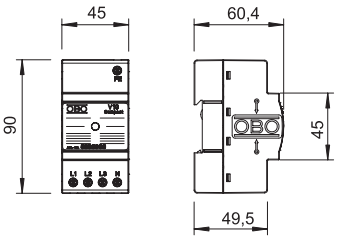
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V10 COMPACT-AS	255	3+NPE		1	15.800	**5093391**

Connection options



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	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm²
Connection cross-section, multi-wire		2.5 - 10 mm²
Connection cross-section, flexible		2.5 - 10 mm²

Surge arrester V10 Compact 385 V



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V10 COMPACT 385	385	3 + NPE		1	16.800	**5093384**

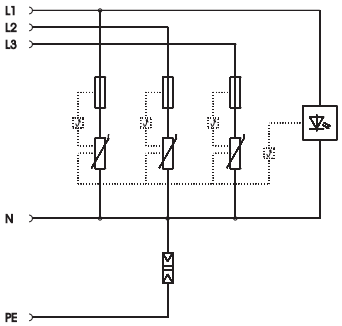
Surge protective device, compact module, type 2+3

- 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

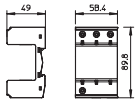
Application: Sub/storey distribution as well as device protection in rotational current systems.

V10 COMPACT 385		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	385 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	< 1,5 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm²
Connection cross-section, multi-wire		2.5 - 10 mm²
Connection cross-section, flexible		2.5 - 10 mm²

Connection options



MultiBase base

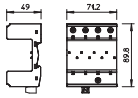


Type	Version	Dividing unit TE (17.5 mm)		Pack Piece	Weight kg/100 pc.	Item no.
MB 1	1-pole	1		1	9.900	**5096648**
MB 2	2-pole	2		1	14.400	**5096653**
MB 3	3-pole	3		1	16.000	**5096665**
MB 4	4-pole	4		1	21.000	**5096680**

- Suitable for V25-B+C, V20-C and V10-C
- Pre-mounted and ready for connection
- For TN systems
- Multifunction terminals for easy circuit of series-mounted devices
- Upper parts can be rotated through 180 degrees

Base, MultiBase with remote signalling

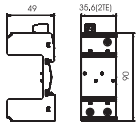
Type	Version	Dividing unit TE (17.5 mm)		Pack Piece	Weight kg/100 pc.	Item no.
MB 1+FS	1-pole	1		1	7.932	**5096649**
MB 2+FS	2-pole	2		1	11.700	**5096654**
MB 3+FS	3-pole	3		1	16.500	**5096667**
MB 4+FS	4-pole	4		1	21.000	**5096682**



- Suitable for V 25-B+C, V 20-C and V10-C
- Pre-mounted and ready for connection
- Multifunction terminals for easy connection to series-mounted devices
- Upper parts can be rotated through 180 degrees
- With remote signalling, potential-free NO contact, for function monitoring

Base, MultiBase + NPE with remote signalling

Type	Version	Dividing unit TE (17.5 mm)		Pack Piece	Weight kg/100 pc.	Item no.
MB 1+NPE+FS	1 + NPE	2		1	11.600	**5096651**

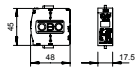


- Suitable for V 25-B+C, V 20-C and V10-C
- Pre-mounted and ready for connection
- Multifunction terminals for easy connection to series-mounted devices
- Upper parts can be rotated through 180 degrees
- With remote signalling, potential-free NO contact, for function monitoring
- 3+1 protection circuit for TN-S and TT network systems

Upper parts

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**

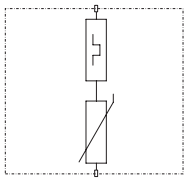


Combination arrester – type 1+2

- 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

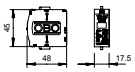
V25-B+C 0-280		
Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	7 kA
Total discharge current (10/350)	I_{total}	7 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [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	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

Connection options



Upper parts

CombiController V50, plug-in arrester 280 V

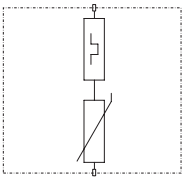


Type	Highest continuous voltage V	U max DC V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V50-B+C 0-280	280	350	1-pole		1	8.000	**5093724**

CombiController upper part– type 1+2 combination arrester

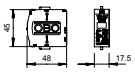
- Plug-in upper part can be fitted into the base without tools or current interruption
- Incl. thermal and dynamic cut-off unit and visual display of defects
- High current conductivity and long service life

Connection options



V50-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}	12.5 kA
Total discharge current (10/350)	I_{total}	12.5 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	30 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

CombiController V25, plug-in arrester 385 V

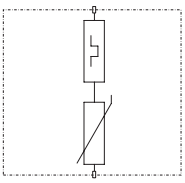


Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V25-B+C 0-385	385	1-pole		1	9.500	**5097061**

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

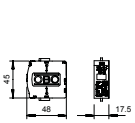
Connection options



V25-B+C 0-385		
Nominal voltage	U_N	350 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	< 1,5 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		160 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

Plug-in arrester, total spark gap between N and PE 255 V

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
C 25-B+C 0	255	NPE	1	5.300	**5095603**

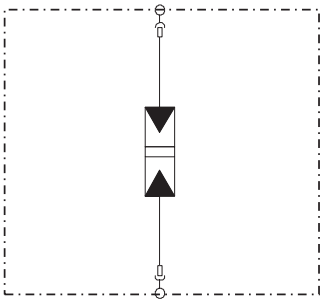


Plug-in total discharge gap for use between neutral lines (N) and protector (PE) Suitable for use in combination with:

- CombiController, type V 25-B+C
- SurgeController, type V 20-C
- SurgeController, type V 10-C

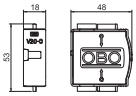
C 25-B+C 0		
Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Lightning impulse current (10/350) (N-PE)	I_{imp}	25 kA
Nominal discharge current (8/20)	I_n	30 kA
Maximum discharge current (8/20 µs)	I_{max}	50 kA
Protection level	U_p	<1,2 kV
Response time	t_A	< 100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	0.1 kA
Maximum back-up fuse		160 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

Connection options



Plug-in arrester V10 320 V

Type	Highest continuous voltage V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V10-C 0-320	320	1-pole	1	3.510	**5093404**

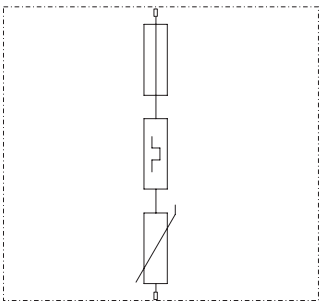


Surge arrester, type 2+3 to EN 61643-11

- Plug-in upper part; upper part can be separated from base without tools
- Incl. thermal and dynamic cut-off unit and visual display of defects
- High current conductivity and long service life

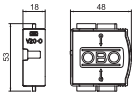
V10-C 0-320		
Nominal voltage	U_N	320 V
Max. continuous operating voltage	U_C	320 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	10 kA
Maximum discharge current (8/20 µs)	I_{max}	20 kA
Protection level	U_p	< 1,2 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

Connection options



Upper parts

SurgeController V20, plug-in arrester 385 V

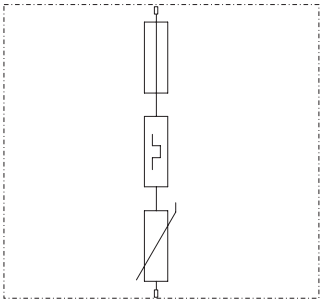


Type	Highest continuous voltage V	U max DC V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 0-385	385	505	1-pole		1	5.826	**5099595**

Surge arrester, type 2

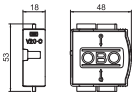
- Plug-in arrester, can be separated from base without tools
- Including thermal and dynamic separating device and visual status display
- High current conductivity and long service life

Connection options



V20-C 0-385		
Max. continuous operating voltage	U_C	385 V
U max DC	U_c DC	505 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_n	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 1,7 kV
Response time	t_A	< 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

SurgeController V20, plug-in arrester 550 V

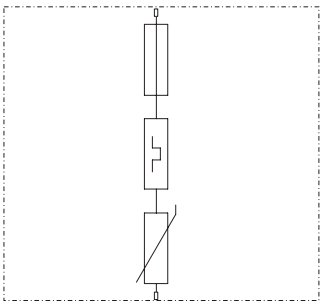


Type	Highest continuous voltage V	U max DC V	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C 0-550	550	745	1-pole		1	7.201	**5099617**

Surge arrester, type 2

- Plug-in arrester, can be separated from base without tools
- Including thermal and dynamic separating device and visual status display
- High current conductivity and long service life

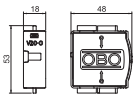
Connection options



V20-C 0-550		
Max. continuous operating voltage	U_C	550 V
U max DC	U_c DC	745 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_n	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 2,4 kV
Response time	t_A	< 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

SurgeController V20, plug-in arrester 75 V

Type	Highest continuous voltage V	U max DC V	Version	Pack Piece	Weight kg/100 pc.	Item no.
V20-C 0-75	75	100	1-pole	1	5.160	**5099579**

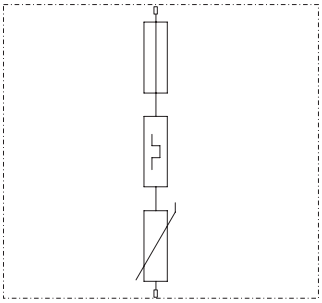


Surge arrester, type 2

- Plug-in arrester, can be separated from base without tools
- Including thermal and dynamic separating device and visual status display
- High current conductivity and long service life

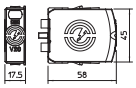
V20-C 0-75		
Max. continuous operating voltage	U_C	75 V
U max DC	U_c DC	100 V
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I_n	15 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Protection level	U_p	< 0,5 kV
Response time	t_A	< 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



Plug-in arrester V20 385 V

Type	Max. continuous voltage AC V	Pole version	Protection rating	Pack Piece	Weight kg/100 pc.	Item no.
V20-0-385	385	1	IP20	1	5.360	**5095368**



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)

V20-0-385		
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	385 V
Protection level	U_p	1.7 kV
Nominal discharge current (8/20 µs)	$I_{n\ /\ L\text{-}N}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	40 kA
Operating temperature range	T_u	-40 - +80 °C
Protection rating		IP20
Approvals		UL, ÖVE, VDE, KEMA

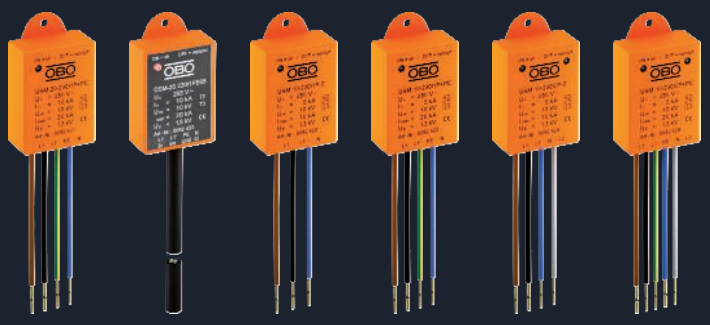
Connection options

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.

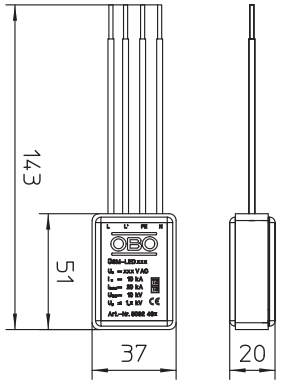
Application in:
- Cable fuse box in the street lighting pole
- Junction boxes
- Cable ducts
- Underfloor systems
- Electrical equipment

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



5 YEARS PRODUCT WARRANTY

Surge protection for LED systems 230V



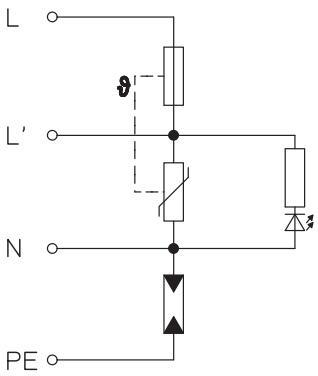
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids.
Appropriate for the protection of LED lighting.

- With visual function display
- Small size for the installation in the pole or in the LED lamp head
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Surge limitation under 1,300 V or 1,000 V @ 5 kA
- Available with or without cut-off function of the lamp in case of malfunction

Application: Universally deployable in all lighting systems

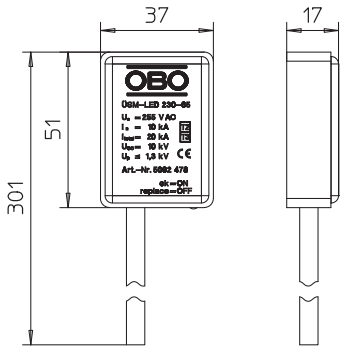
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-LED 230	255	1+NPE		1	3.500	**5092480**

Connection options



ÜSM-LED 230		
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]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 µs)	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

Surge protection for LED systems 230 V IP65



Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-LED 230-65	255	1+NPE		25	7.500	**5092478**

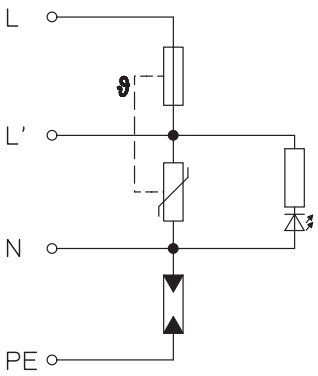
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids.
Appropriate for the protection of LED lighting and the LED driver.

- With visual function display
- Small size for the installation in the mast connection box
- IP65 and with 25 cm connection cable
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Surge limitation under 1,300 V or 1,000 V @ 5 kA
- Available with or without cut-off function of the lamp in case of malfunction

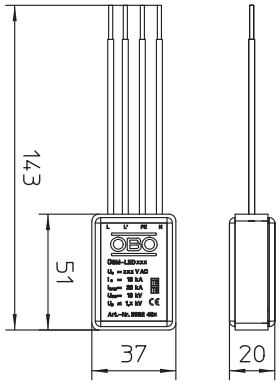
Application: Universally deployable in all lighting systems

ÜSM-LED 230-65		
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		2→3
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 µs)	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		IP65
Connecting cable length		0.25 m

Connection options



Surge protection for LED systems 440 V



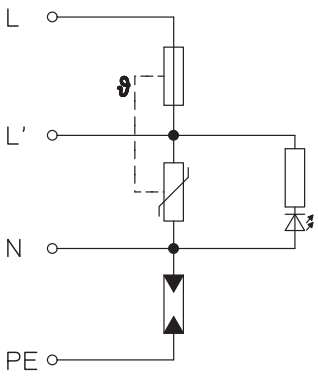
Surge protection module type 2+3 to DIN EN 61643-11 for 440 V power grids.
Appropriate for the protection of LED lighting.

- With visual function display
- Small size for the installation in the pole or in the LED lamp head
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Surge limitation under 1,800 V
- Available with or without cut-off function of the lamp in case of malfunction

Application: Universally deployable in all lighting systems

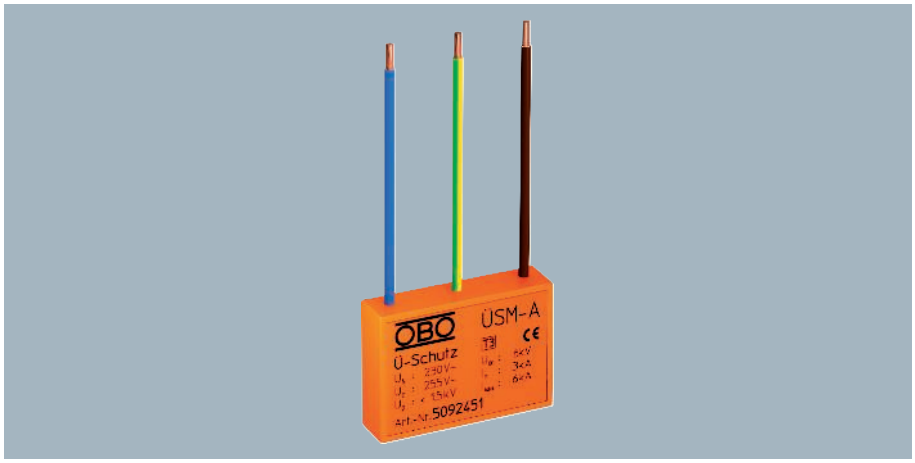
Type	Highest continuous voltage V	Version		Pack Piece	Weight kg/100 pc.	Item no.
ÜSM-LED 440	440	1+NPE		1	4.500	**5092482**

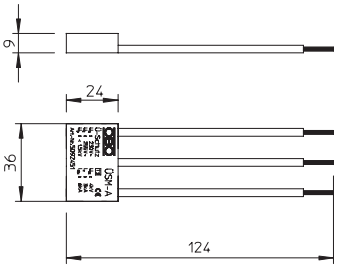
Connection options



ÜSM-LED 440		
Nominal voltage	U_N	440 V
Max. continuous operating voltage	U_C	440 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]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 µs)	I_{max}	20 kA
Protection level	U_p	1,8 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**

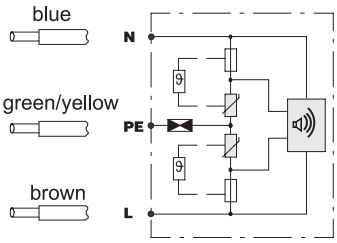
Surge protection module type 3 to DIN EN 61643-11 for 230 V power grids.

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

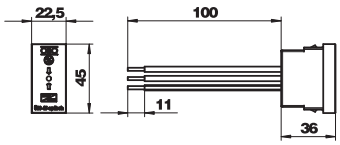
Application: Universally applicable for all installation systems.

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	ϑ	-15 - +60 °C
Maximum discharge current (8/20 µs)	I_{max}	6 kA
Rated current	I_L	16 A

Connection options



Fine power protection for Modul 45 with acoustic function display



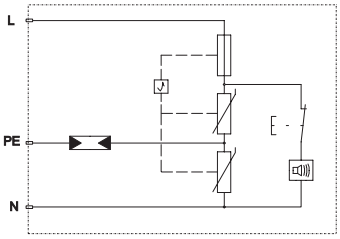
Surge protection / network fine protection, type 3, according to EN 61643-11 for installation in Rapid 45 duct, device installation duct and underfloor systems.

- 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.

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**

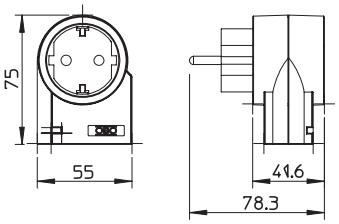
Connection options



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	ϑ	-25 - +45 °C

FineController FC-D for protective contact socket

Type 3 LPZ 2→3



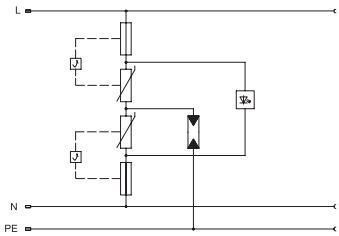
Type	Country version	Colour		Pack Piece	Weight kg/100 pc.	Item no.
FC-D	EN	Pure white		1	11.000	**5092800**

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

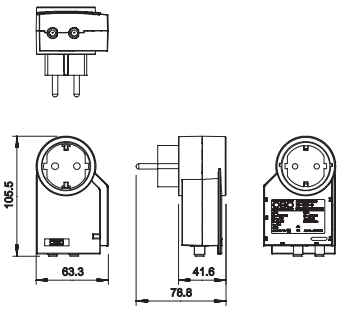
FC-D		
Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,5 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse	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

Connection options



CE Type 3 LPZ 2→3 SAT

FineController FC-SAT for SAT systems and receivers



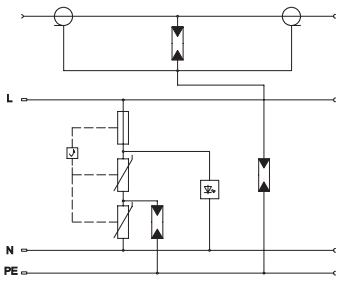
Type 3 combined surge protection to EN 61643-11, designed for use on satellite systems and receivers.

- 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.

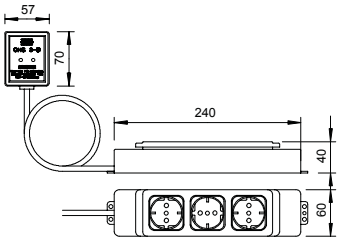
Type	Country version	Colour	Pack Piece	Weight kg/100 pc.	Item no.
FC-SAT-D	EN	Pure white	1	16.000	**5092816**

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

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**

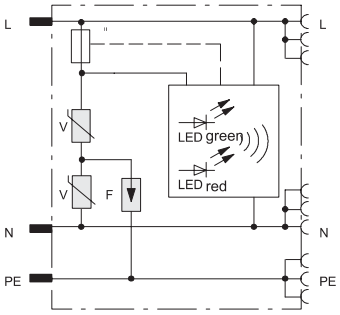
Surge protective device, type 3, to DIN EN 61643-11, intended for use in protective contact sockets.

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

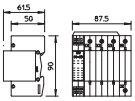
Application: For example, the protection of PCs, printers, copiers, fax machines, etc.

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

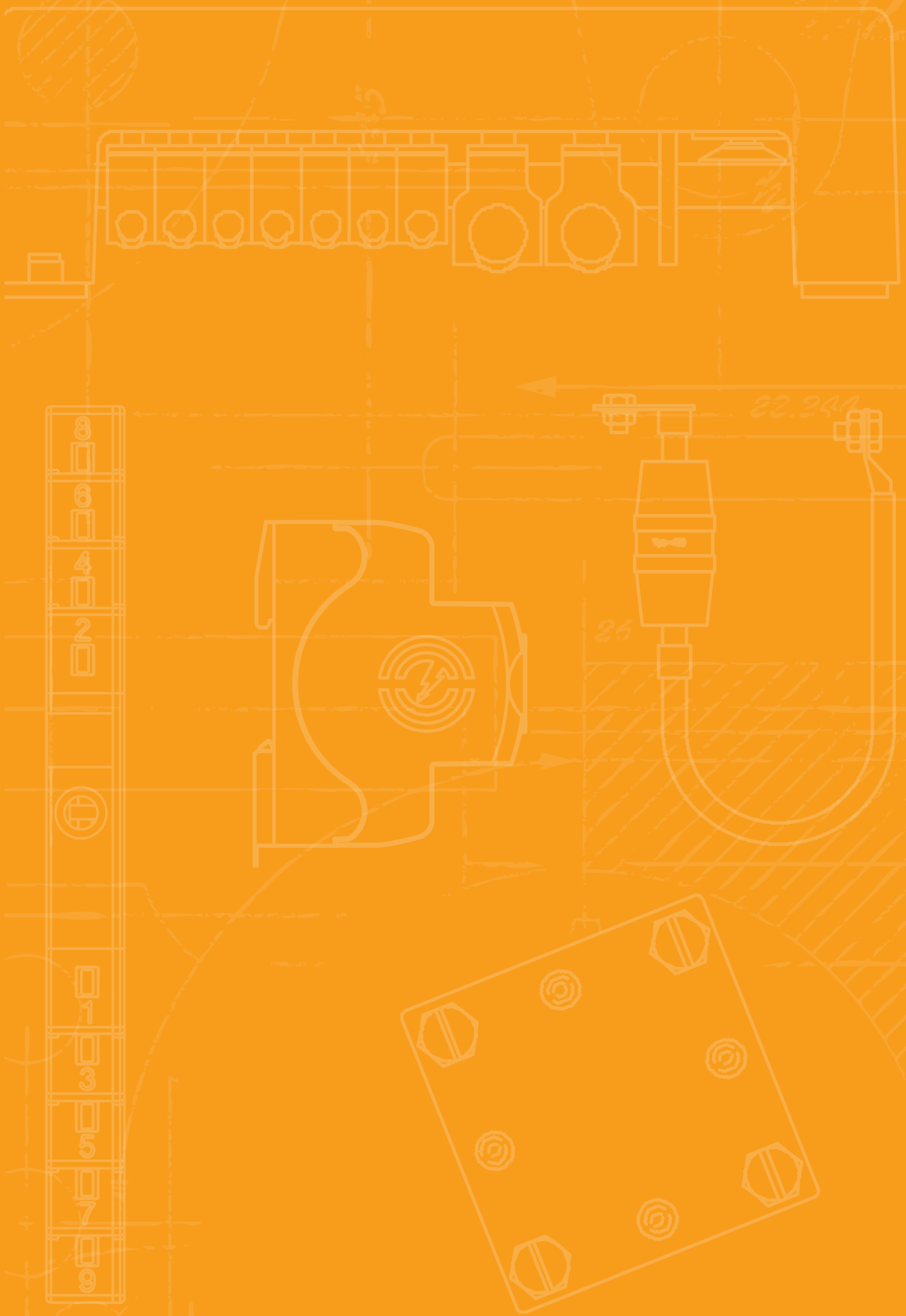


Base, MultiBase + NPE with fuse monitoring



Type	Version		Pack Piece	Weight kg/100 pc.	Item no.
V20-C U-3+NPE	3-NPE with FS-SÜ		1	30.000	**5096370**

- Suitable for V 25-B+C, V 20-C and V 10-C
- With voltage monitoring of phases and function monitoring
- With remote signalling, potential-free changeover contact, for function monitoring
- For TN-S and TT network systems
- Pre-mounted and ready for connection



Photovoltaics

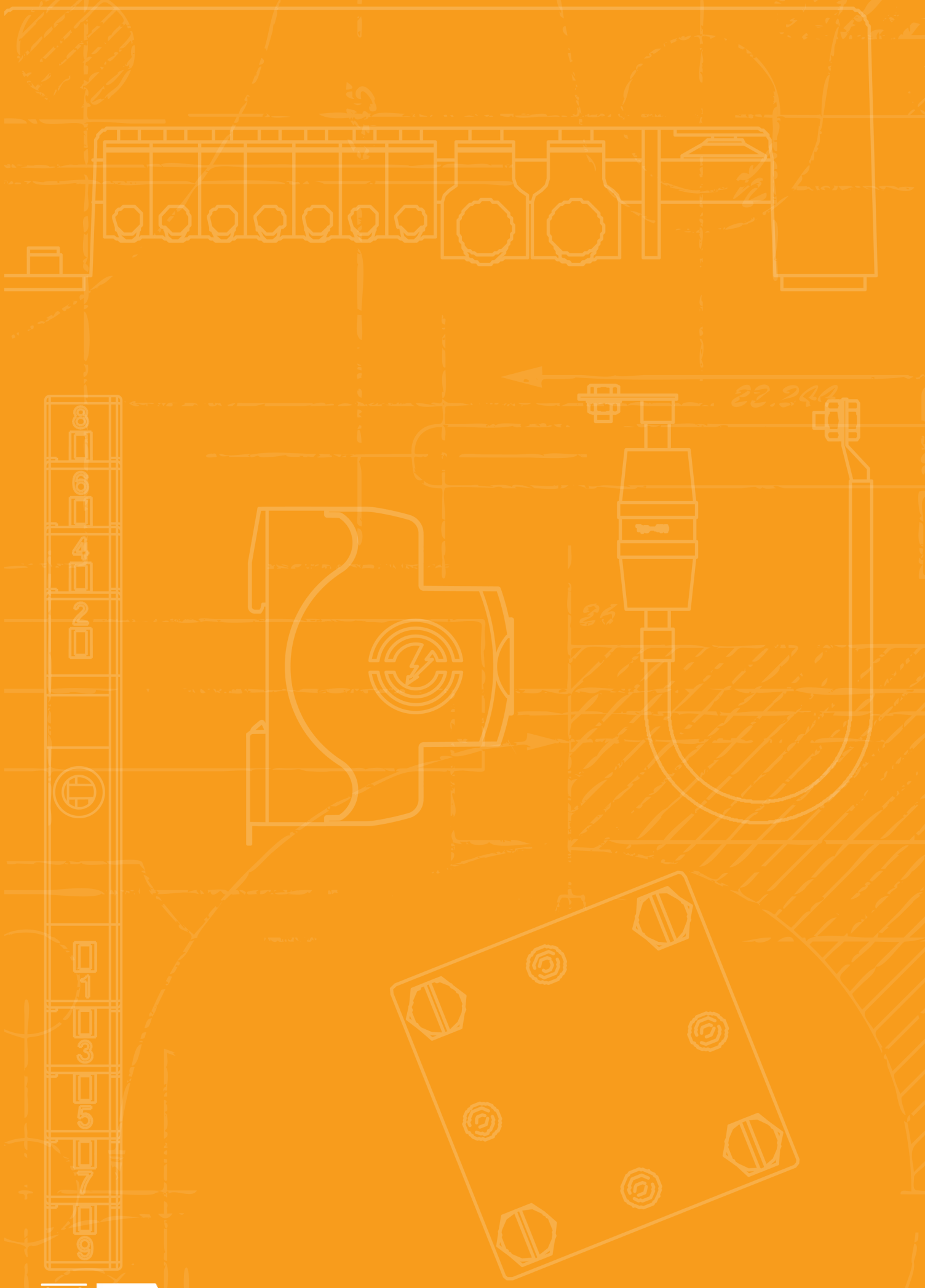
Surge protective devices for photovoltaic applications V-PV-...

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

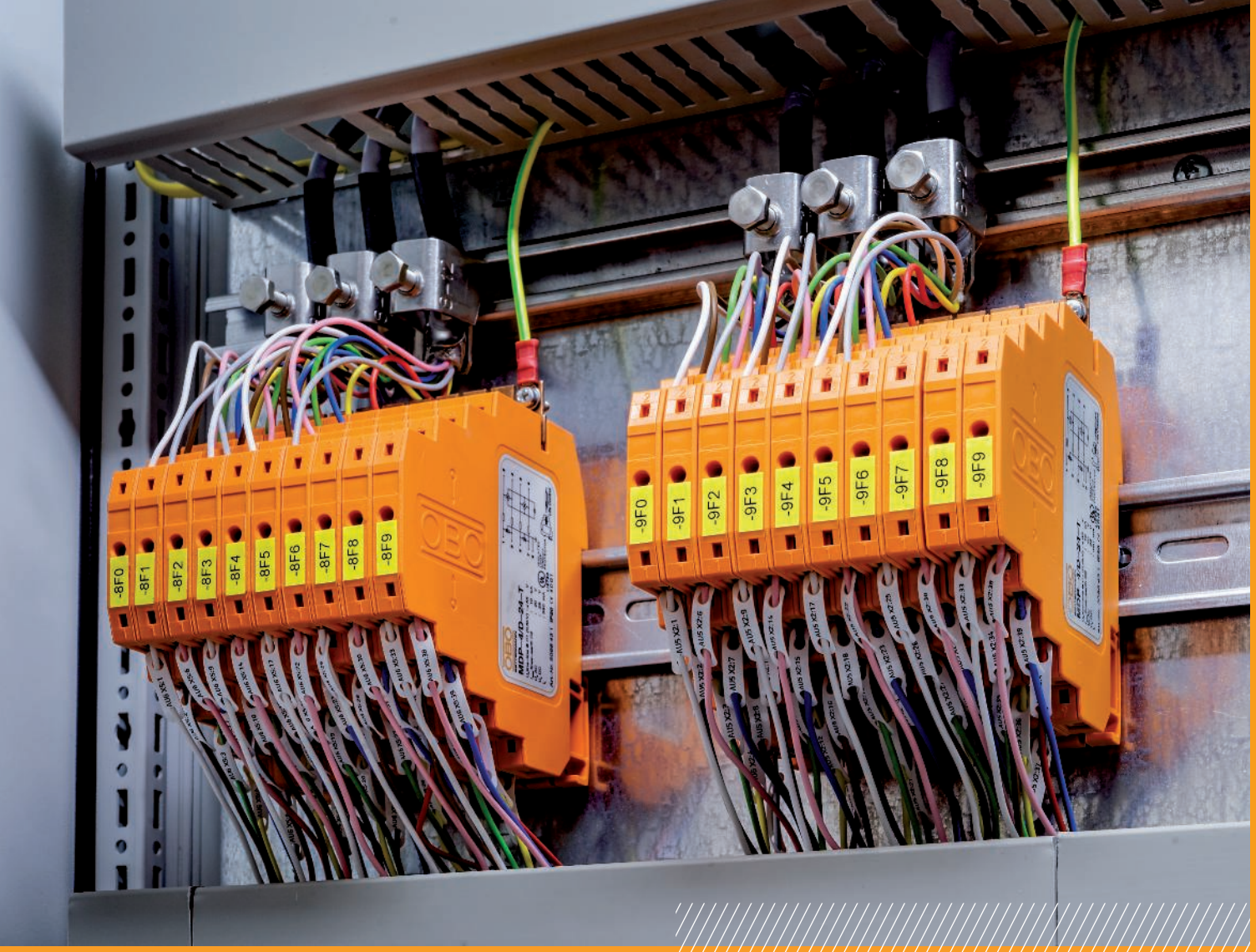


MCR technology

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}



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

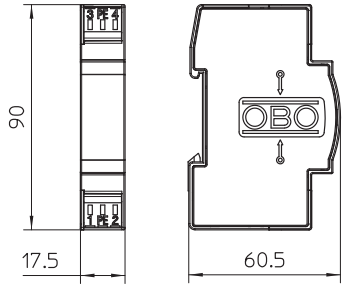
FRD/FLD family

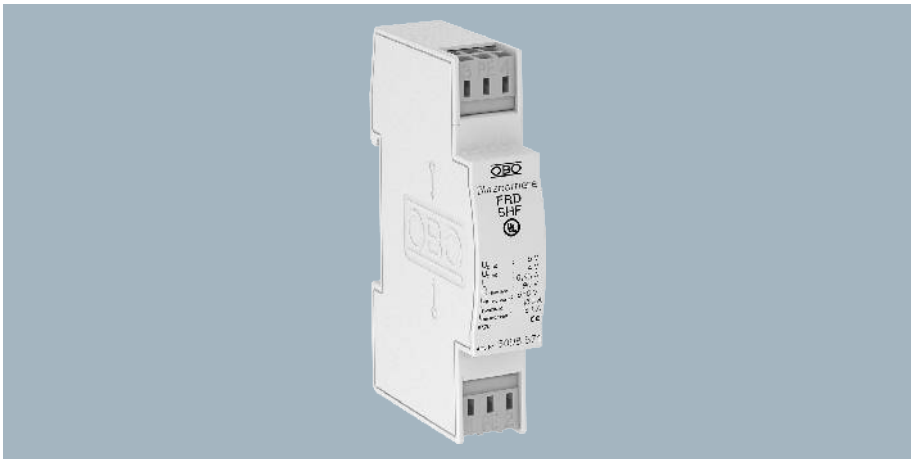
Basic and combination protection for two-core systems

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 24 V





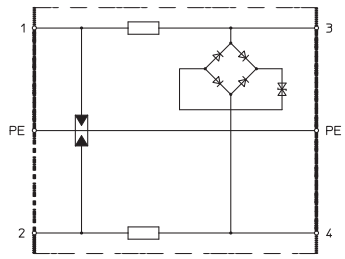
Surge protection for use in measuring, control and regulation systems.

- 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.

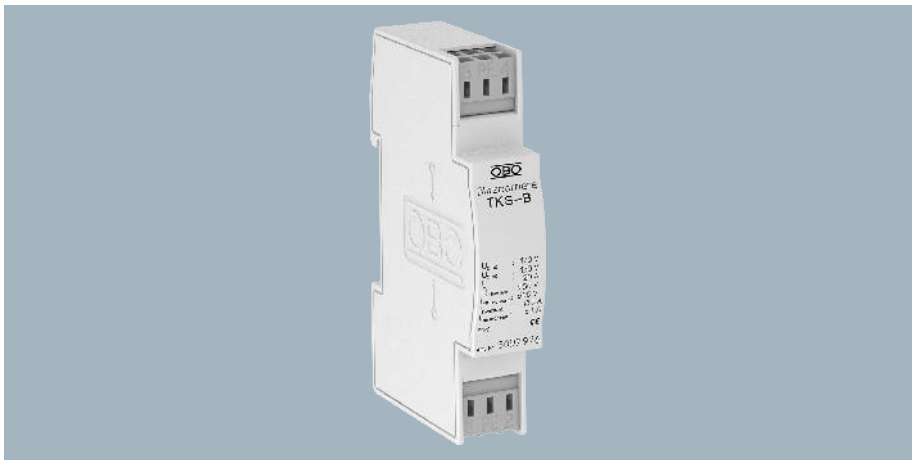
Type	Max. continuous voltage AC V	Max. continuous voltage DC V	Number of poles	Connection system		Pack Piece	Weight kg/100 pc.	Item no.
FRD 24 HF	19	28	2	Terminal		1	4.400	**5098575**

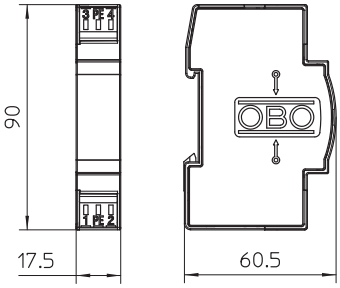
Connection options



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 Ω ± 10 %
Impulse durability wire-wire		C2: 18 kV / 9 kA (8/20µs)
Impulse durability wire-earth		C2: 18 kV / 9 kA (8/20µs)
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	ϑ	-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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, rigid		0.14 - 2.5 mm²
Earthing via:		Terminal
Testing standard		IEC 61643-21
Approvals		UL

Basic protection for two-core systems with HF applications 120 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.
TKS-B	120	170	2	Terminal		1	4.400	**5097976**

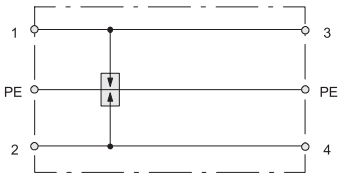
TKS-B: Surge protection for use in measuring, control and regulation systems, as well as telecommunication systems

- 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.

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	ϑ	-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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, rigid		0.14 - 2.5 mm²
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Connection options



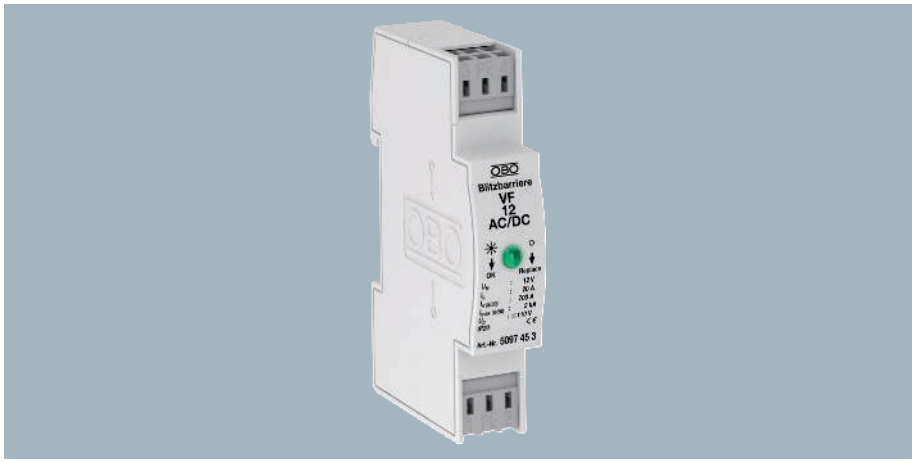
VF family

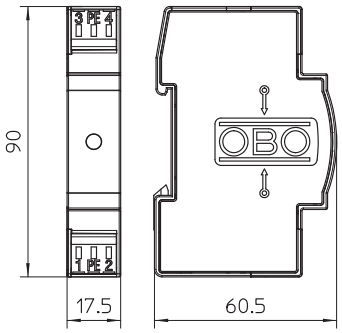
Protection for 2-pole power supplies

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 for power supply, 24 V





Type	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
VF24-AC/DC	34		1	8.000	**5097607**

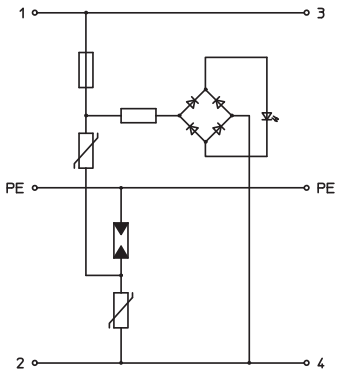
Surge protective device/fine protection type 3 to EN 61643-11

- 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

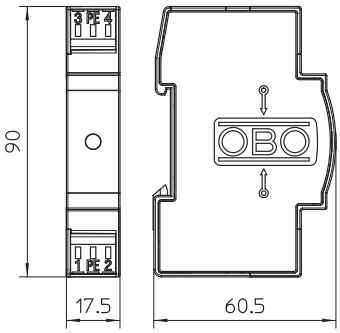
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

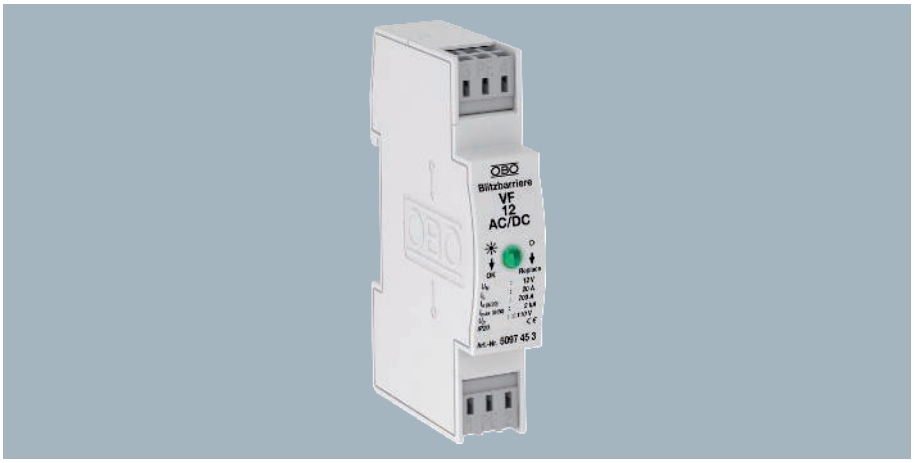
VF24-AC/DC		
U max AC	U_c AC	34 V
U max DC	U_c DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	0,7 kA
Maximum discharge current (8/20 µs)	I_{max}	2 kA
Rated current	I_L	20 A
Protection level wire-wire		<130 V
Protection level wire-earth		<1200 V
Response time	t_A	<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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, flexible		0.14 - 2.5 mm²

Connection options



MCR protection for 2-pole for power supply, 60 V





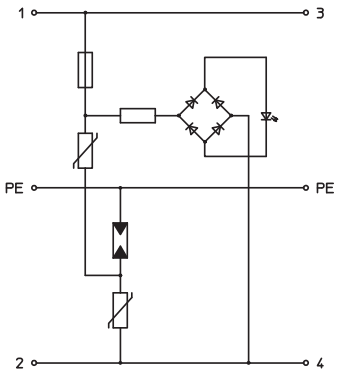
Surge protective device/fine protection type 3 to EN 61643-11

- 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.

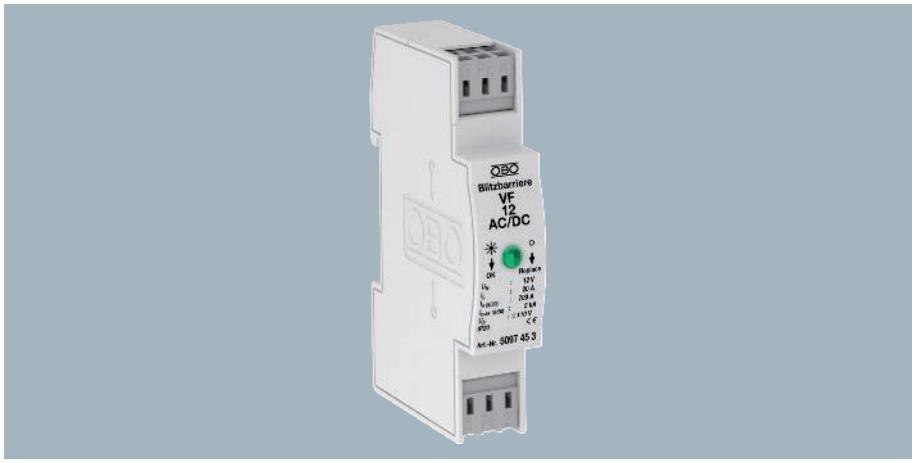
Type	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
VF60-AC/DC	80		1	8.000	**5097623**

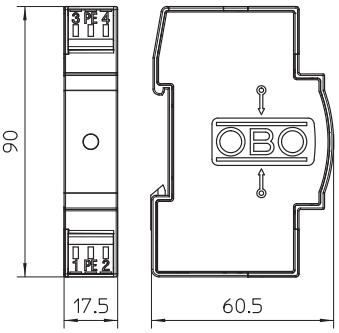
Connection options



VF60-AC/DC		
U max AC	U_c AC	80 V
U max DC	U_c 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_n	0,7 kA
Maximum discharge current (8/20 µs)	I_{max}	2 kA
Rated current	I_L	20 A
Protection level wire-wire		<280 V
Protection level wire-earth		<1200 V
Response time	t_A	<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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, flexible		0.14 - 2.5 mm²

MCR protection for 2-pole for power supply, 230 V





Type	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
VF230-AC/DC	255		1	8.000	**5097650**

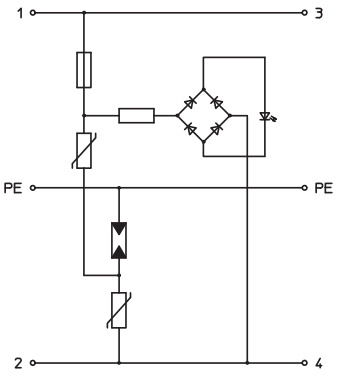
Surge protective device/fine protection type 3 to EN 61643-11

- 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

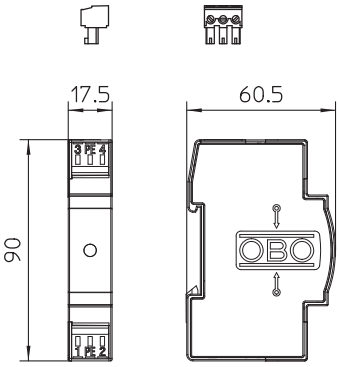
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

VF230-AC/DC		
U max AC	U_c AC	255 V
U max DC	U_c 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_n	2.5 kA
Maximum discharge current (8/20 µs)	I_{max}	7 kA
Rated current	I_L	20 A
Protection level wire-wire		<1000 V
Protection level wire-earth		<1400 V
Response time	t_A	<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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, flexible		0.14 - 2.5 mm²

Connection options



MCR protection for 2-pole power supply with remote signalling, 230 V AC



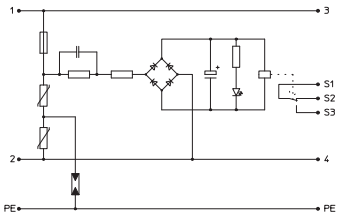
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- 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.

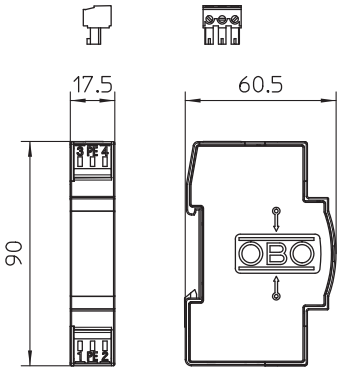
Type	Highest continuous voltage V		Pack Piece	Weight kg/100 pc.	Item no.
VF230-AC-FS	255		1	6.910	**5097858**

Connection options



VF230-AC-FS		
U max AC	U_c 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_n	2,5 kA
Maximum discharge current (8/20 µs)	I_{max}	7 kA
Rated current	I_L	20 A
Protection level wire-wire		<1060 V
Protection level wire-earth		<1400 V
Response time	t_A	<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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, flexible		0.14 - 2.5 mm²

MCR protection for 2-pin for power supply with leak current-free remote signalling, 230 V AC/DC



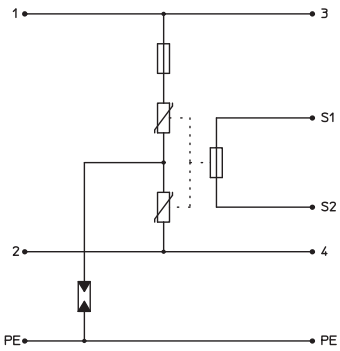
Type	U max AC V	U max DC V		Pack Piece	Weight kg/100 pc.	Item no.
VF2-230-AC/DC-FS	255	350		1	6.000	**5097939**

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.

VF2-230-AC/DC-FS		
U max AC	U_c AC	255 V
U max DC	U_c 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_n	2,5 kA
Maximum discharge current (8/20 µs)	I_{max}	7 kA
Rated current	I_L	20 A
Protection level wire-wire		< 1000 V
Protection level wire-earth		< 1400 V
Response time	t_A	<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 mm²
Connection cross-section, multi-wire		0.14 - 2.5 mm²
Connection cross-section, flexible		0.14 - 2.5 mm²

Connection options



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

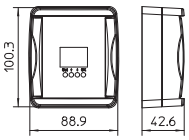
Lightning strike and surge counter for the recording of lightning and impulse currents with date and time

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).

BET TESTED

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**

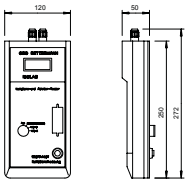


The LSC I+II lightning current meter measures and permanently saves pulse currents, together with the date and time. This ensures constant monitoring in order to notice if any lightning has struck the lightning protection system. Should this be the case, then the lightning protection system must be maintained 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)

ISOLAB measuring system arrester tester

Type	Country version	Nom. V	Measuring range	Pack Piece	Weight kg/100 pc.	Item no.
ISOLAB	D/GB	6	0 V - 999 V	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:

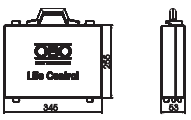
- V10-C and V20-C: Uc Tolerance range
  75 V -> 110 V - 130 V
  150 V -> 215 V - 265 V
  280 V -> 385 V - 475 V
  320 V -> 460 V - 560 V
  335 V -> 460 V - 560 V
  385 V -> 560 V - 680 V
  440 V -> 645 V - 785 V
  550 V -> 820 V - 1,000 V

- 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.

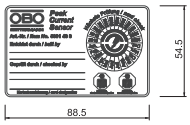
Testing unit for lightning barriers

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.

Magnetic card PCS

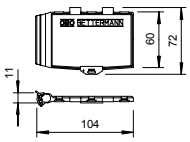


Type		Pack PU	Weight kg/100 PUs	Item no.
PCS		1	5.000	**5091438**

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)

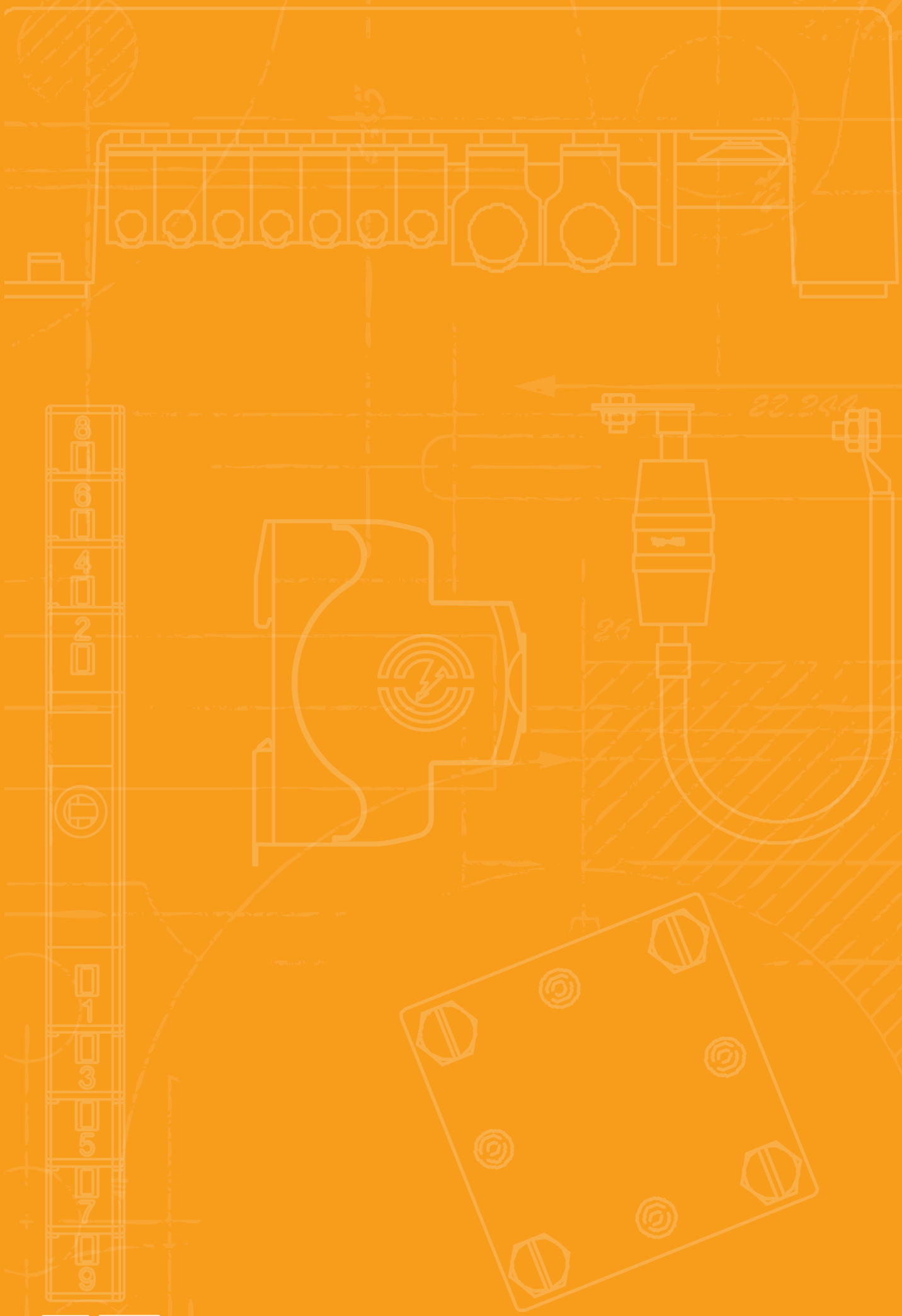
Magnetic card holder PCS-H



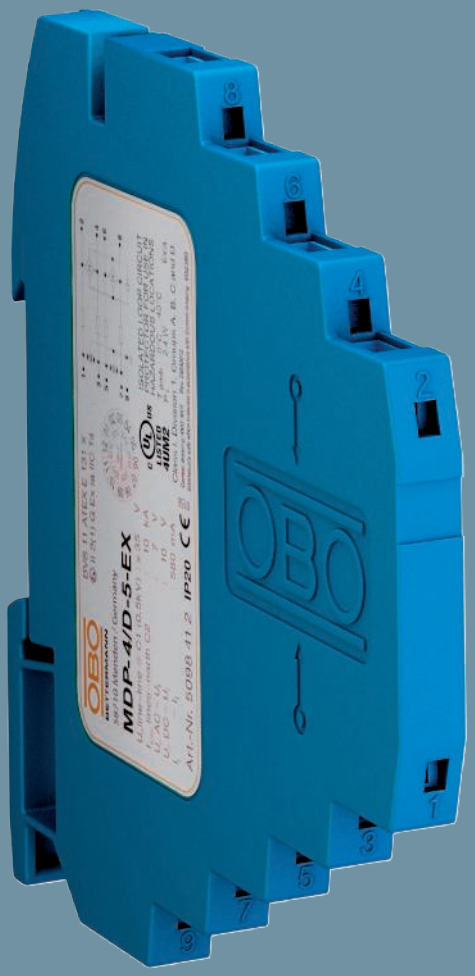
Type		Pack PU	Weight kg/100 PUs	Item no.
PCS-H		1	31.000	**5091527**

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

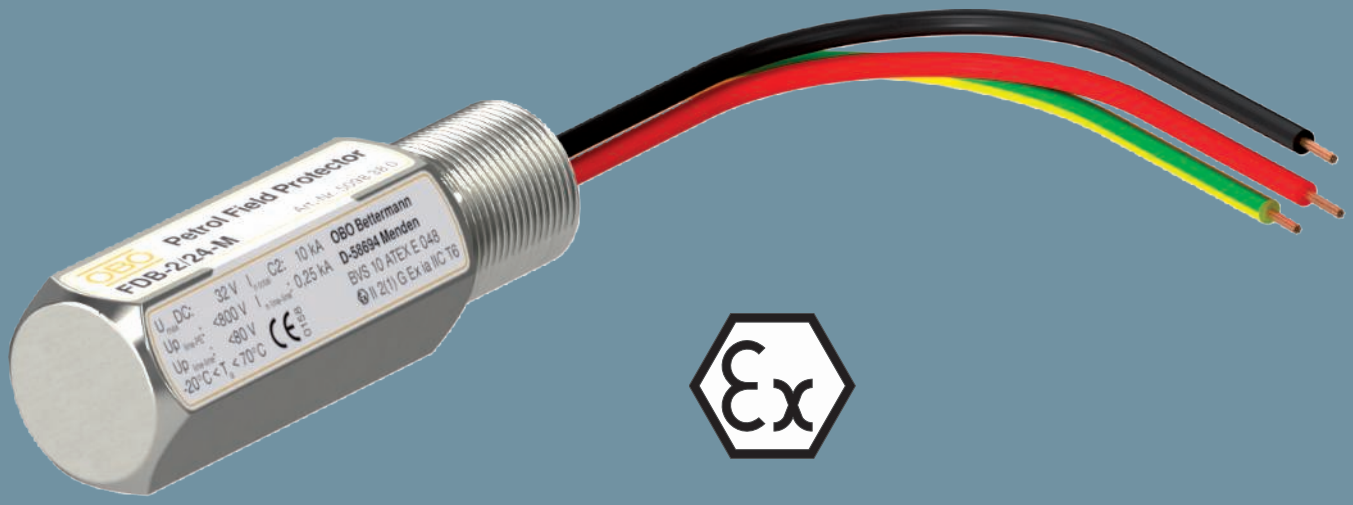


MDP EX family

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



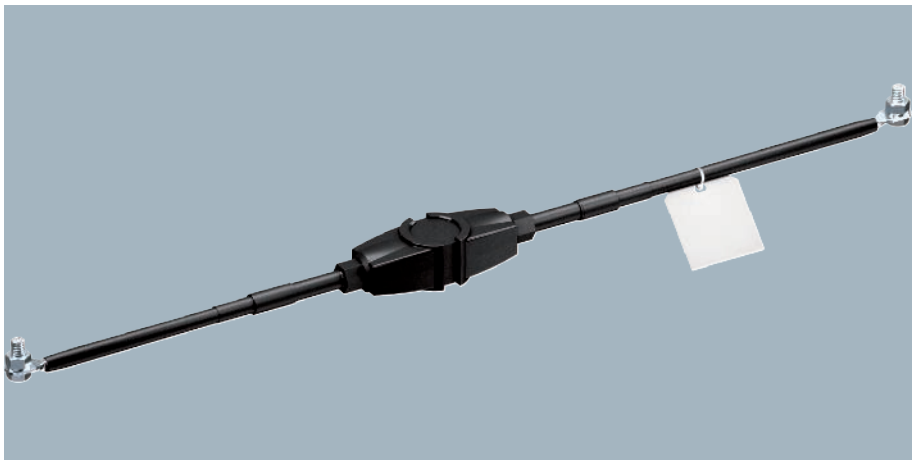
Petrol Field Protector FDB

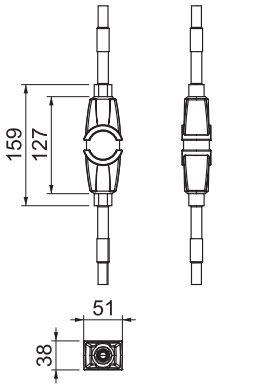
MCR protection for explosive areas

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

EX ISG H spark gap, jacketed





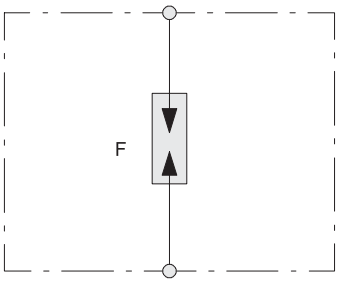
Type		Pack Piece	Weight kg/100 pc.	Item no.
EX ISG H KU		1	210.300	**5240032**

- 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 EN 60079-0/-1: Ex db IIC T6 Gb
- Labelling to EN 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 td IIIC T80 °C Db IP67
- Water-proof shrinkage
- NYY-0 1 x 25 mm2 cable, mounted on both sides
- Particularly suitable for connections in the ground

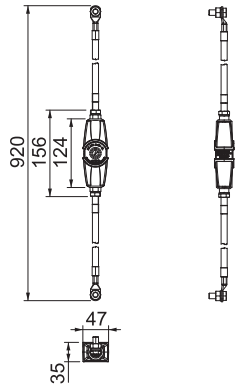
Application: In potentially explosive areas zone 1/21 and 2/22, indirect bridging of insulating flanges and insulating glands, e.g. in cathodic, corrosion-protected (KKS) systems.

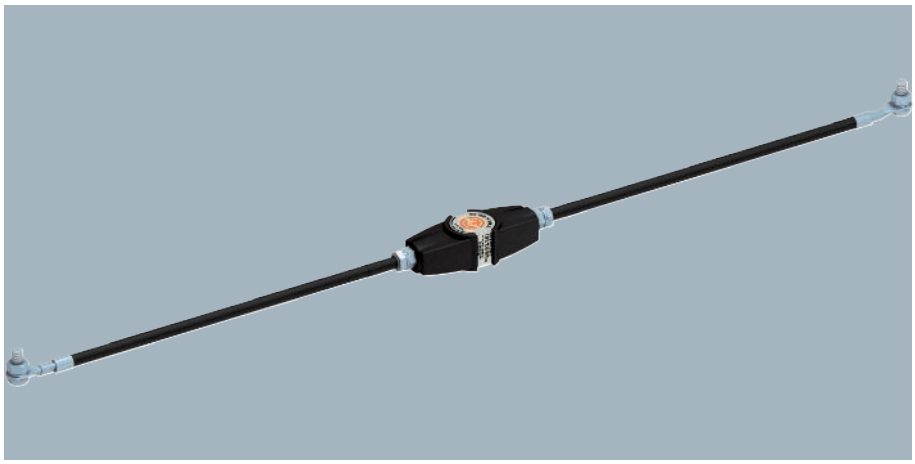
EX ISG H KU		
Connecting cable length		2 m
Rated impulse sparkover voltage	$U_{r\,imp}$	1.25 kV
Rated DC withstand voltage	U_{wDC}	354 V
Rated power frequency withstand voltage	U_{wAC}	250 V
Power frequency spark-over voltage	U_{AS}	0.56 kV
Impulse discharge current (10/350)	I_{imp}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Lightning current carrying capacity		H/100 kA
Temperature range	ϑ	-20 - +60 °C

Connection options



EX ISG H spark gap, with 2 cables





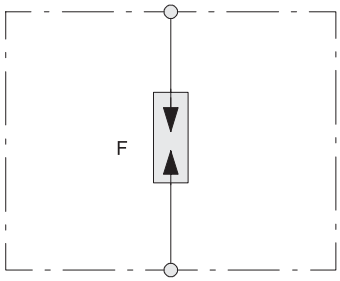
- Spark gap to VDE 0185-561-3 (IEC 62561-3)
- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2 G Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: II 2 D Ex td IIIC T80 °C Db IP67
- Ex certificate to IECEx
- Labelling to EN 60079-0/-1: Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: Ex td IIIC T80 °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 td IIIC T80 °C Db IP67
- Connection cable (25 mm2) on both sides, pre-mounted with M10 bolt, lock washer and nut

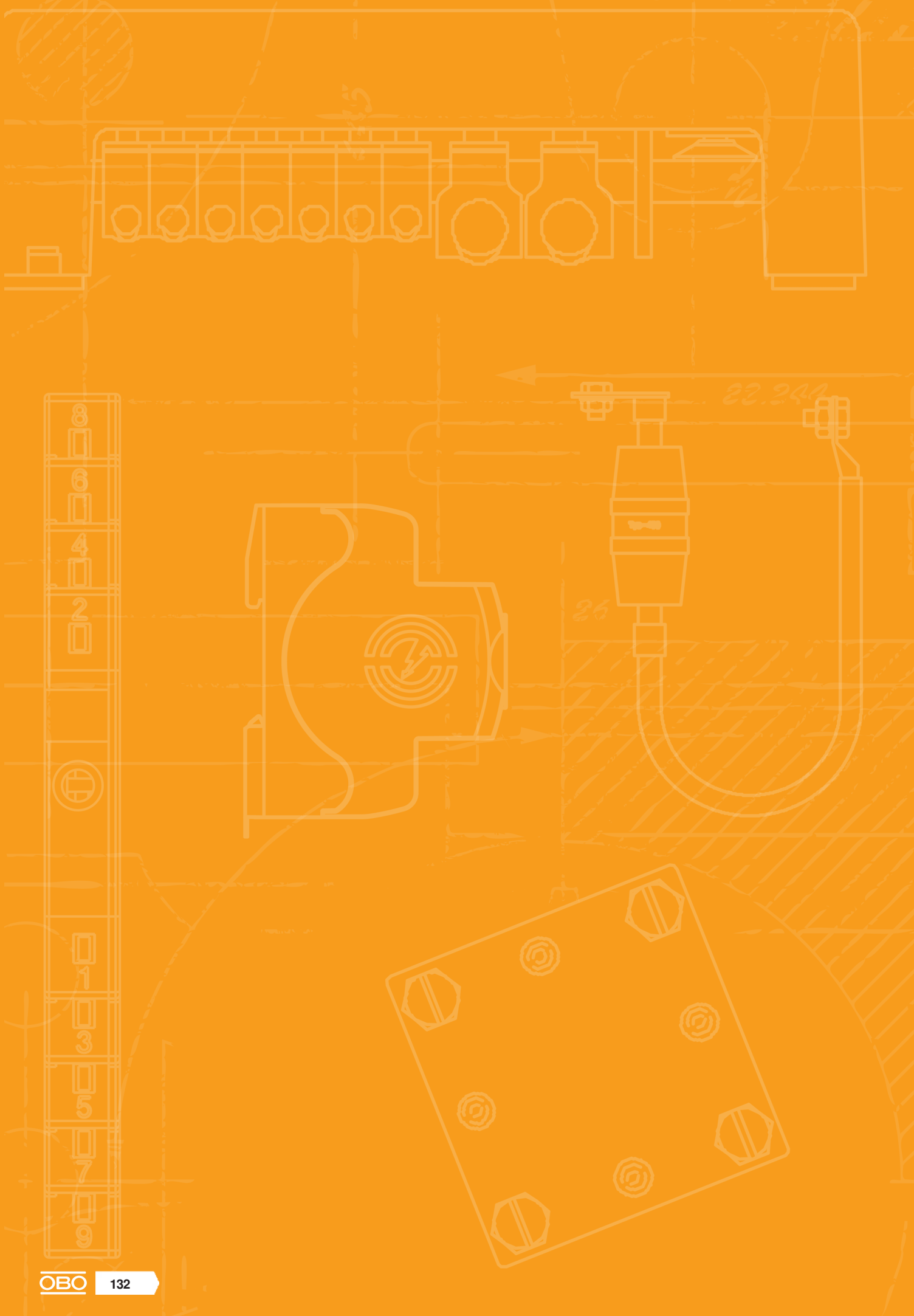
Application: In potentially explosive areas zone 1/21 and 2/22, indirect bridging of insulating flanges and insulating glands, e.g. in cathodic, corrosion-protected (KKS) systems.

Type		Pack Piece	Weight kg/100 pc.	Item no.
EX ISG H 350 2L		1	74.155	**5240033**

Connection options



EX ISG H 350 2L		
Connecting cable length		0.35 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	ϑ	-20 - +60 °C



Data and information technology

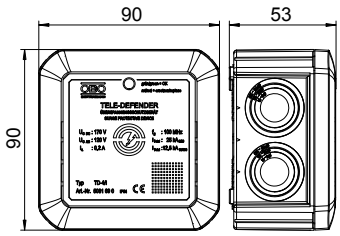
Tele Defender

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-4/I for ISDN and DSL systems



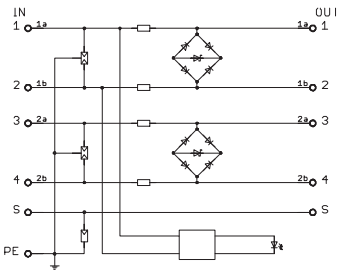
Data cable protection device for telecommunications equipment

- 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

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-4/I	120	170	4	Terminal		1	11.000	**5081690**

Connection options



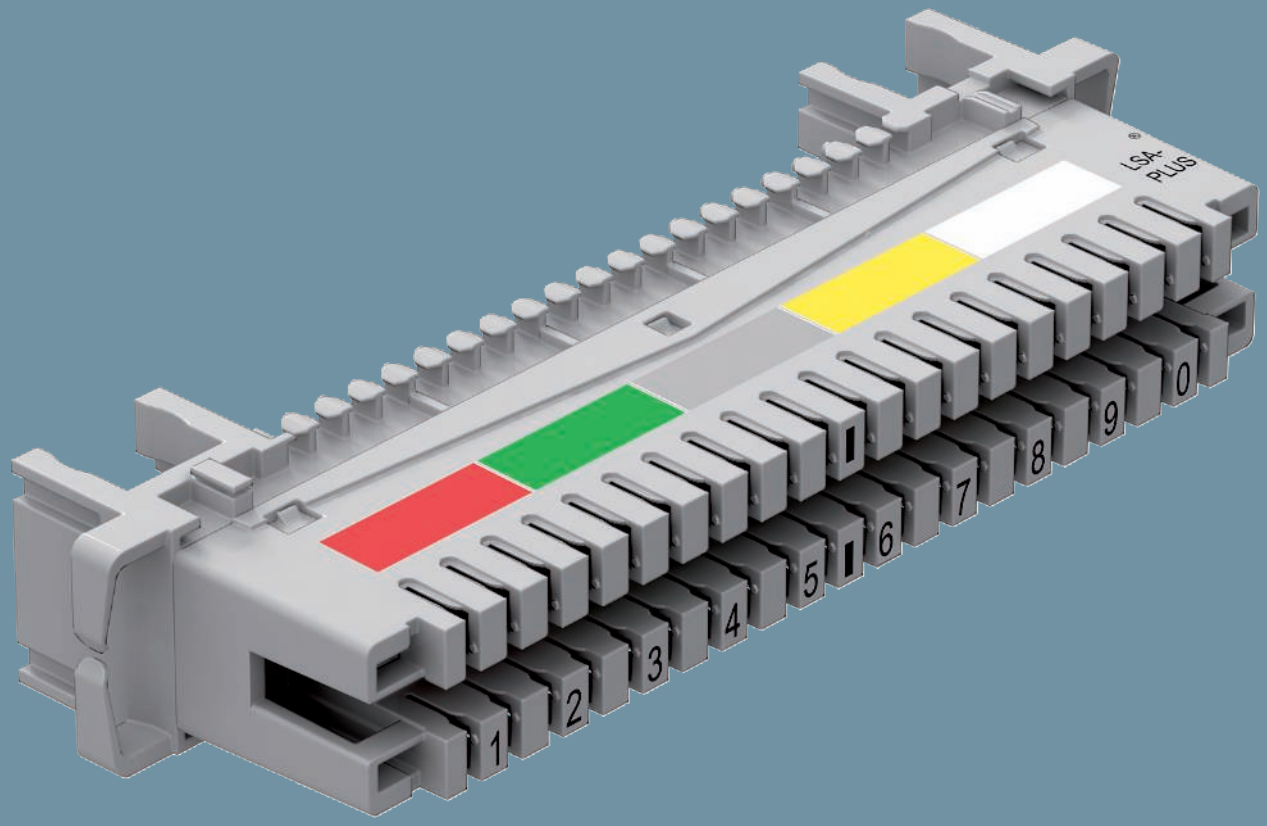
TD-4/I		
Maximum continuous voltage AC	U_C	120 V
Maximum continuous voltage DC	U_C	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.2 A
Capacity (wire-wire)		<50 pF
Capacity (wire-earth)		<10 pF
Series resistance per wire		9 Ω ± 10 %
Impulse durability wire-wire		C2: 18 kV / 9 kA (8/20µs)
Impulse durability wire-earth		C2: 18 kV / 9 kA (8/20µs)
Impulse discharge current (10/350)	I_{imp}	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}	≤3 dB
Temperature range	ϑ	-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 mm²
Connection cross-section, multi-wire		0.14 - 0.75 mm²
Connection cross-section, rigid		0.14 - 0.75 mm²
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



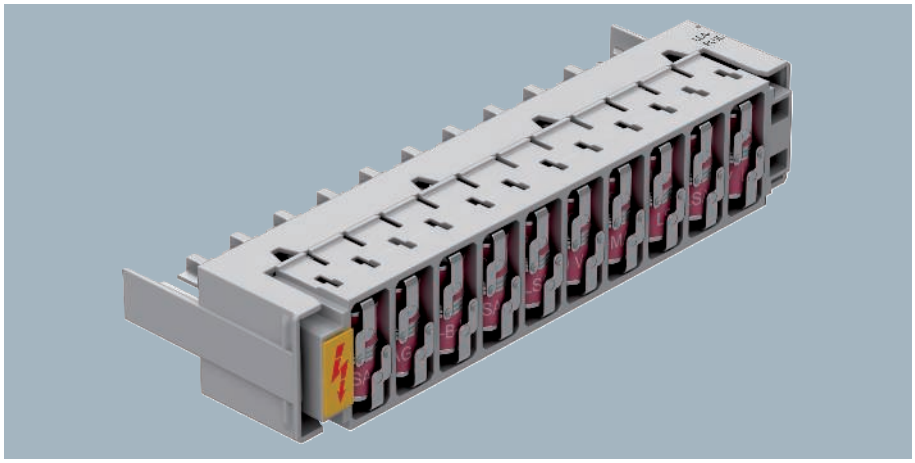
LSA-Plus technology Basic and fine protection

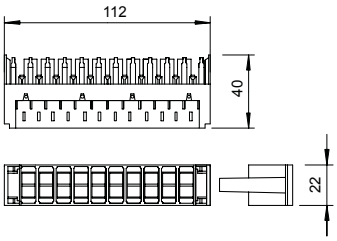
Surge protective devices for industrial telecommunications applications

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**

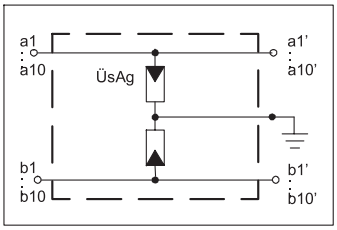
LSA basic protection magazine for use in multi-core data cable systems, MCR systems and telephone switchboards.

- 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 (8/20µs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20µs)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		1 kA
Protection level @ C1		<750 V
Temperature range	ϑ	-40 - +80 °C
Installation type		LSA-Plus, connectable
Connection system		Other
Protection rating		IP20
Testing standard		IEC 61643-21

Connection options



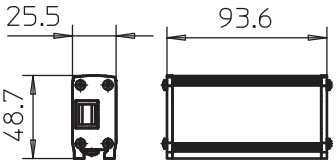
Net Defender

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)



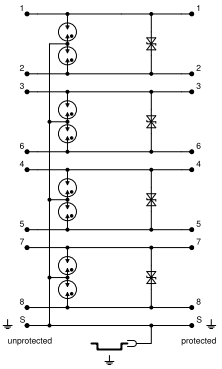
Type	Version	Connection system		Pack Piece	Weight kg/100 pc.	Item no.
ND-CAT6A/EA	Fine protection, 8 wires + shield	RJ45 8(8)		1	16.600	**5081800**

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

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 (8/20µs)
Impulse durability wire-earth		C2: 2 kV / 1 kA (8/20µs)
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	ϑ	-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



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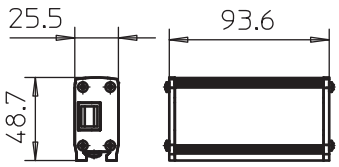
Surge protection for high-speed networks up to 1 GBit (Class ND-CAT6/E-F)

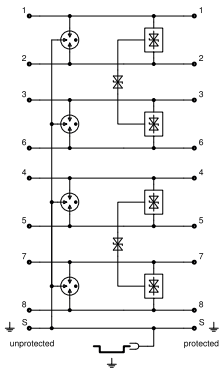


Data cable protection device for high-speed networks
- High-quality RJ45 sockets
- Low protection level at high current load
- Earthing via DIN rail or connection cable
- Support of Power over Ethernet ++ (PoE++/4PPoE) to 1 A in accordance with IEEE 802.3
- Tested transmission quality in networks up 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

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**

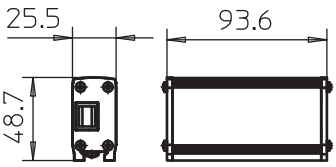
Connection options



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 (8/20µs)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20µs)
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	ϑ	-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-B)

Alu



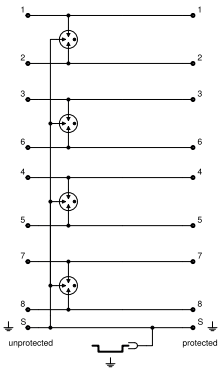
Type	Version	Connection system	Pack Piece	Weight kg/100 pc.	Item no.
ND-CAT6/E-B	Basic protection, 8 wires + shield	RJ45 8(8)	1	16.220	**5081804**

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

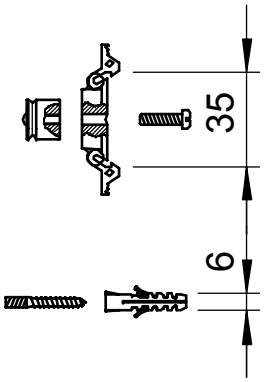
Application example: 1 GBit Ethernet, 10/100 MBit Ethernet, PoE applications, IP camera systems, ISDN S0 interfaces

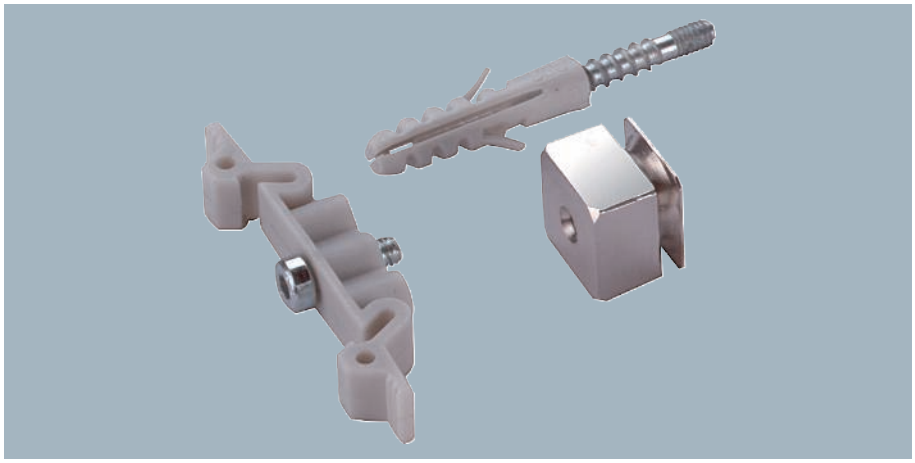
ND-CAT6/E-B		
Maximum continuous voltage AC	U_C	46 V
Maximum continuous voltage DC	U_C	65 V
Category		Type 1 / D1
Lightning protection zone LPZ		0→1
Channel performance ISO/IEC		Class E
Channel performance Ansi/EA		CAT 6
Number of poles		8
Rated current	I_L	1 A
Impulse durability wire-wire		C2: 3 kV / 1,5 kA (8/20µs)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20µs)
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	ϑ	-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



Fastening set for DIN profile rail



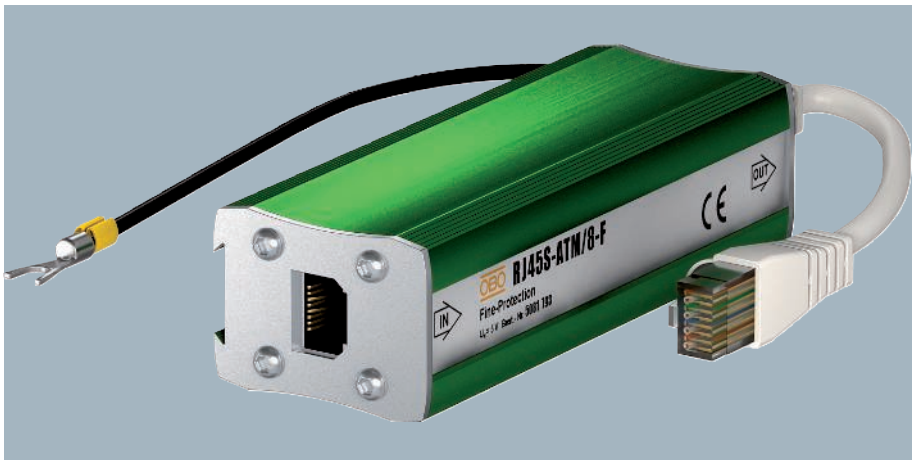


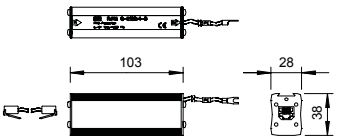
DLS-BS: The fastening set is designed for a DIN rail and wall mounting and can be used for the data cable protection devices listed below:

- Coax N-E5/...
- Coax B-E2/...
- RJ 11-Tele/4...
- RJ 45 S-...

Type	Version		Pack Piece	Weight kg/100 pc.	Item no.
DLS-BS	For mounting: • Coax B-E2/... • Coax N-E5/... • RJ 11-Tele/4... • RJ 45 S-...		1	5.000	**5082382**

Fine protection 8-F for Ethernet networks (Class D/CAT 5)





Type	Version	Connection system		Pack Piece	Weight kg/100 pc.	Item no.
RJ45 S-ATM 8-F	Fine protection, 8 wires + shield	RJ45 8(8)		1	14.000	**5081990**

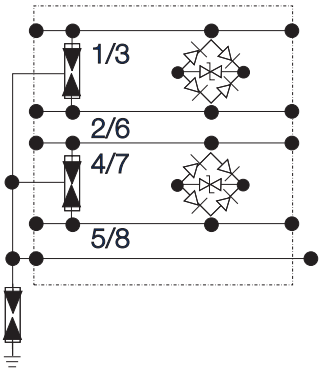
Universal data cable protection device for network technology and telecommunication systems

- In aluminium housing
- Protection for 8 cores
- With two-stage protective circuit
- Simple mounting
- With RJ45 Western connector
- Incl. 150 mm connection cable with RJ45 connectors
- Cat 5e network technology, 10BaseT, 100BaseT, 1000BaseT
- DIN rail mounting with accessories DLS-BS (5082 38 2)

Application: For analogue, ISDN, DSL systems, Ethernet Twisted Pair.

RJ45 S-ATM 8-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
Channel performance ISO/IEC		Class D
Channel performance Ansi/EA		CAT 5e
Number of poles		8
Rated current	I_L	1 A
Impulse durability wire-wire		C2: 3 kV / 1,5 kA (8/20µs)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20µs)
Total discharge current (8/20)		7,5 kA
Protection level wire-wire		<40 V
Protection level wire-earth		<900 V
Frequency range		>155 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45 8(8)
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Connection options

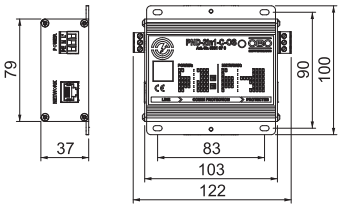


PND combination protection devices for CCTV

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



Type	Maximum continuous voltage (L-N) V	Maximum discharge current (8/20 µs) kA		Pack Piece	Weight kg/100 pc.	Item no.
PND-2in1-C-OS	255	10		1	27.000	**5081070**

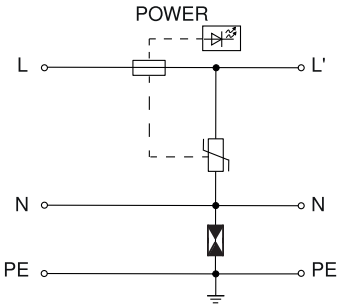
Combination protection device for IP-based TV/camera systems

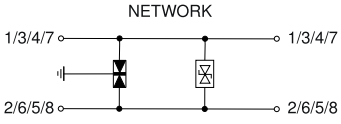
- Protection of power and data interface in a single device
- In aluminium housing
- Simple mounting with adapter plug
- Two-stage protection circuit
- Three-pole power connection for the power interface
- RJ45 connection for the data interface
- With LED operation display (OS)
- Incl. DIN rail fastening set

Application: Protection of CCTV, video signals, (IP) cameras and/or TV systems

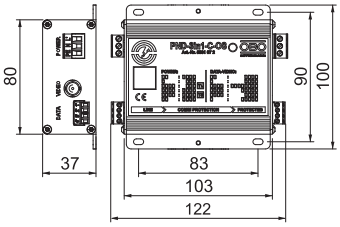
PND-2in1-C-OS		
Temperature range	ϑ	-20 - +80 °C
Installation type		Installation
Protection rating		IP20
Earthing via:		Connection cable / DIN rail
Lightning protection zone LPZ		1→3
Power		
SPD to IEC 61643-11		Class II+III
SPD to EN 61643-11		Type 2+3
Maximum continuous voltage (L-N)	U_C	255 V
Rated current	I_L	16 A
Protection level	U_p	<1,3 kV
Idle voltage	U_{OC}	10 kV
Nominal discharge current (8/20 µs)	$I_{n\ /\ L\text{-}N}$	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

Connection options





Combined protection device 3in1 for CCTV camera systems



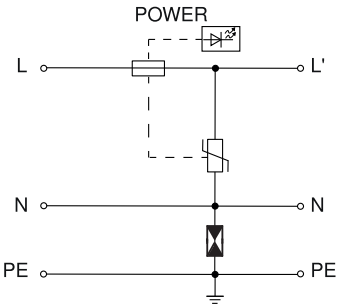
Combination protection device for coaxial TV/camera systems

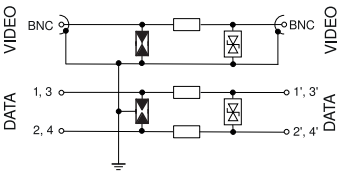
- Protection of power and data interfaces in a single device
- In aluminium housing
- Simple mounting with adapter
- Two-stage protection circuit
- Three-pole power connection for the power interface
- With LED operation display (OS)
- Incl. DIN rail fastening set

Application: Protection of CCTV, video signals, cameras and/or TV systems

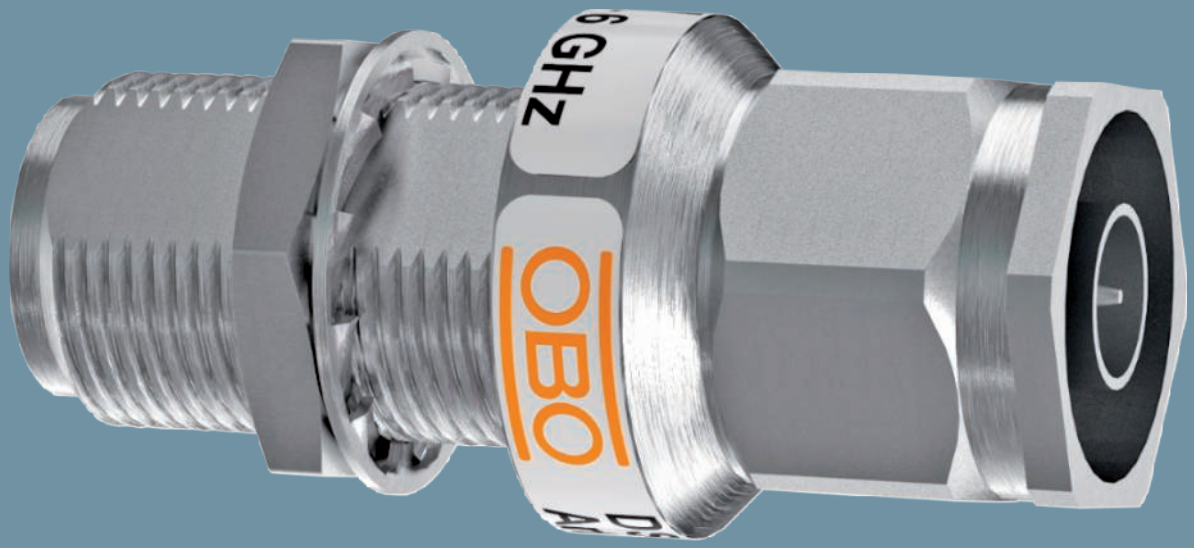
Type	Maximum continuous voltage (L-N) V	Maximum discharge current (8/20 µs) kA		Pack Piece	Weight kg/100 pc.	Item no.
PND-3in1-C-OS	255	10		1	29.900	**5081072**

Connection options





PND-3in1-C-OS		
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)	$I_{n\ /\ L\text{-}N}$	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

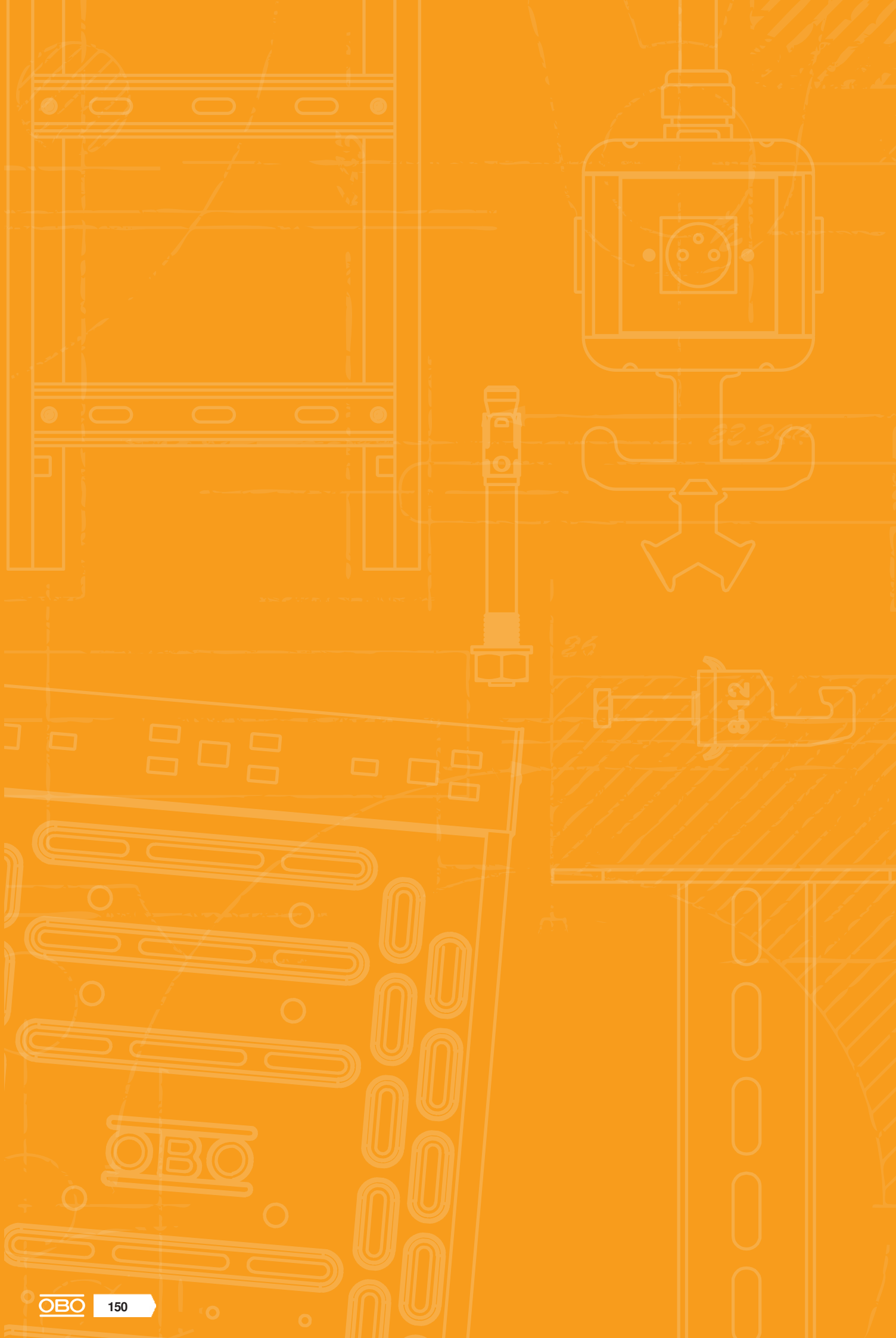


DS family

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



Directories

Test marks

	American Bureau of Shipping, USA
	AENOR, Producto Certificado, Spain
	STOWARZYSZENIE ELEKTRYKÓW POLSKICH, Poland
	Lightning current-tested
	Lightning current-tested, Class H (100 kA)
	CEBEC, Belgium
	Canadian Standards Association, Canada
	DEMKO, Danmarks Elektriske Materielkontrol, Denmark
DIBt	Deutsches Institut für Bautechnik Berlin, Germany
	Det Norske Veritas
	ENEC Austria
	ATEX certificate for explosive areas
	ELEKTROTECHNICKÝ ZKUŠEBNÌ ÚSTAV, Czech Republic
FI	FIMKO, Finland
	Forschungs- und Materialprüfungsanstalt, Germany
	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	KEMA-KEUR, Netherlands
	Indication of metric products
	MAGYAR ELEKTROTECHNIKAI ELLENŐRZŐ INTÉZET Budapest, Hungary
	NEMKO, Norway
NF	AFNOR Quality symbol of the French standardisation institute

	Underwriters Laboratories Inc., USA + CSA, Canada
	Österreichischer Verband für Elektrotechnik, Austria
	INSTITUTO ITALIANO DEL MARCHO DI QUALITÁ, Italy
	RINA 1861, Ship Classification, Certification and Services
	Underwriters Laboratories Inc., USA
	SEMKO An Inchcape Testing Services Company, Sweden
	Eidgenössisches Starkstrominspektorat, Switzerland
SABS APPROVED	South African Bureau of Standards
	Shock-tested, Bundesamt für Zivilschutz, Germany
	Sähkötarkastuskeskus Elinspektionscentralen Electrical Inspectorate, Finland
	Underwriters Laboratories Inc., USA
LISTED	Underwriters Laboratories Inc., USA
	Verband der Elektrotechnik, Elektronik, Informationstechnik e.V., Germany
	German Association of Electricians, tested safety
5 YEARS	5-year warranty

Pictogram explanation

Surfaces

FS	Strip galvanised
FSK	Strip galvanised/plastic-coated
DD	Strip galvanised zinc/aluminium, double dip
BK	Bright
2B	Bright, reworked
EL	Anodised
F	Hot-dip galvanised
G	Electrogalvanised
GK	Electrogalvanised/plastic-coated
GCL	Electrogalvanised, yellow-chromatised
GGP	Electrogalvanised, yellow passivated
GTP	Electrogalvanised, transparently passivated
GR	Primed
L	Painted
SG	Welding primed
FT	Hot-dip galvanised
FT SO	Hot-dip galvanised 85 µm
Cu	Copper-plated
N	Nickel-plated
ZD	Galvanised, Deltatone 500
ZDM	Galvanised, MAGNI 565
GA	Zinc-aluminium coated, Galfan
ZL	Zinc scale

Conformity symbol

CE	Communautés Européennes, EC declaration of conformity according to EC directives
RoHS conform	RoHS-conformant

Quality marks

	Halogen-free; without chlorine, fluorine and bromine
650°	Flame resistant 650 °C
750°	Flame resistant 750 °C
960°	Flame resistant 960 °C
UV resistant	UV-resistant

Specific product symbols

Ø 60	Diameter 60 mm
Ø 68	Diameter 68 mm
Type 3	Protection device to DIN EN 61643-11 or IEC 61643-11
LPZ 2→3	Transition from LPZ 2 to LPZ 3
AS	Acoustic signalling

Applications

FS	Remote signalling
AS	Acoustic signalling
ISDN	Integrated Service Digital Network, ISDN applications
DSL	Digital Subscriber Line, DSL applications
Analog TK	Analogue telecommunication
Cat 5	Category 5 TwisterPair
Cat 6_A	Channel Performance to American EIA/TIA standard
MSR	Measuring, controlling and regulating systems
TV	TV applications
SAT	SAT-TV applications
Mu	MultiBase base
	LifeControl
EX	Intrinsically safe protection device for potentially explosive areas
Class E_A	Channel Performance to ISO/IEC 11801
PoE	Power over Ethernet
230/ 400 V System	230/400 V system
IP 54	Protection rating IP 54
IP 65	Protection rating IP 65

Lightning protection classes

Type 1	Protection device to DIN EN 61643-11 or IEC 61643-11
Type 1+2	Combination protection device made of type 1 and type 2
Type 2	Protection device to DIN EN 61643-11 or IEC 61643-11

Lightning protection classes

Type 2+3	Protection device to DIN EN 61643-11 or IEC 61643-11
Type 3	Protection device to DIN EN 61643-11 or IEC 61643-11

Lightning protection zone

LPZ 0→1	Transition from LPZ 0 to LPZ 1
LPZ 0→2	Transition from LPZ 0 to LPZ 2
LPZ 0→3	Transition from LPZ 0 to LPZ 3
LPZ 1→2	Transition from LPZ 1 to LPZ 2
LPZ 1→3	Transition from LPZ 1 to LPZ 3
LPZ 2→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

E30	Maintenance of electrical function class E30
E90	Maintenance of electrical function class E90

Clamp clip base shapes

N	Clamp clip for C profile rail, slot width 11–12 mm
H	Clamp clip for C profile rail, slot width 16–17 mm
U	Clamp clip for C profile rail, slot width 18–22 mm

Diameter

Ø 60	Diameter 60 mm
Ø 68	Diameter 68 mm
Ø 70	Diameter 70 mm
Ø 74	Diameter 74 mm

Entries

4	4 cable entries
6	6 cable entries
7	7 cable entries
8	8 cable entries
9	9 cable entries
10	10 cable entries
12	12 cable entries
10	10 cable entries ECO
12	12 cable entries ECO
14	14 cable entries ECO
16	16 cable entries
18	18 cable entries ECO
24	24 cable entries

Gland thread

M	Thread metric
Pg	Thread Pg

Entry size

M20	M20 entry
M25	M25 entry
M32	M32 entry
M40	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

1,5 mm²	Nominal cross-section 1.5 mm²
1,5–2,5 mm²	Nominal cross-section 1.5–2.5 mm²
2,5 mm²	Nominal cross-section 2.5 mm²
2,5–4 mm²	Nominal cross-section 2.5–4 mm²
4 mm²	Nominal cross-section 4 mm²
4–6 mm²	Nominal cross-section 4–6 mm²
6 mm²	Nominal cross-section 6 mm²
10 mm²	Nominal cross-section 10 mm²
16 mm²	Nominal cross-section 16 mm²

Nominal voltage

400 V	Nominal voltage 400 V
500 V	Nominal voltage 500 V
660 V	Nominal voltage 660 V

Polarity

3	3-pole
5	5-pole
7	7-pole
8	8-pole
10	10-pole
12	12-pole

Slot widths

7,5	Slot width 7.5 mm
11	Slot width 11 mm
11-12	Slot width 11–12 mm
12	Slot width 12 mm
15	Slot width 15 mm
16	Slot width 16 mm
16,5	Slot width 16.5 mm
16-17	Slot width 16–17 mm
17	Slot width 17 mm
18	Slot width 18 mm
22	Slot width 22 mm
35	Slot width 35 mm

Screw heads

	Philips screw
	Torx screw
	Phillips screw
	Pozidriv

Firing devices

	Bolt-firing tool
	Nail device

Protection rating

IP 20	Protection rating IP 20
IP 30	Protection rating IP 30
IP 31	Protection rating IP 31
IP 44	Protection rating IP 44
IP 54	Protection rating IP 54
IP 55	Protection rating IP 55
IP 65	Protection rating IP 65
IP 66	Protection rating IP 66
IP 67	Protection rating IP 67
IP 68	Protection rating IP 68

Metals

Alu	Aluminium
Alu/St	Aluminium/steel
A2	Stainless steel, rustproof
A4	Stainless steel, rustproof
A5	Stainless steel, rustproof
Cu	Copper
CuZn 37	Brass
St	Steel
TG	Malleable iron
Zn	Die-cast zinc

Plastics

ABS/AVA	Acrylonitrile butadiene styrene
UF	Duroplast, Aminoplast, type 131.5
MF	Duroplast, melamine resin, type 150
EVA	Ethylene vinyl acetate

Plastics

FA	Fibre-proof material DIN 28091
GFK	Fibreglass-reinforced plastic
NBR SBR	Rubber mixture
NBR	Nitrile rubber
PETR	Petrolatum
PA	Polyamide
PA/ GF	Polyamide, fibreglass reinforced
PBPT	Polybutylene terephthalate
PC	Polycarbonate
PE	Polyethylene
PP	Polypropylene
PP/ GF	Polypropylene, fibreglass reinforced
PS	Polystyrene
PVC	Polyvinylchloride
ZELL PC	Cellular polyethylene

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MB 3	5067504	5096665	86
MB 3+FS	5067535	5096667	87
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Building Connections

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