

TBS



**Transient and lightning
protection systems
India**

2020/2021

Building Connections

OBO
BETTERMANN



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OBO Construct planning aids

Digital selection aids for earthing systems and surge protection

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

OBO Construct for earthing systems

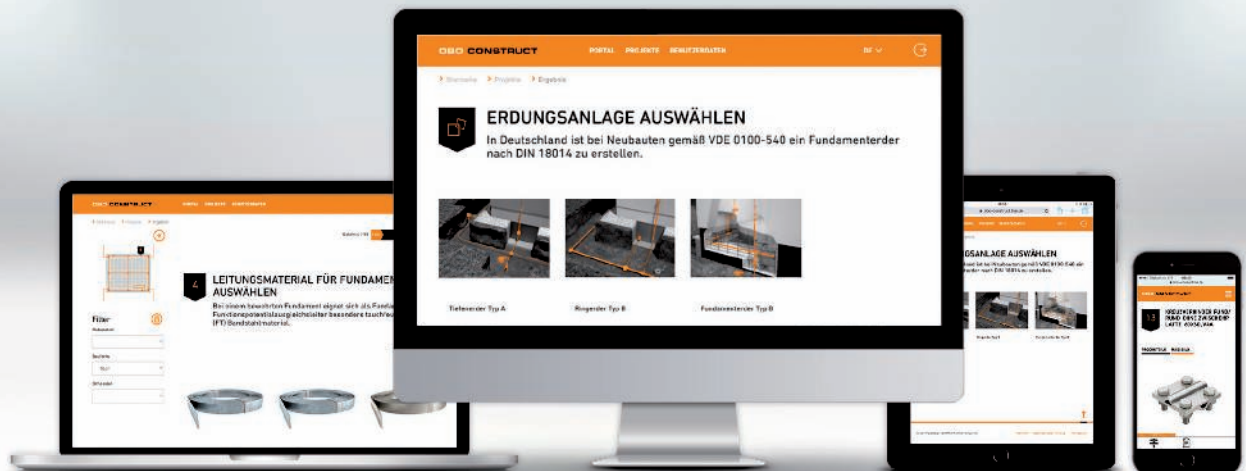
The digital selection aid can be used for the easy planning and configuration of earthing systems. The simple and intuitive user guidance leads you through the individual components of the earthing system step by step. The software then automatically calculates the amounts required and the matching accessories.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

OBO Construct for surge protection

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

Benefits

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





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 2373 89 - 1700 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 earther to current DIN 18014
- The internal lightning protection system
- Equipotential bonding systems
- Overvoltage protection systems
- Current standards
- New selection and planning aids
- Examples





GÜTEZEICHEN



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
- Data sheets

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

OBO manufacturers 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.



Lightning protection guide

Free order and download from www.obo.de



- 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 or 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 voltage damage



Financial loss can only be considered in isolation in cases where no legal or insurance requirements relating to personal safety 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

Further 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)
- Defective heating systems
- Costs due to faults and false alarms in fire and burglar alarm systems

Financial losses are on the rise

Current statistics and estimates of insurance companies show: Damage levels caused by surges – excluding consequential or outage costs – long since reached drastic levels due to the growing dependency on electronic "aids". It's no surprise, then, that property insurers are checking more and more claims and stipulating the use of devices to protect against surges. Information on protection measures can be found in e.g. the German Directive VDS 2010.

Year	Number of lightning and surge voltage damage cases	Paid damages for lightning and surge voltage damage
1999	490,000	€310 million
2006	550,000	€340 million
2007	520,000	€330 million
2008	480,000	€350 million
2009	490,000	€340 million
2010	330,000	€220 million
2011	440,000	€330 million
2012	410,000	€330 million
2013	340,000	€240 million
2014	410,000	€340 million
2015	350,000	€240 million
2016	300,000	€250 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 annexes 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



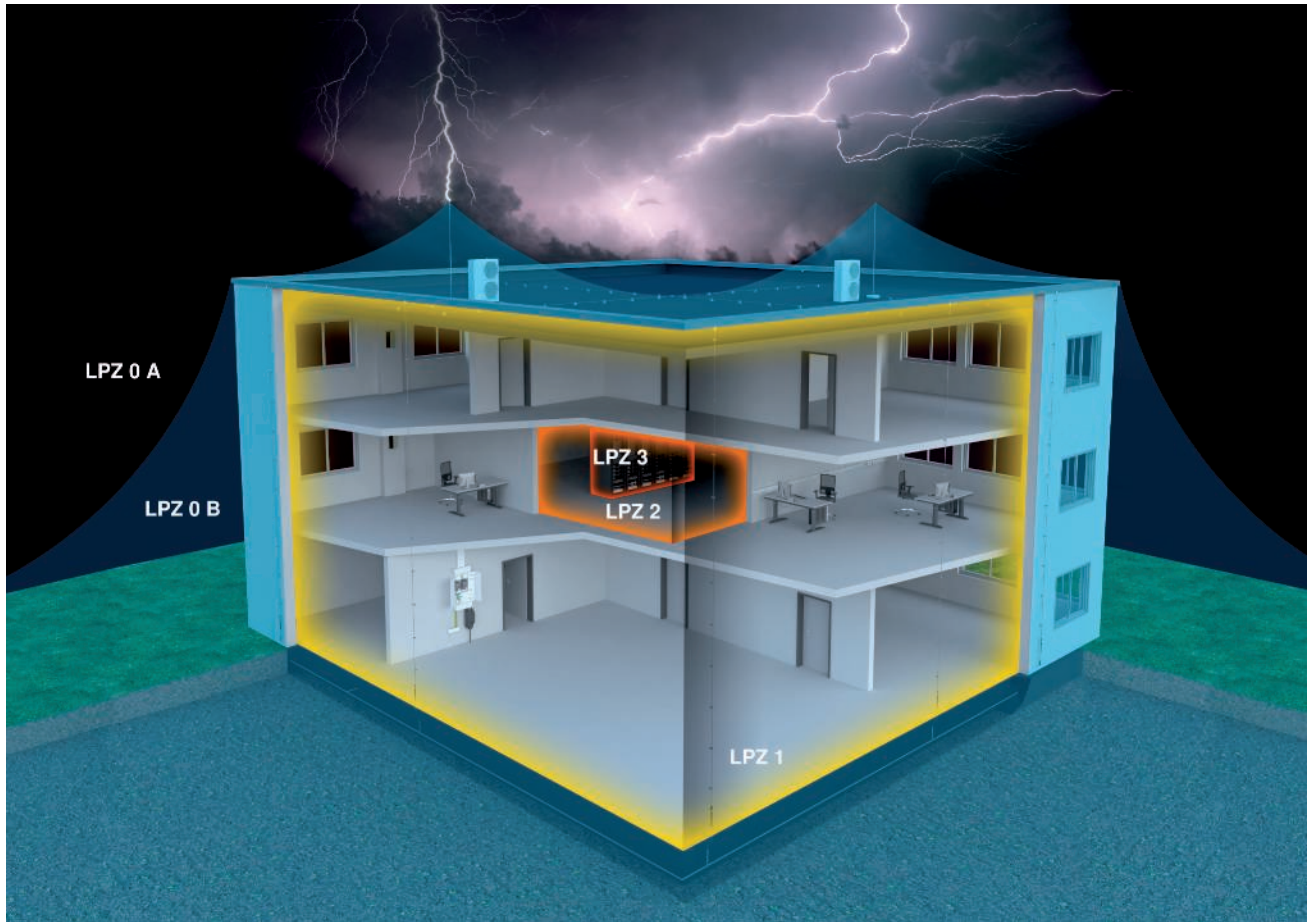
Standard	German supplement	Contents
VDE 0185-305-1 (IEC 62305-1)		Protection against lightning – Part 1: General principles
VDE 0185-305-2 (IEC 62305-2)		Protection against lightning – Part 2: Risk management
	1	Lightning risk in Germany
	2	Calculation aids for estimating the risk of damage for buildings
	3	Additional information on use of EN 62305-2
VDE 0185-305-3 (IEC 62305-3)		Protection against lightning – Part 3: Protection of structures and people
	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 protection devices – Part 11: Surge protection 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 protection 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 arrestors 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 protection devices

The classification of surge protection 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 protection 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 – testing centre for lightning protection, electrical engineering and support systems



Lightning current generator

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 protection devices and lightning arrestors. 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 protection 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
Hüingsser Ring 52
58710 Menden
GERMANY

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

Zertifikat
Mitteilung über die Bewertung des Qualitätssicherungssystems

1. 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

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

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

4. **DEKRA**

Confirmation

Herewith we confirm, that

OBO BETTERMANN GmbH & Co. KG
Hüingsser Ring 52
58710 Menden

is a member of our association

Industrieverband Feuerverzinken e. V., Düsseldorf.

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

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

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

Industrieverband Feuerverzinken e.V.
Hörnselbacher Weg 200
40470 Düsseldorf

Mark Huckhold
Mark Huckhold

Mitglied der European General Galvanizers Association EGGA - BIC DEU1 DEIBDU - IBAN DE42 3007 0024 0589 1643 00

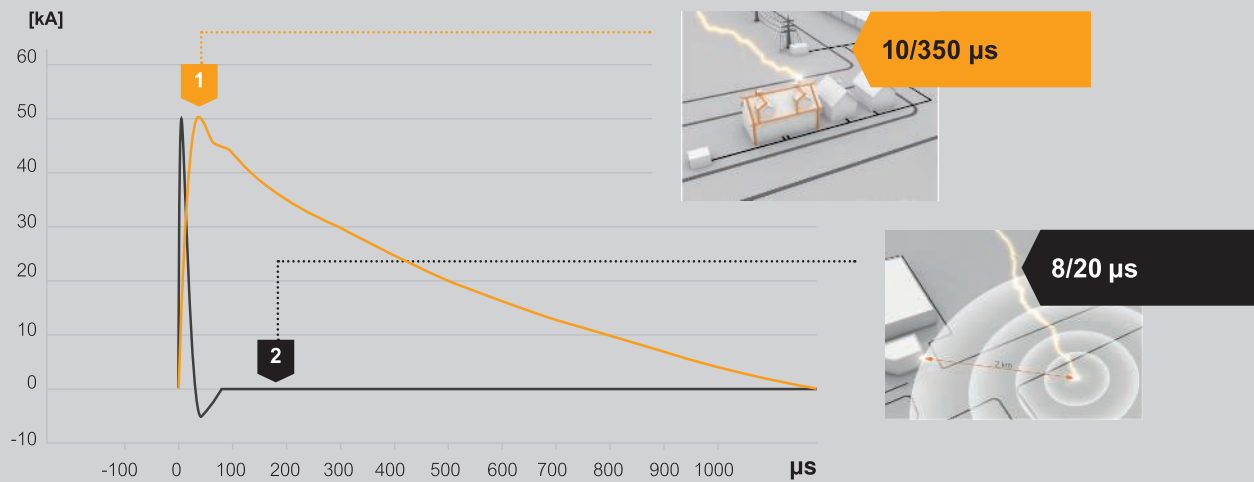
Acceptance Program
Stufe 2 / in Stage 2

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in mit dem gültigen Dokument „TDAP SCOPE“. Es berechtigt h geschützten Zeichens des VDE. in with the valid document „TDAP SCOPE“. It does not ected VDE marks.

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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)

Types of pulse and their characteristics

Testing types for lightning and surge protection

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

Simulation of real environmental conditions


















To carry out standardised tests on components intended for external use, they must be pretreated under real environmental conditions. This takes place in a salt spray trough and a sulphur dioxide testing chamber. Depending on the test, the test length and the concentration of the salt spray or sulphur dioxide in the testing chambers may vary. This means that it is possible to conduct tests according to IEC 60068-2-52, ISO 7253, ISO 9227 and EN ISO 6988.

Testing cable support systems

The well-known KTS testing system, newly installed in the BET Test Centre, allows the investigation of the load capacities of any cable support system manufactured by OBO. The basis for this is IEC 61537 and VDE 0639. In the BET Test Centre, OBO Bettermann has a testing department in which products can be tested according to standards, even during the development phase.



Test marks

	Lightning current-tested
	Lightning current-tested, Class H (100 kA)
	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, Czech Republic
	ATEX certificate for explosive areas
	Russia, GOST The State Committee for Standards
	KEMA-KEUR, Netherlands
	Indication of metric products
	MAGYAR ELEKTROTECHNIKAI ELLENŐRZŐ INTÉZET Budapest, Hungary
	Österreichischer Verband für Elektrotechnik, Austria
	Underwriters Laboratories Inc., USA
	Eidgenössisches Starkstrominspektorat, Switzerland
	Underwriters Laboratories Inc., USA
	Verband der Elektrotechnik, Elektronik, Informationstechnik e.V., Germany
	German Association of Electricians, tested safety
	5-year warranty
	Halogen-free; without chlorine, fluorine and bromine
	INMETRO, Brazil

Pictogram explanation



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
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

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	LifeControl
EX	Intrinsically safe protection device for areas with a risk of explosions
Class E _n	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

Metals

Alu	Aluminium
VA	Stainless steel, rustproof 1.4301
VA	Stainless steel, rustproof 1.4401
VA	Stainless steel, rustproof 1.4404
VA	Stainless steel, rustproof 1.4571
Cu	Copper
CuZn 37	Brass
St	Steel
TG	Malleable iron
Zn	Die-cast zinc

Plastics

GFK	Fibre-glass-reinforced plastic
PETR	Petrolatum
PA	Polyamide
PC	Polycarbonate
PE	Polyethylene
PP	Polypropylene
PS	Polystyrene

Surfaces

FS	Strip galvanised
F	Hot-dip galvanised
G	Electrogalvanised
FT	Hot-dip galvanised
Cu	Copper-plated
N	Nickel-plated
ZD	Galvanised, Deltatone 500



Metallic materials

Alu — Aluminium

VA (1.4301) — Stainless steel, rustproof 1.4301

VA (1.4401) — Stainless steel, rustproof 1.4401

VA (1.4404) — Stainless steel, rustproof 1.4404

VA (1.4571) — Stainless steel, rustproof 1.4571

Cu — Copper

CuZn — Brass

St — Steel

TG — Malleable iron
Electrogalvanised

Zn — Die-cast zinc

Plastic materials



GFK — Fibre-glass-reinforced plastic

Temperature resistance:
minus 50 to 130 °C.

Resistant to

High chemical resistance
Corrosion resistance
UV light resistance

PETR — Petrolatum

PA — Polyamide

Temperature resistance:
permanently up to approx. 90 °C, briefly up to about 130 °C
and to about minus 40 °C*.

Chem. resistance generally as for polyethylene.

Resistant to

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers,
oils and greases.

Unstable with

Bleach, most acids, chlorine.

Risk of stress cracks

Low in air-humid conditions; only with some aqueous salt solutions.
Highly desiccated parts (high temperature and extremely low air
humidity) are highly sensitive to fuels and various solvents.

PA/PE — Polyamide/polyethylene

PC — Polycarbonate

Temperature resistance:
permanently up to approx. 110 °C (in water 60 °C), briefly up to
125 °C, and to below minus 35 °C.

Resistant to

Petrol, turpentine, most weak acids.

Unstable with

Acetone, benzene, chlorine, methylene chloride, most concentrated
acids.

Risk of stress cracks

Relatively low.

Media which can cause tension cracking include benzene, aromatic
hydrocarbons, methanol, butanol, acetone, turpentine.

PE — Polyethylene

Temperature resistance:
hard types permanently up to about 90 °C, briefly up to about 105 °C,
soft types permanently up to about 80 °C, briefly up to about 100 °C
and to about minus 40 °C*.

Resistant to

Alkalis and inorganic acids.

Conditionally resistant to

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Unstable with

Chlorine, hydrocarbons, oxidising acids.

Risk of stress cracks

Relatively high.

Stress cracks can be caused by, among other things, acetone, various
alcohols, formic acid, ethanol, petrol, benzene, butyric acid, acetic acid,
formaldehyde, various oils, petroleum, propanol, nitric acid,
hydrochloric acid, sulphuric acid, soap solutions, turpentine,
trichloroethylene, citric acid.

PP — Polypropylene

Temperature resistance:
permanently up to approx. 90 °C, briefly up to about 110 °C
and to about minus 30 °C*.

Chem. resistance generally as for polyethylene.

Resistant to

Alkalis and inorganic acids.

Conditionally resistant to

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Unstable with

Chlorine, hydrocarbons, oxidising acids.

Risk of stress cracks

Low, only with some acids such as chromic acid, hydrofluoric acid and
hydrochloric acid, as well as nitrogen oxide.

PS — Polystyrene

Temperature resistance:

Because of its relatively high sensitivity to the effects of chemicals, its
use is not recommended at temperatures above normal room
temperature, about 25 °C.

Resistance to cold: to about minus 40 °C*.

Resistant to

Alkalis, most acids, alcohol.

Conditionally resistant to

Oils and greases.

Unstable with

Butyric acid, concentrated nitric acid, concentrated acetic acid,
acetone, ether, petrol and benzene, solvents for paints and lacquers,
chlorine, diesel fuel.

Risk of stress cracks

Relatively high.

Stress cracks can be caused by, amongst other things, acetone, ether,
petrol, cyclohexane, heptane, methanol, propanol and the softeners
used in some PVC cable mixes.

*The minus values apply only for parts in the quiescent condition with
no severe impact stress.

There is no plastic that is resistant to every chemical. The agents listed
are only a small selection. Plastic parts are especially at risk in the
presence of chemicals and high temperatures. Stress cracks may
occur. If in doubt, please consult us and/or ask for a detailed chemical
resistance table.

Stress crack formation: Stress cracks may occur if plastic parts under
tension are exposed to chemicals at the same time. Parts made of
polystyrene and polyethylene are particularly susceptible. Stress cracks
may even be caused by agents to which the plastic in question is
resistant in the absence of stress. Typical examples of parts under
constant stress when used as intended: Grip clips, intermediate
connectors of cable glands, ribbon clips.



Tested lightning protection components

Tightening torques

M5 = 4 Nm

M6 = 6 Nm

M8 = 12 Nm

M10 = 20 Nm

Detailed data can be provided on request.

Brief glossary of overvoltage protection

100% response lightning impulse voltage

The 100% response lightning impulse voltage is the value of the lightning impulse voltage 1.2/50 μ s, causing the arrester to switch. With this testing voltage, the surge protection device must respond ten times to ten loads.

Arrestor

Arrestors are resources, which primarily consist of voltage-dependent resistors and/or spark gaps. Both elements can be switched in series or in parallel or used individually.

Arrestors are used to protect other electrical resources and electrical systems against surge voltages.

Arrestor measured voltage V_c

For arrestors without a spark gap, the measured voltage is the maximum permitted effective value of the mains voltage on the arrester terminals. The measured voltage may constantly be applied to the arrester without changing its operational characteristics.

Back-up fuse before the arrestors

There must be a back-up fuse before the arrestors. If the upstream fuse is greater than the maximum approved back-up fuse of the arrester elements (see technical data of the device), the arrester must be protected selectively with the required value.

Cut-off unit

The cut-off unit cuts the arrester off from the mains or the earthing system if it is overloaded, thus preventing a fire risk and also signalling the switch-off of the protection device.

Equipotential bonding

Electrical connection, which brings the bodies of electrical resources and other conductive parts to the same or almost the same potential.

Equipotential busbar (PAS)

A terminal or rail, intended to connect the protective conductor, the equipotential bonding conductor and, if necessary, the conductor for function earthing with the earthing cable and the earthers.

Error current protection unit (RCD)

Resource for protection against electric shocks and fire protection (e.g. FI protection switches).

Lightning protection equipotential bonding system

The lightning protection equipotential bonding is a key measure in reducing the risk of fire and explosion on the room or building to be protected. The lightning protection equipotential bonding is achieved using equipotential bonding cables or arrestors, which connect the external lightning protection system, metallic parts of the building or room, the installation, the other conductive parts and the electrical energy and telecommunications systems.

Lightning protection system (LPS)

A lightning protection system (LPS) is considered as the entire system used to protect a room or building against the impact of a lightning strike. This includes both internal and external lightning protection.

Lightning protection zone (LPZ)

Lightning protection zones are those areas in which the electromagnetic environment of the lightning is to be defined and mastered. At the zone transitions, all cables and metallic parts must be integrated into the equipotential bonding system.

Lightning surge current (Iimp)

A lightning surge current (lightning current carrying capacity per path) is a standardised surge current curve of the shape 10/350 μ s. With its parameters

- Peak value
- Charge
- Specific energy

it represents the load from natural lightning currents. Type 1 lightning current arrestors (previously requirement class B) must be able to arrest such lightning currents without being destroyed.

Line follow current quenching (If)

The follow current – also called network follow current – is the current which flows through the surge protection device after an arresting operation and is supplied by the network. The follow current is considerably different from the continuous operating current. The level of the network follow current is dependent on the feed line from the transformer to the arrester.

Nominal current (In)

The nominal current is the maximum permitted operating current which may be run continually through the appropriately labelled connection terminals.

Nominal discharge surge current (In)

Peak value of the current flowing through the arrester with the wave shape 8/20. It is used to classify the testing of surge arrestors of type 2 (formerly requirements Class C).

Nominal frequency (fn)

The nominal frequency is that frequency for which a resource is measured, by which it is called and upon which other nominal parameters refer.

Nominal voltage (Vn)

The rated voltage is the voltage value for which a resource is designed. In so doing it might be a direct voltage value or the effective value of a sine-form alternating voltage.

Surge protection device (SPD)

A device intended for the limitation of transient surge voltages and arresting of surge voltages. It contains at least one non-linear construction element. In general speech, surge protection devices are also termed arrestors.

Protection level (Up)

The protection level is the highest current voltage value on the terminals of the surge protection device before response.

Residual voltage (Vres)

The peak voltage value, occurring via the terminals of the surge protection device during or immediately after the arresting surge current has flowed.

Short-circuit resistance

The surge protection device must be able to conduct the short-circuit current, until it is either interrupted by the device itself or by an internal or external cut-off unit or by mains-side over-current protection (e.g. back-up fuse).

Response time (ta)

The response time primarily characterises the response behaviour of the individual protection elements used in arrestors. Depending on the slope du/dt of the surge voltage or di/dt of the surge current, the response times may vary within specific limits.

SPD

Surge protection device.

Surge arrester, type 1

Arrestors, which, due to their special structure, are able to arrest lightning currents or partial lightning currents during direct strikes.

Surge arrester, type 2

Arrestors, which are able to arrest surged voltages caused by remote or nearby strikes or switching actions.

Surge arrester, type 3

Arrestors, used for surge protection of individual consumers or consumer groups and are employed directly on sockets.

Surge voltage

A surge voltage is a voltage occurring briefly between conductors or between a conductor and the earth, which exceeds the highest permissible operating voltage value by a long way, but does not have the operating frequency. It can be created by storms or by earthing or shortcircuits.

Temperature range

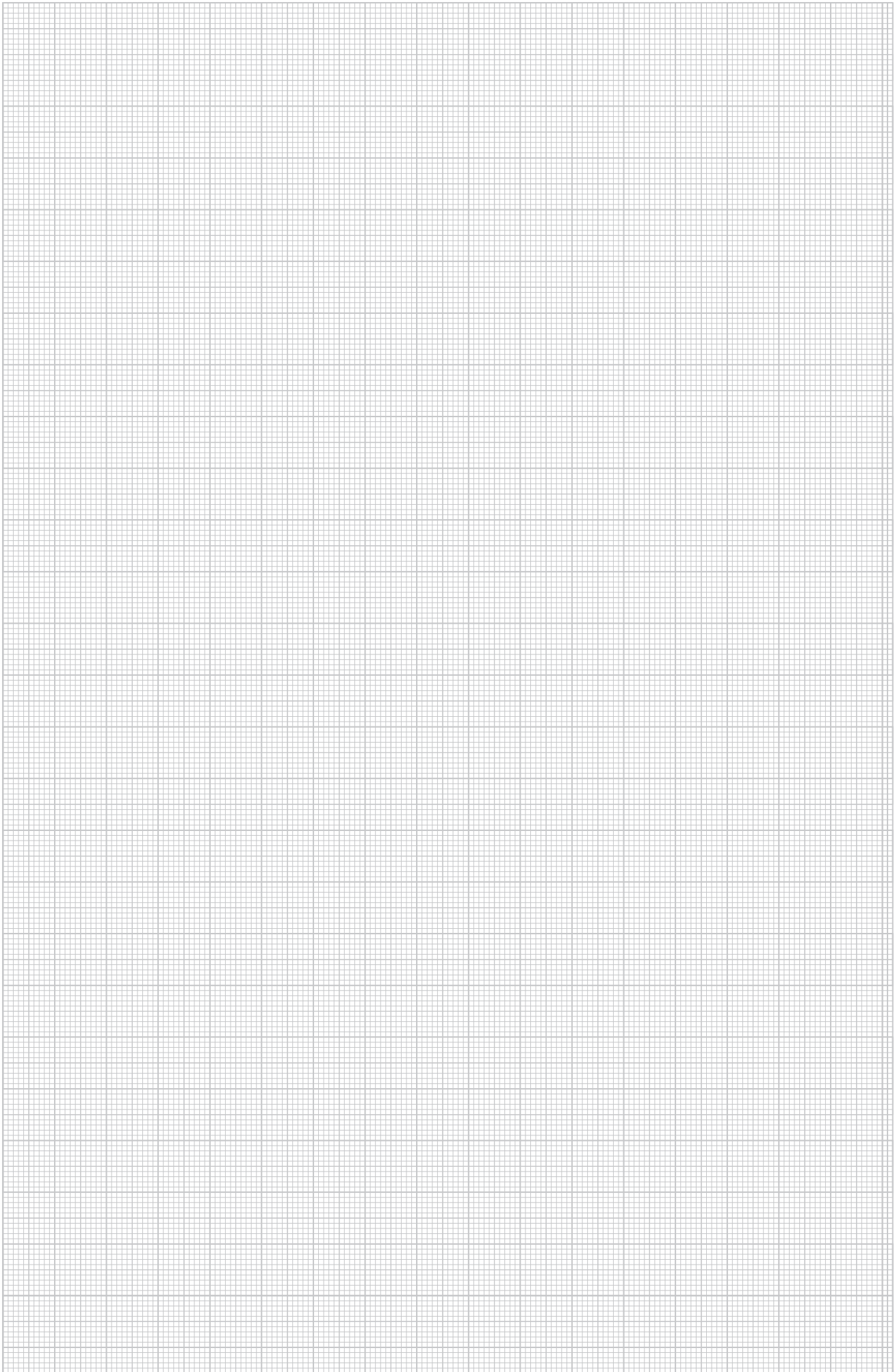
The operating temperature specifies within which temperature limits the perfect function of the surge protection device is guaranteed.

Transmission frequency (fg)

The transmission frequency specifies up to which frequency the insertion damping of the employed resource is less than 3 dB.

Volume resistance per path, series resistance

The volume resistance per path specifies the ohmic resistance increase of the conductor path per wire caused by the use of the surge protection device.







 Typ/Type
MCF 35-1+FS-440
 Art.-Nr./Art. No.
 5096 974
 Lightning protection
 for 400/690V
 power supply systems

U_n	440 V	(50/60 Hz)
I_{imp}	35 kA	(10/350 μ s)
I_n	35 kA	(8/20 μ s)
U_p	$\leq 2,5$ kV	

 SPD L/PEN **TT**
 \Rightarrow 400 A gL/gG
CE 0589
 0589-P1-0446
 Schnellauslösevorrichtung
 fast-lock device
 NEM 0,03g




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 NEM 0,03g


TBS_Typ_04 0249 03/05-10-45:35 (LExport_02453) / 2020/03/05 10-45:52 10-45:52

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

	Lightning arrestors MC	26
	Lightning arrester MCF 35	28
	Coordinated Lightning Controller MCD	30

Lightning arrestors MC, 255 V

Lightning current arrester, 1-pole with function display



Highest
continu-
ous
voltage
V

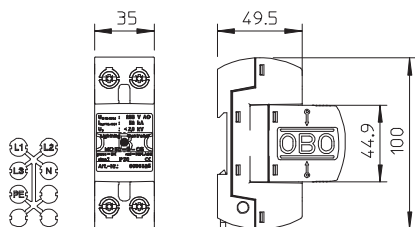
Pack Weight
pcs kg/100 pc. **Item no.**

Type	V	Version	pcs	kg/100 pc.	Item no.
MC 50-B-OS	255	1-pole	1	34.800	5096851

MC 50-B:OS: Type 1 (Class B) lightning current arrester with visual function display in accordance with DIN EN 61643-11 for interface 0 to 1 (LPZ) in accordance with lightning protection concept to IEC 61313-1 and VDE 0185-305 (IEC 62305)

- Upper part and base, plug-in base
- Arresting capacity 50 kA (10/350 μ s) per pole
- Protection level < 2.0 kV
- Power consumption < 26 mW/pole
- 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

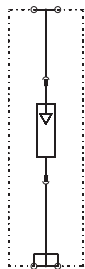
Dimensions



Application example: Industrial systems.

Note: Required as decoupling length for surge voltage protection of 5 m of cable.

Connection options



MC 50-B-OS

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
Lightning surge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Protection level	U_D	< 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)		2
Protection rating		IP20
Connection cross-section, rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Lightning current arrester, 1-pole NPE



Type	Highest continuous voltage		Pack Weight		Item no.
	V	Version	pcs	kg/100 pc.	
MC 125-B NPE	255	NPE	1	52.000	5096863

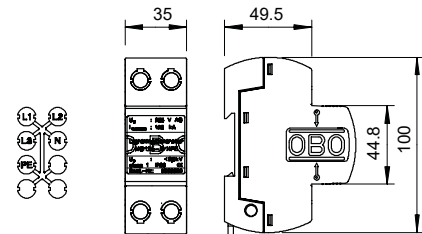
MC 125-B/NPE: For use in TN-S and TT systems as N-PE discharge gap, type 1 (Class B) IEC 61643, for interface 0 to 1 (LPZ) according to lightning protection zone concept to IEC 61312-1 and/or DIN V VDE V 0185 Part 4 for use as discharge gap between N and PE.

- VDE test mark
- Conforms to VDN Directive, 2nd Edition 2004
- Protection capability 125 kA 10/350 μ s
- Including plug caps for identifying the connections
- Protection level <2.5 kV
- Enclosed, non-extinguishing discharge gap: can be used in normal commercial distributor housings

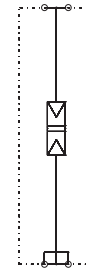
Application example: lightning arrester in accordance with VDN Directive for pre-meter area.
 Note: required as de-coupling length for overvoltage protection of 5 m of cable.



Dimensions



Connection options



MC 125-B NPE

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 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
Lightning surge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Protection level	U_p	< 2,5 kV
Response time	t_A	< 100 ns
Follow current quenching capacity (eff) [N-PE]	I_n	0.1 kA
Maximum back-up fuse		— A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section, rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Lightning arrester MCF 35, 400/690 V for power networks

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



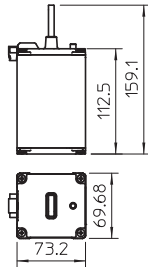
Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
MCF 35-1+FS-440	440	1-pole	1	98.000	5096974

AIG Die-cast aluminium
Lightning arrester type 1

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

Application: Without exception for 400/690 V network systems

Dimensions



Connection options



MCF 35-1+FS-440

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

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



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

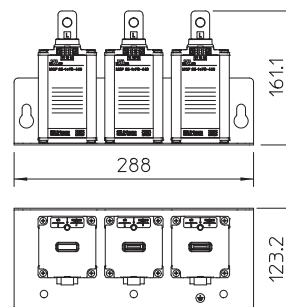
AIG Die-cast aluminium
Lightning arrester type 1

- Fully assembled 3-pole connection unit
- For lightning protection equipotential bonding according to DIN EN 62305 (IEC 62305)
- Lightning current arresting capacity 35 kA (10/350) per pole
- Line following current quenching 50 kA_{eff}, arrester back-up fuse up to 400 A gL/gG
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings
- Cut-off unit with visual indicator
- Remote signalling with potential-free changeover contact
- For finished mounting on busbars and walls

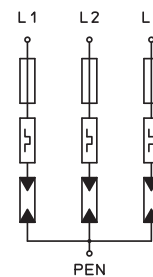
Application: Without exception for 400/690 V power systems



Dimensions



Connection options



MCF 35-P3+FS-440

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

Coordinated LightningController MCD

Coordinated LightningController - MCD50-B



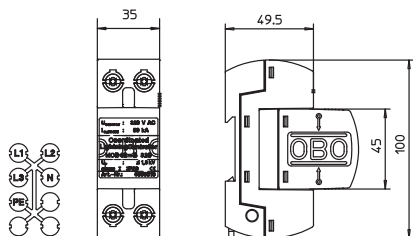
Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
MCD 50-B-320	320	1-pole	1	34.400	5096860

MCD 50-B: Coordinated lightning current arrester, type 1 (Class B) DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN V VDE V 0185 Part 4.

Combination arrester for use in TN and TT networks.

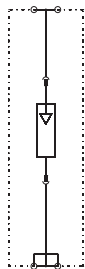
- Arresting capacity 50 kA (10/350 μ s) per pole
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: Can be used in standard distributor housings.

Dimensions



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

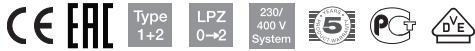
Connection options



MCD 50-B-320

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_c	320 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Protection level	U_d	1,3 kV
Response time	t_A	<100 ns
Short-circuit resistance	I_{peak}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		2
Connection cross-section, rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Combination arrestor, 1-pole NPE

Type
1+2LPZ
0→2230/
400 V
System

5

PCT

DVE

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

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

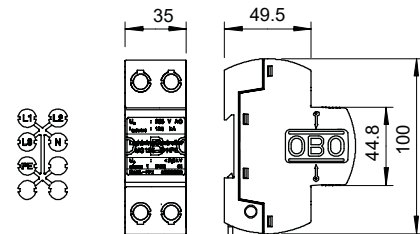
MCD 125-B/NPE: Coordinated N-PE spark gap, type 1+2 to EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or VDE 0185-305.

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

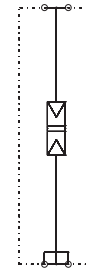
Application: Industrial systems and buildings with external lightning protection of Classes I to IV.



Dimensions

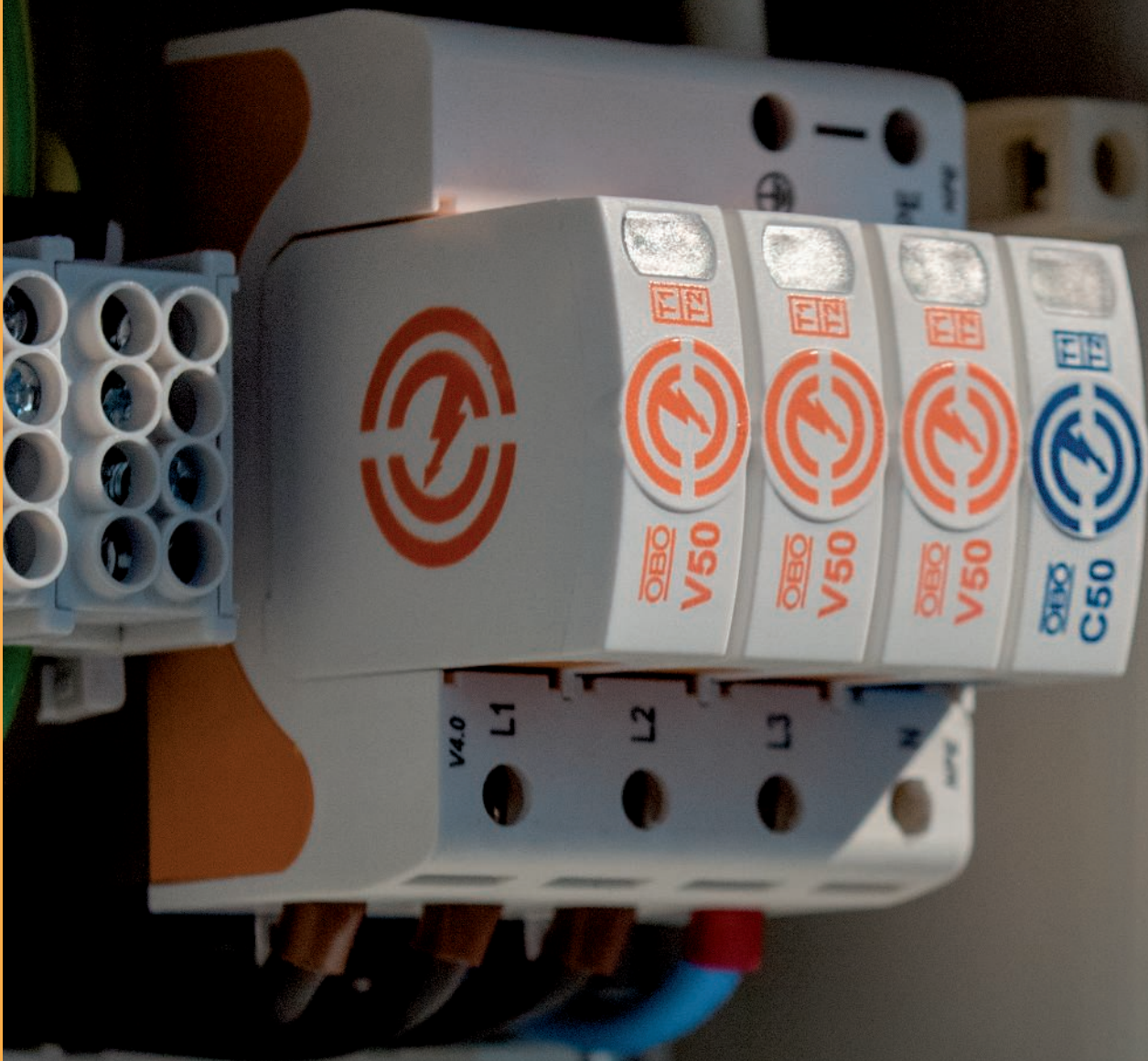


Connection options



MCD 125-B NPE

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	125 kA
Lightning surge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	125 kA
Arrestor 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_f	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 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Diese Anlage ist mit
Überspannungsschutzgeräten
ausgerüstet.

OBO
BETTERMANN

Bei Isolationsmessungen bitte die OBO
Schutzmodule herausziehen bzw.
abklemmen.

System contains overvoltage protection
devices. Please remove or disconnect the
OBO protectors during isolation tests.

Mod. Nr. 4100 0303

Surge protection energy technology, arrester, type 1+2

	Combination arrester MCF Compact	34
	MCD combination arrester	36
	V50 combination arrester	40
	Accessories, upper parts and bases	62

LightningController Compact - MCF100



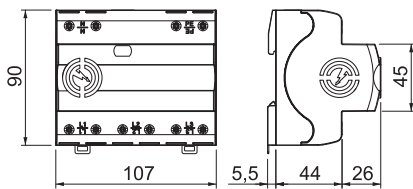
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
MCF100-3+NPE+FS	255	3+N/PE	IP20	1	93.500	5096987

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

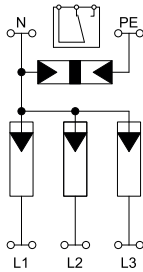
- Protection level ≤ 1.5 kV
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity up to 100 kA (10/350), 3+NPE
- Line following current quenching 50 kA Ipeak, arrester backup fuse to 315 A gL/gG
- Fulfills the requirements of VDE-AR-N 4100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

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

Dimensions



Connection options



MCF100-3+NPE+FS

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50/60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 255 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 35 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 25 kA
Lightning surge current (10/350)	I_{total} 100 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 100 kA
Protection level [L-N]	U_n 1.5 kV
Max. mains-side overcurrent protection	315 A
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_{in} -40 - +80 °C
Protection rating	IP20
Approvals	VDE, UL
Conductor cross-section, flexible (fine-wire)	1.5 - 25 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 3 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



LightningController Compact - MCF75



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

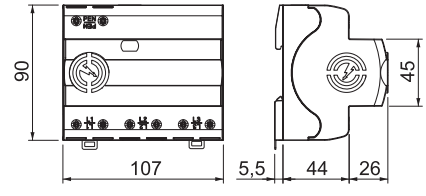
Combination arrester, lightning current and surge arrester, type 1+2

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

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



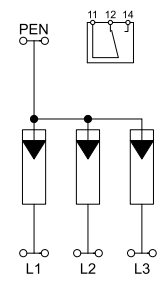
Dimensions



MCF75-3+FS

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

Connection options



Combination arrester, 1-pole NPE



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

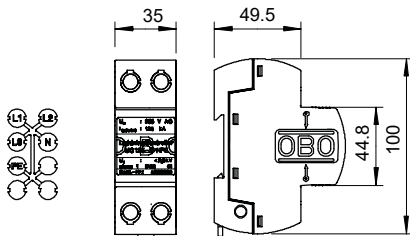
Combination arrester, type 1+2, N+PE for use in TN-S and TT networks.

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.

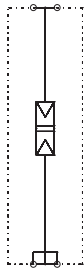
- Arresting capacity 125 kA (10/350 μ s)
- Conforms to VDE-AR-N 4100
- Incl. plug caps for labelling the connections
- Protection level < 1.5 kV, allows device protection
- Encapsulated, non-extinguishing spark gap

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

Dimensions



Connection options



MCD 125-B NPE

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	125 kA
Lightning surge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	125 kA
Arrestor 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 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Coordinated LightningController - MCD50-B



Type	Highest continuous voltage V	Version	Pack Weight		Item no.
			pcs	kg/100 pc.	
MCD 50-B-320	320	1-pole	1	34.400	5096860

MCD 50-B: Coordinated lightning current arrester, type 1 (Class B) DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN V VDE V 0185 Part 4.

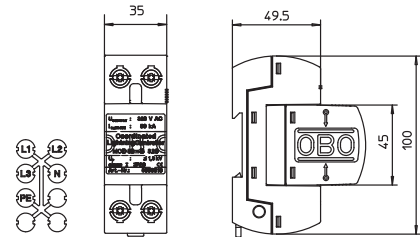
Combination arrester for use in TN and TT networks.

- Arresting capacity 50 kA (10/350 μs) per pole
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: Can be used in standard distributor housings.

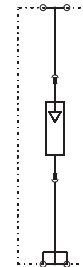
Application: Industrial systems and buildings with external lightning protection of Classes I to IV.



Dimensions



Connection options



MCD 50-B-320

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	320 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Protection level	U_o	1,3 kV
Response time	t_A	<100 ns
Short-circuit resistance	I_{peak}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		2
Connection cross-section, rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Coordinated LightningController MCD 50-B-OS-320

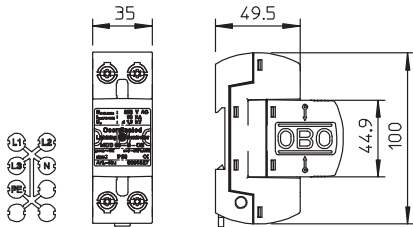


Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
MCD 50-B-OS-320	320	—	1	34.800	5096861

Combination arrester, surge arrester, type 1

- Protection level < 1.3 kV allows device protection
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 150 kA (10/350) in total
- Line following current quenching 25 kA I_{peak}, arrester backup fuse to 500 A gL/gG
- Suitable for use in pre-meter area according to the VDEW directive
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings

Dimensions



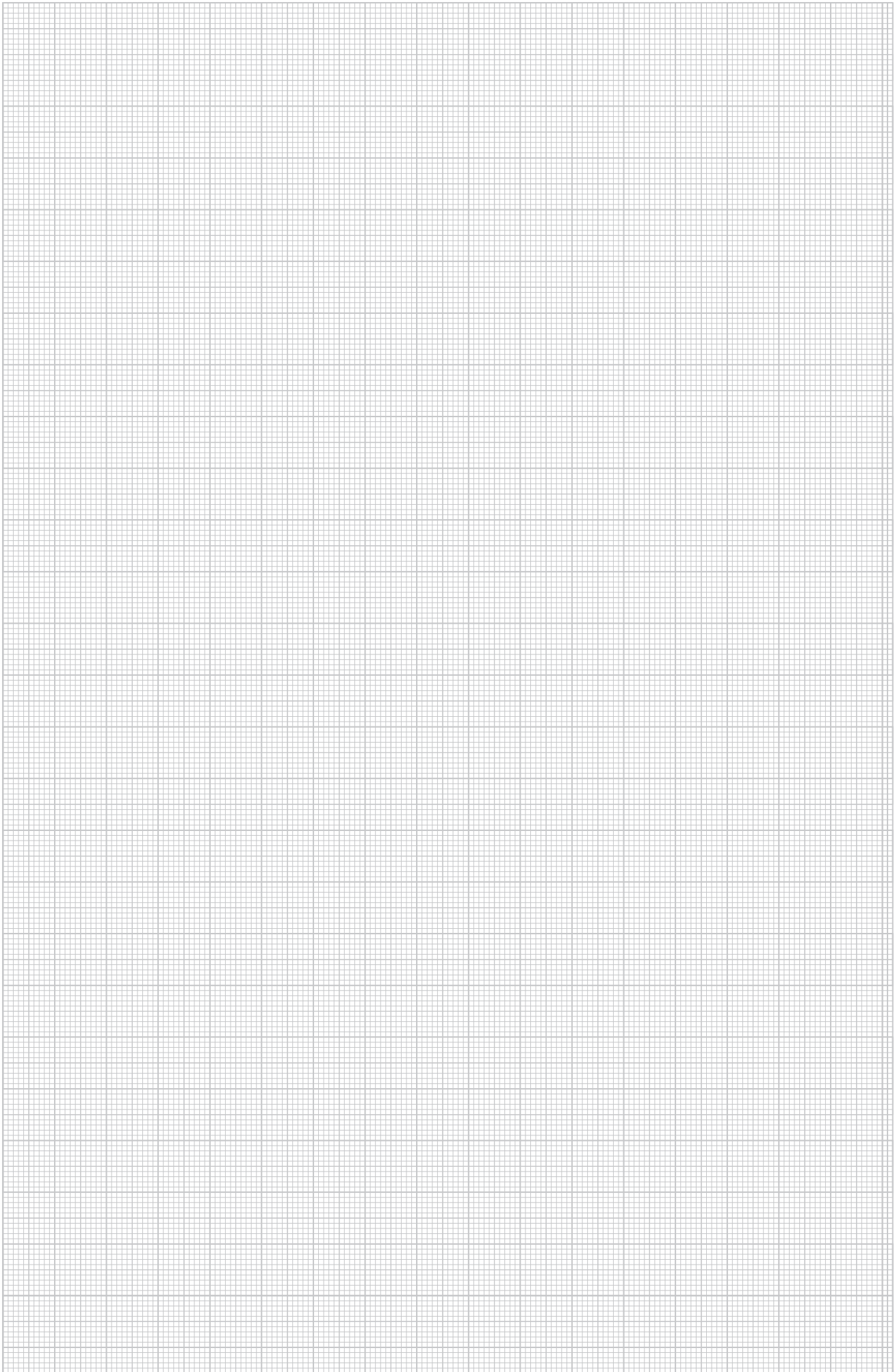
Application: Industrial systems and buildings with external lightning protection of the highest class I to IV.

Connection options

MCD 50-B-OS-320

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_c	320 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Protection level	U_d	1,3 kV
Response time	t_A	<100 ns
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Connection cross-section, rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²





Combination arrester V50, 320 V, type 1+2

Combination arrester V50, 1-pole 320 V



Type	Highest continuous voltage AC V		Protection version rating	Pack pcs	Weight kg/100 pc.	Item no.
	AC V	Pole				
V50-1-320	320	1	IP20	1	17.200	5093540

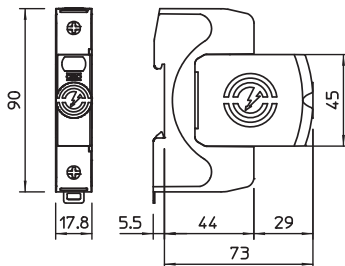
PA Polyamide

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.

Dimensions



Connection options



V50-1-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Protection level [L-N]	U_p 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+FS-320	320	1	IP20	1	17.200	5093546

PA Polyamide

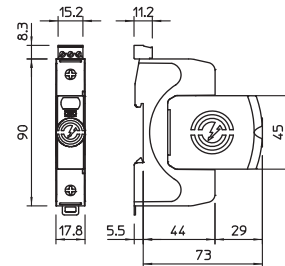
Lightning current combination arrester, type 1+2

- 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.



Dimensions



Connection options



V50-1+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Protection level [L-N]	U_p 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole 320 V



Type	AC voltage V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3-320	320	3	IP20	1	48.900	5093542

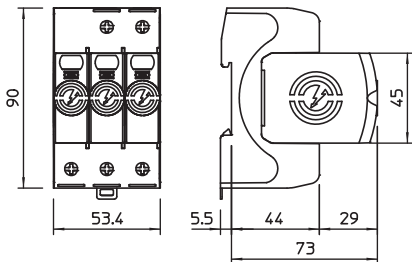
PA Polyamide

Lightning current combination arrester, type 1+2

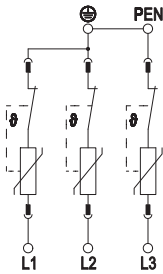
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-3-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_n 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+FS-320	320	3	IP20	1	49.300	5093548

PA Polyamide

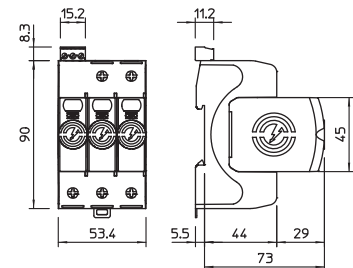
Lightning current combination arrester, type 1+2

- 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

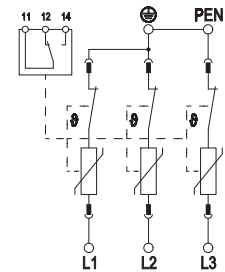
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_n 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{RES} 0.9 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, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 1-pole + NPE 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+NPE-320	320	1+N/PE	IP20	1	31.100	5093552

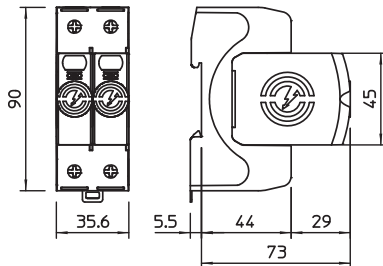
PA Polyamide

Lightning current combination arrester, type 1+2

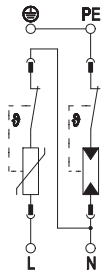
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-1+NPE-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PF} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 1-pole + NPE with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+NPE+FS-320	320	1+N/PE	IP20	1	31.100	5093560

PA Polyamide

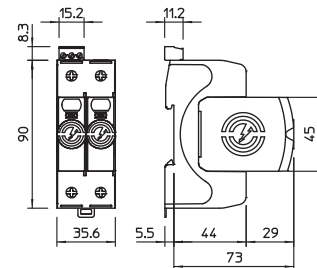
Lightning current combination arrester, type 1+2

- 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

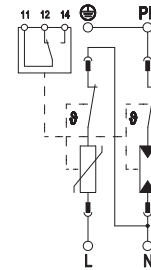
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{L-PE} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{II} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole + NPE 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+NPE-320	320	3+N/PE	IP20	1	61.200	5093554

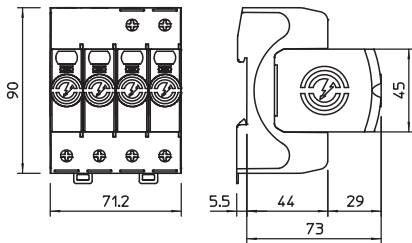
PA Polyamide

Lightning current combination arrester, type 1+2

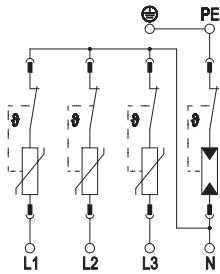
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-3+NPE-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PF} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole + NPE with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+NPE+FS-320	320	3+N/PE	IP20	1	61.700	5093562

PA Polyamide

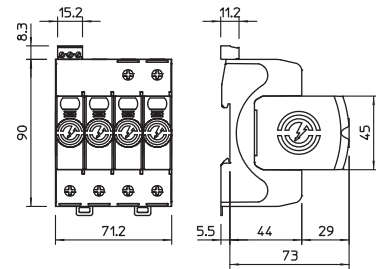
Lightning current combination arrester, type 1+2

- 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

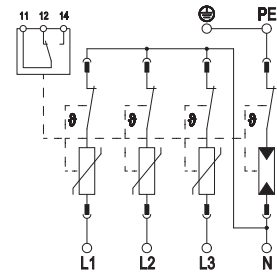
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+NPE+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{-PE} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 0,9 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_{II} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 385 V, type 1+2

Combination arrester V50, 1-pole 385 V



Type	Highest continuous voltage AC V		Protection version rating	Pack pcs	Weight kg/100 pc.	Item no.
	AC V	Pole				
V50-1-385	385	1	IP20	1	18.300	5093572

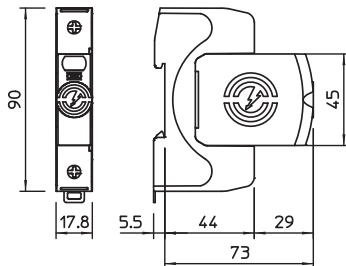
PA Polyamide

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.

Dimensions



Connection options



V50-1-385

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 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Protection level [L-N]	U_p 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+FS-385	385	1	IP20	1	18.500	5093578

PA Polyamide

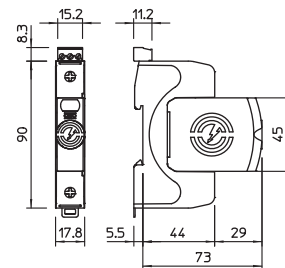
Lightning current combination arrester, type 1+2

- 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.



Dimensions



Connection options



V50-1+FS-385

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 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Protection level [L-N]	U_p 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 1-pole + NPE 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+NPE-385	385	1+N/PE	IP20	1	32.200	5093584

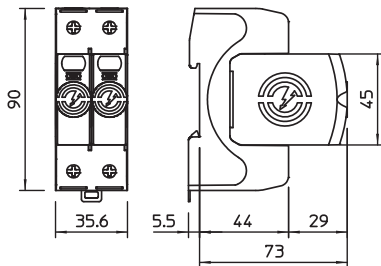
PA Polyamide

Lightning current combination arrester, type 1+2

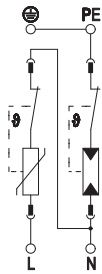
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-1+NPE-385

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 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PF} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 1-pole + NPE with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-1+NPE+FS-385	385	1+N/PE	IP20	1	32.500	5093590

PA Polyamide

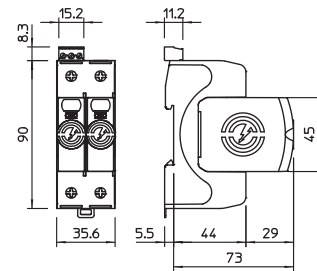
Lightning current combination arrester, type 1+2

- 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

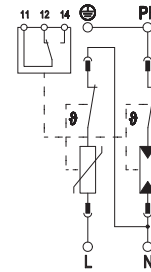
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-385

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 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{L-PE} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{II} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole + NPE 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+NPE-385	385	3+N/PE	IP20	1	64.500	5093586

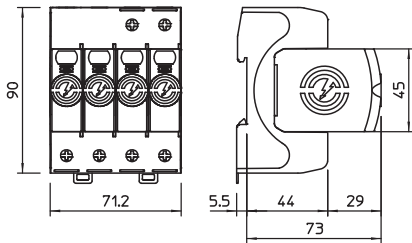
PA Polyamide

Lightning current combination arrester, type 1+2

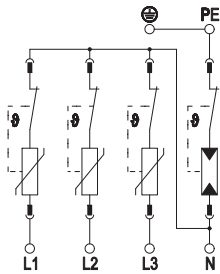
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-3+NPE-385

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 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PF} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole + NPE with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+NPE+FS-385	385	3+N/PE	IP20	1	65.000	5093592

PA Polyamide

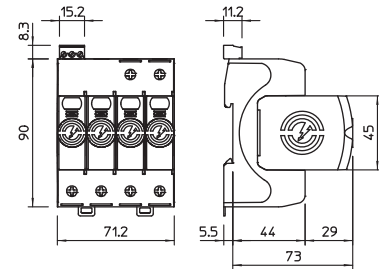
Lightning current combination arrester, type 1+2

- 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

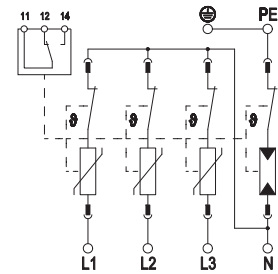
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+NPE+FS-385

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 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{-PE} 2.5 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{II} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50 upper part, type 1+2

Upper part V50 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
	V50-0-320	320	1	IP20	1	9.160

Upper part, lightning current combination arrester, type 1+2

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

V50-0-320

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 320 V
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE

Upper part V50 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
	V50-0-385	385	1	IP20	1	10.510

Upper part, lightning current combination arrester, type 1+2

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

V50-0-385

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 350 V
Maximum continuous voltage AC	U_c 385 V
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE



Combination arrester V50, 3-pole 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3-385	385	3	IP20	1	52.200	5093574

PA Polyamide

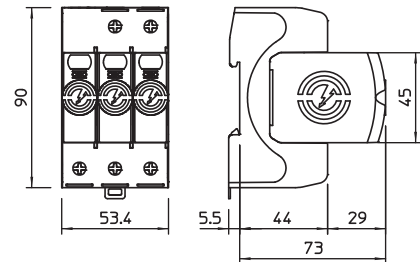
Lightning current combination arrester, type 1+2

- 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

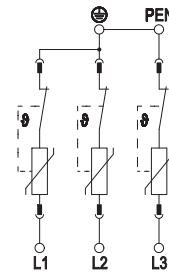
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3-385

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 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_n 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit withstand for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_{u} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V50, 3-pole with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V50-3+FS-385	385	3	IP20	1	52.600	5093580

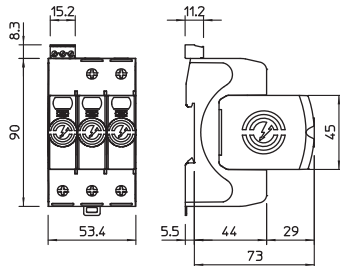
PA Polyamide

Lightning current combination arrester, type 1+2

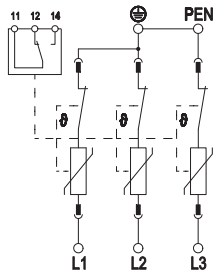
- For lightning current equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage 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.

Dimensions



Connection options



V50-3+FS-385

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 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Lightning surge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_n 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,1 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{ii} -40 - +80 °C
Protection rating	IP20
Approvals	UL, KEMA, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Combination arrester V25, 3-pole + NPE 385 V



Type	Highest continuous voltage V	Version	Pack Weight		Item no.
			pcs	kg/100 pc.	
V25-B+C 3NPE385	385	3-pole with NPE; 385 V	1	53.700	5094478

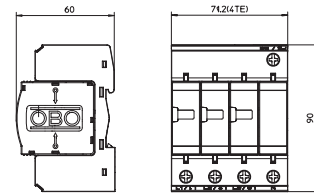
V 25-B+C/...: Combination arrester set, lightning and surge arrester type 1+2 to DIN EN 61643-11 (B+C to VDE 0675 Part 6).

- With new MultiBase base with multi connection terminals
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN-S and TT systems
- Plug-in arrester with dynamic isolating device
- Visual function display
- Protection level <1.5 kV
- Encapsulated non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Marked connections

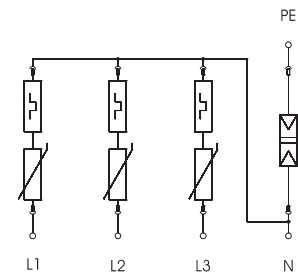
Application example: Building with open-wire power supply or for setting up lightning protection equipotential bonding in residential buildings.



Dimensions



Connection options



V25-B+C 3NPE385

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 II
Lightning protection zone LPZ		0-2
Impulse discharge current (10/350)	I_{imp}	7 kA
Lightning surge current (10/350)	I_{total}	25 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{total 8/20}$	120 kA
Maximum discharge current (8/20 μ s)	I_{max}	50 kA
		—
Protection level	U_p	< 1,6 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Combination arrester V25, 3-pole + NPE 385 V with remote signalling



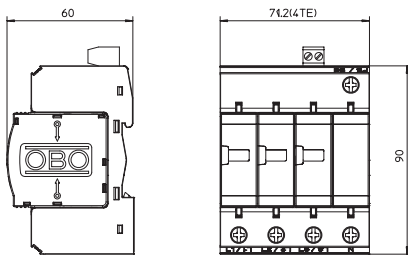
Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V25-B+C 3NPEFS38	385	3+NPE	1	51.000	5094526

V 25-B+C/...: Combination arrester set, lightning and surge arrester type 1+2 to DIN EN 61643-11 (B+C to VDE 0675 Part 6).

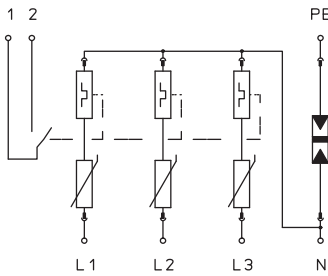
- With new MultiBase base with multi connection terminals
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN and TT systems
- With remote signalling, potential-free NO contact, for function monitoring
- Plug-in arrester with dynamic cut-off unit
- Visual function display
- Protection level <1.5 kV
- Encapsulated non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Marked connections

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

Dimensions



Connection options



V25-B+C 3NPEFS38

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
Lightning surge current (10/350)	I_{total}	25 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	120 kA
Maximum discharge current (8/20 μ s)	I_{max}	50 kA
Protection level	U_n	< 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)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Combination arrester V25, 3-pole 385 V



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

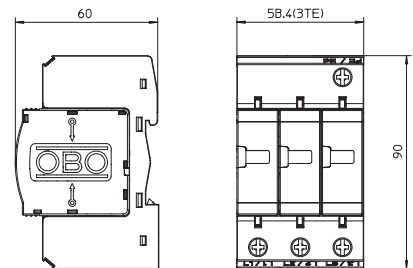
V 25-B+C/...: Combination arrester set, lightning and surge arrester type 1+2 to DIN EN 61643-11 (B+C to VDE 0675 Part 6).

- With new MultiBase base with multi connection terminals
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- For TN systems
- Plug-in arrester with dynamic isolating device
- With visual function display
- Protection level <1.5 kV
- Encapsulated non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Marked connections

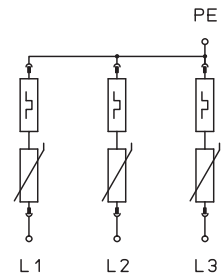
Application example: Building with open-wire power supply or for setting up lightning protection equipotential bonding in residential buildings.



Dimensions



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 III
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	7 kA
Lightning surge 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 μ s)	I_{max}	50 kA
		—
Protection level	U_n	<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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²





Combination arrester V25, 385 V, type 1+2, for TN-S networks

Combination arrester V25, 4-pole 385 V



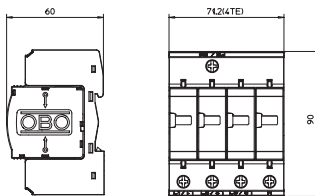
Highest continuous voltage V Version

Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V25-B+C 4-385	385	4-pole complete	1	51.000	5094440

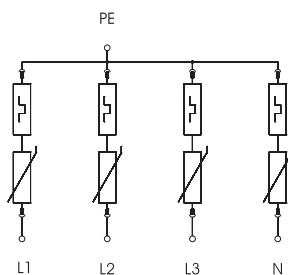
V 25-B+C/...: Combination arrester set, lightning and surge arrester type 1+2 to DIN EN 61643-11 (B+C to VDE 0675 Part 6).

- With new MultiBase base with multi connection terminals
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- For TN systems
- Plug-in arrester with dynamic isolating device
- With visual function display
- Protection level <1.5 kV
- Encapsulated non-extinguishing zinc oxide varistor arrester for use in standard distributor housings
- Marked connections

Dimensions



Connection options



V25-B+C 4-385

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
Lightning surge current (10/350)	I_{total}	25 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrester surge current (8/20) [total]	$I_{total, 8/20}$	120 kA
Maximum discharge current (8/20 μ s)	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)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

CombiController V25B+C 385



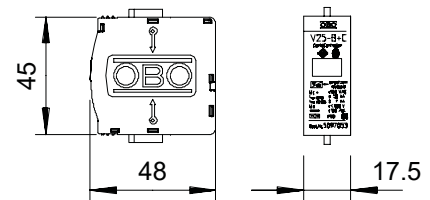
Type	Highest continuous voltage		Version	Pack Weight		Item no.
	V	U max DC V		pcs	kg/100 pc.	
V25-B+C 0-385	385	505	1-pole	30	9.500	5097063

CombiController cover part – type 1+2 combination arrester

- Plug-in cover; cover 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



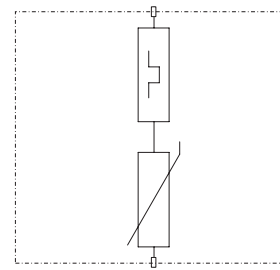
Dimensions



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
Lightning surge current (10/350)	I_{total}	7 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	30 kA
Protection level	U_o	< 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

Connection options





Combination arrester upper part 320 V

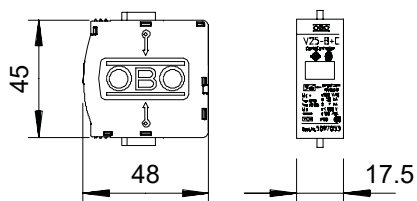


Type	U max V	DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V25-B+C 0-320	320	420	1-pole	1	10.000	5097290

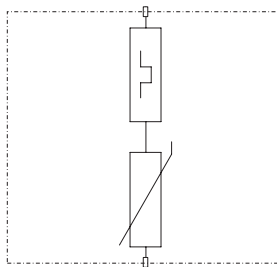
CombiController cover part – type 1+2 combination arrester

- Plug-in cover; cover 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

Dimensions



Connection options



V25-B+C 0-320

Nominal voltage	U_N	320 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
Lightning surge current (10/350)	I_{total}	7 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrestor surge current (8/20) [total]	$I_{total 8/20}$	30 kA
Protection level	U_D	< 1,3 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

Combination arrester upper part 385 V



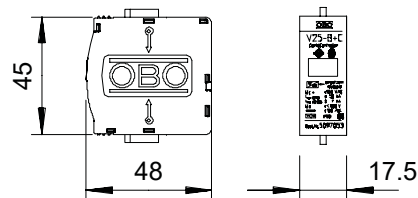
Type	Highest continuous voltage		Version	Pack Weight		Item no.
	V	U max DC V		pcs	kg/100 pc.	
V25-B+C 0-385	385	505	1-pole	1	9.500	5097061

CombiController cover part – type 1+2 combination arrester

- Plug-in cover; cover 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



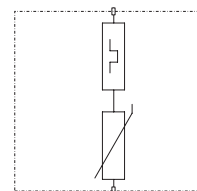
Dimensions



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
Lightning surge current (10/350)	I_{total}	7 kA
Nominal discharge current (8/20)	I_n	30 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	30 kA
Protection level	U_o	< 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

Connection options





Accessories, upper parts and bases V25

Upper part, total spark gap between N and PE 255 V



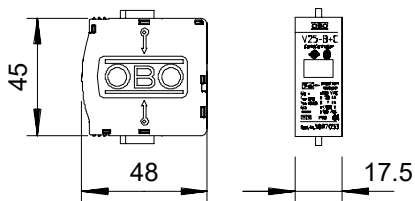
Highest continuous voltage

Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
C 25-B+C 0	255	NPE	1	5.300	5095603

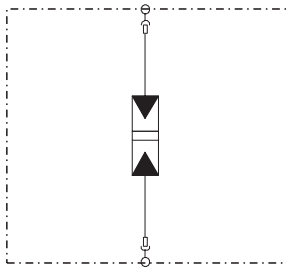
C 25-B+C/..+NPE: Plug-in total discharge gap for use between N and PE. Suitable for use in combination with:

- CombiController Type V 25-B+C
- SurgeController Type V 20-C
- SurgeController Type V 10-C

Dimensions



Connection options



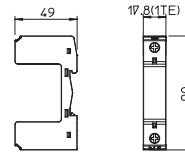
C 25-B+C 0

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 μ s)	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

MultiBase base



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1	1-pole	1	1	7.588	5096648
MB 3	3-pole	3	1	16.000	5096665
MB 4	4-pole	4	1	21.000	5096680

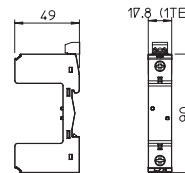


- Suitable for V25-B+C, V20-C and V10-C
- Pre-mounted and ready for connection
- For TN systems
- Multifunction terminals for easy circuit of series-mounted devices
- Upper parts can be rotated through 180 degrees

Base, MultiBase with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+FS	1-pole	1	1	6.700	5096649
MB 3+FS	3-pole	3	1	16.500	5096667
MB 4+FS	4-pole	4	1	21.000	5096682

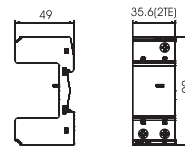


- Suitable for V 25-B+C, V 20-C and V10-C
- Pre-mounted and ready for connection
- Multifunction terminals for easy connection to series-mounted devices
- Upper parts can be rotated through 180 degrees
- With remote signalling, potential-free NO contact, for function monitoring

MultiBase base + NPE



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE	1 + NPE	2	1	11.500	5096650
MB 3+NPE	3 + NPE	4	1	20.000	5096669

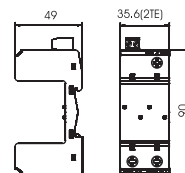


- Suitable for V 25-B+C, V 20-C and V10-C
- Pre-mounted and ready for connection
- Multifunction terminals for easy connection to series-mounted devices
- Upper parts can be rotated through 180 degrees
- For TN-S and TT network systems

Base, MultiBase + NPE with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE+FS	1 + NPE	2	1	11.600	5096651
MB 3+NPE+FS	3 + NPE	4	1	21.000	5096671

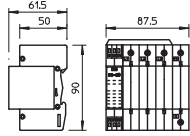


- Suitable for V 25-B+C, V 20-C and V10-C
- Pre-mounted and ready for connection
- Multifunction terminals for easy connection to series-mounted devices
- Upper parts can be rotated through 180 degrees
- With remote signalling, potential-free NO contact, for function monitoring
- 3+1 protection circuit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



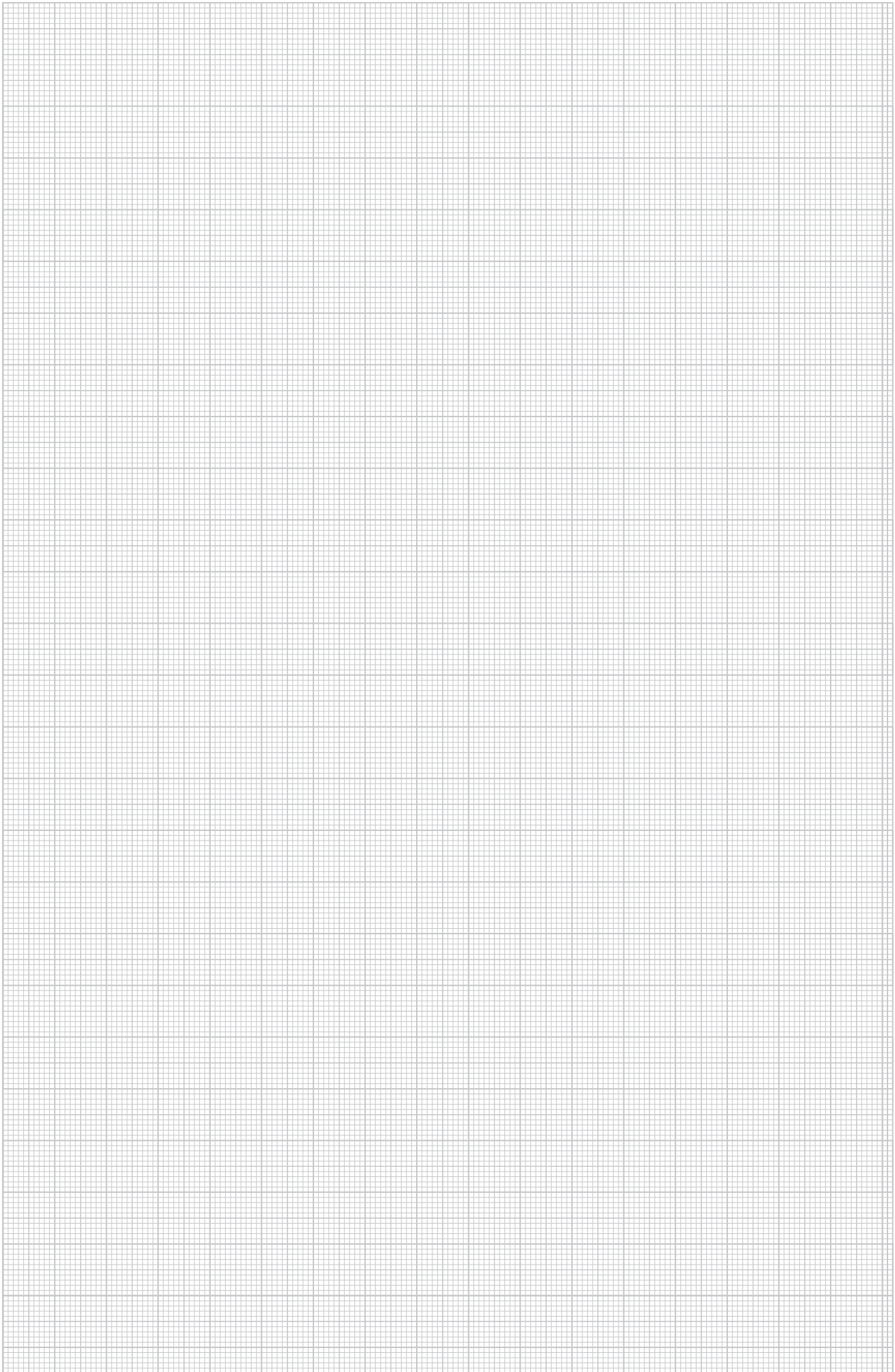


Base, MultiBase + NPE with fuse monitoring



Type	Version	Pack pcs	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 of arrester upper part, remote signalling
- With remote signalling, potential-free changeover contact, for function monitoring
- For TN-S and TT network systems
- Pre-mounted and ready for connection



Diese Anlage ist mit
Überspannungsschutzgeräten
ausgerüstet.

OBO
BETTERMANN

Bei Isolationsmessungen bitte die OBO
Schutzmodule herausziehen bzw.
abklemmen.

System contains overvoltage protection
devices. Please remove or disconnect the
OBO protectors during isolation tests.

Mat.-Nr. 4100 8383






V20 Überspannungsableiter Typ 2

V20 surge arrestor type 2



Surge protection energy technology, type 2 arrester

	Surge arrester V20	70
	System solution, surge arrester V20 in housing	93
	Accessories, upper parts and bases V20	103



Surge arrester V20 in 320 V, type 2

Surge arrester V20, 1-pole, 320 V



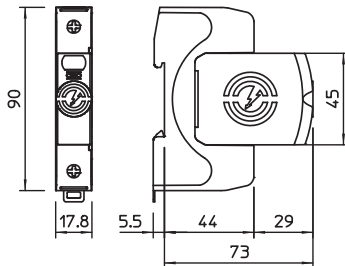
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1-320	320	1	IP20	1	13.000	5095171

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.

Dimensions



Connection options



V20-1-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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 with remote signalling, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1+FS-320	320	1	IP20	1	13.200	5095291

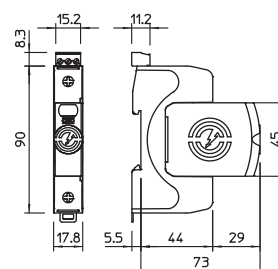
Surge arrester, type 2

- 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.



Dimensions



Connection options



V20-1+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Surge arrester V20 in 320 V, type 2, for TN-C networks

Surge arrester V20, 3-pole, 320 V



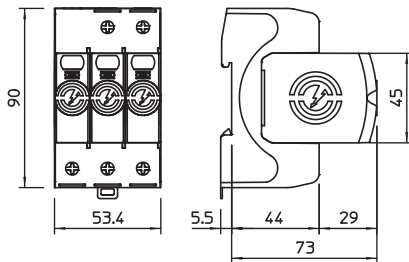
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3-320	320	3	IP20	1	36.300	5095173

Surge arrester, type 2

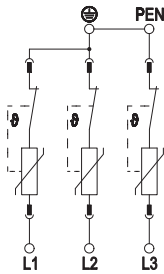
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-3-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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 with remote signalling, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3+FS-320	320	3	IP20	1	36.700	5095293

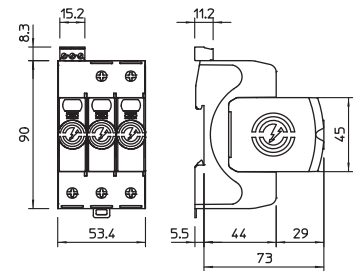
Surge arrester, type 2

- 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

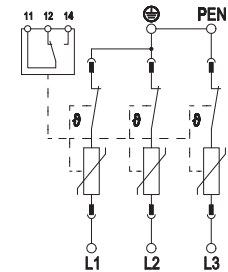
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_d 1.4 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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, 320 V



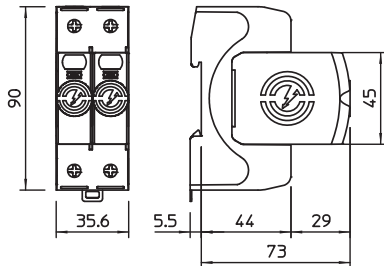
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1+NPE-320	320	1+N/PE	IP20	1	24.400	5095261

Surge arrester, type 2

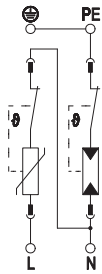
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-1+NPE-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{L-PE} 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{II} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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 and remote signalling, 320 V



Type	AC voltage V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1+NPE+FS-320	320	1+N/PE	IP20	1	24.700	5095341

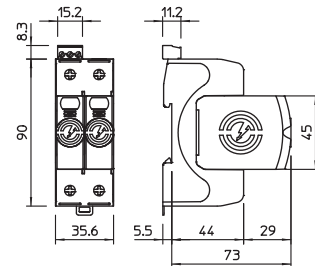
Surge arrester, type 2

- 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

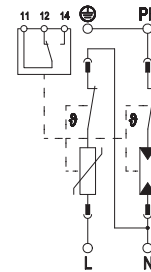
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PE} 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
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, 320 V



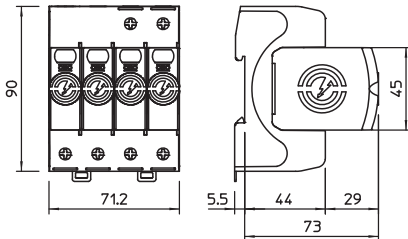
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3+NPE-320	320	3+N/PE	IP20	1	46.100	5095263

Surge arrester, type 2

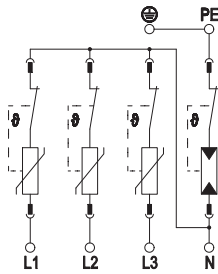
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-3+NPE-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.4 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$ 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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, 320 V



Type	AC voltage V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3+NPE+FS-320	320	3+N/PE	IP20	1	46.600	5095343

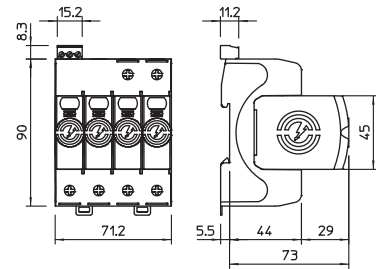
Surge arrester, type 2

- 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

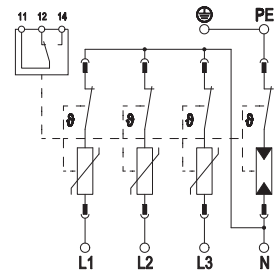
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+FS-320

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 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{1-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_n 1.4 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PE} 1.7 kV
Residual voltage [L-N] @ 1 kA	U_{res} 1,0 kV
Residual voltage [L-N] @ 5 kA	U_{res} 1,2 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Surge arrester V20 in 385 V, type 2

Surge arrester V20, 1-pole, 385 V



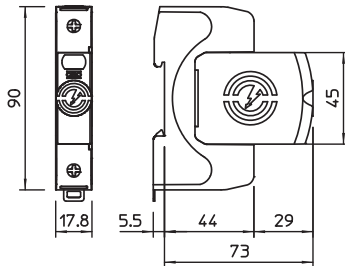
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1-385	385	1	IP20	1	13.300	5095191

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.

Dimensions



Connection options



V20-1-385

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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-2-385	385	2	IP20	1	26.400	5095192

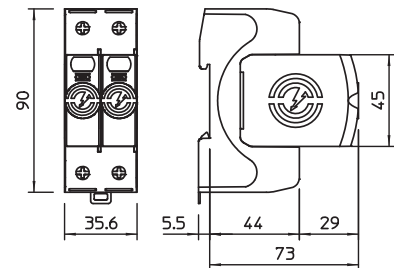
Surge arrester, type 2

- 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

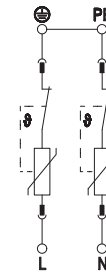
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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 with remote signalling, 385 V



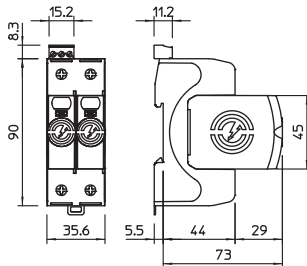
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-2+FS-385	385	2	IP20	1	26.700	5095302

Surge arrester, type 2

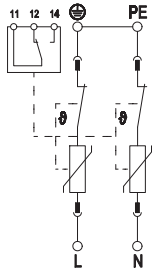
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-2+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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-1+NPE-385	385	1+N/PE	IP20	1	24.700	5095271

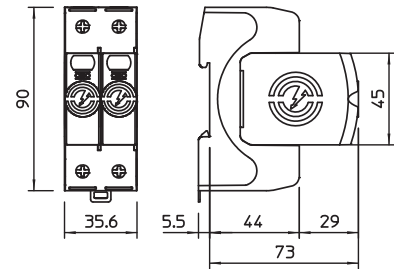
Surge arrester, type 2

- 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.



Dimensions



Connection options



V20-1+NPE-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 μ s)	I_n / I_{-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{-PE} 1.9 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_{ui} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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, 385 V



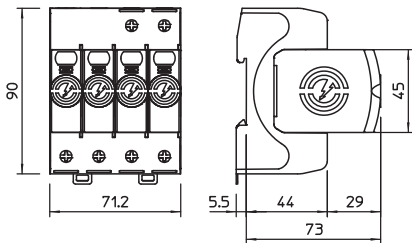
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3+NPE-385	385	3+N/PE	IP20	1	47.000	5095273

Surge arrester, type 2

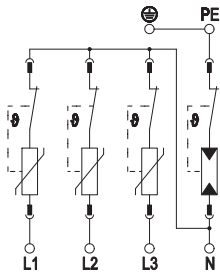
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-3+NPE-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 μ s)	I_n / I_{L-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.7 kV
Combined voltage protection level [L-PE]	$U_{p / L-PE}$ 1.9 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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, 385 V



Type	AC voltage V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3+NPE+FS-385	385	3+N/PE	IP20	1	47.500	5095353

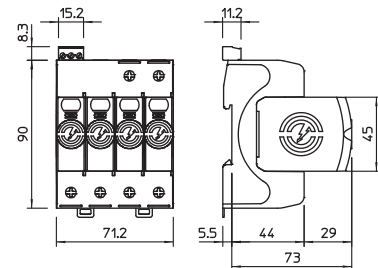
Surge arrester, type 2

- 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

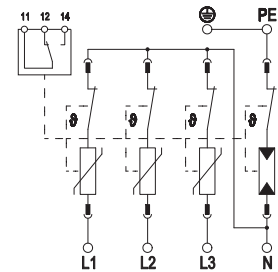
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+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 μ s)	I_n / I_{1-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_n 1.7 kV
Combined voltage protection level [L-PE]	U_n / I_{1-PE} 1.9 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
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, 385 V

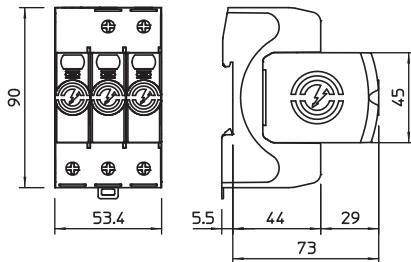


Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-3-385	385	3	IP20	1	35.600	5095193

Surge arrester, type 2

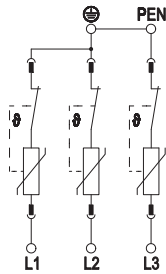
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Application: Equipotential bonding in main and sub-distributions.

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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
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 with remote signalling, 385 V



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

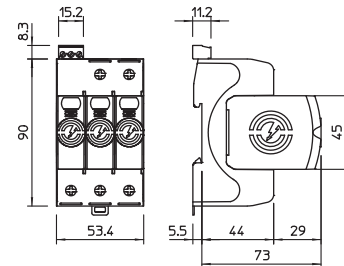
Surge arrester, type 2

- 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

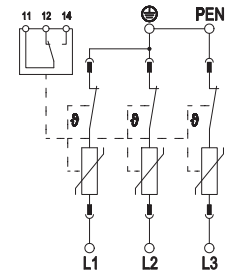
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [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 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Surge arrester V20, 4-pole, 385 V



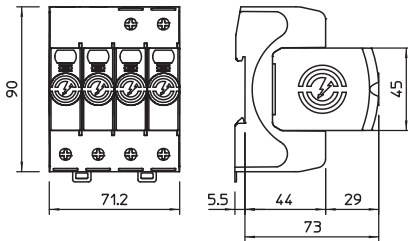
Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-4-385	385	4	IP20	1	48.600	5095194

Surge arrester, type 2

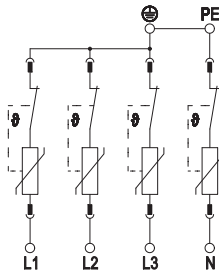
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying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

Dimensions



Connection options



V20-4-385

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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
Conductor cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1.5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Surge arrester V20, 4-pole with remote signalling, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
V20-4+FS-385	385	4	IP20	1	49.100	5095304

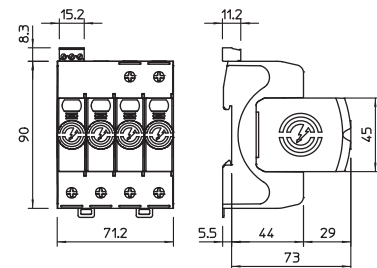
Surge arrester, type 2

- 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

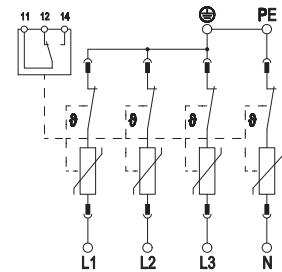
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-4+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 μ s)	I_n / I_{n-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 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_{li} -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Conductor cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Conductor cross-section, rigid (single wire/multi-wire)	1,5 - 35 mm ²
Conductor cross-section, flexible (fine-wire)	16 - 2 AWG
Conductor cross-section, rigid (single wire/multi-wire)	16 - 2 AWG



Surge arrester V20 upper parts, type 2

Upper part V20 320 V

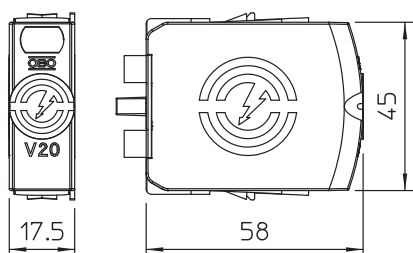


Type	AC voltage	Pole version	Protection rating	Pack pcs	Weight kg/100 pc.	Item no.
	V					
V20-0-320	320	1	IP20	1	5.100	5095366

Upper part, 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 upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Plastic (UL 94 V-0)

Dimensions



Connection options

V20-0-320

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 320 V
Protection level	U_p 1.4 kV
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Operating temperature range	T_v -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA

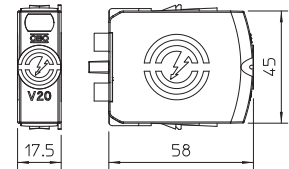
Upper part V20 385 V



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

Upper part, 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 upper part 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_n 1.7 kV
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE, KEMA



Upper part C20 280 V

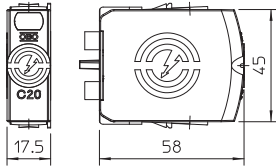


Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack Weight		Item no.
				pcs	kg/100 pc.	
C20-0-255	255	N/PE	IP20	1	3.680	5095600

Upper part, N-PE surge arrester, type 2

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

Application: Equipotential bonding in main and sub-distributors.



C20-0-255

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

Combination arrester C25, 1-pole+NPE



Highest
continu-
ous
voltage

Type V Version

Pack Weight
pcs kg/100 pc. Item no.

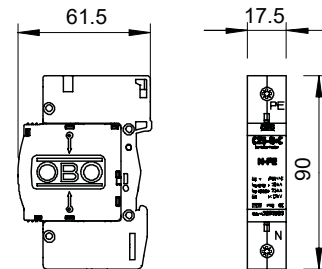
Type	V	Version	pcs	kg/100 pc.	Item no.
C 25-B+C 1	255	NPE	1	12.500	5095606

C 25-B+C/..+NPE: Plug-in total discharge gap for use between neutral lines (N) and protector (PE). Suitable for use in combination with:

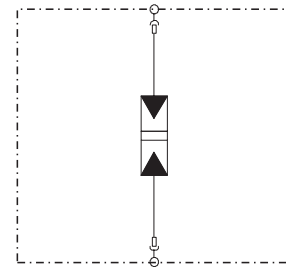
- CombiController Type V 25-B+C
- SurgeController Type V 20-C
- SurgeController Type V 10-C



Dimensions



Connection options



C 25-B+C 1

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 μ s)	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
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Surge arrester, 3-pole with remote signalling



Highest continuous voltage
V

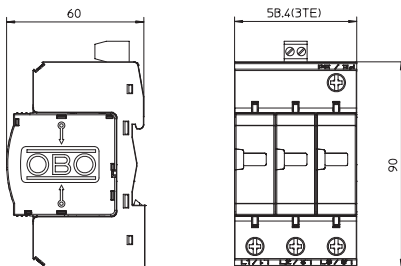
Pack Weight
pcs kg/100 pc.

Type	V	Version	pcs	kg/100 pc.	Item no.
V20-C 3+FS-385	385	3-pole + FS	1	34.700	5094780

V 20-C/...: Surge arrester type 2 (Class C) to VDE 61643 part 11-0675 (DIN EN 6-11).

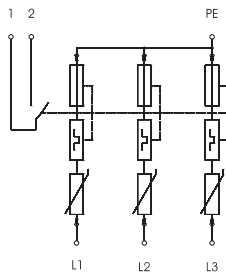
- With new MultiBase base and Multi connection clamps
- Complete unit consisting of upper and base, pre-mounted and ready for connection
- Suitable for TN network systems
- Plug-in upper part; upper part can be separated from base without tools
- With remote signalling, potential-free changeover contact, for function monitoring
- Including thermal and dynamic separating device
- With visual defect display
- High current conductivity and long service life
- Marked connections

Dimensions



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

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
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_n	< 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Surge arrester, 1-pole + NPE



Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 1+NPE-385	385	1+NPE	1	23.300	5094666

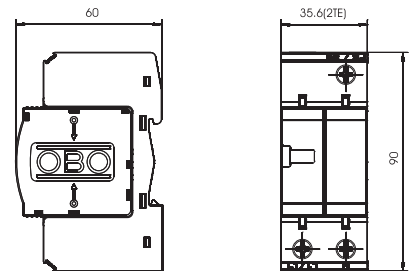
V 20-C/...: Surge protection device type 2 (Class C) to VDE 0675 part 6-11 (DIN EN 61643-11).

- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- VDE-tested
- Suitable for TN- and TT network systems
- Plug-in upper part; upper part can be separated from base without tools
- Including thermal and dynamic separating device
- With visual status of defects
- High current conductivity and long service life
- Marked connections

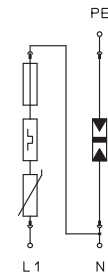
Application example: residential buildings, single-family homes without outer lightning protection system.



Dimensions



Connection options



V20-C 1+NPE-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
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	40 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_n	< 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Surge arrester, 3-pole + NPE

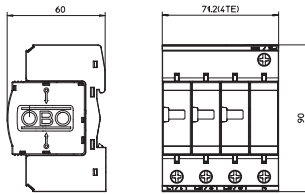


Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 3+NPE-385	385	3+NPE	1	42.600	5094668

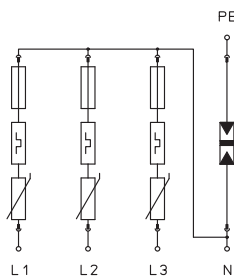
V 20-C/...: Surge protection device type 2 (Class C) to VDE 0675 part 6-11 (DIN EN 61643-11).

- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- VDE-tested
- Suitable for TN- and TT network systems
- Plug-in upper part; upper part can be separated from base without tools
- Including thermal and dynamic separating device
- With visual status of defects
- High current conductivity and long service life
- Marked connections

Dimensions



Connection options



Application example: residential buildings, single-family homes without outer lightning protection system.

V20-C 3+NPE-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
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	80 kA
Maximum discharge current (8/20 μ s)	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)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Surge arrester, 3-pole + NPE with remote signalling



Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 3+NPEFS38	385	3+NPE + FS	1	45.200	5094788

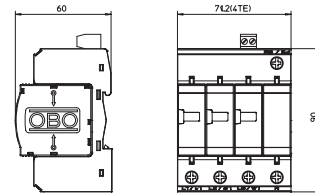
V 20-C/...: Surge protection device type 2 (Class C) to VDE 0675 part 6-11 (DIN EN 61643-11).



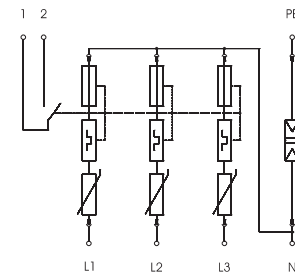
- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- VDE-tested
- Suitable for TN- and TT- network systems
- Plug-in upper part; upper part can be separated from base without tools
- With remote signalling, potential-free changeover contact, for function monitoring
- Including thermal and dynamic separating device
- With visual status of defects
- High current conductivity and long service life
- Marked connections

Application example: residential buildings, single-family homes

Dimensions



Connection options



V20-C 3+NPEFS38

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
Arrestor surge current (8/20) [total]	$I_{Ttotal 8/20}$	80 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_d	< 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)		4
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Surge arrester, 1-pole



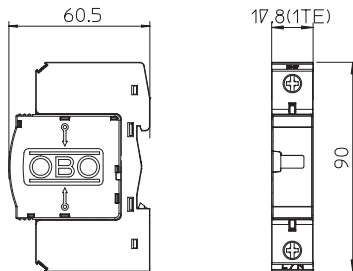
Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 1-550	550	1-pole	1	12.900	5094713

Surge arrester, type 2, 550 V

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Arrester, connectable with dynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings

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

Dimensions



Connection options



V20-C 1-550

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]	$I_{Total\ 8/20}$	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_n	< 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)		1
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Surge arrester, 3-pole



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

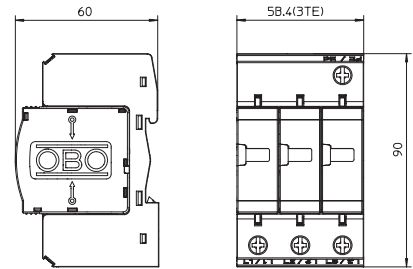
Surge arrester, type 2, 550 V

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Arrester, connectable with dynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings

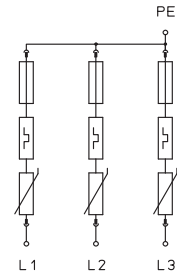
Application: Equipotential bonding (LPZ 1 to 2) in main and sub-distributors.



Dimensions



Connection options



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 μ s)	I_{max}	40 kA
Protection level	U_n	< 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Surge arrester, 1-pole, leakage current-free

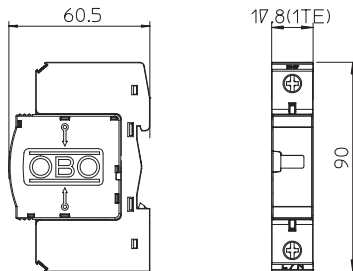


Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-VA 1-385	385	1-pole	1	12.500	5099475

V 20-VA/...: Surge protection device type 2 (Class C) to VDE 0675 part 6-11 (DIN EN 61643-11).

- With new MultiBase base part and Multi-connection clamps
- Suitable for use in the pre-meter area (absolutely free of leakage current)
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for TN-C network systems
- Plug-in upper part; upper part can be separated from base without tools
- Including thermal and dynamic separating device
- With visual display of defects
- High current conductivity and long service life
- Marked connections

Dimensions



Connection options



Application example: residential buildings, single-family homes

V20-VA 1-385

Nominal voltage	U_N	350 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
Arrestor surge current (8/20) [total]	$I_{Ttotal 8/20}$	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	25 kA
Protection level	U_p	< 1,8 kV
Response time	t_A	< 100 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Upper part, surge arrester V20 48 V



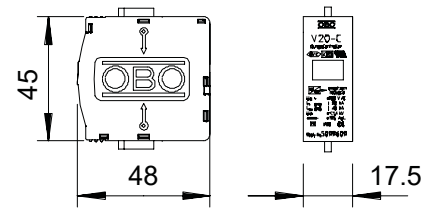
Type	Highest continuous voltage		Version	Pack pcs	Weight kg/100 pc.	Item no.
	V	U max DC V				
V20-C 0-48	48	60	1-pole	1	5.300	5099574

Upper part – type 2 surge arrester

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



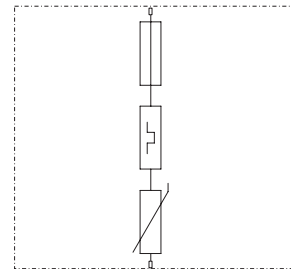
Dimensions



V20-C 0-48

Max. continuous operating voltage	U_c	48 V
U max DC	$U_{c DC}$	60 V
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		0→2
Nominal discharge current (8/20)	I_n	15 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_o	<0,280 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



Upper part, surge arrester V20 385 V

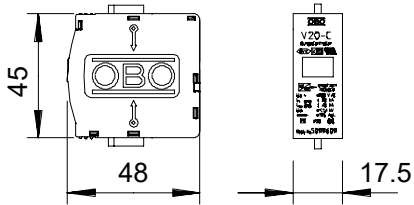


Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 0-385	385	1-pole	30	5.826	5099729

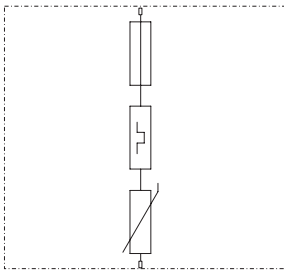
Upper part – type 2 surge arrester

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

Dimensions



Connection options



V20-C 0-385

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
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_o	< 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

Upper part, surge arrester V20 B+C 320 V



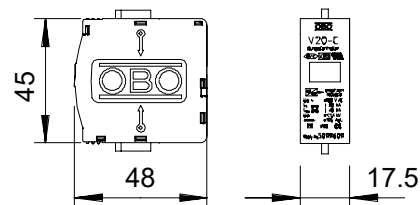
Type	Highest continuous voltage		Version	Pack pcs	Weight kg/100 pc.	Item no.
	V	U max DC V				
V20-B+C 0-320	320	420	1-pole	1	5.500	5099847

Upper part – type 2 surge arrester

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



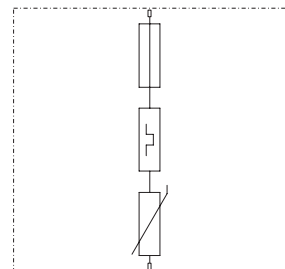
Dimensions



V20-B+C 0-320

Max. continuous operating voltage	U_c	320 V
U max DC	$U_{c DC}$	420 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Nominal discharge current (8/20)	I_n	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	40 kA
Protection level	U_o	< 1,4 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

Connection options



Surge arrester V20/V25

Surge arrester V20 1+FS 320 V



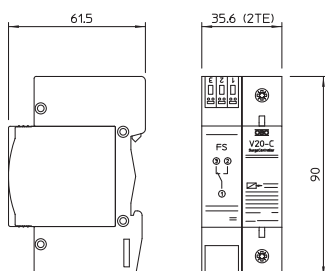
Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 1+FS-320-A	320	1-pole	1	21.000	5096057

Surge arrester type 2, 320 V

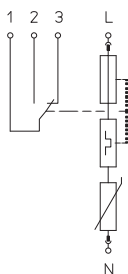
- With remote signalling, potential-free change-over contact, for function monitoring
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pin
- Arrester, connectable with dynamic cut-off unit and visual function display
- High-performance varistor technology

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

Dimensions



Connection options



V20-C 1+FS-320-A

Nominal voltage	U_N	320 V
Max. continuous operating voltage	U_C	320 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 μ s)	I_{max}	40 kA
Protection level	U_n	< 1,4 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 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Upper part, surge arrester 75 V



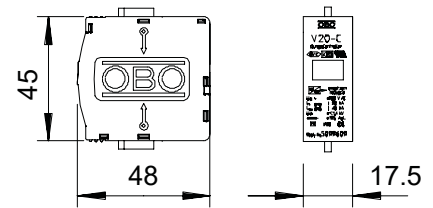
Type	Highest continuous voltage		Version	Pack Weight		Item no.
	V	U max DC V		pcs	kg/100 pc.	
V20-C 0-75	75	100	1-pole	1	5.160	5099579

Upper part – type 2 surge arrester

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



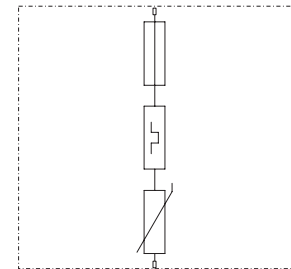
Dimensions



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 μ s)	I_{max}	40 kA
Protection level	U_o	< 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



Upper part, surge arrester 150 V

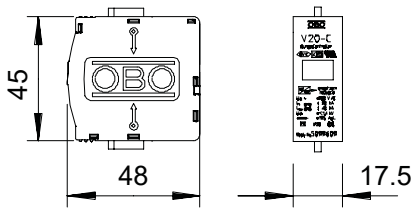


Type	Highest continuous voltage V	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 0-150	150	200	1-pole	1	4.794	5096707

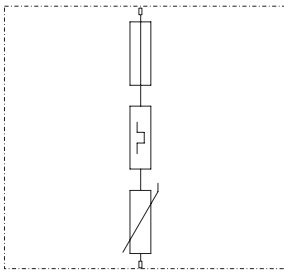
Upper part – type 2 surge arrester

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

Dimensions



Connection options



V20-C 0-150

Max. continuous operating voltage	U_c	150 V
U max DC	U_c DC	200 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 μ s)	I_{max}	40 kA
Protection level	U_p	< 0,8 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

Upper part, surge arrester 320 V



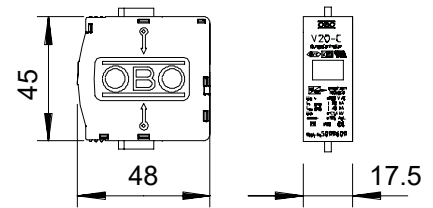
Type	Highest continuous voltage U max DC		Version	Pack pcs	Weight kg/100 pc.	Item no.
	V	V				
V20-C 0-320	320	420	1-pole	1	5.545	5099848

Upper part – type 2 surge arrester

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



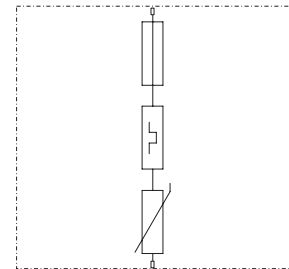
Dimensions



V20-C 0-320

Max. continuous operating voltage	U_c	320 V
U max DC	$U_{c DC}$	420 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 μ s)	I_{max}	40 kA
Protection level	U_o	< 1,4 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

Connection options



Combination arrester C25, 1-pole+NPE



Highest continuous voltage V Version

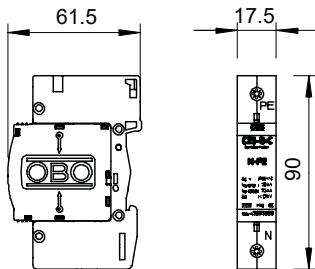
Pack Weight pcs kg/100 pc. Item no.

Type	V	Version	pcs	kg/100 pc.	Item no.
C 25-B+C 1	255	NPE	1	12.500	5095606

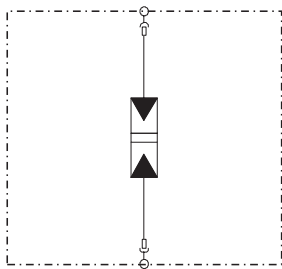
C 25-B+C/..+NPE: Plug-in total discharge gap for use between neutral lines (N) and protector (PE). Suitable for use in combination with:

- CombiController Type V 25-B+C
- SurgeController Type V 20-C
- SurgeController Type V 10-C

Dimensions



Connection options



C 25-B+C 1

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 μ s)	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
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Upper part, total spark gap between N and PE 255 V



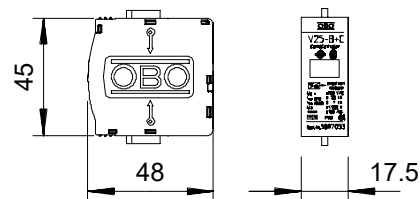
Type	Highest continuous voltage		Pack		Weight	Item no.
	V	Version	pcs	kg/100 pc.		
C 25-B+C 0	255	NPE	1	5.300		5095603

C 25-B+C/..+NPE: Plug-in total discharge gap for use between N and PE. Suitable for use in combination with:

- CombiController Type V 25-B+C
- SurgeController Type V 20-C
- SurgeController Type V 10-C



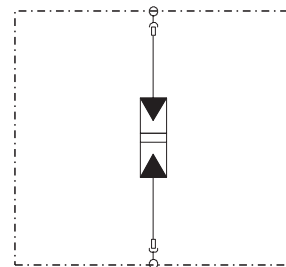
Dimensions



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 μ s)	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



Upper part, surge protection, leak current-free



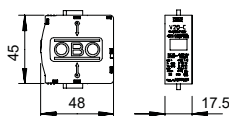
Highest continuous voltage

Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-VA 0	385	1-pole	1	6.018	5099613

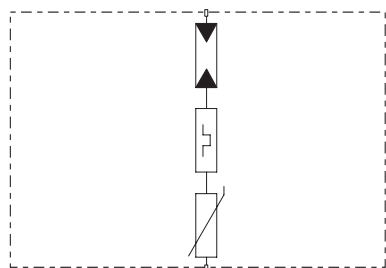
V 20-VA/O...: Separate upper part (plug-in).

- Suitable for use in the pre-meter area (absolutely free of leakage current)
- Plug-in upper part; upper part can be separated from base without tools

Dimensions



Connection options



V20-VA 0

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
Maximum discharge current (8/20 μ s)	I_{max}	25 kA
Protection level	U_d	< 1,8 kV
Response time	t_A	< 100 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		1
Protection rating		IP20

Upper part, surge arrester 385 V



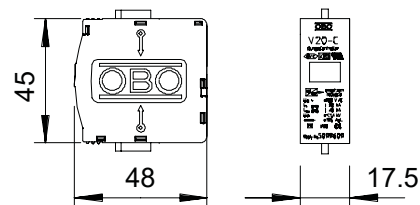
Type	Highest continuous voltage		Version	Pack pcs	Weight kg/100 pc.	Item no.
	V	U max DC V				
V20-C 0-385	385	505	1-pole	1	5.826	5099595

Upper part – type 2 surge arrester

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



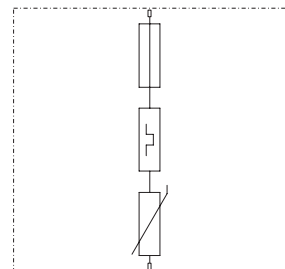
Dimensions



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 μ s)	I_{max}	40 kA
Protection level	U_o	< 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

Connection options



Upper part, surge arrester 440 V

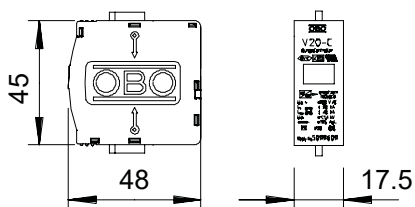


Type	Highest continuous voltage		Version	Pack pcs	Weight kg/100 pc.	Item no.
	V	U max DC V				
V20-C 0-440	440	585	1-pole	1	6.452	5099706

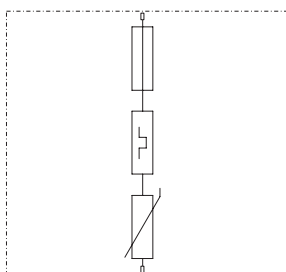
Upper part – type 2 surge arrester

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

Dimensions



Connection options



V20-C 0-440

Max. continuous operating voltage	U_C	440 V
U max DC	U_C DC	585 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 μ s)	I_{max}	40 kA
Protection level	U_p	< 2,0 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

Upper part, surge arrester 550 V



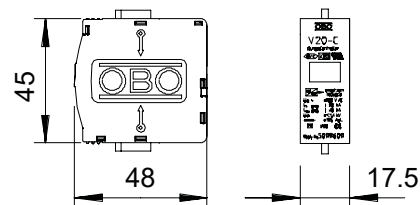
Type	Highest continuous voltage		Version	Pack Weight		Item no.
	V	U max DC V		pcs	kg/100 pc.	
V20-C 0-550	550	745	1-pole	1	7.201	5099617

Upper part – type 2 surge arrester

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



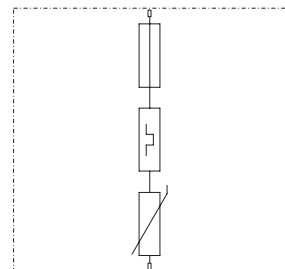
Dimensions



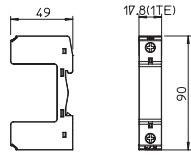
V20-C 0-550

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 μ s)	I_{max}	40 kA
Protection level	U_o	< 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

Connection options



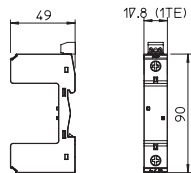
MultiBase base



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1	1-pole	1	1	7.588	5096648
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

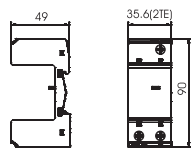
Base, MultiBase with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+FS	1-pole	1	1	6.700	5096649
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

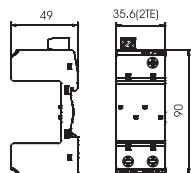
MultiBase base + NPE



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE	1 + NPE	2	1	11.500	5096650
MB 3+NPE	3 + NPE	4	1	20.000	5096669

- 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
- For TN-S and TT network systems

Base, MultiBase + NPE with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE+FS	1 + NPE	2	1	11.600	5096651
MB 3+NPE+FS	3 + NPE	4	1	21.000	5096671

- 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

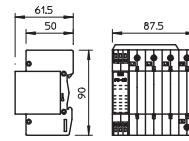


Base, MultiBase + NPE with fuse monitoring



Type	Version	Pack pcs	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 of arrester upper part, remote signalling
- With remote signalling, potential-free changeover contact, for function monitoring
- For TN-S and TT network systems
- Pre-mounted and ready for connection



Keller 1 Wasch- maschine	Keller 2 Trockner	Keller 3 Licht	Keller 4 Steckdosen	Keller 5 Heizung und Pumpe	Keller 6 Garage	EG/OG DG 1 Licht	EG/OG/DG Steckdosen
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Doepke
B16

Doepke
B16

Doepke
B16

OBO
BETTERMANN

**V10
Compact**

SurgeController

U_n 230/400 V
 U_c 255 VAC
 U_{max} 20 kV
 U_p <1,1 kV
 I_{max} 63 A

I_n 10 kA
 I_{max} 20 kA
 I_{max} 80 kA
 I_{max} 20
 I_{max} LPZ 1-3

Art.-Nr. 5093 38 0

CE

Herd 1	Herd 2	Herd 3					
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Doepke

ROCB

DES 4

U_n 230/400V
 I_n 63A
 $I_{\Delta n}$ 0,03A

Doepke

ROCB

DES 2

U_n 230/400V
 I_n 25A
 $I_{\Delta n}$ 0,03A

Doepke

B16

FI-Schalter 1.1 allgemein	FI-Schalter 1.2 allgemein	FI-Schalter 1.3 allgemein	FI-Schalter 1.4 allgemein	FI-Schalter 2.1 Bad/WC	FI-Schalter 2.2 Bad/WC	LS 16A Bad/WC	
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Surge protection energy technology, arrester, type 2+3



Surge arrester V10 Compact

116



Accessories, upper parts and bases V10

117



Surge protection for LED systems, module type 2+3

119

Surge arrester Compact 385 V



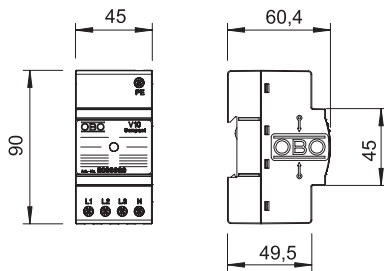
Highest continuous voltage

Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V10 COMPACT 385	385	3 + NPE	1	16.800	5093384

Surge protection device, compact module, type 2+3

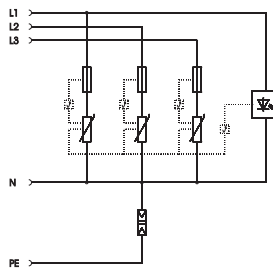
- Surge protection in subdistributors to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual status display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

Dimensions



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

Connection options



V10 COMPACT 385

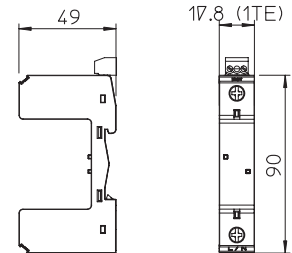
Nominal voltage	U_N	385 V
Max. continuous operating voltage	U_C	385 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Protection level	U_n	< 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)		2.5
Protection rating		IP20
Connection cross-section, rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²

Base, MultiBase with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+FS	1-pole	1	1	6.700	5096649
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

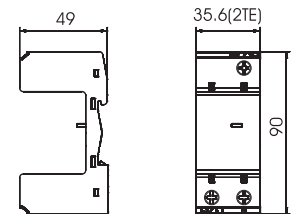


MultiBase base + NPE



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE	1 + NPE	2	1	11.500	5096650
MB 3+NPE	3 + NPE	4	1	20.000	5096669

- 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
- For TN-S and TT network systems

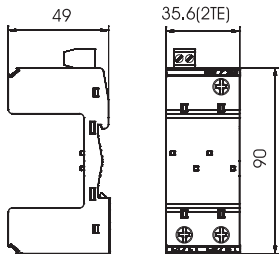


Base, MultiBase + NPE with remote signalling



Type	Version	Dividing unit TE (17.5 mm)	Pack pcs	Weight kg/100 pc.	Item no.
MB 1+NPE+FS	1 + NPE	2	1	11.600	5096651
MB 3+NPE+FS	3 + NPE	4	1	21.000	5096671

- 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

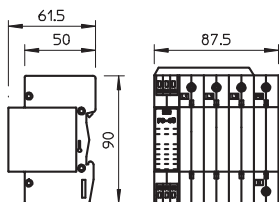


Base, MultiBase + NPE with fuse monitoring



Type	Version	Pack pcs	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 of arrestor upper part, remote signalling
- With remote signalling, potential-free changeover contact, for function monitoring
- For TN-S and TT network systems
- Pre-mounted and ready for connection



Surge protection for LED systems 440 V



Type	Highest continuous voltage V	Version	Pack Weight		Item no.
			pcs	kg/100 pc.	
ÜSM-LED 440	440	1+NPE	1	4,500	5092482

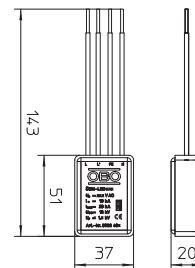
Surge protection module type 2+3 to DIN EN 61643-11 for 440 V power grids.
Appropriate for the protection of LED lighting.

- 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

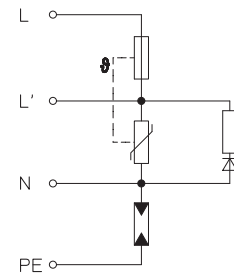
Application: Universally deployable in all lighting systems



Dimensions



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
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Protection level	U_n	1,8 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		16 A
Temperature range	ϑ	-15 - +60 °C
Protection rating		IP20
Connecting cable length		0.09 m



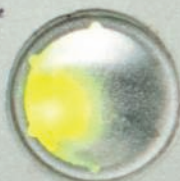
OBO

Blitzbarriere

VF
24
AC/DC



OK



Replace

U_N : 24 V
 I_L : 20 A
 $I_n (8/20)$: 700 A
 $I_{max} (8/20)$: 2 kA
 U_p : ≤ 130 V
IP20 CE

Art.-Nr. 5097 60 7

theben

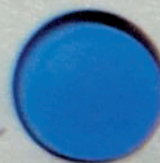
13 03 15

OFF

13:41

18

MENU





Surge protection Energy technology, type 3 arrestor



Fine power protection, series installation

122



TBS_Typ_OA / en / 2020/03/05 10:45:35 (LLExpert_02453) / 2020/03/05 10:45:52 10:45:52

MCR protection for 2-pole power supply, 12 V



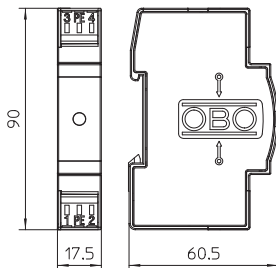
Highest continuous voltage V

Type	Highest continuous voltage V	Pack pcs	Weight kg/100 pc.	Item no.
VF12-AC DC	13.5	1	9.000	5097453

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

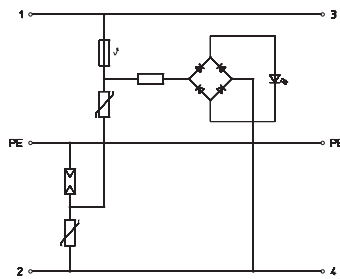
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

Connection options



VF12-AC DC

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _t	20 A
Protection level wire-wire		<110 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 24 V



Highest continuous voltage V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF24-AC/DC 34	1	8.000	5097607

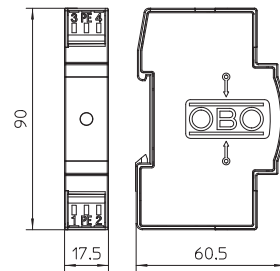
Surge protection device / fine protection type 3 to EN 61643-11

- 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

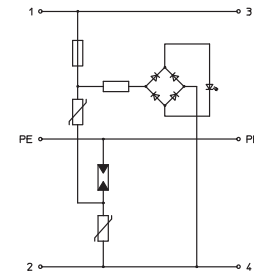
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



Connection options



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply, 48 V



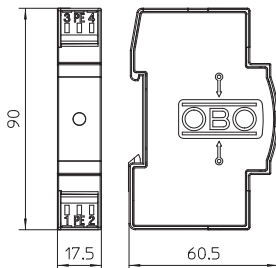
Highest continuous voltage V

Type	Highest continuous voltage V	Pack pcs	Weight kg/100 pc.	Item no.
VF48-AC/DC	60	1	8.000	5097615

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

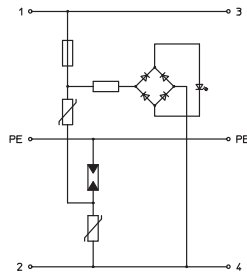
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

Connection options



VF48-AC/DC

U max AC	U _c AC	60 V
U max DC	U _c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _t	20 A
Protection level wire-wire		<220 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

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



Highest continuous voltage V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF60-AC/DC 80	1	8.000	5097623

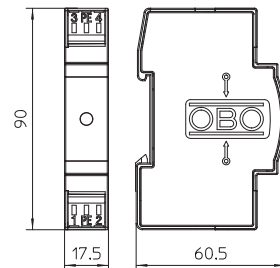
Surge protection device / fine protection type 3 to EN 61643-11

- 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

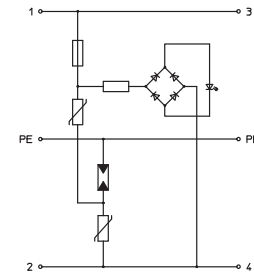
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply, 110 V



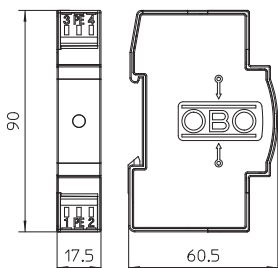
Highest continuous voltage V

Type	Highest continuous voltage V	Pack pcs	Weight kg/100 pc.	Item no.
VF110-AC DC	150	1	8.000	5097631

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

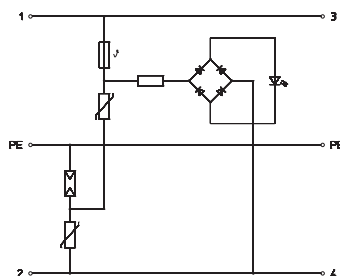
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

Connection options



VF110-AC DC

U max AC	U_c AC	150 V
U max DC	U_c DC	200 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	2 kA
Maximum discharge current (8/20 μ s)	I_{max}	6.5 kA
Rated current	I_t	20 A
Protection level wire-wire		<500 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

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



Highest continuous voltage V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF230-AC/DC 255	1	8.000	5097650

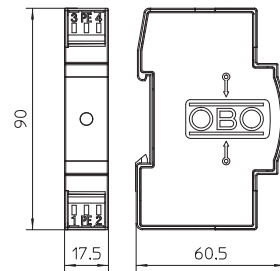
Surge protection device / fine protection type 3 to EN 61643-11

- 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

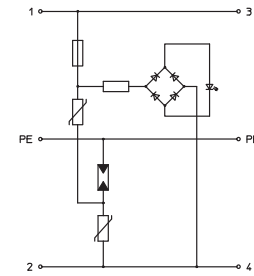
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



Connection options



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole power supply with remote signalling, 24 V AC/DC



Highest continuous voltage V

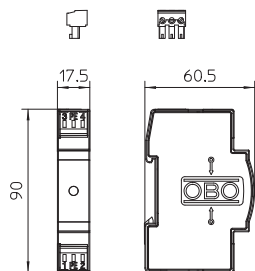
Pack Weight
pcs kg/100 pc. Item no.

Type	VF24-AC/DC-FS	34	1	6.620	5097820
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Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

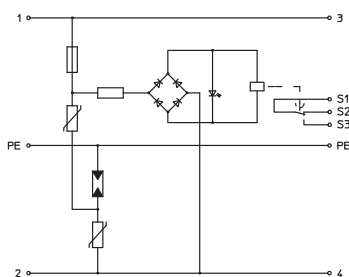
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Connection options



VF24-AC/DC-FS

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 _t	20 A
Protection level wire-wire		<160 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

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



Highest continuous voltage V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF230-AC-FS 255	1	6.910	5097858

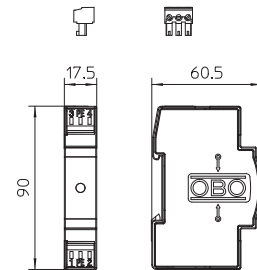
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- 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

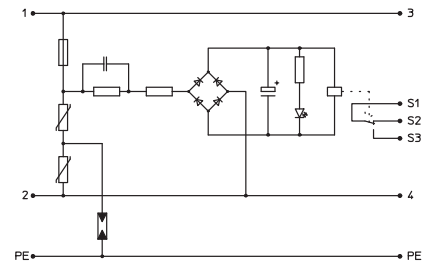
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²





Photovoltaic systems

	Lightning current and surge arrester, type 1+2, photovoltaic systems 1,500 V DC	132
	Lightning current and surge arrester, type 1+2, photovoltaic systems 1,000 V DC	134
	Surge arrester, type 2, photovoltaics 1,500 V DC	136
	Surge arrester, type 2, photovoltaics 1,000 V DC	138
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	Photovoltaic upper parts	141

PV complete block 1500 V DC



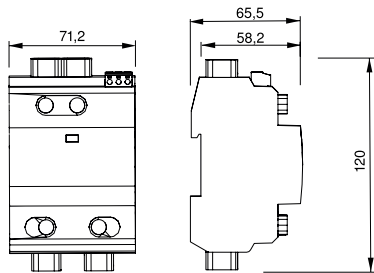
Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V-PV-T1+2-1500	1500	Y configuration	1	49.200	5094240

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

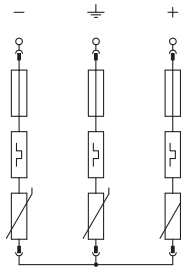
- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover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

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

Dimensions



Connection options



V-PV-T1+2-1500

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

PV complete block 1500 V DC with remote signalling



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

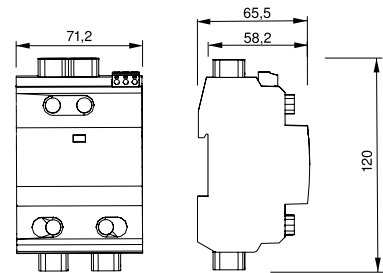
Type 1+2 combination arrester for lightning and surge protection of PV systems.

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

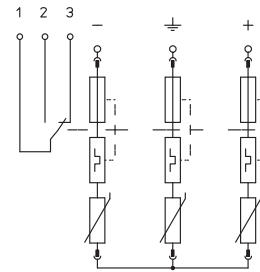
Application: Lightning current and surge protection devices for PV systems.



Dimensions



Connection options



V-PV-T1+2-1500FS

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



PV complete block 1000 V DC



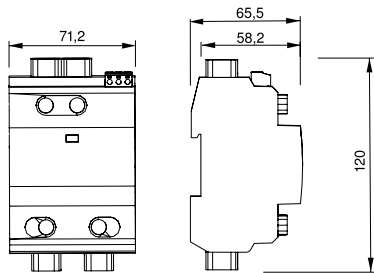
Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V-PV-T1+2-1000	1000	Y configuration	1	40.700	5094230

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

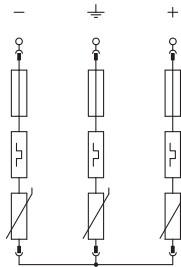
- Lightning protection equipotential bonding according to IEC 62305 (VDE 0185-305)
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity to 12.5 kA (10/350) and 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover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

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

Dimensions



Connection options



V-PV-T1+2-1000

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

PV complete block 1000 V DC with remote signalling



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

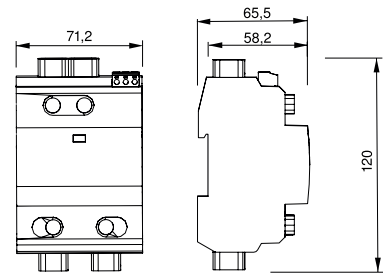
Type 1+2 combination arrester according to EN 50539-11 for lightning and surge protection of PV systems.

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

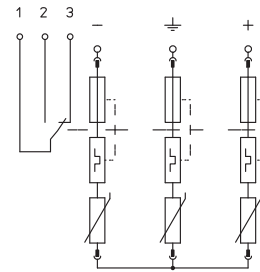
Application: Lightning current and surge protection devices for PV systems.



Dimensions



Connection options



V-PV-T1+2-1000FS

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



PV type 2 surge protection complete block

PV complete block 1500 V DC



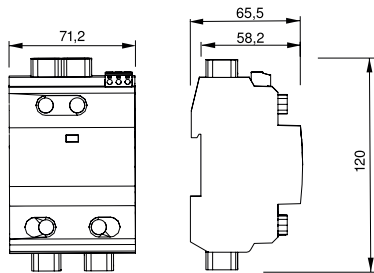
Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V-PV-T2-1500	1500	Y configuration	1	33.800	5094210

Type 2 surge protection for PV plants.

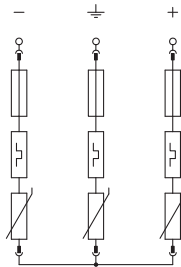
- Surge protection according to IEC 60364-7-712 (VDE 0100-712)
- Arresting capacity of 20 kA per pole and up to 40 kA (8/20)
- Error-resistant Y circuit with status display
- The FS variant possesses a potential-free changeover contact for remote signalling

Application: Surge protection devices for PV systems.

Dimensions



Connection options



V-PV-T2-1500

U max DC	U _c DC	1500 V
SPD to EN 61643-11		Type 2
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 _n	< 4,5 kV
Response time	t _A	< 25 ns
Temperature range	ϑ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 35 mm ²

PV complete block 1500 V DC with remote signalling



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

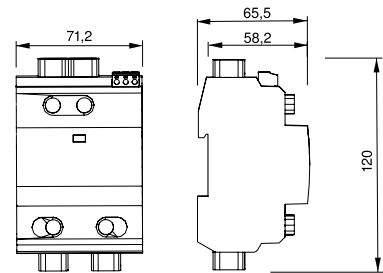
Type 2 surge protection for PV plants.

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

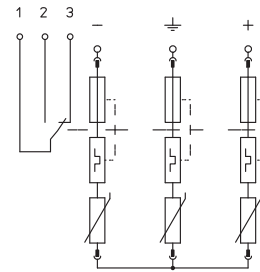
Application: Surge protection devices for PV systems.



Dimensions



Connection options



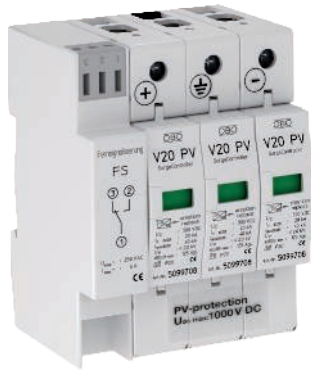
V-PV-T2-1500+FS

U max DC	U _c DC	1500 V
SPD to EN 61643-11		Type 2
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 _n	< 4,5 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - 80 °C
Protection rating		IP20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 35 mm ²



PV type 2 surge protection complete block

PV surge protection V20, 1000 V DC with remote signalling

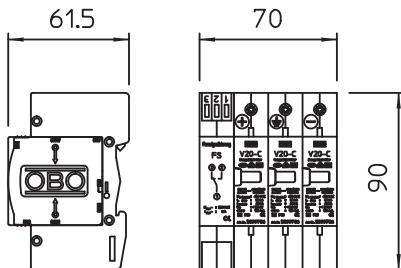


Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 3PHFS-1000	1000	3-pole for PV systems with FS	1	44.500	5094574

V20 surge arrester, type 2, for photovoltaic systems

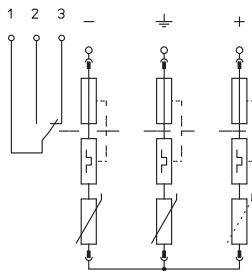
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- V20-C 3-PH-1000 tested to EN 50539-11 (VDE / KEMA)
- Arresting capacity to 40 kA (8/20) per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

Dimensions



Application: PV systems with or without separate lightning protection system

Connection options



V20-C 3PHFS-1000

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
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 _n	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV surge protection V20, 600 V DC



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

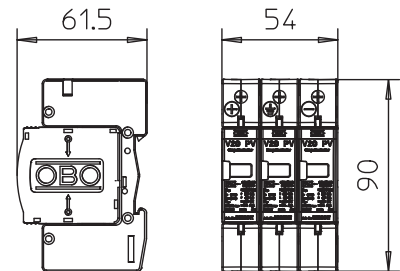
V20 surge arrester, type 2, for PV systems

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

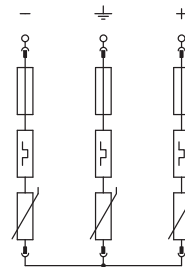
Application: PV systems with or without separate lightning protection system



Dimensions



Connection options



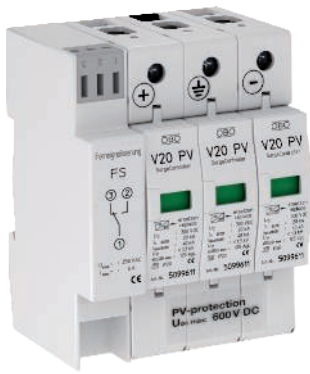
V20-C 3PH-600

U max DC	U _c DC	600 V
SPD to EN 61643-11		Type 2
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 _n	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



PV type 2 surge protection complete block

PV surge protection V20, 600 V DC with remote signalling



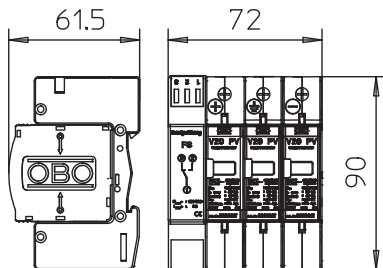
Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 3PHFS-600	600	3-pole for PV systems; Y circuit with FS	1	41.500	5094576

V20 surge arrester, type 2, for PV systems

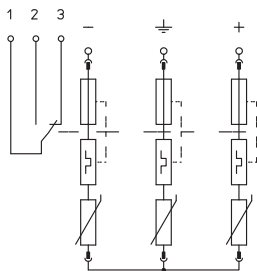
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: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

Application: PV systems with or without separate lightning protection system

Dimensions



Connection options



V20-C 3PHFS-600

U max DC	U _c DC	600 V
SPD to EN 61643-11	Type	Type 2
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 _n	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section, rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV cover – surge arrester, type 2



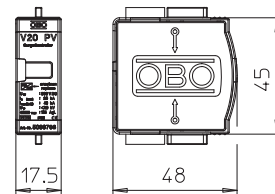
Type	U max DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
V20-C 0-500PV	500	1-pole, PV upper part with Y base to 1,000 V DC	1	6.500	5099708



V20-C/...PV: SurgeController upper part, type 2, surge arrester for photovoltaic systems

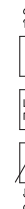
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pin
- Low DC protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual status display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

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



V20-C 0-500PV

U max DC	U _c DC	500 V
SPD to EN 61643-11		Type 2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Protection level	U _p	< 2,0 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












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Net-Defender

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Surge protection, data and information technology

	Surge protection for telecommunication systems	144
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Combination protection device TD-2d-V for VDSL systems



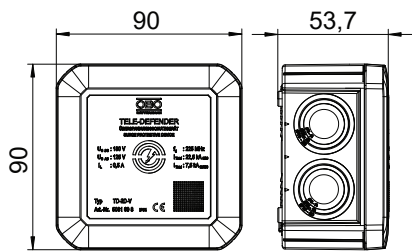
Type	AC V	DC V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
TD-2D-V	125	180	2	Terminal	1	9.500	5081698

Plastic

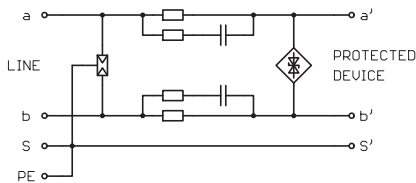
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
- "Push-in" clamps for quick installation
- Bandwidth-optimised for secure transmission up to 225 MHz
- Surface mounting

Dimensions



Connection options



Application: Ideal for all DSL systems, IP connections, ISDN or analogue telecommunications

TD-2D-V

Maximum continuous voltage AC	U_c	125 V
Maximum continuous voltage DC	U_c	180 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	I_n	0.5 A
Capacity (wire-wire)		<10 pF
Capacity (wire-earth)		<20 pF
Series resistance per wire		2,2 Ω \pm 5 %
Impulse durability wire-wire		C2: 15 kV / 7,5 kA (8/20 μ s)
Impulse durability wire-earth		C2: 15 kV / 7,5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total discharge current (8/20)		22,5 kA
Total discharge current (10/350)		D1: 7,5 kA
Protection level wire-wire		<350 V
Protection level wire-earth		<600 V
Frequency range		0 - 225 MHz
Insertion loss	S_{21}	\leq 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 - 1 mm ²
Connection cross-section, multi-wire		0.14 - 1 mm ²
Connection cross-section, rigid		0.08 - 1.5 mm ²
Testing standard		IEC 61643-21

Combination protection device TD-4/I for ISDN and DSL systems



Type	Highest continuous voltage		Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
	AC V	DC V					
TD-4/I	120	170	4	Terminal	1	11.000	5081690

Plastic

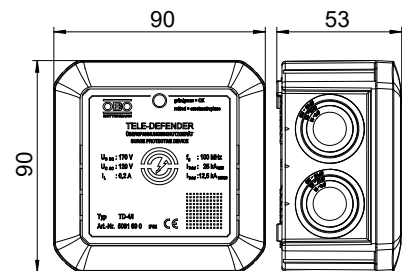
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
- "Push-in" terminals for quick installation
- Bandwidth-optimised for secure transmission
- Surface mounting
- Visual function display

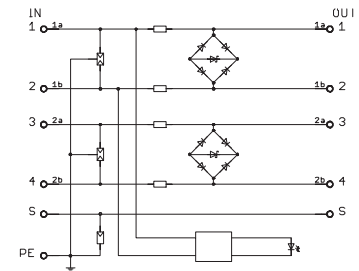
Application: DSL systems, IP connections, ISDN or analogue telecommunications



Dimensions



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_n	0.2 A
Capacity (wire-wire)		<50 pF
Capacity (wire-earth)		<10 pF
Series resistance per wire		$9 \Omega \pm 10 \%$
Impulse durability wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse durability wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
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 mm ²
Connection cross-section, multi-wire		0.14 - 0.75 mm ²
Connection cross-section, rigid		0.14 - 0.75 mm ²
Testing standard		IEC 61643-21

Combination protection device TD-2/D-HS for ISDN and DSL systems



Type	Maximum continuous voltage AC V	Maximum continuous voltage DC V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
TD-2/D-HS	120	170	2	Terminal	1	4.800	5081694

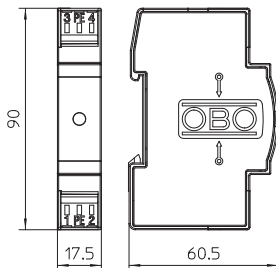
Plastic

Data cable protection devices for telecommunication systems

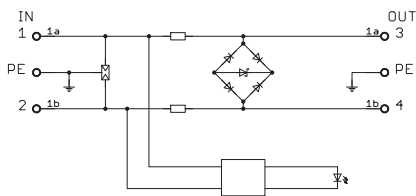
- Low protection level at high current load
- Screwless terminals or connectable
- Bandwidth-optimised for secure transmission
- Quick mounting onto DIN rail for a telephone line
- Visual function display

Application: DSL systems, ISDN or analogue telecommunication

Dimensions



Connection options



TD-2/D-HS

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category	Type 1+2+3 / D1+C2+C1	
Lightning protection zone LPZ	0→3	
Number of poles	2	
Rated current	I_n	0.2 A
Capacity (wire-wire)	<50 pF	
Capacity (wire-earth)	<50 pF	
Series resistance per wire	$9 \Omega \pm 10 \%$	
Impulse durability wire-wire	C2: 18 kV / 9 kA (8/20 μ s)	
Impulse durability wire-earth	C2: 18 kV / 9 kA (8/20 μ s)	
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total discharge current (8/20)	10 kA	
Total discharge current (10/350)	D1: 5 kA kA	
Protection level wire-wire	<300 V	
Protection level wire-earth	<650 V	
Frequency range	0 - 75 MHz	
Insertion loss	S_{21}	≤ 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type	Hat rail 35 mm	
Connection system	Terminal	
Protection rating	IP20	
Shielding connection available	No	
Connection cross-section, flexible	0.14 - 2.5 mm ²	
Connection cross-section, multi-wire	0.14 - 2.5 mm ²	
Connection cross-section, rigid	0.14 - 2.5 mm ²	
Testing standard	IEC 61643-21	

LSA basic protection magazine

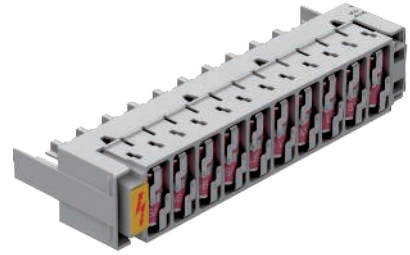


Type	Installation type	Number of poles	Pack pcs	Weight kg/100 pc.	Item no.
LSA-B-MAG	LSA-Plus, connectable	20	1	8.600	5084020

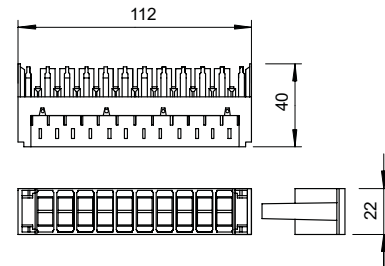
LSA-B-MAG: LSA basic protection magazine for use in multi-core data cable systems, MCR systems and telephone switchboards.

- Basic protection
- Equipped with 20 gas charge tubes
- Max. voltage: 180 V

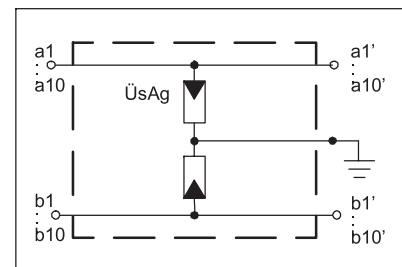
Application: Directly on LSA-Plus separating strips or connection strips (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2)).



Dimensions



Connection options



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_n	1 A
Impulse durability wire-wire	C2: 10 kV / 5 kA (8/20 μ s)
Impulse durability wire-earth	C2: 10 kV / 5 kA (8/20 μ s)
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



Coaxial protection device for BNC connection: male/female

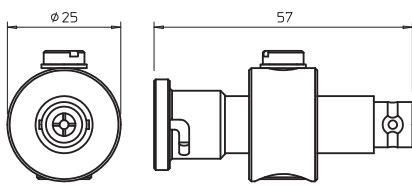


Type	Connection system	Frequency range	Pack pcs	Weight kg/100 pc.	Item no.
DS-BNC M/W	BNC	0 - 2,2 GHz	1	6.500	5093252

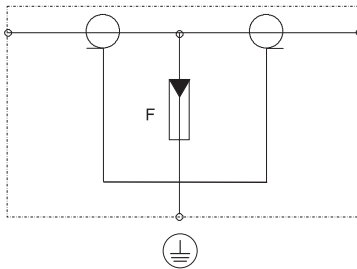
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Dimensions



Connection options



DS-BNC M/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_n	10 A
Wave resistance	Z_L	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2,2 GHz
Insertion loss	$S_{2,1}$	≤0,95 dB
Return loss	$S_{1,1}$	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21



Coaxial protection device for N connection: male/female



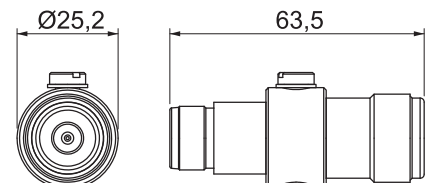
Type	Con- nection system	Frequency range	Pack Weight		Item no.
			pcs	kg/100 pc.	
DS-N M/W	N	0 - 3 GHz	1	12.200	5093996

Coaxial data cable protection devices

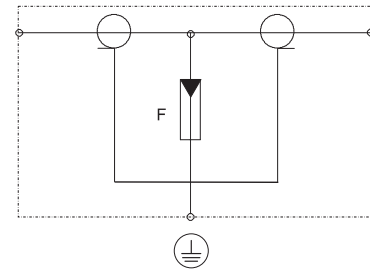
- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With N connector
- Including OBO M25 Quick clip for simple installation



Dimensions



Connection options



DS-N M/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category	Type	1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_n	10 A
Wave resistance	Z_L	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3 GHz
Insertion loss	$S_{2,1}$	$\leq 0,62$ dB
Return loss	$S_{1,1}$	≥ 14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for N connection up to 6 GHz: Male/female

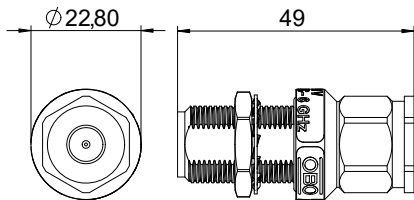


Type	Conne- tion system	Frequency range	Pack Weight		Item no.
			pcs	kg/100 pc.	
DS-N-6 M/W	N	0 - 6 GHz	1	7.830	5093998

Coaxial data cable protection devices for transmission and reception technology

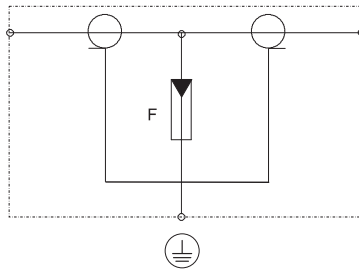
- With N-Connector, male/female
- High impulse current load capacity: 2.5 kA (10/350)
- Simple mounting (adapter), m = connector, w = socket
- Low protection level at high current loads
- Optimum transmission behaviour:
 - Low reflection behaviour
 - Bandwidth-optimised for secure transmission up to 6 GHz
- Available in 50 Ω technology

Dimensions



Application: For example: SAT-TV C band, WiMAX, WLAN applications, DVB-T2

Connection options



DS-N-6 M/W

Maximum continuous voltage AC	U_c	50 V
Maximum continuous voltage DC	U_c	70 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_n	10 A
Wave resistance	Z_L	50 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Protection level		<750 V
Frequency range		0 - 6 GHz
Insertion loss	S_{21}	≤0,1 dB
Return loss	S_{11}	≥22 dB
Temperature range	θ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP65/67
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21



Coaxial protection device for F connection: male/female



Type	Conne- tion system	Frequency range	Pack Weight		Item no.
			pcs	kg/100 pc.	
DS-F M/W	F	0 - 3,4 GHz	1	9.000	5093275

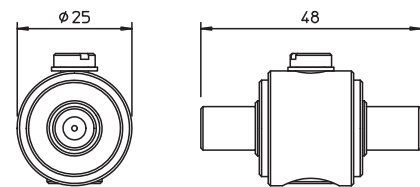
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 µs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With F connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

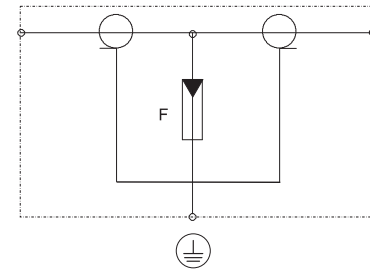
Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T(2)



Dimensions

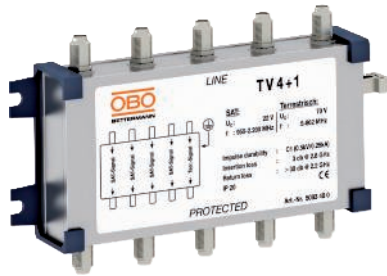


Connection options



DS-F M/W		
Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category	Type	1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_n	5 A
Wave resistance	Z_L	75 Ω
Impulse durability wire-wire		C2: 10 kV / 5 kA (8/20µs)
Impulse durability wire-earth		C2: 10 kV / 5 kA (8/20µs)
Impulse discharge current (10/350)	I_{imp}	1 kA
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		2 kA
Protection level		<800 V
Frequency range		0 - 3,4 GHz
Insertion loss	S_{21}	≤0,9 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		F
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for SAT and cable multi-switch



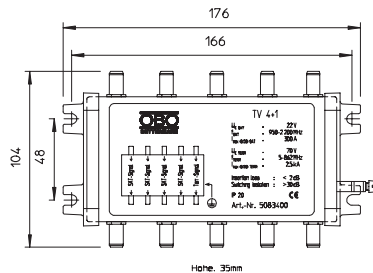
Type	Connection system	Frequency range	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
TV 4+1	F	0,5 - 2,8 GHz	F	1	37.000	5083400

Coaxial data line protection for TV reception systems

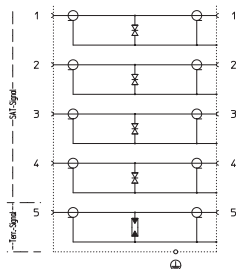
- Protects up to four SAT lines
- Protects one terrestrial line, e.g. DVB-T.
- Simple mounting using screws and holder
- With F-connector
- Optimum transmission behaviour with 75 Ohm technology.

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T receivers

Dimensions



Connection options



TV 4+1

Maximum continuous voltage V_c SAT inputs	U_c	22 V
Maximum continuous voltage V_c terrestrial input	U_c	70 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1-3
Number of poles		5
Rated current	I_l	2 A
Wave resistance	Z_L	75 Ω
Nominal discharge current SAT inputs	I_n	300 A
Lightning impulse current terrestrial input	I_{imp}	1 kA
Protection level SAT inputs at I_n	U_p	<45 V
Protection level Terrestrial input at I_n		<500 V
Frequency range		0,5 - 2,8 GHz
Insertion loss	S_{p1}	≤ 3 dB
Return loss	S_{11}	>30 dB
Temperature range	θ	-40 - +80 °C
Installation type		Surface-mounted
Connection system		F
Protection rating		IP10
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Surge protection for high-speed networks up to 10 GBit (Class EA/CAT6A)



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

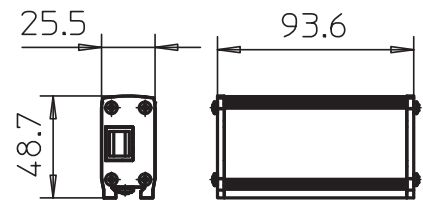
Data cable protection device for high-speed networks

- 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



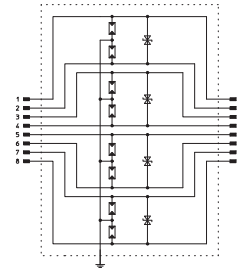
Dimensions



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_n	1 A
Impulse durability wire-wire	C1: 0,3 kV / 0,15 kA (8/20 μ s)
Impulse durability wire-earth	C2: 2 kV / 1 kA (8/20 μ s)
Total discharge current (8/20)	7 kA
Protection level wire-wire	<120 V
Protection level wire-earth	<700 V
Frequency range	>500 MHz
Temperature range ϑ	-40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ45 8(8)
Protection rating	IP10
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable / hat rail
Testing standard	IEC 61643-21

Connection options



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

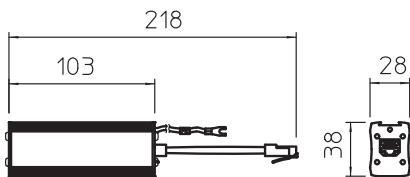


Type	Version	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
RJ45 S-ATM 8-F	Fine protection, 8 wires + shield	RJ45 8(8)	1	14.000	5081990

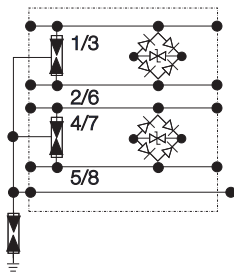
Universal data cable protection device for network technology and telecommunication systems

- 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)

Dimensions



Connection options



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_t	1 A
Impulse durability wire-wire		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20 μ s)
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

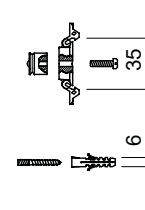
Fastening set for DIN profile rail



Type	Version	Pack pcs	Weight kg/100 pc.	Item no.
DLS-BS	For mounting: <ul style="list-style-type: none"> • Coax B-E2/... • Coax N-E5/... • RJ 11-Tele/4... • RJ 45 S-... 	1	5.000	5082382

DLS-BS: The fastening set is designed for a hat profile 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-...



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



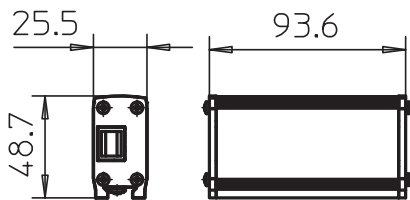
Type	Version	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
ND-CAT6/E-F	Fine protection, 8 wires + shield	RJ45 8(8)	1	16.380	5081802

Alu Aluminium

Data cable protection device for high-speed networks

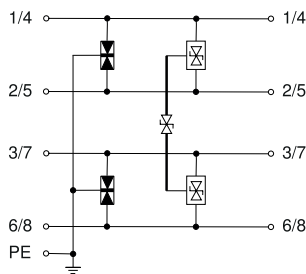
- High-quality RJ45 sockets
- Low protection level at high current load
- Earthing via DIN rail or connection cable
- Support of Power over Ethernet ++ (PoE++/4PPoE) to 1 A in accordance with IEEE 802.3
- Tested transmission quality in networks up to 1 GBit/s (Class E) or CAT6
- Fast installation through plug-in version
- Incl. DIN rail fastening set and earthing cable

Dimensions



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

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_n	1 A
Impulse durability wire-wire		C1: 0,3 kV / 0,15 kA (8/20 μ s)
Impulse durability wire-earth		C2: 3 kV / 1,5 kA (8/20 μ s)
Total discharge current (8/20)		5 kA
Protection level wire-wire		<40 V
Protection level wire-earth		<900 V
Frequency range		>250 MHz
Temperature range	θ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45 8(8)
Protection rating		IP10
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable / hat rail
Testing standard		IEC 61643-21



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



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

Alu Aluminium

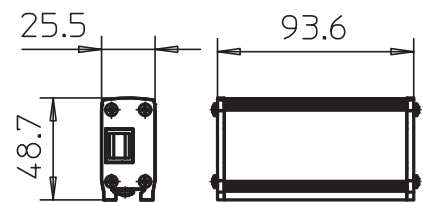
Data cable protection device for high-speed networks

- 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



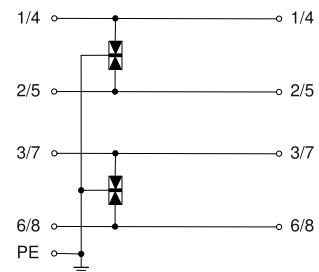
Dimensions



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_n	1 A
Impulse durability wire-wire	C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse durability wire-earth	C2: 3 kV / 1,5 kA (8/20 μ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<1100 V
Protection level wire-earth	<900 V
Frequency range	>250 MHz
Temperature range ϑ	-40 - +80 °C
Installation type	Connector/cable adapter
Connection system	RJ45 8(8)
Protection rating	IP10
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable / hat rail
Testing standard	IEC 61643-21

Connection options



Fine protection for 9-pole RS232 interface



Highest continuous voltage

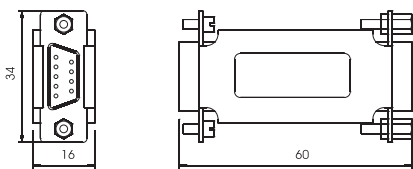
Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
SD09-V24 9	18	SUB-D-9; V24 RS232	1	6.000	5080053

Data cable protection devices, serial interfaces

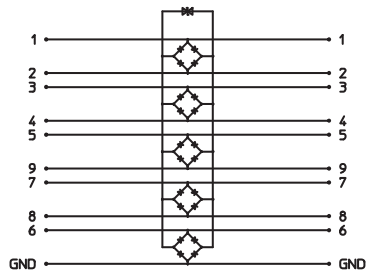
- Various connection technologies available
- Low protection level

Application: PLC, alarm systems, controllers

Dimensions



Connection options



SD09-V24 9

Max. continuous operating voltage	U_c	18 V
Category		Type 3 / C1
Lightning protection zone LPZ		2→3
Number of poles		9
Impulse durability wire-wire		0,34 kA (8/20 μ s)
Impulse durability wire-earth		0,34 kA (8/20 μ s)
Protection level wire-wire		<50 V
Protection level wire-earth		<50 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_n	<25 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 9-pin
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21



Fine protection for 15-pole RS232 interface



Highest
continu-
ous
voltage

Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
SD15-V24 15	18	SUB-D-15; V24 RS232	1	7.000	5080150

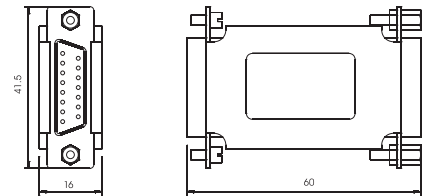
Data cable protection devices, serial interfaces

- Various connection technologies available
- Low protection level

Application: PLC, alarm systems, controllers



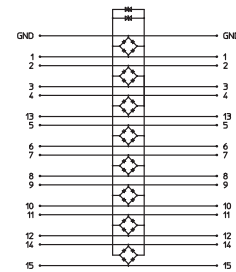
Dimensions



SD15-V24 15

Max. continuous operating voltage	U_c	18 V
Category		Type 3 / C1
Lightning protection zone LPZ		2-3
Number of poles		15
Impulse durability wire-wire		0,34 kA (8/20 μ s)
Impulse durability wire-earth		0,34 kA (8/20 μ s)
Protection level wire-wire		<50 V
Protection level wire-earth		<50 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_n	<25 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 15-pin
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Connection options



Fine protection for 9-pole RS485 interface



Highest continuous voltage

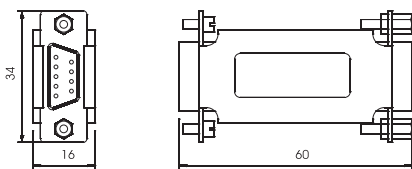
Type	V	Version	Pack pcs	Weight kg/100 pc.	Item no.
SD09-V11 9	7.5	SUB-D-9; V11 RS485	1	2.951	5080061

Data cable protection devices, serial interfaces

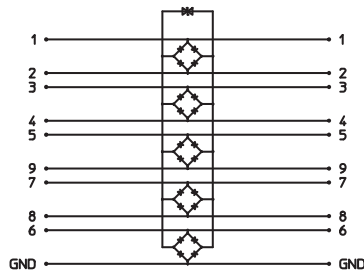
- Various connection technologies available
- Low protection level

Application: PLC, alarm systems, controllers

Dimensions



Connection options



SD09-V11 9

Max. continuous operating voltage	U_c	7.5 V
Category		Type 3 / C1
Lightning protection zone LPZ		2→3
Number of poles		9
Impulse durability wire-wire		0,75 kA (8/20 μ s)
Impulse durability wire-earth		0,75 kA (8/20 μ s)
Protection level wire-wire		<100 V
Protection level wire-earth		<100 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_n	<10 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 9-pin
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21



MCR protection for 2-pole power supply, 12 V



Highest
continu-
ous
voltage
V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF12-AC DC 13.5	1	9.000	5097453

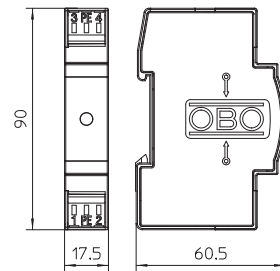
Surge protection device / fine protection type 3 to EN 61643-11

- 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

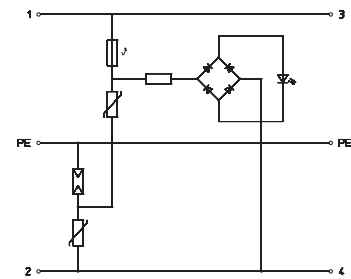
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



Connection options



VF12-AC DC

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _t	20 A
Protection level wire-wire		<110 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply, 24 V



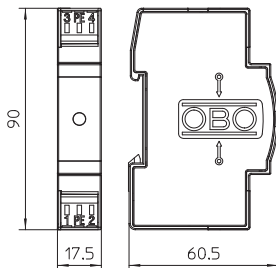
Highest continuous voltage V

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

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

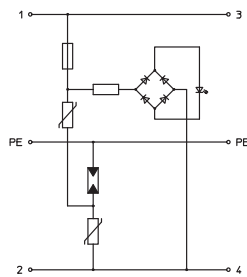
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

Connection options



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply, 48 V



Highest
continu-
ous
voltage
V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF48-AC/DC 60	1	8.000	5097615

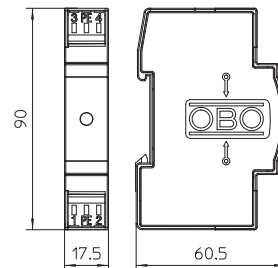
Surge protection device / fine protection type 3 to EN 61643-11

- 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

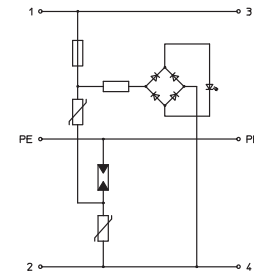
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



Connection options



VF48-AC/DC

U max AC	U _c AC	60 V
U max DC	U _c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _t	20 A
Protection level wire-wire		<220 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



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



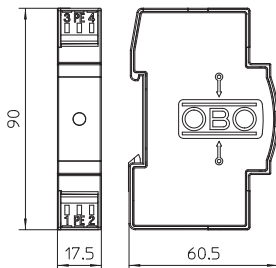
Highest continuous voltage V

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

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

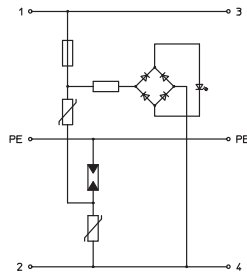
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 110 V



Highest continuous voltage V

Type	Pack pcs	Weight kg/100 pc.	Item no.
VF110-AC DC 150	1	8.000	5097631

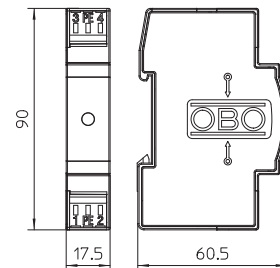
Surge protection device / fine protection type 3 to EN 61643-11

- 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

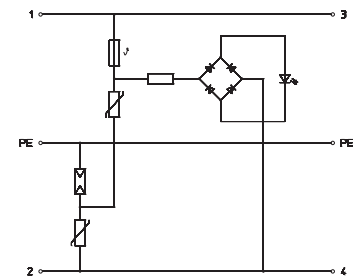
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.



Dimensions



Connection options



VF110-AC DC

U max AC	U _{c AC}	150 V
U max DC	U _{c DC}	200 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	2 kA
Maximum discharge current (8/20 μs)	I _{max}	6.5 kA
Rated current	I _t	20 A
Protection level wire-wire		<500 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



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



Highest continuous voltage V

Type

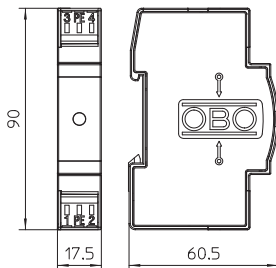
VF230-AC/DC | 255

Pack pcs	Weight kg/100 pc.	Item no.
1	8.000	5097650

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

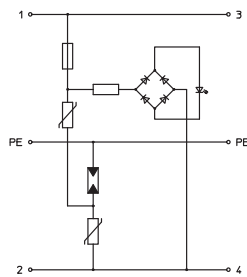
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



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

Connection options



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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply with remote signalling, 12 V AC/DC



Type	Highest continuous voltage	Pack pcs	Weight kg/100 pc.	Item no.
	V	1	6.400	5097454
VF12-AC/DC-FS 13.5				

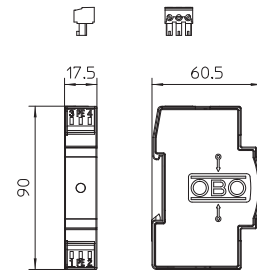
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

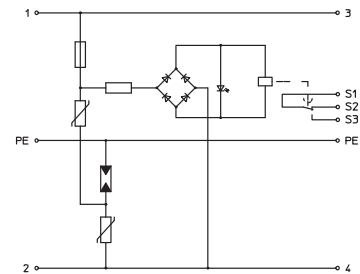
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



Connection options



VF12-AC/DC-FS

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _n	20 A
Protection level wire-wire		<110 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole power supply with remote signalling, 24 V AC/DC



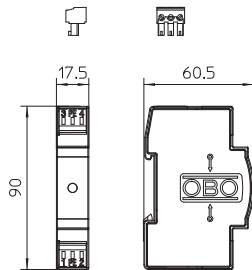
Highest continuous voltage V

Type	U _c	Pack pcs	Weight kg/100 pc.	Item no.
VF24-AC/DC-FS	34	1	6.620	5097820

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

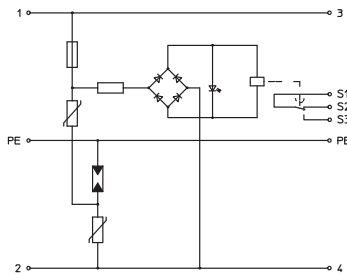
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Connection options



VF24-AC/DC-FS

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 _t	20 A
Protection level wire-wire		<160 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply with remote signalling, 12 V AC/DC



Type	Highest continuous voltage	Pack pcs	Weight kg/100 pc.	Item no.
	V	1	6.630	5097822

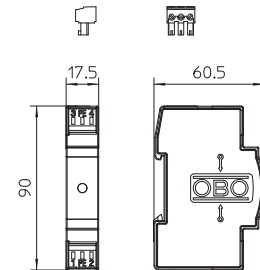
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

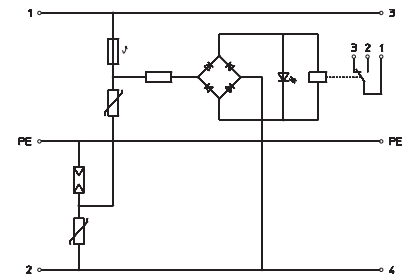
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



Connection options



VF48-AC/DC-FS

U max AC	U _c AC	60 V
U max DC	U _c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Maximum discharge current (8/20 μs)	I _{max}	2 kA
Rated current	I _t	20 A
Protection level wire-wire		<220 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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

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



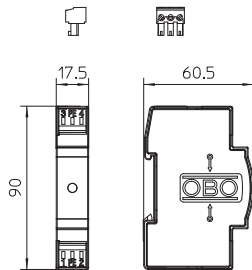
Highest continuous voltage V

Type	U _c AC	Pack pcs	Weight kg/100 pc.	Item no.
VF230-AC-FS	255	1	6.910	5097858

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

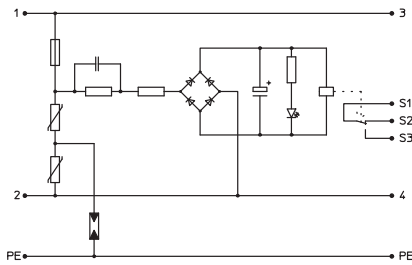
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

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 _t	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 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Combination protection for two-core systems with HF applications 5 V



Type	AC voltage V	DC voltage V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
FRD 5 HF	4	6	2	Terminal	1	4.400	5098571

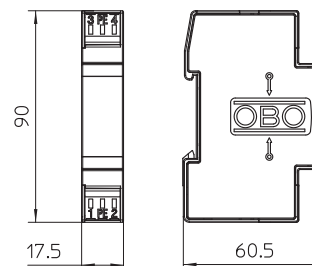
Surge protection for use in measuring, control and regulation systems.

- 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

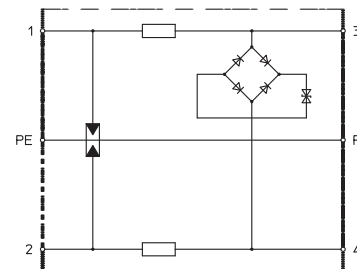
Application: Multipurpose use on any 35 mm DIN profile rail in every commercially available distribution housing.



Dimensions



Connection options



FRD 5 HF

Maximum continuous voltage AC	U_c	4 V
Maximum continuous voltage DC	U_c	6 V
Category	Type	1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_n	0.45 A
Series resistance per wire		$2,2 \Omega \pm 10 \%$
Impulse durability wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse durability wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Total discharge current (8/20)		18 kA
Total discharge current (10/350)		D1: 6 kA
Protection level wire-wire		<90 V
Protection level wire-earth		<650 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 2-pole, 5 V version

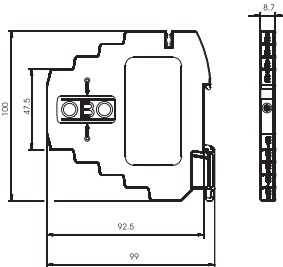


Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
MDP-2 D-5-T	7	10	2	Terminal	1	6.000	5098404

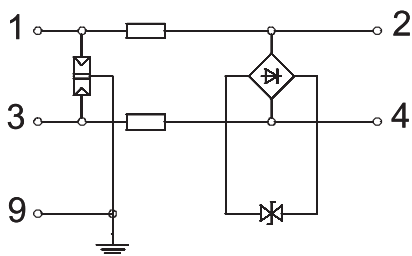
MDP... D-5-T: Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

Dimensions



Connection options



MDP-2 D-5-T

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		5 kA
Total discharge current (10/350)		D1: 1 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 4-pole, 5 V version



Type	AC voltage V	DC voltage V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
MDP-4 D-5-T	7	10	4	Terminal	1	6.000	5098411

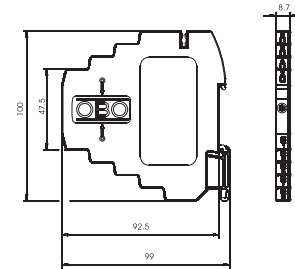
MDP... D-5-T: Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

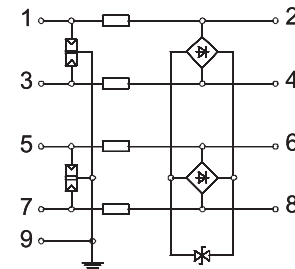
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options



MDP-4 D-5-T

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category	Type	1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 2-pole, 24 V version

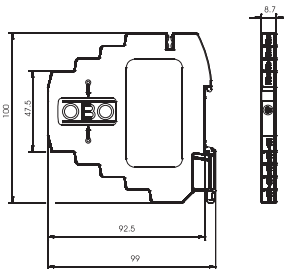


Type	AC voltage V	DC voltage V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
MDP-2 D-24-T	20	28	2	Terminal	1	6.000	5098422

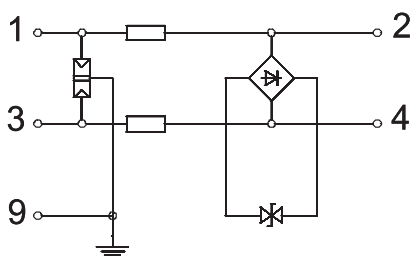
MDP... D-24-T: Lightning barrier with test function; 24 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Dimensions



Connection options



MDP-2 D-24-T

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		5 kA
Total discharge current (10/350)		D1: 1 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 4-pole, 24 V version



Type	Highest continuous voltage		Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
	AC V	DC V					
MDP-4 D-24-T	20	28	4	Terminal	1	5.800	5098431

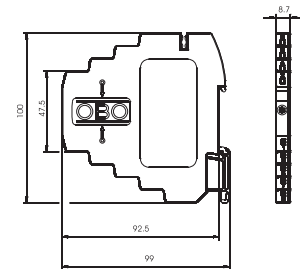
MDP... D-24-T: Lightning barrier with test function; 24 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

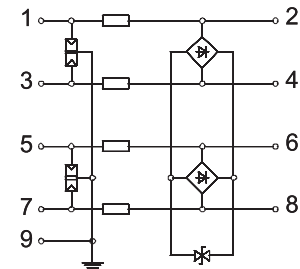
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options

**MDP-4 D-24-T**

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category	Type	1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_n	0.58 A
Series resistance per wire		$2,35 \Omega \pm 5 \%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 2-pole, 48 V version

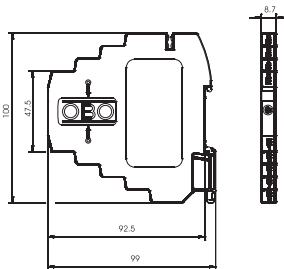


Type	AC V	DC V	Number of poles	Connec- tion system	Pack pcs	Weight kg/100 pc.	Item no.
MDP-2 D-48-T	41	58	2	Terminal	1	6.000	5098442

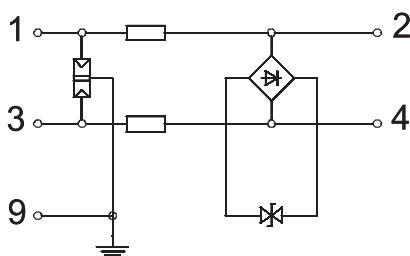
MDP... D-48-T: Lightning barrier with test function; 48 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Dimensions



Connection options



MDP-2 D-48-T

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		5 kA
Total discharge current (10/350)		D1: 1 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 4-pole, 48 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack pcs	Weight kg/100 pc.	Item no.
MDP-4 D-48-T	41	58	4	Terminal	1	5.800	5098450

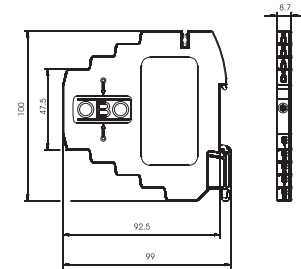
MDP... D-48-T: Lightning barrier with test function; 48 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

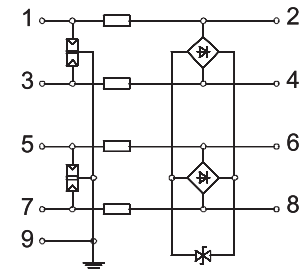
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options



MDP-4 D-48-T

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category	Type	1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		4
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Hat rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
Testing standard		IEC 61643-21
Approvals		UL



TBS_Typ_0A/en/2020/03/05/10:45:35 (LLExport_0_2453) / 2020/03/05 10:45:52 10:45:52

Surge protection, Ex protection



MCR protection, 2-pole 24 V

180



Series protection device, 4-pole, 48 V

181



MCR protection, 2-pole 24 V

182

Series protection device, 4-pole, 24 V version, Ex-tested

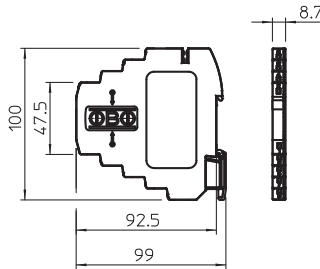


Type	Highest continuous voltage		Number of poles	Pack Weight		Item no.
	AC V	DC V		pcs	kg/100 pc.	
MDP-4 D-24-EX	20	28	4	1	5.800	5098432

MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits

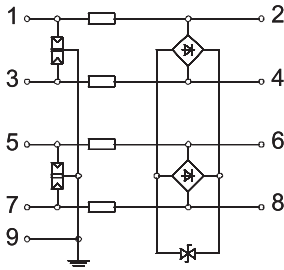
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0–100 MHz
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

Dimensions



Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Connection options



MDP-4 D-24-EX

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 KV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 KV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		< 55 V
Protection level wire-earth		< 800 V
Frequency range		0-100 MHz
Temperature range	θ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21
Approvals		UL

Series protection device, 4-pole, 48 V version, Ex-tested



Highest continuous voltage AC
Highest continuous voltage DC

Type	AC V	DC V	Number of poles	Pack pcs	Weight kg/100 pc.	Item no.
MDP-4 D-48-EX	41	58	4	1	5.800	5098452

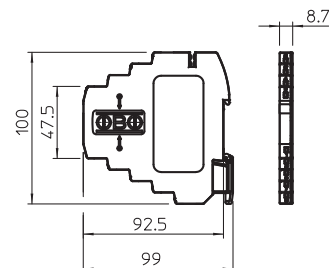
MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0–100 MHz
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

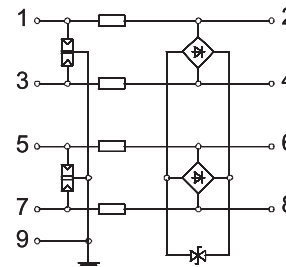
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options



MDP-4 D-48-EX

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category	Type	1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_n	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse durability wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)		10 kA
Total discharge current (10/350)		D1: 2 kA
Protection level wire-wire		< 95 V
Protection level wire-earth		< 800 V
Frequency range		0-100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section, rigid		0.14 - 2.5 mm ²
Earthing via:		Hat rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21
Approvals		UL



MCR protection for explosive areas, 2-pole, 24 V



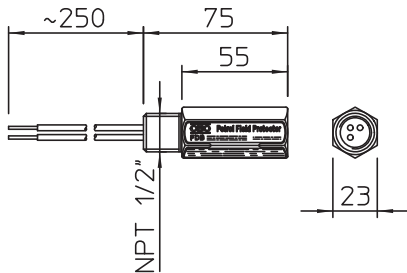
	Highest continuous voltage AC V	Highest continuous voltage DC V	Version	Pack pcs	Weight kg/100 pc.	Item no.
Type	22	32	2-pole; NPT	1	19.000	5098390

Petrol Field Protector FDB for intrinsically safe measuring circuits and bus systems

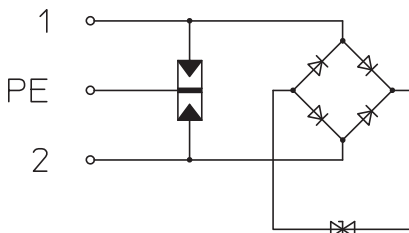
- Different connection technologies available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- ATEX approval: II 2(1) G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 48)

Application: Flow sensors, temperature sensors

Dimensions

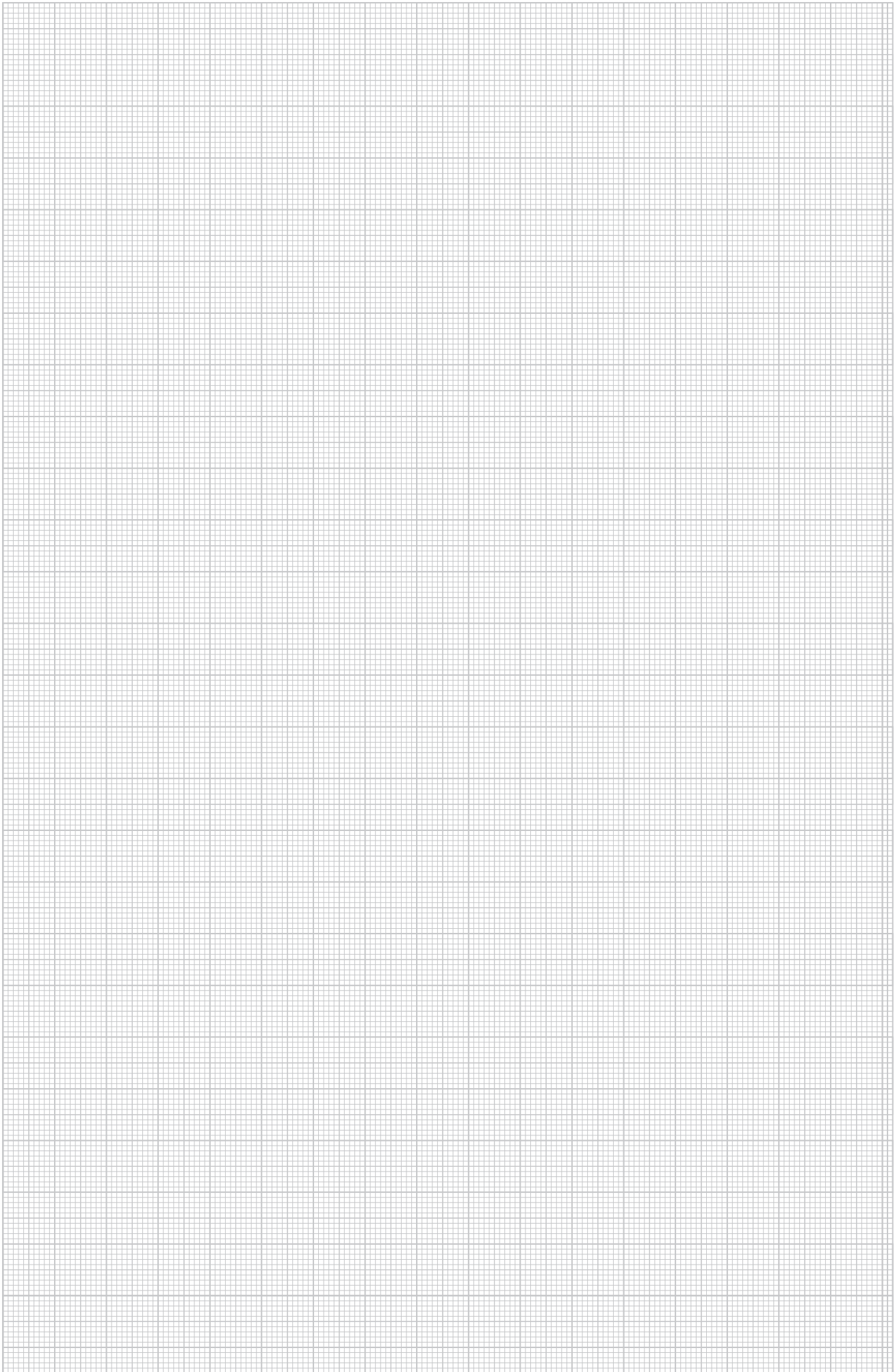


Connection options



FDB-2 24-N

Maximum continuous voltage AC U_c	22 V
Maximum continuous voltage DC U_c	32 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1→3
Number of poles	2
Impulse durability wire-wire	C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse durability wire-earth	C2: 5 kV / 2,5 kA (8/20 μ s)
Total discharge current (8/20)	10 kA
Protection level wire-wire	<80 V
Protection level wire-earth	<800 V
Temperature range ϑ	-20 - +70 °C
Installation type	Screw-on
Protection rating	IP65/67
Mounting of input / output	1/2" NPT
Mounting of field / device side:	Connection cable 1.5 mm ² Length ~ 250 mm
Earthing via:	Connection cable
Housing material	V2A
EX approval	II 2(1)G Ex ia [ia Ga] IIC T4..T6 Gb (BVS 10 ATEX E 048)
Testing standard	IEC 61643-21





Surge protection, protection and spark gaps



Isolating spark gap

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**Spark gap/
surge voltage protection**

189

Spark gap EX ISG

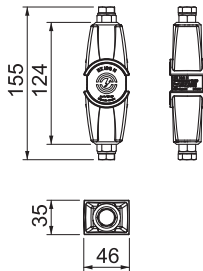


Type	Connection cable length m	Response voltage kV	Lightning current carrying capacity kA	Temperature range °C	Pack pcs	Weight kg/100 pc.	Item no.
EX ISG H	0	1.25	100	-20 - +60	1	41.360	5240030
EX ISG H 350	0.35	1.25	100	-20 - +60	1	57.260	5240031
EX ISG H 350 2L	0.35	1.25	100	-20 - +60	1	57.260	5240033
EX ISG H KU	2	1.25	100	-20 - +60	1	210.300	5240032

Hotmelt

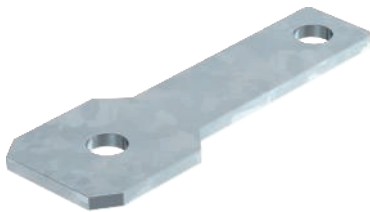
- Spark gap to VDE 0185-561-3 (IEC 62561-3)
- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2G Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: II 2 D Ex td IIIC T80 °C Db IP67
- Ex certificate to IECEX
- Labelling to EN 60079-0/-1: Ex db IIC T6 Gb
- Labelling to EN 60079-0/-31: Ex td IIIC T80 °C Db IP67

Dimensions



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.

Connection clamp AB EX ISG straight



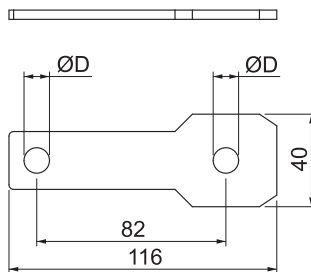
Type	Drill hole Ø mm	Version	Pack pcs	Weight kg/100 pc.	Item no.
AB EX ISG S M10	11	For M10 bolt	2	9.000	5240360
AB EX ISG S M12	14	For M12 bolt	2	8.900	5240362
AB EX ISG S M16	18	For M16 bolt	2	8.600	5240366
AB EX ISG S M20	22	For M20 bolt	2	8.200	5240370
AB EX ISG S M24	26	For M24 bolt	2	7.800	5240374

SI Steel

FT Hot-dip galvanised

Connection clamp for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces.

Dimensions



Connection clamp AB EX ISG, angled

Type	Drill hole		Pack pcs	Weight kg/100 pc.	Item no.
	Ø mm	Version			
AB EX ISG SW M10	11	For M10 bolt	2	10.900	5240380
AB EX ISG SW M12	14	For M12 bolt	2	10.800	5240382
AB EX ISG SW M16	18	For M16 bolt	2	10.500	5240386
AB EX ISG SW M20	22	For M20 bolt	2	10.100	5240390
AB EX ISG SW M24	26	For M24 bolt	2	9.700	5240394

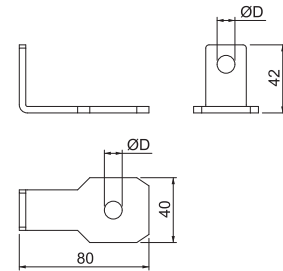
St Steel

FT Hot-dip galvanised

Connection clamp for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces.



Dimensions



Connection cable – AL EX ISG

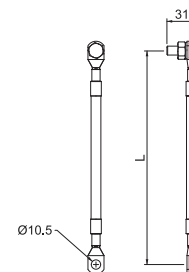
Type	Dimension mm	Pack pcs	Weight kg/100 pc.	Item no.
AL EX ISG 200	200	1	12.300	5240104
AL EX ISG 300	300	1	15.200	5240106

Cu Copper

UV-resistant connection cable (copper 25 mm²) for mounting the OBO Ex spark gap, type EX ISG, on insulating flanges and insulating pieces. With cable shoe for M10 bolts on both sides, on one side with M10 screw, nuts and spring ring.



Dimensions



Spark gap EX ISG, with 2 cables

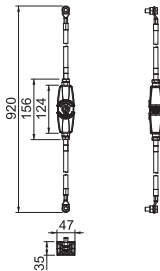


Type	Connection cable length m	Response voltage kV	Lightning current carrying capacity kA	Temperature range °C	Pack pcs	Weight kg/100 pc.	Item no.
EX ISG H 350 2L	0.35	1.25	100	-20 - +60	1	57.260	5240033

Hotmelt

- Spark gap to VDE 0185-561-3 (IEC 62561-3)
- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2G 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

Dimensions



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.

Upper part, total spark gap between N and PE 255 V

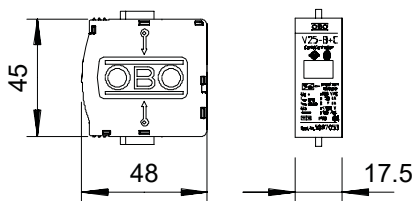


Type	Highest continuous voltage V	Version	Pack pcs	Weight kg/100 pc.	Item no.
C25BCONPE	255	1-pole	30	5.195	5095599

C 25-B+C/..+NPE: Plug-in total discharge gap for use between N and PE. Suitable for use in combination with:

- CombiController Type V 25-B+C
- SurgeController Type V 20-C
- SurgeController Type V 10-C

Dimensions



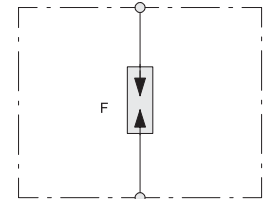
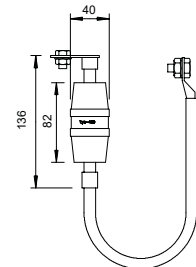
Explosion-proof, Parex closed spark gap



Type	Connection cable length	Dimension	Pack pcs	Weight kg/100 pc.	Item no.
	m	mm			
480 350	0.35	350	1	53.000	5240069

- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2G Ex d IIC T6 Gb
- Ex certificate to IECEX and DNV
- Labelling to EN 60079-0/-1: Ex d IIC T6 Gb
- Lightning current carrying capacity class H (100 kA) to VDE 0185-561-3 (IEC 62561-3)
- Incl. connecting cable 25 mm² Cu, highly flexible, with cable shoe, screw (M10), nut and lock washer

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



Spark gap / surge voltage protection for coupling earthing systems



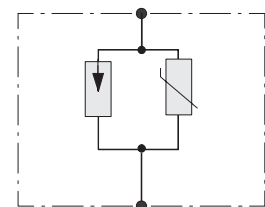
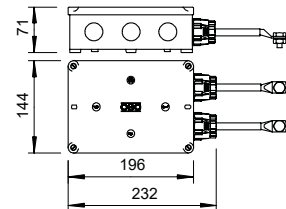
Type	Rated power frequency withstand voltage	Rated DC withstand voltage	Impulse current (10/350)	Nominal discharge current (8/20)	Pack pcs	Weight kg/100 pc.	Item no.
	V	V	kA	kA			
FS-V20	280	280	100	100	1	170.000	5099803

The FS-V20 device is a spark gap with parallel-connected surge arrester (protection level <1.5 kV). It is used to couple different earthing systems.

It is connected directly to the appropriate equipotential busbar.

Cable mounted with M10 cable shoe and bolt M10x25 (DIN 933) and nut M10 (DIN 934).

Application: Coupling earthing systems in data technology sector (functional and operational earthing)



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**Änderungen sind nur von einer
Blitzschutzfachkraft
durchzuführen!**



Measuring and testing systems



ISOLAB measuring system arrester tester

192



Magnetic card holder PCS-H

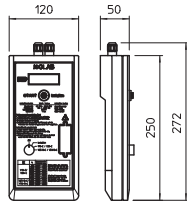
192



Lightning current meter LSC

192

ISOLAB measuring system arrestor tester



Type	Country version	Nom. voltage V	Measuring range	Pack Weight		Item no.
				pcs	kg/100 pc.	
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 arrestors:

• 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 arrestors of other manufacturers can be tested for 1 or 3 mA characteristic curve behaviour
- Battery operation
- Measuring cables contained in the scope of delivery.

Magnetic card and holder MK-B

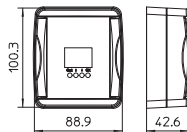


Type	Pack PU	Weight		Item no.
		kg/100 PUs	PU	
MK-B	1	31.000	5091322	

PCS magnetic card to record pulse/lightning currents including holder

- Holder can be leaded
- For mounting on round conductor Rd 8-10
- Simple holder mounting through clamping
- 1 PU = 10 units

Lightning strike counter

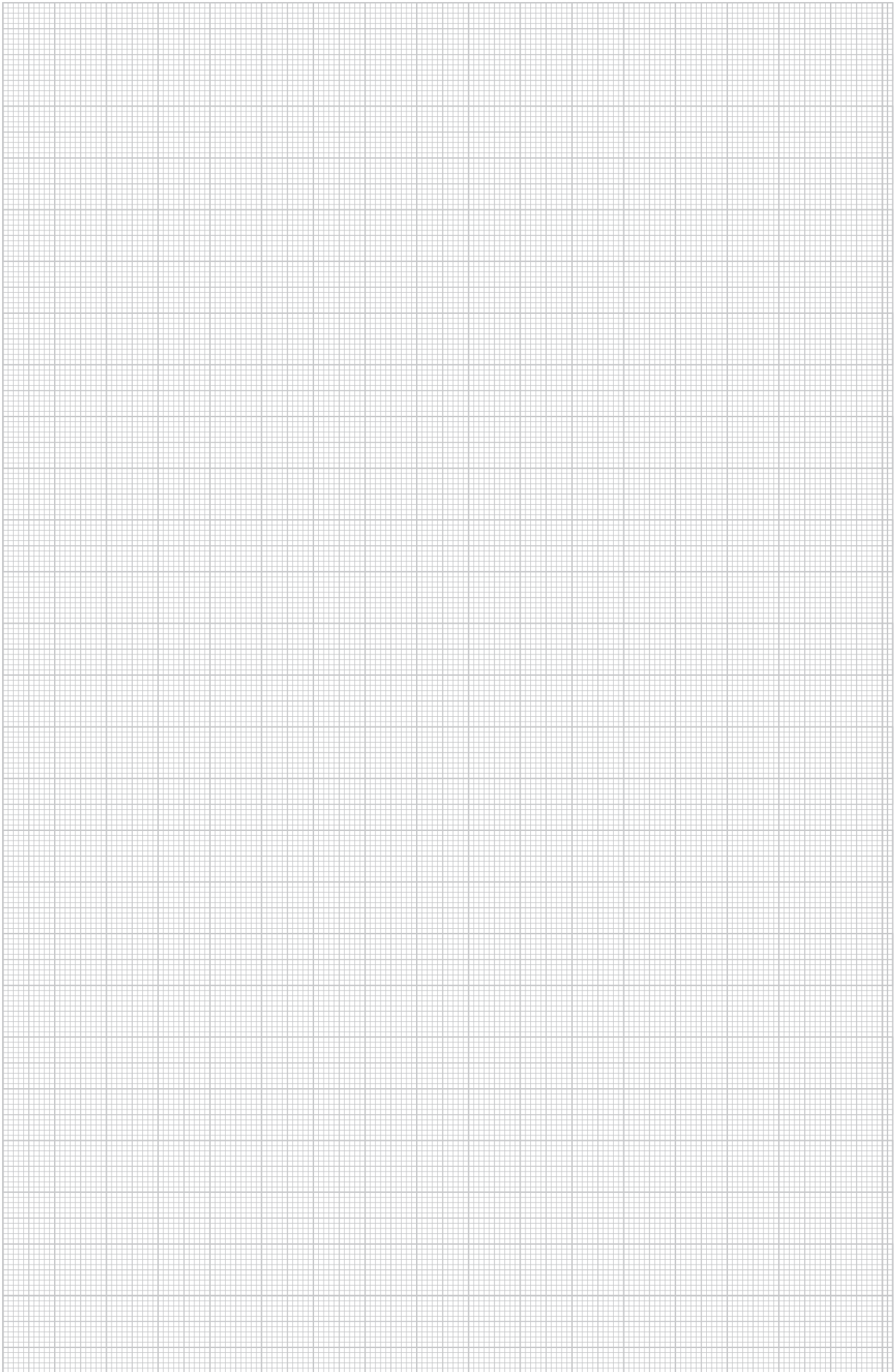


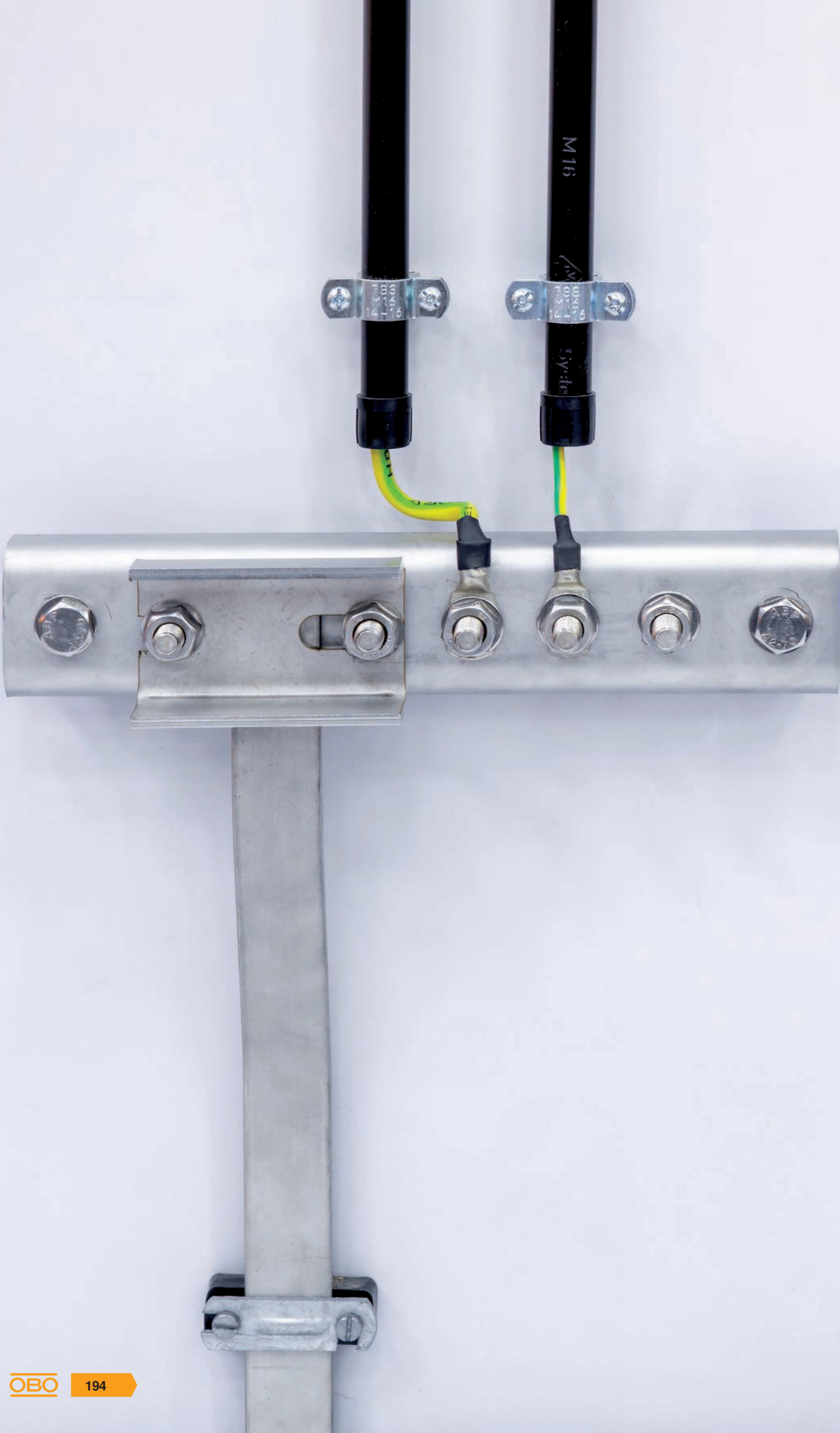
Type	Measuring range	Pack Weight		Item no.
		pcs	kg/100 pc.	
LSC I+II	1 kA - 100 kA	1	32.500	5091722

Plastic







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 protection device
- Long lifespan of the internal lithium batteries
- LCD display
- Internal battery
- Tested according to VDE 0185-561-6 (IEC 62561-6)





Equipotential bonding systems

	Equipotential busbars for indoor use	196
	Equipotential busbars for outdoor areas	197
	Equipotential busbars for industrial areas	198
	Equipotential busbars for Ex area	199
	Earthing pipe	201
	Earthing clamps	202



Equipotential busbar rail for indoors, VDE-tested



Colour

Type

1801 VDE | Grey

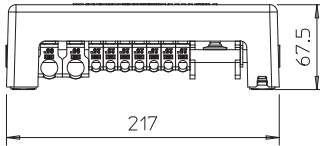
Pack Weight
pcs kg/100 pc. Item no.

1 | 55.000 | 5015650

CuZn | Brass

Equipotential busbar for equipotential bonding to DIN VDE 0100-410/-540 as well as lightning protection equipotential bonding to DIN VDE 0185-305

Dimensions

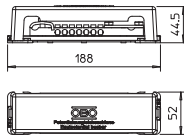


- According to VDE 0618, Part 1
- With 10 x 10 mm clamping rail made of nickel-plated brass
- With contact-secure series terminals made of electrogalvanised steel
- Cover and rail stands made of grey polystyrene
- Sealable/labellable cover
- Lightning current carrying capacity 100 kA (10/350)
- Tension clamp with screw lock against self-loosening (e.g. required in industry)

Connection options:

- 7 single or multi-wire cables 2.5–25 mm² or fine-wire cables to 16 mm² (max. Ø 7 mm)
- 2 single or multi-wire cable 25–95 mm² or fine-wire cables to 70 mm² (max. Ø 13.5 mm)
- 1 flat conductor 30 x 3.5 mm

Equipotential busbar with plastic base plate



Lightning current
carrying capacity

Type

1809 | H/100

Pack Weight
pcs kg/100 pc. Item no.

1 | 23.000 | 5015073

CuZn | Brass

Equipotential busbar for equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305

- Base plate and covering made of polystyrene, grey
- Sealable / labellable cover
- Contact strip made of nickel-plated brass
- Screws and crossbar made of electrogalvanised steel
- Capable of carrying lightning current 100 kA (10/350)

Connection options:

- 7 x single or multi-core cables to 25 mm² or fine-core cables to 16 mm²
- 1 x round cable Rd 8-10
- 1 x flat strip to FL30 or round cable Rd 8-10

Equipotential busbar for outside installation



Type	Colour	Lightning current carrying capacity kA	Pack Weight		Item no.
			pcs	kg/100 pc.	
1809 A	Black	N/50	1	23.000	5015111
1809 AM	Black	H/100	1	23.000	5015105

A2 Stainless steel, rustproof 1.4301

Equipotential busbar for equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305

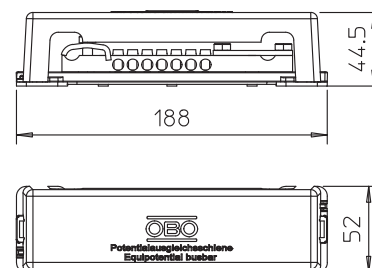
- Cover hood and base plate made of polystyrene
- Colour: Black, UV-resistant
- Screws and crossbar made of VA
- Capable of carrying lightning current 50 kA (10/350)

Connection options:

- 7 x single or multi-core cables to 25 mm² or fine-core cables to 16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat strip to FL30 or round conductor Rd 8-10

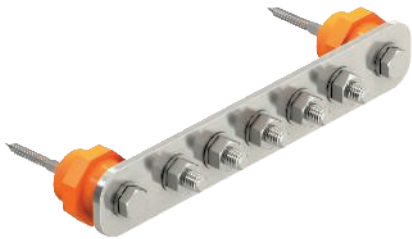


Dimensions



Equipotential busbar for industrial application

Equipotential busbar BigBar for industrial application

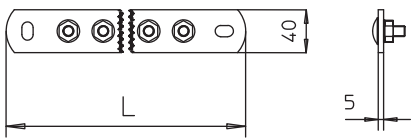


Type	Number of connections	Width mm	Length mm	Height mm	Pack pcs	Weight kg/100 pc.	Item no.
1802 5 VA	5	40	246	5	1	90.000	5015854
1802 10 VA	10	40	408.5	5	1	190.000	5015866

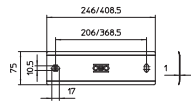
A2 Stainless steel, rustproof 1.4301

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)

Dimensions



Cover for BigBar equipotential busbar

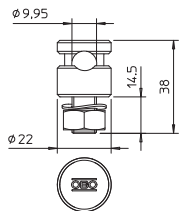


Type	Number of connections	Pack pcs	Weight kg/100 pc.	Item no.
1802 AH 5	5	1	25.800	5015880
1802 AH 10	10	1	36.300	5015884

A2 Stainless steel, rustproof 1.4301

- Complete with all mounting components
- Labellable

Connector, Rd 8–10 mm with pressure trough



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
5001 N-VA	Rd 8-10	N/50	10	6.800	5304176

A2 Stainless steel, rustproof 1.4301

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Equipotential busbar for EX zone 1/21, 2/22



Type	Number of connections	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
EX PAS 5	5	H/100	1	152.000	5015265
EX PAS 10	10	H/100	1	214.000	5015270

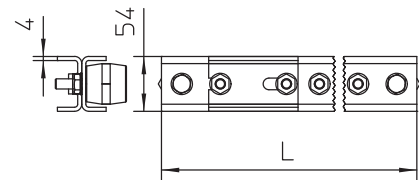
A2 Stainless steel, rustproof 1.4301

For ignition spark-free protection/functional equipotential bonding to DIN VDE 0100-410/-540 as well as ignition spark-free lightning protection equipotential bonding to VDE 0185-305 (IEC 62305) in systems to VDE 0165-1 (IEC/ EN 60079-14)

- Use in potentially explosive areas, Ex zone 1 and 2/21 and 22
- Tested according to explosion group IIC
- Lightning current carrying capacity class H (100 kA) to VDE 0185-561-1 (IEC/EN 62561-1)
- UV-stabilised and halogen-free insulation feet
- With spring washer for locking screws against self-loosening to VDE 0185-305-3 Supplementary sheet 2
- Suitable for indoor and outdoor applications



Dimensions



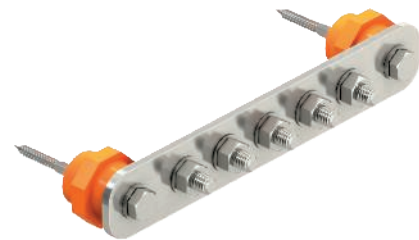
Equipotential busbar BigBar for industrial application



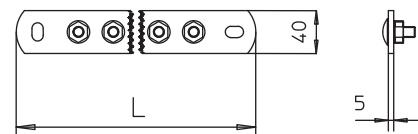
Type	Number of connections	Width mm	Length mm	Height mm	Pack pcs	Weight kg/100 pc.	Item no.
1802 5 VA	5	40	246	5	1	90.000	5015854
1802 10 VA	10	40	408.5	5	1	190.000	5015866

A2 Stainless steel, rustproof 1.4301

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)



Dimensions

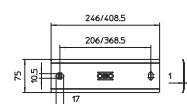


Cover for BigBar equipotential busbar

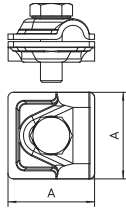
Type	Number of connections	Pack pcs	Weight kg/100 pc.	Item no.
1802 AH 5	5	1	25.800	5015880
1802 AH 10	10	1	36.300	5015884

A2 Stainless steel, rustproof 1.4301

- Complete with all mounting components
- Labellable



Vario quick connector

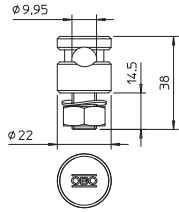


Type	Fit mm	Dimen- sion A mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
249 8-10 VA	Rd 8-10	40	H/100	10	10.700	5311551

A2 Stainless steel, rustproof 1.4301

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Connector, Rd 8–10 mm with pressure trough



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
5001 N-VA	Rd 8-10	N/50	10	6.800	5304176

A2 Stainless steel, rustproof 1.4301

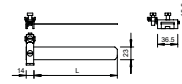
- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Earthing pipe clamp VA

Type	For pipe Ø	Dimension L	For pipe Ø	Pack pcs	Weight kg/100 pc.	Item no.
	inch	mm	mm			
927 4	3/8-6	555	17.2 - 185	10	8.900	5057558

A2 Stainless steel, rustproof 1.4301

- For pipes of Ø 3/8 - 6"
- Connection options: Max. 2 cables 2.5-25 mm²
- Round conductor Rd 8
- Clip element, bolts and tightening strap made of rustproof stainless steel (VA)



Earthing pipe clamp, nickel-plated

Type	For pipe Ø	Dimension L	Pack pcs	Weight kg/100 pc.	Item no.
	mm	mm			
927 0	109.5	8 - 22	10	5.000	5057507

CuZn Brass

N Nickel-plated

- For pipe Ø 8-22 mm
- Connection options: max. 2 conductors 2.5-10 mm²
- Clip elements and screws from nickel-plated brass
- Tightening strip from high-grade stainless steel (V2A)

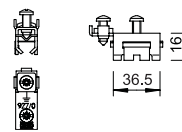


Clamp lock for earthing pipe clamp

Type	Pack pcs	Weight kg/100 pc.	Item no.

A2 Stainless steel, rustproof 1.4301

- Connection option: max. 2 conductors 2.5-25 mm²
- Possible to connect round conductor Rd 8

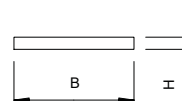


Installation strip for earthing pipe clamp

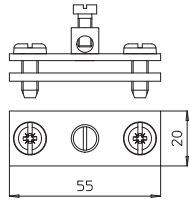
Type	Dimension B	Dimension H	Pack m	Weight kg/100 m	Item no.
	mm	mm			
927 BAND-VA	23	0.3	40	6.000	5057922

A2 Stainless steel, rustproof 1.4301

- 40 m roll
- Ready for transport and installation in unroll pack



Earthing terminal for cables and flat conductors



Shipping
box
Type pcs

939 | 150

Pack Weight
pcs kg/100 pc. Item no.

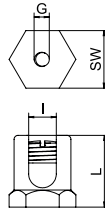
25 | 5.932 | **5043107**

St Steel

G Electrogalvanised

- For cables to 16 mm² and flat conductors
- Fit: cable to 16 mm² x max. FL 30
- With riveted brass connection terminal and one cylinder bolt, M5 x 12, with two cylinder bolts, M6 x 16

Earthing terminal with fastening thread



Dimen- Dimen- Cross-
sion L sion l section
mm mm mm² Thread

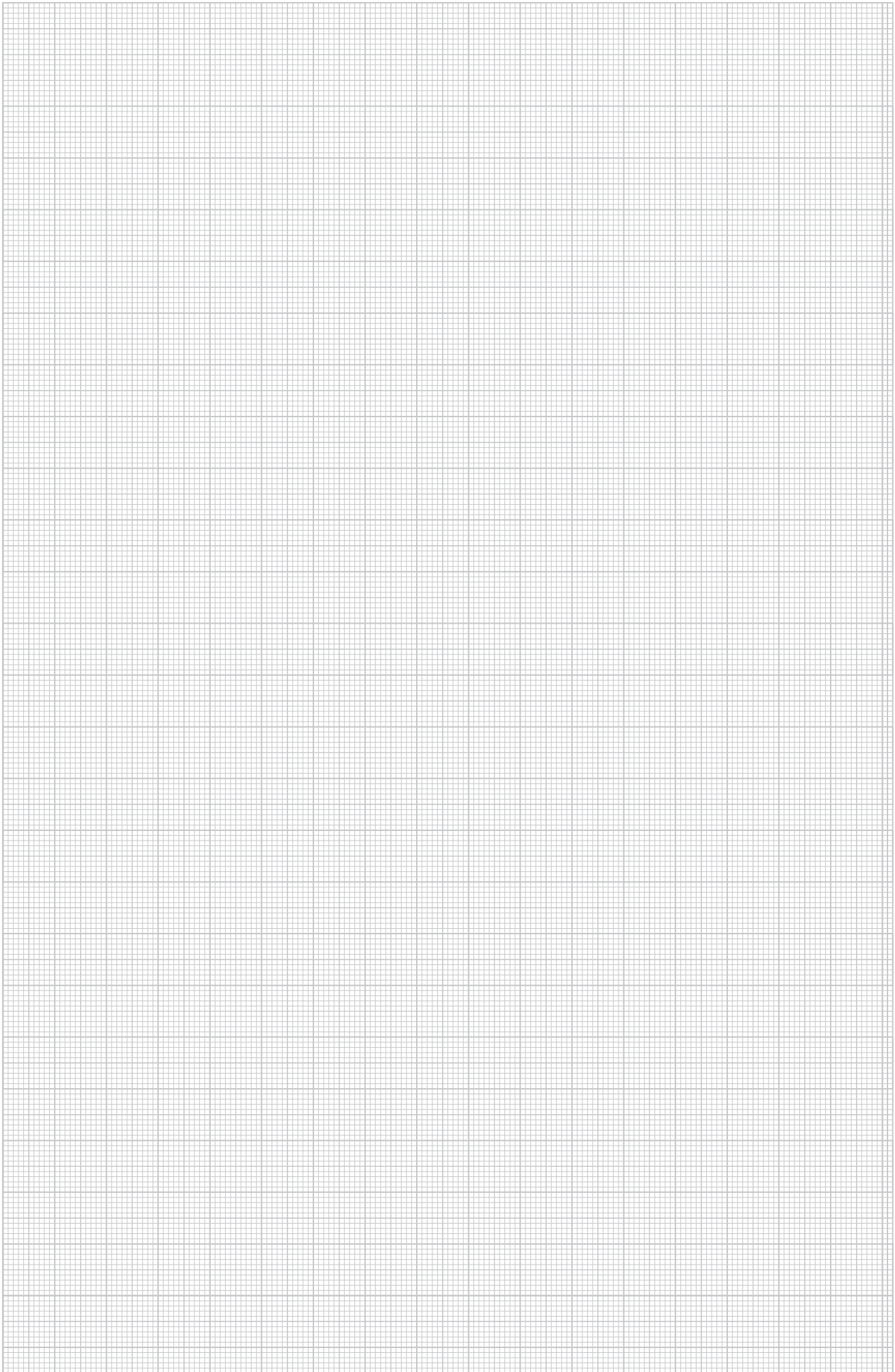
Type

Type	Dimen- sion L mm	Dimen- sion l mm	Cross- section mm ²	Thread	Pack pcs	Weight kg/100 pc.	Item no.
EKL 25 M6	22	8	25	M6	50	3.100	6404006
EKL 35 M6	26	10	35	M6	50	4.800	6404014

Pack Weight
pcs kg/100 pc. Item no.

CuZn Brass

Earthing terminal for fastening the equipotential bonding wire to the cable support system.



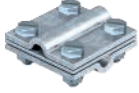





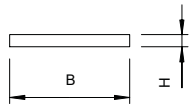
OBO
5041

OBO

Earthing systems

	Conductor material	206
	Earth rods and plates	209
	Connection material	210
	Earth enhancing compound & earthing kit and accessories	216

Galvanised steel flat conductor for earth



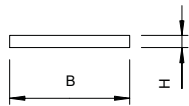
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
5052 DIN 25X3	25 x 3	75	84	50	84	59.700	5019342
5052 DIN 30X3	30 x 3	90	71	50	71	70.650	5019344
5052 DIN 30X4	30 x 4	120	52	50	52	97.000	5019350

St Steel

FT Hot-dip galvanised

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- Zinc coating: $\geq 500 \text{ g/m}^2$ (approx. $70 \mu\text{m}$ in mean value)
- For lightning protection, earthing systems and ring equipotential bonding

Stainless steel flat conductor

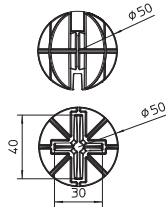


Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
5052 V2A 30X3.5	30 x 3,5	105	50	42	50	82.500	5018501
5052 V4A 30X3.5	30 x 3,5	105	50	42	50	82.425	5018706

A2 Stainless steel, rustproof 1.4301 **A4** Stainless steel, rustproof 1.4571/1.4404

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- According to the foundation earther standard DIN 18014, V4A is required in the earth
- For use in areas at risk of corrosion
- For lightning protection, earthing systems and ring equipotential bonding

Protective cap for connection lugs, reflective

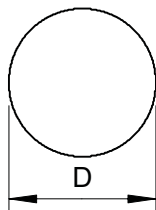


Type	Fit mm	Pack pcs	Weight kg/100 pc.	Item no.
ProtectionBall	RD 8-10/ FL 25/ 30/ 40	25	2.050	5018014

PE Polyethylene

- For snapping onto round conductors or flat conductors
- Noticeable, reflective label
- For accident protection during the construction phase

Round conductor, aluminium



Type	Nominal size \varnothing mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
RD 8-ALU	8	50	150	20	150	13.500	5021286
RD 10-ALU	10	78	95	20	95	21.000	5021308

Alu Aluminium

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 8 ALU: Semi-hard (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 8 ALU-T: Can be subjected to torsion (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 10 ALU: Pure aluminium (E-Al corresponds to DIN 48801)
- AL and ALMgSi may not be routed directly on, in or under plaster, mortar or concrete, nor routed in the earth



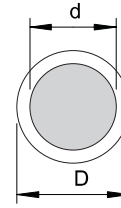
Round conductor, aluminium, with PVC sheathing



Type	Nominal size	Cross-section	Normal ring	Normal ring	Pack m	Weight kg/100 m	Item no.
	∅ mm	mm ²	ca. m	ca. kg			
RD 8-PVC	8/11	50	100	20	100	20.000	5021332

Alu Aluminium

- Meets the requirements of VDE 0185-305 (IEC 62305)
- With PVC jacketing (halogen-free)
- Suitable for routing on, in or under plasterwork, mortar or concrete



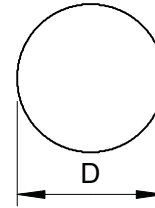
Round conductor, copper



Type	Nominal size	Cross-section	Normal ring	Normal ring	Pack m	Weight kg/100 m	Item no.
	∅ mm	mm ²	ca. m	ca. kg			
RD 8-CU	8	50	100	45	100	45.000	5021480
RD 10-CU	10	78	50	35	50	70.000	5021502

Cu Copper

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)



Round conductor, copper sheathed



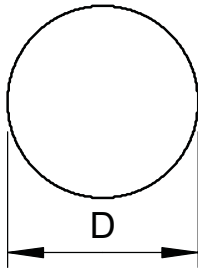
Type	Nominal	Cross-	Pack	Weight	Item no.
	size \varnothing	section		m	
	mm	mm ²			
RD 8-ST CU IN	8	50	1	43.000	5021382
RD 10-ST CU IN	10	78	1	65.000	5021384

Si Steel

Cu Copper-plated

- According to IEC/ EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- Copper layer thickness: Min. 250 μ m

Dimensions



Earth rod with copper sheath

Type	Dimension D mm	Dimension L mm	Material	Length mm	Pack pcs	Item no.
14 2000 CCER	14.2	2000	St	2000	1	5450008
14 3000 CCER	14.2	3000	St	3000	1	5450010
17 2000 CCER	17	2000	St	2000	1	5450012
17 3000 CCER	17	3000	St	3000	1	5450014
20 3000 CCER	20	3000	St	3000	1	5450025
25 3000 CCER	25	3000	St	3000	1	5450027
14 1250 CCER	14.2	1250	St	1250	1	5450005

St Steel

Cu Copper-plated



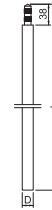
Earth rod for standard applications

Type	Length mm	Outer-Ø mm	Short-circuit current (50 Hz) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
219 20 CU	1000	20	—	H/100	1	264.000	5450020

St Steel

Cu Copper-plated

- High corrosion resistance
- Copper coating thickness: Min. 250 µm
- With peg and bore for linking together
- Round pegs with two knurls
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)
- Short-circuit current I_k (50 Hz), time 1 s, temp. max. 300 °C: 7.9 kA



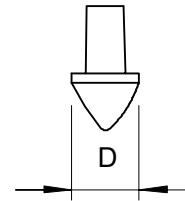
Driving spike for ST and BP earth rod

Type	For earth rods Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
219 20 IP	20	1	5.000	5450019

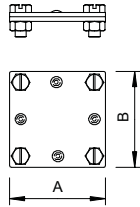
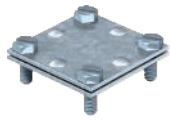
St Steel

FT Hot-dip galvanised

- Suitable for ST and BP system



Cross-connector for flat conductor



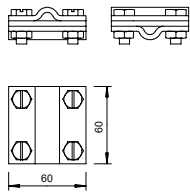
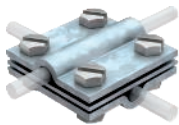
Type	Fit mm	Dimen- sion A mm	Dimen- sion B mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
255 A-FL30 FT	max. FL30	52	52	H/100	20	11.500	5314534

SI Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max FL 30 x FL 30
- Without adapter plate
- Mounted with 4 hexagonal bolts M6 x 20 (F)

Cross-connector with intermediate plate for Rd 8–10



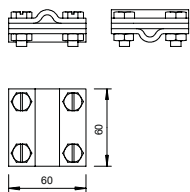
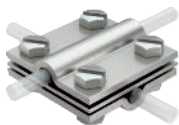
Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10 FT	Rd 8-10	H/100	25	33.530	5312310

SI Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for Rd 8–10

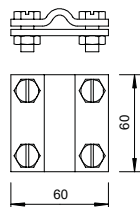
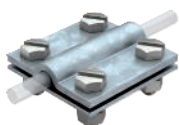


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10 V4A	Rd 8-10	H/100	10	33.530	5312318

A4 Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for round cables and flat conductors



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10XFL30 FT	8-10 x FL30	H/100	25	28.500	5312655

SI Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

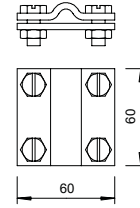
Cross-connector for round conductors and flat conductors



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10xFL30V4A	8-10 x FL30	H/100	10	28.500	5312656

A4 Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



Cross-connector for flat conductors and round conductors

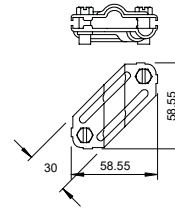


Type	Fit mm	Short-circuit current (50 HZ) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250	Rd 8-10/FL30	5.6	N/50	25	10.260	5312906

Sl Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20 (F)



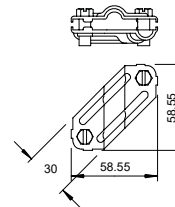
Cross-connector for flat conductors and round conductors



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250 VA	Rd 8-10/FL30	H/100	25	10.260	5312922
250 V4A	Rd 8-10/FL30	H/100	10	10.260	5312925

A2 Stainless steel, rustproof 1.4301 A4 Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20



Diagonal clamp for flat conductors and round conductors

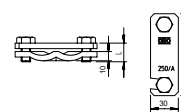


Type	Fit mm	Short-circuit current (50 HZ) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250 A-FT	Rd 6-22/max. FL50	7.3	H/100	25	28.800	5313015

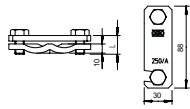
Sl Steel

FT Hot-dip galvanised

- For reinforced steels Ø 6-22 mm and flat conductor 50 x 4
- Installed with screws M10 x 40
- AS version with screws M10 x 20
- Simple installation with open slot



Diagonal clamp for flat conductors and round conductors

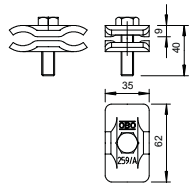


Type	Dimension L mm	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250 A-VA	40	Rd 6-22/max.	FL50 H/100	10	28.800	5313023

A2 Stainless steel, rustproof 1.4301

- For reinforced steels Ø 6-22 mm and flat conductor 50 x 4
- Installed with screws M10 x 40
- AS version with screws M10 x 20
- Simple installation with open slot

Parallel clamp for the connecting of reinforcing steels

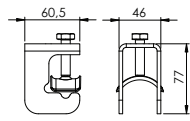


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
259 A VA	Ø 10-20	H/100	10	18.800	5315522

A2 Stainless steel, rustproof 1.4301

- For connecting reinforced steels Ø 10–20 mm
- Mounted with M10 x 40 bolts

VARIO earthing terminal for large reinforced steels



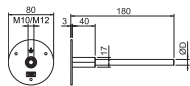
Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
1814 ST D37	FL30x3-4mm / Rd 10 x Rd 16-37	H/100	25	30.000	5014477
1814 FT D37	FL30x3-4mm / Rd 10 x Rd 16-37	H/100	25	30.000	5014469

SI Steel

FI Hot-dip galvanised

- For armoured steel with 16-37 mm diameter and round conductors and flat conductors
- Rapid installation using open slot and only one M10 screw
- Rotatable metal pressure trough for simple, safe mounting

Earthing fixed point with axis and double thread



Type	Thread	Short-circuit current (50 HZ) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
205 DG L180 V4A	M10/M12	3.3	H/100	10	23.900	5420022

A4 Stainless steel, rustproof 1.4404

- For connection to earthing systems, arresters and reinforcements
- Contact plate: Ø 80 mm made of stainless steel, rustproof (V4A)
- Clamping bolt Ø 10 mm
- Incl. plastic cover for simple installation



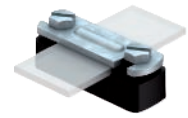
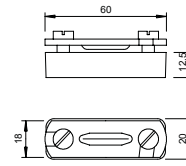
Spacer clip for flat conductor, with polyamide base

Type	Fit mm	Dimension B mm	Pack pcs	Weight kg/100 pc.	Item no.
833 35	max. FL30	60	25	4,228	5033039

St Steel

FT Hot-dip galvanised

- Fit: FL 30
- With mounting hole 6.2 x 22 mm
- With 2 cylinder bolts M6 x 16 and over-piece from hot-dip galvanised steel
- Bottom section from polyamide, black



Connection clip for earth rods

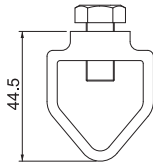


Type	For earth rods		Fit	Pack pcs	Weight kg/100 pc.	Item no.
	Ø mm	mm				
14 25 RT	14.2	Rd 8-10/ FL 25		1	11.000	5450060
14 95 RC	14.2	Rd 8-10/ FL 25		1	40.000	5450062
17 25 RT	17.2	Rd 8-10/ FL 25		1	11.000	5450064

CuZn Brass CuAl Aluminium bronze

- For connection of the copper-plated earth rod, type 219 16 CU, to conductor material
- Type A terminal

Dimensions



Universal connection clip for earth rods

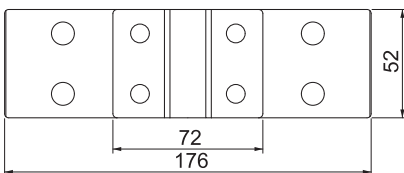


Type	For earth rods		Pack pcs	Weight kg/100 pc.	Item no.
	Ø mm	mm			
14 25 RTC	14.2		1	50.000	5450066
17 25 RTC	17.2		1	50.000	5450068
20 25 RTC	20		1	50.000	5450070
25 25 RTC	25		1	50.000	5450072

A2 Stainless steel, rustproof 1.4301

- For earthing systems
- On flat conductor

Dimensions

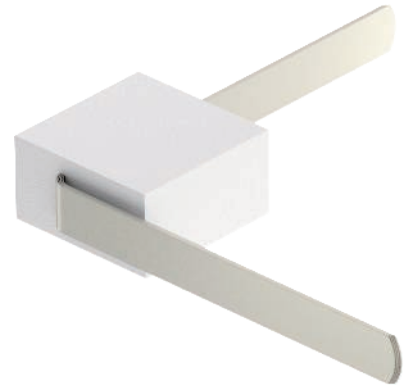


Expansion strip for foundation earther systems

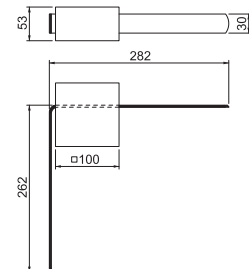
Type	Dimension	Pack pcs	Weight		Item no.
	W x H mm		pcs	kg/100 pc.	
1807 DB	30x3,5	1	40.000		5016160

A2 Stainless steel, rustproof 1.4301

- Expansion strip according to VDE 0185-561-2 (IEC 62561-2)
- To pass the foundation earther through movement joints



Dimensions



Earthing enhancing compound



Type	Dimension	Pack Weight		Item no.
		pcs	kg/100 pc.	
OEC 25	25kg	1	2,500.000	5009200

- To improve and maintain a constant earth electrode resistance
- Highly swellable and powdery special clay
- Tested according to IEC 62561-7 (VDE 0185-561-7)

Earthing improver IN



Type	Dimension	Pack Weight		Item no.
		pcs	kg/100 pc.	
OEC-1 10	10kg	1	1,000.000	5450050
OEC-1 25	25kg	1	2,500.000	5450052
OEC-2 10	10kg	1	1,000.000	5450056
OEC-2 25	25kg	1	2,500.000	5450058

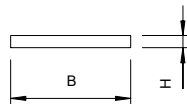
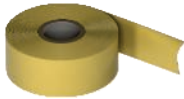
Earthing kit



Type	Dimension	Pack Weight		Item no.
		pcs	kg/100 pc.	
OBO EK 14255	270x1300	1	676.000	5450044

- To improve and maintain a constant earth resistance
- Highly swellable and powdery special clay
- Set consisting of:
 1. Copper bonded earth rod, length: 1250mm, diameter: 14,2mm
 2. Earth conductivity enhancing mineral compound : 5 kG
 3. Rod to cable clamp

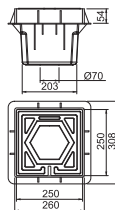
Corrosion protection strip



Type	Width mm	Length m	Pack Weight		Item no.
			pcs	kg/100 pc.	
356 50	50	10	1	71.500	2360055

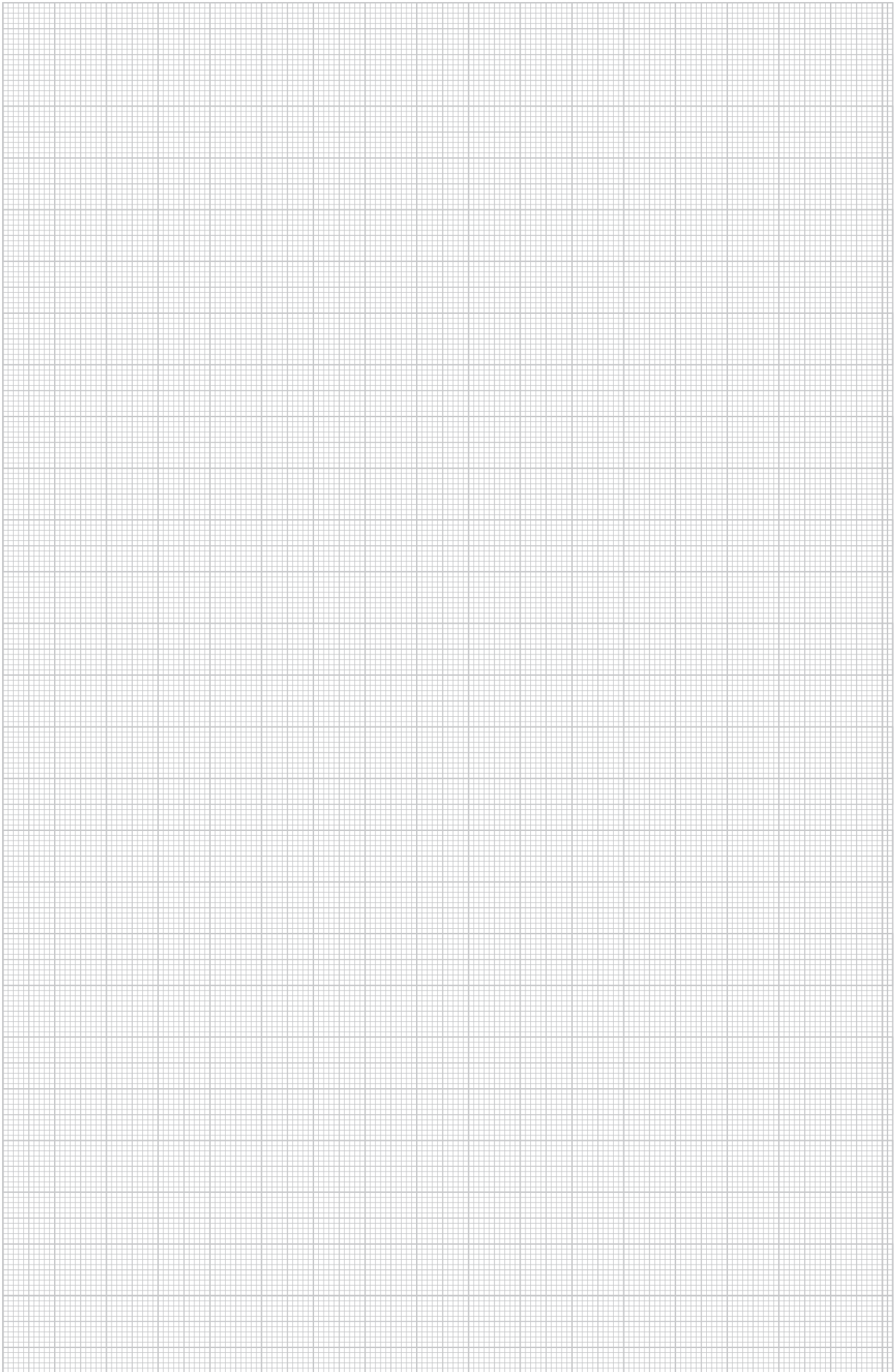
- PETRO Petrolatum
- Approx. 1.1 mm thick
- Width: 50 mm or 100 mm, made of petrolatum-coated chemical fibre fabric
- Can be processed cold

Underfloor test box



Type	Pack Weight		Item no.
	pcs	kg/100 pc.	
UFE	1	230.000	5450030







- Without separating piece



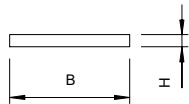


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Air-termination and down-conductor systems

	Conductor material	220
	Air-termination systems	222
	Air-termination rods	224
	Roof conductor holder	229
	Connectors and connection terminals	233
	Accessories	239

Galvanised steel flat conductor for earth



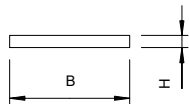
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
5052 DIN 25X3	25 x 3	75	84	50	84	59.700	5019342
5052 DIN 30X3	30 x 3	90	71	50	71	70.650	5019344
5052 DIN 30X4	30 x 4	120	52	50	52	97.000	5019350

St Steel

FT Hot-dip galvanised

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- Zinc coating: ≥ 500 g/m² (approx. 70 µm in mean value)
- For lightning protection, earthing systems and ring equipotential bonding

Stainless steel flat conductor

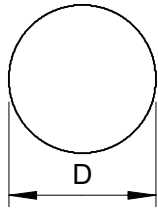


Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
5052 V2A 30X3.5	30 x 3,5	105	50	42	50	82.500	5018501
5052 V4A 30X3.5	30 x 3,5	105	50	42	50	82.425	5018706

A2 Stainless steel, rustproof 1.4301 **A4** Stainless steel, rustproof 1.4571/1.4404

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- According to the foundation earther standard DIN 18014, V4A is required in the earth
- For use in areas at risk of corrosion
- For lightning protection, earthing systems and ring equipotential bonding

Round conductor, aluminium

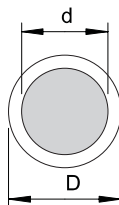


Type	Nominal size Ø mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
RD 8-ALU	8	50	150	20	150	13.500	5021286
RD 10-ALU	10	78	95	20	95	21.000	5021308
RD 8-ALU I	8	50	150	20	1	1,960.000	5450086
RD 10-ALU I	10	78	95	20	1	3,020.000	5450088

Alu Aluminium

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 8 ALU: Semi-hard (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 8 ALU-T: Can be subjected to torsion (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 10 ALU: Pure aluminium (E-Al corresponds to DIN 48801)
- AL and ALMgSi may not be routed directly on, in or under plaster, mortar or concrete, nor routed in the earth

Round conductor, aluminium, with PVC sheathing



Type	Nominal size Ø mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Pack m	Weight kg/100 m	Item no.
RD 8-PVC	8/11	50	100	20	100	20.000	5021332

Alu Aluminium

- Meets the requirements of VDE 0185-305 (IEC 62305)
- With PVC jacketing (halogen-free)
- Suitable for routing on, in or under plasterwork, mortar or concrete



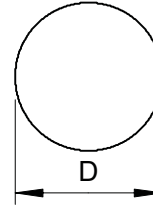
Round conductor, copper



Type	Nominal size	Cross-section	Normal ring	Normal ring	Pack	Weight	Item no.
	mm	mm ²	ca. m	ca. kg			
RD 8-CU	8	50	100	45	100	45.000	5021480
RD 10-CU	10	78	50	35	50	70.000	5021502

Cu Copper

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

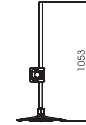


Stand for FangFix Junior system

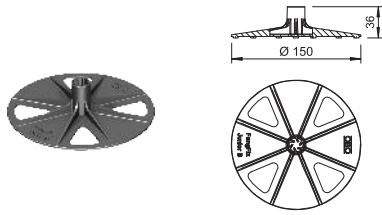
Type	Length	Nominal size	Pack	Weight	Item no.
	mm	mm			
F-FIX-JUNIOR	1000	10	10	32.000	5403308

Alu Aluminium

- Incl. aluminium air-termination rod 1,000 mm long (Ø 10 mm)
- Quick mounting of the air-termination rod in the base using plug technology
- With Vario quick connector 249



Base for FangFix Junior



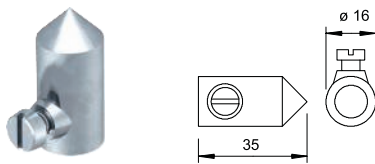
Type
F-FIX-BASIS

PP Polypropylene

- For mounting \varnothing 10 mm air-termination rods up to an overall length of 1,000 mm
- Quick installation of air-termination rod in base using plug-in system
- Quick and easy installation

Pack pcs	Weight kg/100 pc.	Item no.
10	3,790	5403324

Air-termination tip



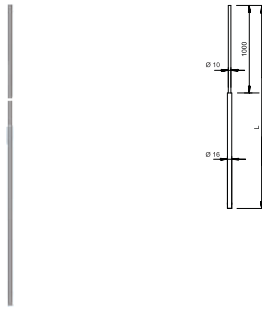
Type
120 A | Rd 8-10

Zn Die-cast zinc
G Electrogalvanised

- To be used for Rd 8–10 (corrosion protection)
- With cylinder bolt M6 x 10
- Made of die-cast zinc, bolts made of hot-galvanised steel

Pack pcs	Weight kg/100 pc.	Item no.
10	2,500	5405068

Tapered pipe air-termination rod



Type	Length mm	Nominal size \varnothing mm	Pack pcs	Weight kg/100 pc.	Item no.
101 VL1500	1500	10/16	10	38.000	5401980
101 VL2000	2000	10/16	10	55.000	5401983
101 VL3000	3000	10/16	10	88.000	5401989
101 VL4000	4000	10/16	10	120.000	5401995

Alu Aluminium

- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- From a free length of > 2.5 m, an additional fastening, e.g. insulated spacer is recommended
- Last metre is tapered from \varnothing 16 mm to \varnothing 10 mm, material: AlMgSi
- Matches stand system FangFix

Stand for FangFix system 16 kg

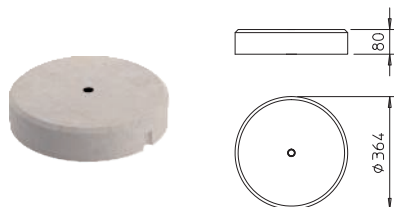


Type	Fit mm	Nominal size \varnothing mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-16	Rd 8	373	1	1,732.500	5403200

BET Concrete

- System consists of FangFix stone with edge protection and clamp
- FangFix clamp made of VA; lightning current tested to VDE 0185-305 (IEC 62305)
- 16 kg stone of \varnothing 365 mm, high level of stability
- Quick and easy mounting of air-termination rod using anchors
- Concrete, frost-resistant
- The FangFix stone can be stacked
- Suitable for \varnothing 16 mm pipe air-termination rods

Concrete block for FangFix-System 16 kg



Type	Nominal size \varnothing mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-S16	365	1	1,700.000	5403227

BET Concrete

- 16 kg stone of \varnothing 365 mm, high level of stability
- Frost-resistant concrete
- Stackable

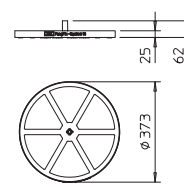


Base for FangFix system 16 kg

Type	Nominal size \varnothing mm	Pack pcs	Weight kg/100 pc.	Item no.

PP Polypropylene

Edge protection with integrated dowel (basic) suitable for FangFix system.



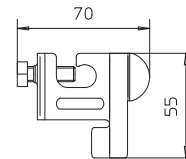
Terminal for FangFix system



Type	Fit mm	Pack pcs	Weight kg/100 pc.	Item no.

A2 Stainless steel, rustproof 1.4301

- FangFix terminal, VA for RD 8 mm
- Tested with H (100 kA) to DIN EN 50164-1
- Round conductor installed on the air-termination rod with only one screw



Air-termination rod holder for ridge tiles

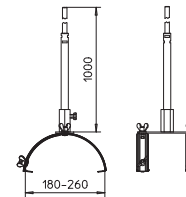
Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.

A2 Stainless steel, rustproof 1.4301

Rod holder for ridge tiles, for simple, quick and safe fastening of \varnothing 16 mm air-termination rods

- System consisting of holder made of V2A stainless steel and aluminium air-termination rods
- Quick and easy mounting thanks to pre-mounted air-termination rod
- Air-termination rod length: 1,000 mm
- Width adjustable between 180–260 mm
- Spacing of the ridge holders: 110 mm (5403330)
- Spacing of the ridge holders: 300 mm (5403333)

Application: To protect roof structures such as photovoltaic and TV/SAT systems.



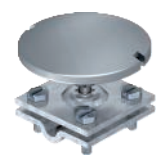
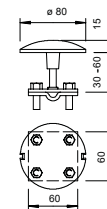
Mushroom-shaped air-termination with connectors

Type	Fit mm	Dimension D \varnothing mm	Pack pcs	Weight kg/100 pc.	Item no.

St Steel

FT Hot-dip galvanised

- Mushroom-shaped air-termination from aluminium
- With pre-mounted cross-piece and hexagonal bolt M8 x 25, hot-dip galvanised steel
- For round conductor Rd 8-10 and flat conductor FL 30



isFang air-termination rod

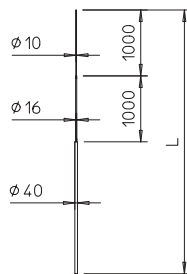


Type	Dimension B mm	Dimension D mm	Length mm	Pack pcs	Weight kg/100 pc.	Item no.
101 3B-4000	2000	1000	4000	1	400.000	5402864
101 3B-8000	5500	1000	8000	1	1,000.000	5402880

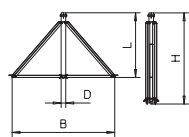
Alu Aluminium

- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Tapered air-termination rod
- Suitable for 40 mm isFang tripod stand and isFang support systems

Dimensions



isFang tripod



Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-100	1000	40	600	885	1	620.000	5408968
isFang 3B-150	1500	40	900	1275	1	950.000	5408969

A2 Stainless steel, rustproof 1.4301

Folding tripod stand for screwless installation of free-standing air-termination rods with a diameter of 40 mm, e.g. for OBO isCon® conductors. Roof slope to max. 5 degrees. Incl. Rd 8–10 crossbar for rapid round conductor fastening. The concrete plinth and threaded rods are to be ordered separately.



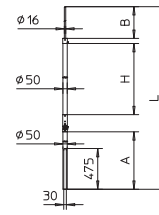
Insulated air-termination rod for inner-routed isCon® conductor



Type	Dimension D Ø mm	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang IN L4	50	1325	1500	1000	4000	1	535.000	5408854
isFang IN L6	50	3325	1500	1000	6000	1	835.000	5408856
isFang IN L8	50	5335	1500	1000	8000	1	1,350.000	5408858
isFang IN L10	50	6000	1733	2000	10000	1	1,540.000	5408860

GFK Fibre-glass-reinforced plastic

- For installation of the OBO isCon® conductors in the pipe
- For mounting on the building structure with isFang support
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Tested according to IEC TS 62561-8



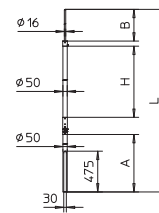
Insulated air-termination rod for inner-routed isCon® conductor with side exit



Type	Dimension D Ø mm	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang IN-A L4	50	1325	1500	1000	4000	1	535.000	5408874
isFang IN-A L6	50	3325	1500	1000	6000	1	835.000	5408876
isFang IN-A L8	50	5335	1500	1000	8000	1	1,385.000	5408878
isFang IN-A L10	50	6000	1733	2000	10000	1	1,540.000	5408880

GFK Fibre-glass-reinforced plastic

- For installation of the OBO isCon® conductors in the pipe
- For mounting on the building structure with isFang support
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Tested according to IEC TS 62561-8



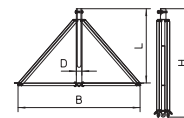
isFang tripod with side outlet



Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-150-A	1500	50	900	1275	1	950.000	5408932
isFang 3B-250-A	2900	50	1450	2055	1	2,500.000	5408902

A2 Stainless steel, rustproof 1.4301

- Screwless installation of freestanding air-termination rods as well as insulated air-termination rods with 50 mm diameter
- E.g. for internal OBO isCon® conductor
- Roof slope to max. 5 degrees
- Incl. Rd 8–10 crossbar for quick round conductor fastening
- Concrete plinths as well as threaded rods should be ordered separately

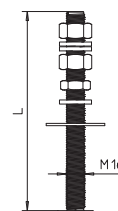


isFang-3B threaded rod

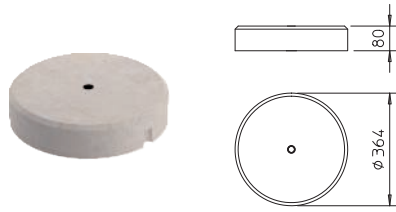
Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-G1	270	3	48.000	5408971
isFang 3B-G2	340	3	60.400	5408972
isFang 3B-G3	430	3	69.500	5408973

A2 Stainless steel, rustproof 1.4301

- For fastening on one, two, three or four FangFix concrete bases with tripod stand



Concrete block for FangFix-System 16 kg

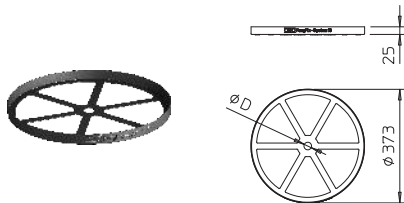


Type	Nominal size Ø mm	Pack Weight		Item no.
		pcs	kg/100 pc.	
F-FIX-S16	365	1	1,700.000	5403227
F-FIX-S16 I	365	1	1,600.000	5450080

BET Concrete

- 16 kg stone of Ø 365 mm, high level of stability
- Frost-resistant concrete
- Stackable

Base for FangFix system 16 kg for mounting the isFang tripod



Type	Nominal size Ø mm	Dimension D Ø mm	Pack Weight		Item no.
			pcs	kg/100 pc.	
F-FIX-B16 3B	373	25	10	15.800	5403238

PP Polypropylene

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16

isFang, insulated air-termination rod for inner-routed isCon® conductor Professional Plus



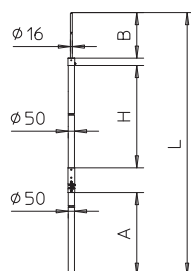
Type	Dimension D Ø mm	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack Weight		Item no.
						pcs	kg/100 pc.	
isFang IN 6000	50	3325	1500	1000	6000	1	835.000	5408936
isFang IN 8000	50	5335	1500	1000	8000	1	1,315.000	5408868

GFK Fibre-glass-reinforced plastic

- For installation of the OBO isCon® Pro+ conductor in the pipe
- For mounting on the building structure with isFang support
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Inclusive connection element (type isCon IN connect)
- Inclusive potential connection (type isCon In PAE)



Dimensions

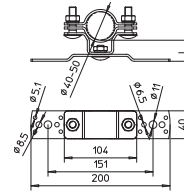


isFang support for wall mounting, 30 mm spacing

Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TW30	30	2	62.000	5408952

A2 Stainless steel, rustproof 1.4301

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

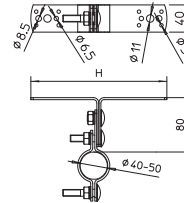


isFang support for wall mounting, 80 mm spacing

Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TW80	80	2	63.000	5408950

A2 Stainless steel, rustproof 1.4301

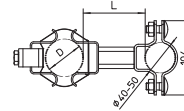
Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

isFang support for spaced pipe mounting, \varnothing 50–300 mm

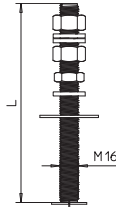
Type	Dimension D \varnothing mm	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TR100 300	300	300	2	146.000	5408959

A2 Stainless steel, rustproof 1.4301

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of \varnothing 50–300 mm.



isFang-3B threaded rod

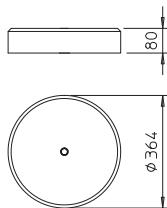


Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-G1	270	3	48.000	5408971
isFang 3B-G2	340	3	60.400	5408972
isFang 3B-G3	430	3	69.500	5408973

A2 Stainless steel, rustproof 1.4301

- For fastening on one, two, three or four FangFix concrete bases with tripod stand

Concrete block for FangFix-System 16 kg

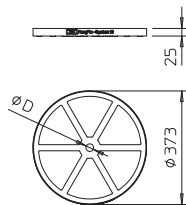


Type	Nominal size Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-S16	365	1	1,700.000	5403227

BET Concrete

- 16 kg stone of Ø 365 mm, high level of stability
- Frost-resistant concrete
- Stackable

Base for FangFix system 16 kg for mounting the isFang tripod



Type	Nominal size Ø mm	Dimension D Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-B16 3B	373	25	10	15.800	5403238

PP Polypropylene

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16

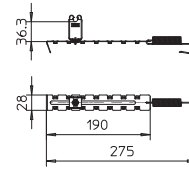


Ridge conductor holder with tensioning spring 35 mm

Type	Fit mm	Installation height mm	Pack		Weight kg/100 pc.	Item no.
			pcs			
132 U 35	Rd 8	35	20		6.800	5203018

A2 Stainless steel, rustproof 1.4301

- For round conductor Rd 8
- Clamping range 280-380 mm

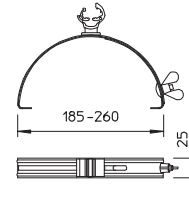


Roof conductor holder for ridge tiles, 185–260 mm, Rd 8–10, A2 8 mm

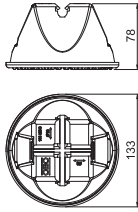
Type	Fit mm	Installation height mm	Pack		Weight kg/100 pc.	Item no.
			pcs			
132 K-VA	Rd 8-10	20	20		10.900	5202515

A2 Stainless steel, rustproof 1.4301

- Adjustable width from 185-260 mm
- Bottom part made of non-rusting stainless steel (V2A)
- Infinitely adjustable conductor holder
- Conductor holder of polyamide
- Fast installation using wing screw



Roof conductor holder for flat roofs, black

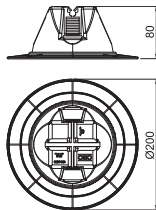


Type	Fit mm	Pack	Weight	Item no.
		pcs	kg/100 pc.	
165 MBG-8-10	Rd 8-10	12	100.000	5218700
165 MBG-8-10 FO	Rd 8-10	12	100.000	5218704

PA/PE Polyamide/polyethylene

- Closed form with base
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve made of polyethylene, black, bottom polypropylene, black
- Base made of polyamide PA 6, black, UV-stabilised and weather-resistant
- Base can be used on almost all roofing felt systems (bitumen, PVC)
- Types 165 MBG...FO: Packed in foil bag

Roof conductor holder for flat roofs, with increased base section

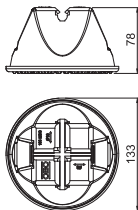


Type	Fit mm	Pack	Weight	Item no.
		pcs	kg/100 pc.	
165 MBG-8-10 200	Rd 8-10	12	100.000	5218716

PA/PE Polyamide/polyethylene

- DIN 48829 Form B 1
- Closed form with bottom
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve from polyethylene, black, bottom polypropylene, black
- With larger bottom section (Ø 200 mm) for improved stability

Roof conductor holder for flat roofs, grey



Type	Fit mm	Colour	Pack	Weight	Item no.
			pcs	kg/100 pc.	
165 MBG-8-10 GR	Rd 8-10	Grey	12	100.000	5218708

PA/PE Polyamide/polyethylene

- Closed form with base
- With double conductor holder
- Filling weight 1 kg (frost resistant concrete)
- Case made from polyethylene, light grey, UV-stabilised and weatherproof
- Base made from polyamide PA 6, light grey, UV-stabilised and weatherproof
- Base suitable for nearly all roofing membrane systems (Bitumen, PVC)

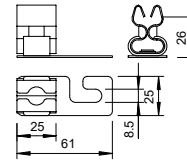


Roof conductor holder for tiled, slated and corrugated roofs, Rd 8

Type	Fit mm	Installation height mm	Pack pcs	Weight kg/100 pc.	Item no.

A2 Stainless steel, rustproof 1.4301

- Bottom section and conductor holder stainless steel (V2A)
- Bottom section with Ø 8.5 mm slot

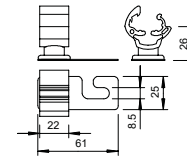


Roof conductor holder for tiled, slated and corrugated roofs, Rd 8-10

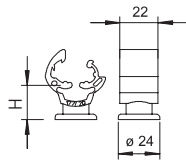
Type	Fit mm	Installation height mm	Pack pcs	Weight kg/100 pc.	Item no.

A2 Stainless steel, rustproof 1.4301

- Bottom section stainless steel (V2A)
- Bottom section with Ø 8.5 mm slot
- Conductor holder of polyamide



Universal cable bracket Rd 8–10 mm

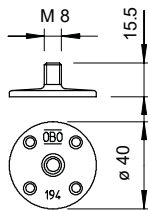


Type	Fit mm	Installation height mm	Pack Weight		Item no.
			pcs	kg/100 pc.	
177 30 M8	Rd 8-10	30	20	0.790	5207460
177 55 M8	Rd 8-10	55	20	1.007	5207487

PA Polyamide

- With female thread M8 or through hole Ø 7 mm
- Weather and temperature-resistant from -35 °C to +90 °C

Bonding base

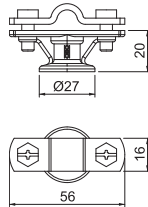


Type	Colour	Thread	Pack Weight		Item no.
			pcs	kg/100 pc.	
194	Grey	M8	100	0.389	5207258

PA Polyamide

- With threaded stem M8
- For mounting cable supports with M8 female thread
- For bonding to concrete, steel or brickwork
- When installing flat conductors and round cables, expansion elements are to be used for thermal compensation

Cable bracket with crossbar Rd 8–10 mm copper-plated



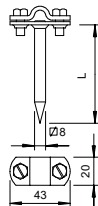
Type	Fit mm	Pack Weight		Item no.
		pcs	kg/100 pc.	
113 8-10	Rd 8-10	20	9.600	5230217

Zn Die-cast zinc

Cu Copper-plated

- With female thread M8 or through hole Ø 7 mm
- Over-piece installed with 2 hexagonal bolts

Cable bracket Rd 8–10 mm, with square pin



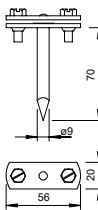
Type	Fit mm	Length mm	Pack Weight		Item no.
			pcs	kg/100 pc.	
163 70 FT	Rd 8-10	70	50	8.476	5223075

St Steel

FT Hot-dip galvanised

- Complete with crossbar and hexagonal bolts
- With square pin for rapid mounting
- With hexagonal bolts made of VA

Cable bracket with crossbar FL 30 mm, with round pin



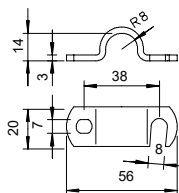
Type	Fit mm	Length mm	Pack Weight		Item no.
			pcs	kg/100 pc.	
166 LS 70	FL30	70	50	9.140	5226570

St Steel

FT Hot-dip galvanised

- With crossbar and 2 hexagonal bolts (VA)
- With loose round pin Ø 9 mm

Crossbar, round conductors and air-termination rods 16 mm



Type	Fit mm	Pack Weight		Item no.
		pcs	kg/100 pc.	
156 16	Rd 16	50	3.230	5228220

St Steel

FT Hot-dip galvanised

- With open slot for quick installation

Vario quick connector

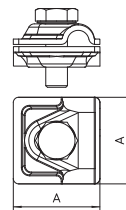


Type	Fit mm	Dimension A mm	Short-circuit current (50 Hz) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
249 8-10 ST	Rd 8-10	40	5.6	H/100	20	10.800	5311500

St Steel

FT Hot-dip galvanised

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



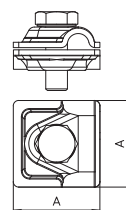
Vario quick connector



Type	Fit mm	Dimension A mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
249 8-10 VA	Rd 8-10	40	H/100	10	10.700	5311551

A2 Stainless steel, rustproof 1.4301

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector, Rd 8–10 mm with pressure trough

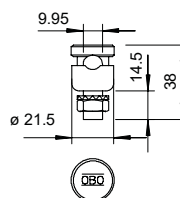


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
5001 N-FT	Rd 8-10	N/50	20	5.900	5304164

St Steel

FT Hot-dip galvanised

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



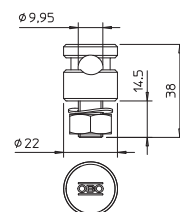
Connector, Rd 8–10 mm with pressure trough



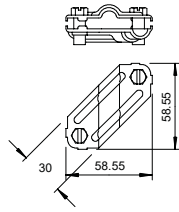
Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
5001 N-VA	Rd 8-10	N/50	10	6.800	5304176

A2 Stainless steel, rustproof 1.4301

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Cross-connector for flat conductors and round conductors



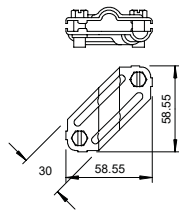
Type	Fit mm	Short-circuit current (50 Hz) (1 s; ≤300 °C) kA	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250	Rd 8-10/FL30	5.6	N/50	25	10.260	5312906

St Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20 (F)

Cross-connector for flat conductors and round conductors

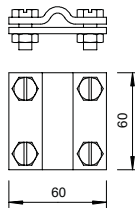
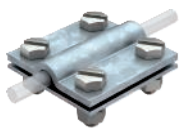


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
250 VA	Rd 8-10/FL30	H/100	25	10.260	5312922
250 V4A	Rd 8-10/FL30	H/100	10	10.260	5312925

A2 Stainless steel, rustproof 1.4301 **A4** Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20

Cross-connector for round cables and flat conductors



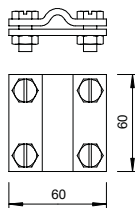
Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10XFL30 FT	8-10 x FL30	H/100	25	28.500	5312655

St Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for round conductors and flat conductors



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10xFL30V4A	8-10 x FL30	H/100	10	28.500	5312656

A4 Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



Cross-connector Rd 8–10 mm

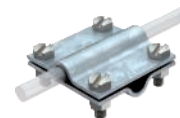
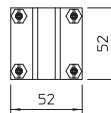


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
251 8-10	Rd 8-10	H/100	25	11.690	5312035

St Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- For round conductors, fit: Rd 8-10 x Rd 8-10
- With 4 hexagonal bolts M6 x 16 (VA)



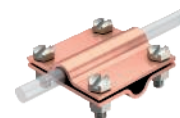
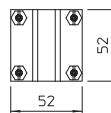
Cross-connector Rd 8–10 mm



Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
251 CU	Rd 8-10	H/100	10	12.400	5312132

Cu Copper

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- With 4 hexagonal bolts M6 x 16, must of rust-proof steel (VA)



Cross-connector with intermediate plate for Rd 8–10

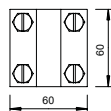


Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10 FT	Rd 8-10	H/100	25	33.530	5312310

St Steel

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)



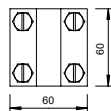
Cross-connector with intermediate plate for Rd 8–10



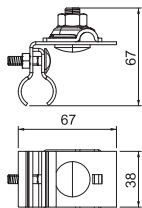
Type	Fit mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
252 8-10 V4A	Rd 8-10	H/100	10	33.530	5312318

A4 Stainless steel, rustproof 1.4571

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



Folding and construction clamp

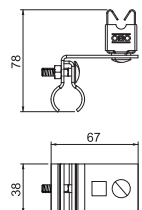


Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
RSF 249 8-10 VA	Rd 8-10	max. 10	N/50	50	14.200	5317502

A2 Stainless steel, rustproof 1.4301

- For round standing seam systems, fixed cable routing
- Manufacturer release by Kalzip
- Tested according to VDE 0185-561-1 (IEC/EN 62561-1)

Folding and construction clamp

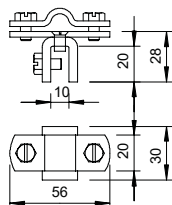


Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
RSF 177 20 VA M8	8	8	N/50	50	13.400	5317512

A2 Stainless steel, rustproof 1.4301

- For round standing seam systems, loose cable routing
- Manufacturer release by Kalzip
- Tested according to VDE 0185-561-1 (IEC/EN 62561-1)

Folding clamp Rd 8-10 up to 10 mm plate thickness

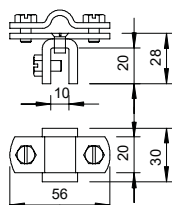


Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
270 8-10 FT	Rd 8-10	max. 10	N/50	20	13.810	5317207

Sl Steel
F1 Hot-dip galvanised

- Metal thickness to 10 mm
- For conductor routing transverse and in parallel to the plate
- Corresponds to the requirements to DIN V VDE V 0185-3 section 4.5

Folding clamp Rd 8-10 up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
270 8-10 VA	Rd 8-10	max. 10	N/50	10	13.800	5317208

A2 Stainless steel, rustproof 1.4301

- Metal thickness to 10 mm
- For conductor routing transverse and in parallel to the plate
- Corresponds to the requirements to DIN V VDE V 0185-3 section 4.5

Folding clamp up to 5 mm plate thickness

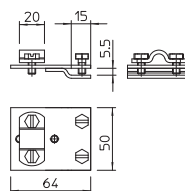


Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
271 8-10	Rd 8-10	max. 5	N/50	20	14.060	5317401

St Steel

FT Hot-dip galvanised

- Plate thickness to 5 mm
- For conductor routing transverse and longitudinal to plate
- With 4 hexagonal bolts M6 x 12
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)
- 271 Cu: with hexagonal bolts stainless steel (VA)



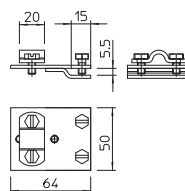
Folding clamp up to 5 mm plate thickness



Type	Fit mm	Clamping range mm	Lightning current carrying capacity kA	Pack pcs	Weight kg/100 pc.	Item no.
271 8-10 VA	Rd 8-10	max. 5	N/50	10	15.000	5317481

A2 Stainless steel, rustproof 1.4301

- Plate thickness to 5 mm
- For conductor routing transverse and longitudinal to plate
- With 4 hexagonal bolts M6 x 12
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)
- 271 Cu: with hexagonal bolts stainless steel (VA)



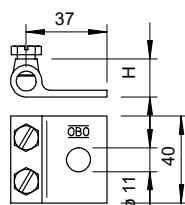
Clamping shoe

Type	Fit mm	Pack pcs	Weight kg/100 pc.	Item no.
319 8	Rd 8	25	7.800	5325307
319 10	Rd 10	25	9.650	5325315

TG Malleable iron

F Hot galvanised

- With Ø 11 mm attaching hole
- 2 hexagonal bolts M8 x 16
- Bolts hot-dip galvanised steel and clamping element hot dipped galvanised cast steel



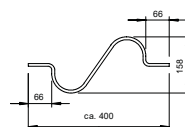
Expansion piece



Type	Pack pcs	Weight kg/100 pc.	Item no.
172 AR	10	7.500	5218926

Alu Aluminium

- For equalising temperature-related length changes
- Necessary on conductor lengths over 20 m
- From round conductor Rd 8-Al

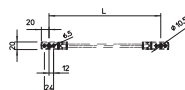


Bridging cable

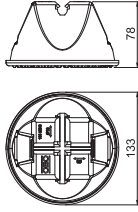
Type	Dimen- sion L mm	Pack pcs	Weight kg/100 pc.	Item no.
853 300	300	10	7.260	5331013

Cu Copper

- From flexible copper cable 16 mm²
- Coating: black, chlorinated India rubber mixture
- With 1 mounting hole Ø 10.5 mm per attachment side
- With 2 mounting holes Ø 7.3 mm per attachment side
- Suitable for applications outside or inside



Roof conductor holder for flat roofs, black



Type	Fit mm	Pack pcs	Weight kg/100 pc.	Item no.
165 MBG-8-10	Rd 8-10	12	100.000	5218700
165 MBG-8-10 FO	Rd 8-10	12	100.000	5218704

PA/PE Polyamide/polyethylene

- Closed form with base
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve made of polyethylene, black, bottom polypropylene, black
- Base made of polyamide PA 6, black, UV-stabilised and weather-resistant
- Base can be used on almost all roofing felt systems (bitumen, PVC)
- Types 165 MBG...FO: Packed in foil bag

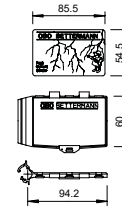


Magnetic card and holder MK-B

Type	Pack	Weight	Item no.
	PU	kg/100 PUs	
MK-B	1	31.000	5091322

PCS magnetic card to record pulse/lightning currents including holder

- Holder can be leaded
- For mounting on round conductor Rd 8-10
- Simple holder mounting through clamping
- 1 PU = 10 units



Lightning strike counter

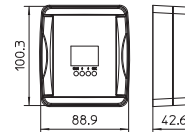


Type	Measuring range	Pack	Weight	Item no.
		pcs	kg/100 pc.	
LSC I+II	1 kA - 100 kA	1	32.500	5091722

Plastic

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 protection device
- Long lifespan of the internal lithium batteries
- LCD display
- Internal battery
- Tested according to VDE 0185-561-6 (IEC 62561-6)

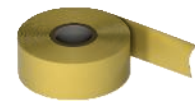
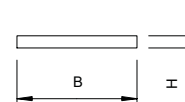


Corrosion protection strip

Type	Width	Length	Pack	Weight	Item no.
	mm	m	pcs	kg/100 pc.	
356 50	50	10	1	71.500	2360055

PETRO Petrolatum

- Approx. 1.1 mm thick
- Width: 50 mm or 100 mm, made of petrolatum-coated chemical fibre fabric
- Can be processed cold





Insulated lightning protection



Insulated lightning protection

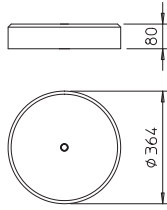
242



OBO isCon® system

243

Concrete block for FangFix-System 16 kg

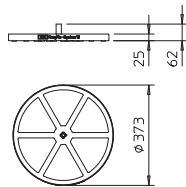


Type	Nominal size Ø mm	Pack Weight		Item no.
		pcs	kg/100 pc.	
F-FIX-S16	365	1	1,700.000	5403227

BET Concrete

- 16 kg stone of Ø 365 mm, high level of stability
- Frost-resistant concrete
- Stackable

Base for FangFix system 16 kg

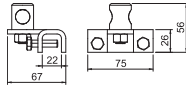


Type	Nominal size Ø mm	Pack Weight		Item no.
		pcs	kg/100 pc.	
F-FIX-B16	373	10	16.400	5403235

PP Polypropylene

Edge protection with integrated dowel (basic) suitable for FangFix system.

Folding clamp for seaming sheet up to 20 mm thickness



Type	Dimension d Ø mm	Dimension L mm	Dimension D Ø mm	Pack Weight		Item no.
				pcs	kg/100 pc.	
FCAH	16	121	30	1		5450096

St Steel
FT Hot-dip galvanised

To fasten a GFK rod on constructions of 4 to 20 mm, Dimension D Ø: 16 mm

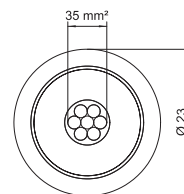
isCon® conductor, premium black



Type	Cross-section mm ²	Nominal size Ø mm	Equivalent separation distance m	Pack m	Weight kg/100 m	Item no.
isCon PR 90 SW	35	23	0.9	100	66.600	5408018

Please refer to the mounting instructions for information on routing the OBO isCon® Premium conductor.

- Highly voltage-resistant, insulated conductor
- Floating discharge-free
- Tested according to IEC/EN 62561-1 (VDE 0185-561-1) with H2/200 kA
- Equivalent separation distance $se \leq 0.90$ m (air) and $se \leq 1.8$ m (solid material)
- Tested according to IEC TS 62561-8 (VDE V 0185-561-8)
- Halogen-free
- Fire load 4.2 kWh/m



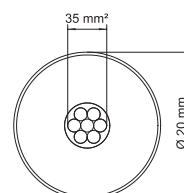
isCon® conductor, professional black



Type	Cross-section mm ²	Nominal size Ø mm	Equivalent separation distance m	Pack m	Weight kg/100 m	Item no.
isCon Pro 75 SW	35	20	0.75	100	57.000	5408008

Please refer to the mounting instructions for information on routing the OBO isCon® Pro conductor.

- Highly voltage-resistant, insulated conductor
- Floating discharge-free
- For maintenance of the separation distance according to IEC 62305 (VDE 0185-305-3)
- Tested according to IEC/EN 62561-1 (VDE 0185-561-1) with H1/150 kA
- Equivalent separation distance $se \leq 0.75$ m (air) and $se \leq 1.5$ m (solid material)
- Tested according to IEC TS 62561-8 (VDE V 0185-561-8)
- Halogen-free
- Fire load 3.3 kWh/m



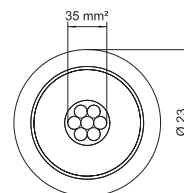
isCon® conductor, professional plus black



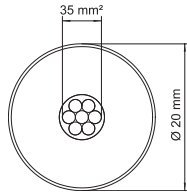
Type	Cross-section mm ²	Nominal size Ø mm	Equivalent separation distance m	Pack m	Weight kg/100 m	Item no.
isCon Pro+ 75 SW	35	23	0.75	100	69.400	5408004

Please refer to the mounting instructions for information on routing the OBO isCon® conductor.

- Highly voltage-resistant, insulated conductor
- Floating discharge-free
- Additional mechanical protection (black protective jacket)
- For maintenance of the separation distance according to IEC 62305 (VDE 0185-305-3)
- Tested according to IEC/EN 62561-1 (VDE 0185-561-1) with H1/150 kA
- Equivalent separation distance $se \leq 0.75$ m (air) and $se \leq 1.5$ (solid material)
- Tested according to IEC TS 62561-8 (VDE V 0185-561-8)
- Halogen-free
- Fire load 4.3 kWh/m
- Can be used in potentially explosive areas Ex zone 1/2 and 21/22 when taking the current mounting instructions into account



isCon® conductor, basic black

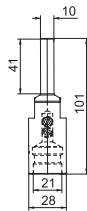


Type	Cross-section	Nominal size	Equivalent separation distance	Pack	Weight	Item no.
	mm ²	mm	m			
isCon BA 45 SW	35	20	0.45	100	57.000	5408014

Please refer to the mounting instructions for information on routing the OBO isCon® Basic conductor.

- Highly voltage-resistant, insulated conductor
- For maintenance of the separation distance according to IEC 62305 (VDE 0185-305-3)
- Tested according to IEC/EN 62561-1 (VDE 0185-561-1) with H1/150 kA
- Equivalent separation distance $se \leq 0.45$ m (air) and $se \leq 0.90$ m (solid material)
- Tested according to IEC TS 62561-8 (VDE V 0185-561-8)
- Halogen-free
- Fire load 3.3 kWh/m

isCon® connection element



Type	Dimension D	Fit	Lightning current carrying capacity	Pack	Weight	Item no.
	Ø mm	mm	kA			
isCon con 2	20	10	H1/150	2	21.500	5408021
isCon connect	23	10	H1/150	2	21.500	5408022

A2 Stainless steel, rustproof 1.4301

- Screw-on termination of the connection for the isCon® conductor
- Incl. heat-shrinkable sleeve, hexagonal
- Tested up to 200 kA (lightning protection class I)

Connection element for installation in the insulated air-termination rod isFang IN

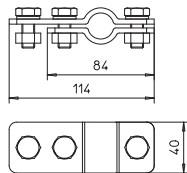


Type	Dimension D	Lightning current carrying capacity	Pack	Weight	Item no.
	Ø mm	kA			
isCon IN con 2	20	H1/150	1	27.800	5408019
isCon IN con PRE	23	H2/200	1	27.800	5408020

A2 Stainless steel, rustproof 1.4301

- Screw-on termination of the connection for the isCon® conductor
- Connection and installation of the conductor in the insulated air-termination rod
- Tested up to 200 kA (lightning protection Class II)

Potential connection



Type	Fit	Pack	Weight	Item no.
	mm			
isCon PAE	Ø 17-25mm	2	36.500	5408036

A2 Stainless steel, rustproof 1.4301

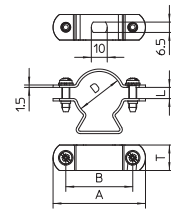
- Potential connection
- To avoid floating discharges on the isCon® conductor
- With sprung discs to protect screws against loosening

VA cable bracket for isCon® conductor for mounting on roof/wall structures

Type	Dimension D Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
isCon H VA	21 - 23	50	2.850	5408056

A2 Stainless steel, rustproof 1.4301

- For isCon® conductor for mounting on roof/wall structures
- With sprung discs to protect the screws against loosening



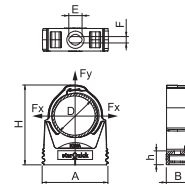
starQuick clip



Type	Colour	Dimension D mm	Dimension A mm	Dimension B mm	Pack pcs	Weight kg/100 pc.	Item no.
SQ-25 LGR	Light grey	—	40	17	50	0.970	2146207

PA Polyamide

Cable brackets for isCon® conductors for mounting on the building structure. Can also be used in the first 1.5 m. Can be arranged next to each other. Made from a UV and weather-resistant polyamide.



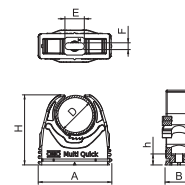
Multi-Quick clip, metric



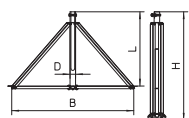
Type	Clamping range D mm	Pull-out value N	Colour	Shipping box pcs	Pack pcs	Weight kg/100 pc.	Item no.
M-Quick M32 LGR	25 - 32	60	Light grey	600	50	1.390	2153734

PA Polyamide

- Multi-Quick metric
- Simple fastening
- Secure locking
- Radial arrangement
- Simplified storage
- Universally applicable



isFang tripod with side outlet



Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-150-A	1500	50	900	1275	1	950.000	5408932
isFang 3B-250-A	2900	50	1450	2055	1	2,500.000	5408902

A2 Stainless steel, rustproof 1.4301

- Screwless installation of freestanding air-termination rods as well as insulated air-termination rods with 50 mm diameter
- E.g. for internal OBO isCon® conductor
- Roof slope to max. 5 degrees
- Incl. Rd 8–10 crossbar for quick round conductor fastening
- Concrete plinths as well as threaded rods should be ordered separately

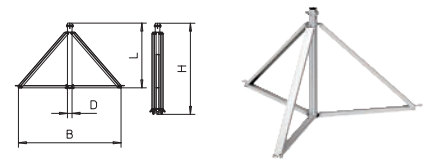




Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-100	1000	40	600	885	1	620.000	5408968
isFang 3B-150	1500	40	900	1275	1	950.000	5408969

A2 Stainless steel, rustproof 1.4301

Folding tripod stand for screwless installation of free-standing air-termination rods with a diameter of 40 mm, e.g. for OBO isCon® conductors. Roof slope to max. 5 degrees. Incl. Rd 8–10 crossbar for rapid round conductor fastening. The concrete plinth and threaded rods are to be ordered separately.

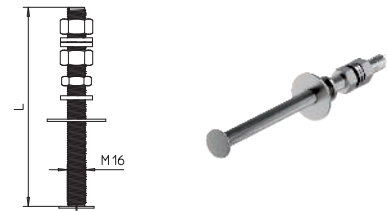


isFang-3B threaded rod

Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang 3B-G1	270	3	48.000	5408971
isFang 3B-G2	340	3	60.400	5408972
isFang 3B-G3	430	3	69.500	5408973

A2 Stainless steel, rustproof 1.4301

• For fastening on one, two, three or four FangFix concrete bases with tripod stand

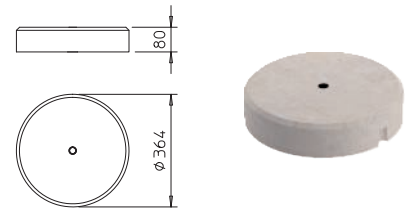


Concrete block for FangFix-System 16 kg

Type	Nominal size Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-S16	365	1	1,700.000	5403227

BE1 Concrete

- 16 kg stone of Ø 365 mm, high level of stability
- Frost-resistant concrete
- Stackable

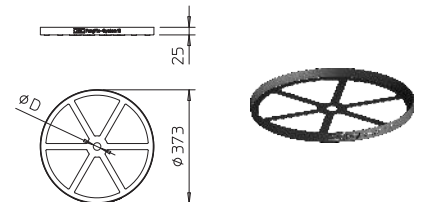


Base for FangFix system 16 kg for mounting the isFang tripod

Type	Nominal size Ø mm	Dimension D Ø mm	Pack pcs	Weight kg/100 pc.	Item no.
F-FIX-B16 3B	373	25	10	15.800	5403238

PP Polypropylene

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16



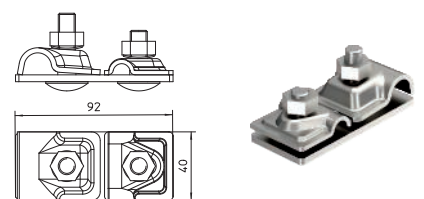
Connection plate for one isCon® conductor



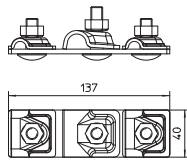
Type	Dimension	Pack pcs	Weight kg/100 pc.	Item no.
isCon AP1-16 VA	16x8-10mm	1	27.400	5408026

A2 Stainless steel, rustproof 1.4301

Connection plate to connect an isCon® conductor with air-termination rod Ø 16 mm, tested up to 150 kA (lightning protection class II)



Connection plate for two isCon® conductors



Type	Dimension	Pack pcs	Weight kg/100 pc.	Item no.
isCon AP2-16 VA	16x8-10mm	1	39.500	5408028

A2 Stainless steel, rustproof 1.4301

Connection plate to connect two isCon® conductors with air-termination rod Ø 16 mm, tested up to 150 kA (lightning protection class II)

Cable tie, black, UV and weather-resistant



Type	Dimension B mm	Dimension L mm	Dimension t mm	Dimension Max. bundle Ø mm	Colour	Pack pcs	Weight kg/100 pc.	Item no.
565 7.6x380 SWUV	7.6	380	1.8	105	Black	100	0.533	2331924

PA Polyamide

Cable ties are used for quick, uncomplicated fixing or bundling of cables and pipes to cable support systems or other mounting structures.

Information panel

Type	Pack pcs	Weight kg/100 pc.	Item no.
isCon HWS EN	1	2.000	5408059

PS Polystyrene

Label: "NOTE! Insulated lightning protection with the OBO isCon® system. Only a lightning protection specialist may carry out changes"

- To label the lightning protection system
- Self-adhesive and with 4 fastening holes \varnothing 6.5 mm

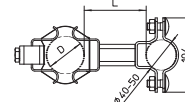


isFang support for spaced pipe mounting, \varnothing 50–300 mm

Type	Dimension D \varnothing mm	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TR100 300	300	300	2	146.000	5408959

A2 Stainless steel, rustproof 1.4301

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of \varnothing 50–300 mm.

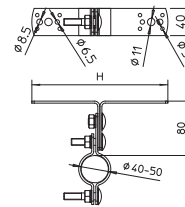


isFang support for wall mounting, 80 mm spacing

Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TW80	80	2	63.000	5408950

A2 Stainless steel, rustproof 1.4301

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

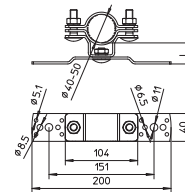


isFang support for wall mounting, 30 mm spacing

Type	Dimension L mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang TW30	30	2	62.000	5408952

A2 Stainless steel, rustproof 1.4301

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.



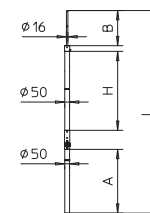
isFang, insulated air-termination rod for inner-routed isCon® conductor Professional Plus



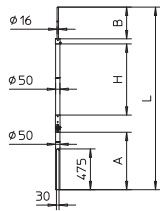
Type	Dimension D \varnothing mm	Dimension A mm	Dimension H mm	Dimension B mm	Dimension Length mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang IN 6000	50	3325	1500	1000	6000	1	835.000	5408936
isFang IN 8000	50	5335	1500	1000	8000	1	1,315.000	5408868

GFK Fibre-glass-reinforced plastic

- For installation of the OBO isCon® Pro+ conductor in the pipe
- For mounting on the building structure with isFang support
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Inclusive connection element (type isCon IN connect)
- Inclusive potential connection (type isCon In PAE)



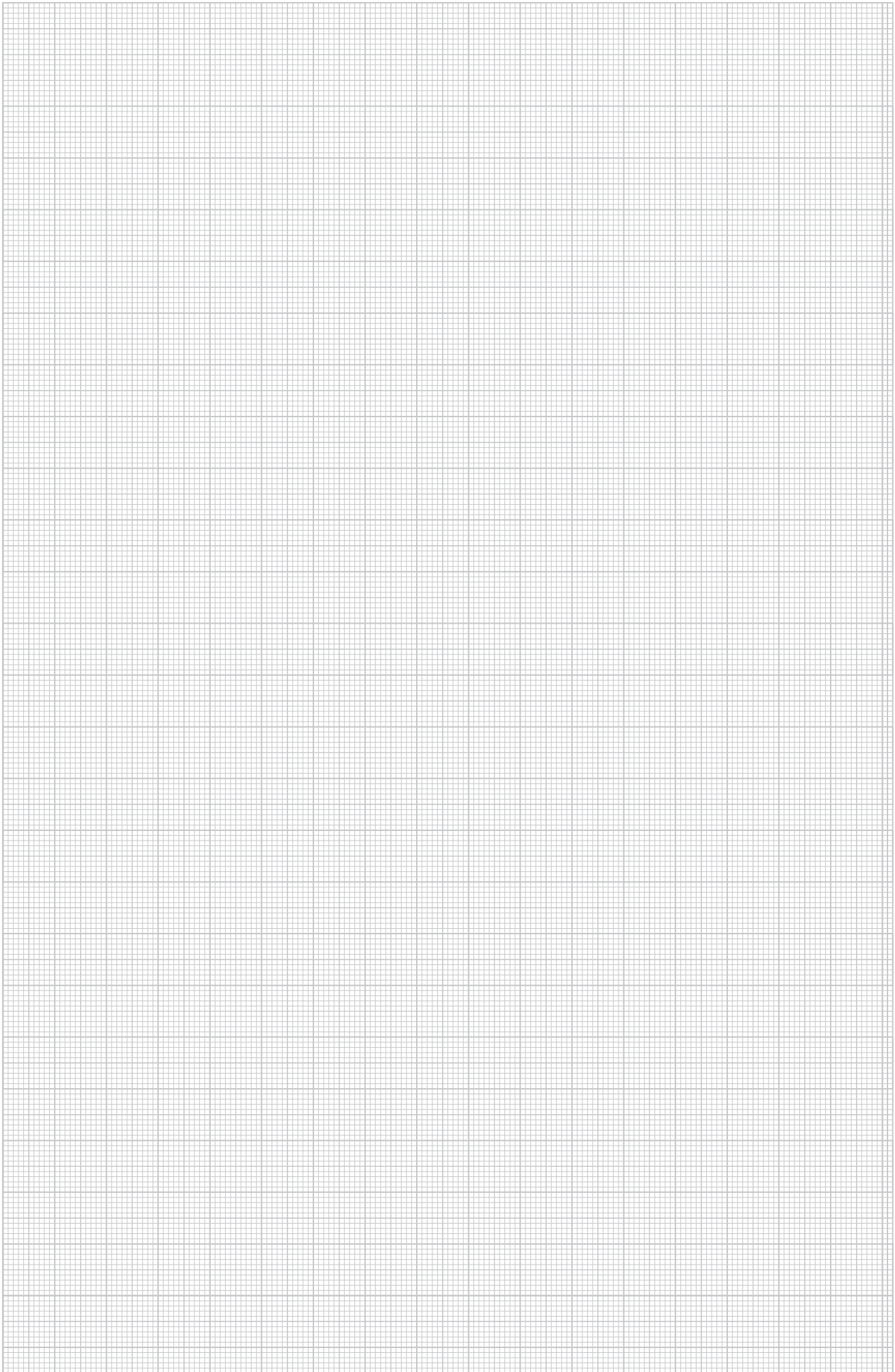
Insulated air-termination rod for inner-routed isCon® conductor with side exit

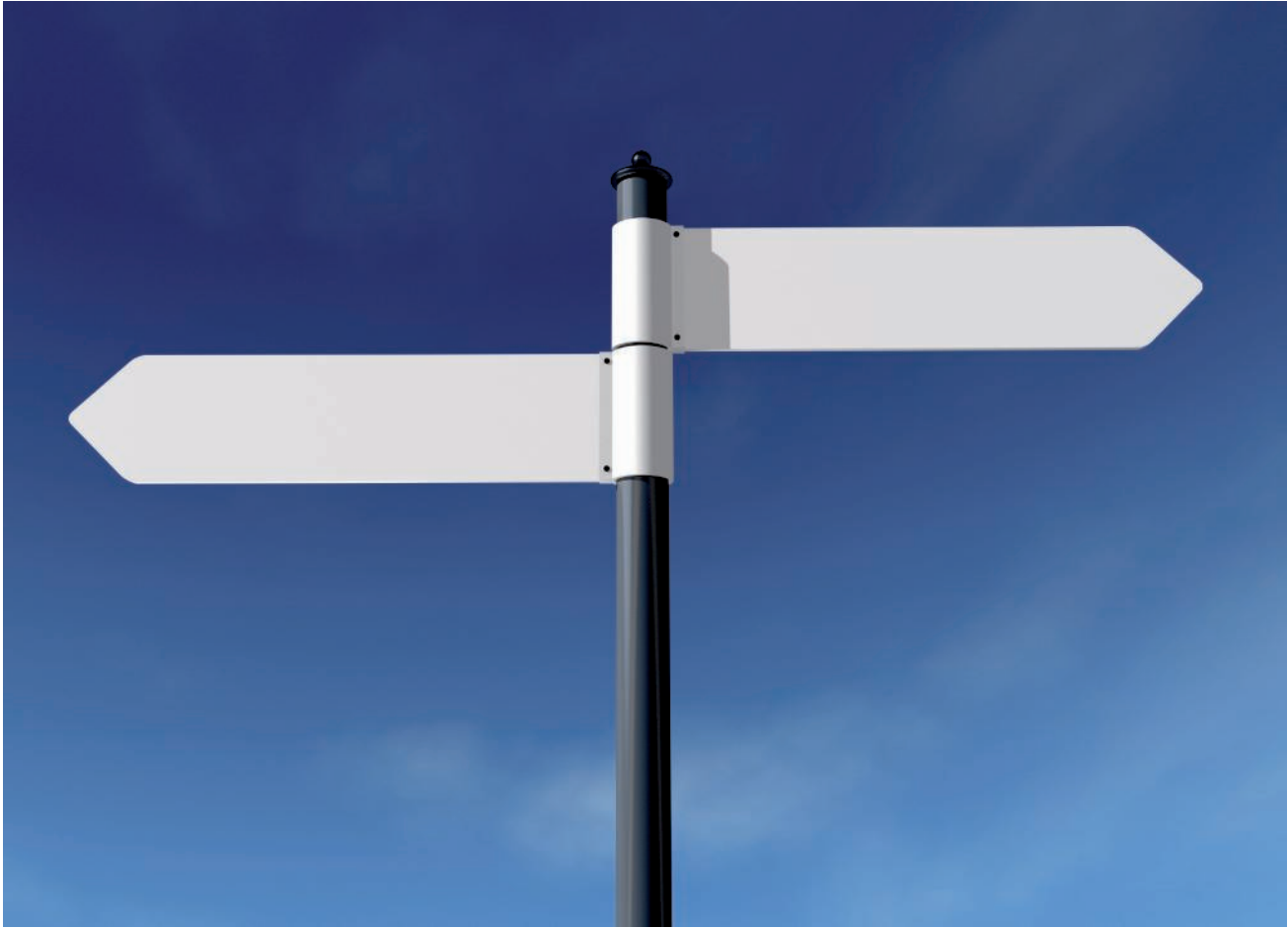


Type	Dimension D Ø mm	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack pcs	Weight kg/100 pc.	Item no.
isFang IN-A L4	50	1325	1500	1000	4000	1	535.000	5408874
isFang IN-A L6	50	3325	1500	1000	6000	1	835.000	5408876
isFang IN-A L8	50	5335	1500	1000	8000	1	1,385.000	5408878
isFang IN-A L10	50	6000	1733	2000	10000	1	1,540.000	5408880
isFang IN L4	50	1325	1500	1000	4000	1	535.000	5408854
isFang IN L6	50	3325	1500	1000	6000	1	835.000	5408856
isFang IN L8	50	5335	1500	1000	8000	1	1,350.000	5408858
isFang IN L10	50	6000	1733	2000	10000	1	1,540.000	5408860

GFK Fibre-glass-reinforced plastic

- For installation of the OBO isCon® Pro+ conductor in the pipe
- With side conductor outlet matching isFang air-termination rod stand with side outlet, type isFang 3B-A
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Inclusive connection element (type isCon IN connect)
- Inclusive potential connection (type isCon In PAE)





Directories



Numeric directory

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Type listing

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5741671	2153734	245	5022732	5093275	151	5165965	5096861	38	6524273	5240370	186	6647842	5408854	225
6417353	2331924	248	5126041	5093384	116	5966449	5096863	27	6524297	5240374	186	6647859	5408856	225
			6334674	5093509	54	5541394	5096865	31	6524433	5240380	187	6647866	5408858	225
			6334681	5093510	54	5990116	5096974	28	6524457	5240382	187	6647873	5408860	225
			6398447	5093540	40	5995012	5096976	29	6524464	5240386	187	6219391	5408868	226
5230533	/pc. 2360055	216	6398461	5093542	42	6487325	5096981	35	6524471	5240390	187	6647804	5408874	225
			6398454	5093546	41	6487332	5096987	34	6524488	5240394	187	6647811	5408876	225
			6398508	5093548	43							6647828	5408878	225
6427925	5009200	216	6398515	5093552	44	5766636	5097061	63		/100 pc.		6647835	5408880	225
			6398522	5093554	46	5030669	5097063	61	5817512	5304164	233	6219452	5408902	225
6391059	5014469	212	6398539	5093560	45	5711551	5097290	62	5892809	5304176	198	5859567	5408932	225
6391042	5014477	212	6398546	5093562	47	5578116	5097453	122				5871620	5408936	226
			6398553	5093572	48	5736561	5097454	167	5417675	5311500	233	5670070	5408950	227
5378259	5015073	196	6398577	5093574	55	5578123	5097607	123	5417910	5311551	200	5670087	5408952	227
6587292	5015105	197	6398560	5093578	49	5578130	5097615	124				5849407	5408959	227
5959427	5015111	197	6398584	5093580	56	5578147	5097623	125	5417972	5312035	235	5670148	5408968	224
6427628	5015265	199	6398591	5093584	50	5578154	5097631	126	5418030	5312132	235	5674931	5408969	224
6427680	5015270	199	6398607	5093586	52	5578161	5097650	127	5418092	5312310	210	5674948	5408971	225
5378556	5015650	196	6398614	5093590	51	5578185	5097820	128	5700869	5312318	210	5674979	5408972	225
5002277	5015854	198	6398621	5093592	53	5812258	5097822	169	5418399	5312655	210	5674986	5408973	225
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5033615	5015880	198	6463831	5093998	150				5418696	5312906	211	6505890	5420022	212
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5694014	5019344	206	5648482	5094574	138	5406716	5099475	98	5893158	5317208	236	6497546	5450044	216
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5381914	5021286	206	5240112	5094668	94	5807612	5099613	108	6622375	5317512	236	6613779	5450058	216
5381976	5021308	206	5406662	5094713	96	5396970	5099617	111				6497553	5450060	214
5067474	5021332	207	5240174	5094715	97	5942498	5099706	110	5421870	5325307	237	6497560	5450062	214
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5382096	5021502	207	6159864	5095173	72	5570318	5099848	105	5105619	5401980	222	6497614	5450072	214
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			6161379	5095261	74	5784968	5203018	229						
5388517	5057507	201	6161638	5095263	76				5674733	5402864	224			
5388692	5057558	201	6161706	5095271	81	5404651	5207258	232	5674856	5402880	224	6049080	/100 pc. 6404006	202
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5805519	5057930	201	6162840	5095302	80	5813255	5216818	231	5548775	5403219	223			
			6162888	5095303	85				5548898	5403227	222			
			6162895	5095304	87	5407959	5217075	231	5548959	5403235	223			
5915973	/pc. 5080053	158	6163489	5095341	75				5926320	5403238	226			
5916277	5080061	160	6163496	5095343	77	6648290	5218700	230		/pc.				
5916031	5080150	159	6163502	5095353	83	6648306	5218704	230	5034872	5403308	221			
			6163595	5095366	88	6648313	5218708	230	5034933	5403324	222			
6034352	5081690	145	6163601	5095368	89	6648320	5218716	230	5613572	5403330	223			
6087723	5081694	146	5027652	5095599	188	5409090	5218926	237						
6427444	5081698	144	6329694	5095600	90					/100 pc.				
5614364	5081800	153	5919391	5095603	64	5409458	5223075	232	5428657	5405068	222			
6532766	5081802	156	5542957	5095606	91					/pc.				
6532773	5081804	157				5410416	5226570	232	5428718	5405769	223			
6415694	5081990													

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isFang 3B-150	5674931	5408969	224
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isFang 3B-150-A	5859567	5408932	225
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isFang 3B-250-A	6219452	5408902	225
isFang 3B-250-A	6219452	5408902	246
isFang 3B-G1	5674948	5408971	225
isFang 3B-G1	5674948	5408971	228
isFang 3B-G1	5674948	5408971	247
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isFang 3B-G2	5674979	5408972	228
isFang 3B-G2	5674979	5408972	247
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isFang IN L8	6647866	5408858	250
isFang IN-A L10	6647835	5408880	225
isFang IN-A L10	6647835	5408880	250
isFang IN-A L4	6647804	5408874	225
isFang IN-A L4	6647804	5408874	250
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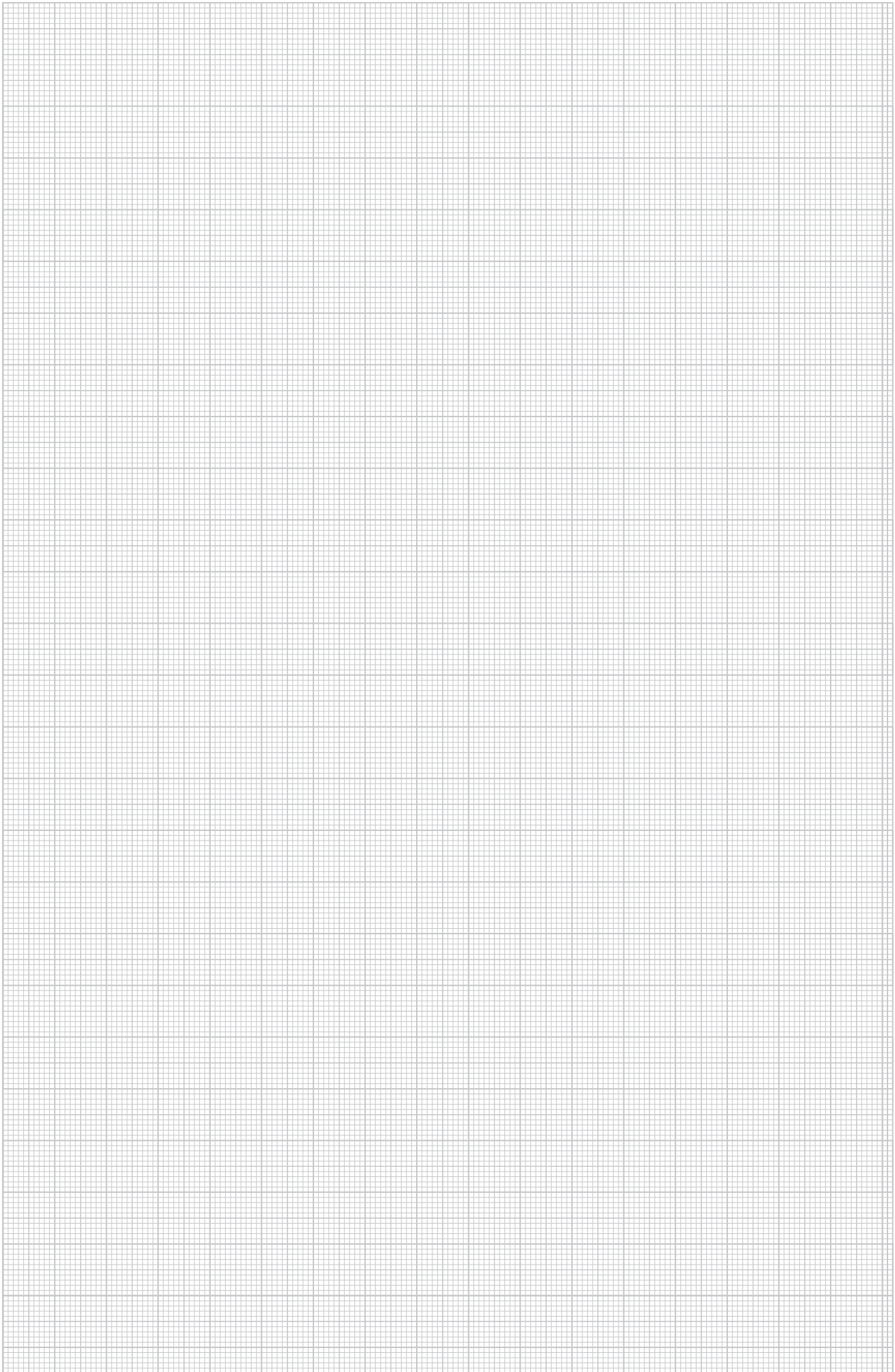


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MB 3+NPE	5067542	5096669	117
MB 3+NPE+FS	5067559	5096671	65
MB 3+NPE+FS	5067559	5096671	112
MB 3+NPE+FS	5067559	5096671	118
MB 4	5067566	5096680	65
MB 4	5067566	5096680	112
MB 4+FS	5067597	5096682	65
MB 4+FS	5067597	5096682	112
MB 4+FS	5067597	5096682	117
MC 125-B NPE	5966449	5096863	27
MC 50-B-OS	5051411	5096851	26
MCD 125-B NPE	5541394	5096865	31
MCD 125-B NPE	5541394	5096865	36
MCD 50-B-320	5068563	5096860	30
MCD 50-B-320	5068563	5096860	37
MCD 50-B-OS-320	5165965	5096861	38
MCF 35-1+FS-440	5990116	5096974	28
MCF 35-P3+FS-440	5995012	5096976	29
MCF100-3+NPE+FS	6487332	5096987	34
MCF75-3+FS	6487325	5096981	35
MDP-2 D-24-T	5406860	5098422	174
MDP-2 D-48-T	5406891	5098442	176
MDP-2 D-5-T	5406839	5098404	172
MDP-4 D-24-EX	5848523	5098432	180
MDP-4 D-24-T	5406884	5098431	175
MDP-4 D-48-EX	5848530	5098452	181
MDP-4 D-48-T	5406914	5098450	177
MDP-4 D-5-T	5406853	5098411	173
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MK-B	5461111	5091322	239
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ND-CAT6/E-F	6532766	5081802	156
ND-CAT6A/EA	5614364	5081800	153
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OEC 25	6427925	5009200	216
OEC-1 10	6613748	5450050	216
OEC-1 25	6613755	5450052	216
OEC-2 10	6613762	5450056	216
OEC-2 25	6613779	5450058	216
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RD 10-ALU	5381976	5021308	206
RD 10-ALU	5381976	5021308	220
RD 10-ALU I	6497744	5450088	220
RD 10-CU	5382096	5021502	207
RD 10-CU	5382096	5021502	221
RD 10-ST CU IN	6640386	5021384	208
RD 8-ALU	5381914	5021286	206
RD 8-ALU	5381914	5021286	220
RD 8-ALU I	6497737	5450086	220
RD 8-CU	5382034	5021480	207
RD 8-CU	5382034	5021480	221

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RSF 249 8-10 VA	6622368	5317502	236
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SD09-V24 9	5915973	5080053	158
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TD-2D-V	6427444	5081698	144
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UFE	6497515	5450030	216
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V20-0-385	6163601	5095368	89
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V20-1+NPE+FS-320	6163489	5095341	75
V20-1+NPE-320	6161379	5095261	74
V20-1+NPE-385	6161706	5095271	81
V20-1-320	6159840	5095171	70
V20-1-385	6159888	5095191	78
V20-2+FS-385	6162840	5095302	80
V20-2-385	6159895	5095192	79
V20-3+FS-320	6162833	5095293	73
V20-3+FS-385	6162888	5095303	85
V20-3+NPE+FS-320	6163496	5095343	77
V20-3+NPE+FS-385	6163502	5095353	83
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V20-3-320	6159864	5095173	72
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V20-C 0-385	5027294	5099729	100
V20-C 0-385	5396857	5099595	109
V20-C 0-440	5942498	5099706	110
V20-C 0-48	5044987	5099574	99
V20-C 0-500PV	5708933	5099708	141
V20-C 0-550	5396970	5099617	111
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V20-C 1+NPE-385	5382980	5094666	93
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V20-C 3+FS-385	5240280	5094780	92
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V20-C U-3+NPE	5063407	5096370	66
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V50-1-320	6398447	5093540	40
V50-1-385	6398553	5093572	48
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V50-3+NPE+FS-385	6398621	5093592	53
V50-3+NPE-320	6398522	5093554	46
V50-3+NPE-385	6398607	5093586	52
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VF110-AC DC	5578154	5097631	126
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VF12-AC/DC-FS	5736561	5097454	167
VF230-AC/DC	5578161	5097650	127
VF230-AC/DC	5578161	5097650	166
VF230-AC-FS	5578215	5097858	129
VF230-AC-FS	5578215	5097858	170
VF24-AC/DC	5578123	5097607	123
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VF24-AC/DC-FS	5578185	5097820	128
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V-PV-T1+2-1000	6603718	5094230	134
V-PV-T1+2-1000FS	6603725	5094232	135
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V-PV-T2-1500	6603695	5094210	136
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Hyderabad
8939993192

Nagpur
78240 77762

Indore
8939993193

Jamshedpur
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