5 YEARS PRODUCT WARRANTY

Type 1+2

Type 2

Surge protection for photovoltaic systems

Selection guide and product overview

Building Connections

OBO BETTERMANN

The commissioning engineer has the overall responsibility for electrical safety.

Photovoltaics working group

People, livestock and property must be protected against damage caused by surges resulting from atmospheric influences or switching surges..

IEC 60364-1

Relevant standards:

Installation of low-voltage systems

- IEC 60364-1
- IEC 60364-5-53
- IEC 60364-4-41
- IEC 60364-4-44
- EN 60664-1 (IEC 60664-1)

Tests (commissioning test) and documentation

- IEC 60364-6
- EN 50110-1

Requirements for PV power supply systems

- IEC 60364-7-712
- EN 62446 (IEC 62446)
- IEC 61643-12
- IEC 61643-32

Lightning protection systems and earthing systems

- IEC 62305-1 to -4
- Local additional requirements (e.g. state building regulations in Germany)
- DIN 18014
- IEC 60364-5-54

Fire protection in the area of PV

- IEC 60364-7-712 ED3:

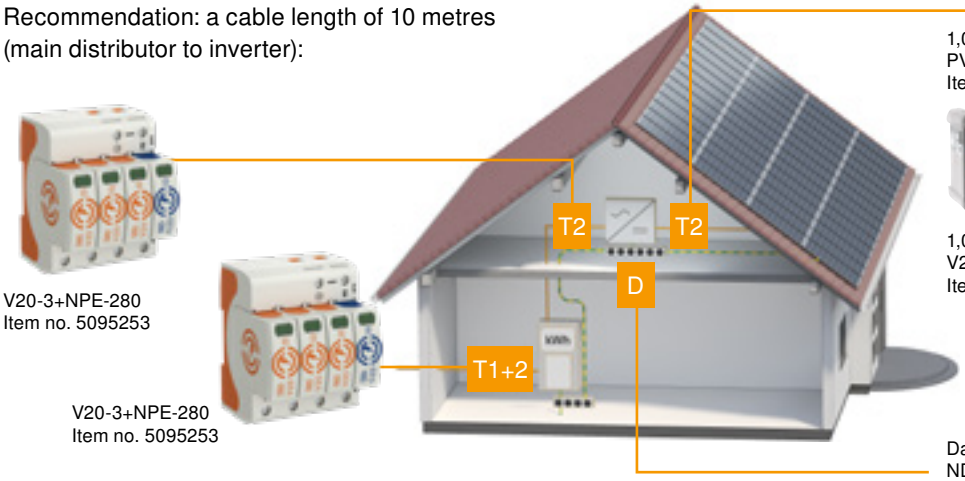
Construction regulations

- EN 13501-1/-2, DIN 4102-1/-2 Fire classification of construction products and building elements
- The national and regional construction regulations must be observed with regard to the use of construction products. These include, for example, the state construction regulations in Germany, VKF regulations in Switzerland and OIB directives in Austria.

This list makes no claim to completeness! Please observe the appropriate local and statutory requirements

Buildings without lightning protection

Recommendation: a cable length of 10 metres
(main distributor to inverter):



V20-3+NPE-280
Item no. 5095253

V20-3+NPE-280
Item no. 5095253

1,000 V, per tracker
PVG- C1000K 200
Item no. 5088435

1,500 V, 2 trackers
PVG-C1000K 110
Item no. 5088415

1,000 V, per tracker
V20-C 3-PH-1000
Item no. 5094608

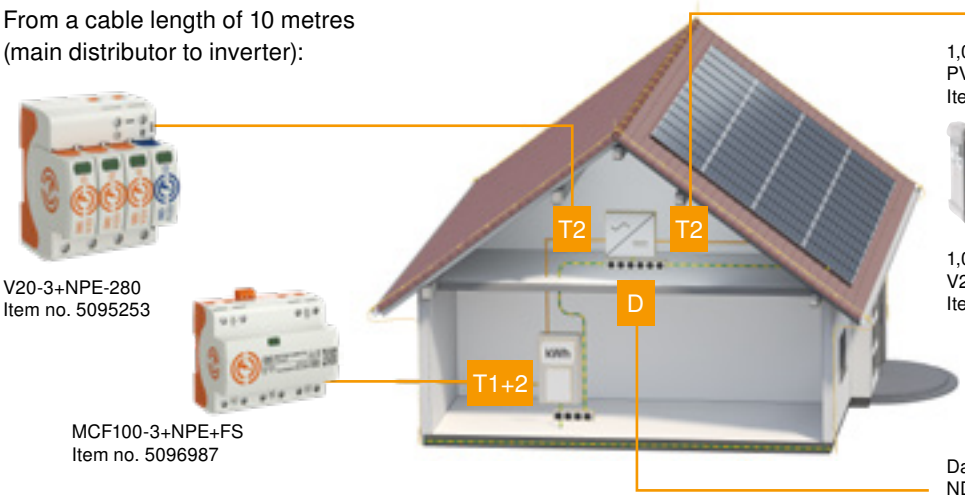
1,500 V, per tracker
V-PV-T2-1500
Item no. 5094210

Data cable protection device Cat6
ND-CAT6A/EA
Item no. 5081800

Buildings with lightning protection

with the separation distance maintained (LPS 3 or 4)

From a cable length of 10 metres
(main distributor to inverter):



V20-3+NPE-280
Item no. 5095253

MCF100-3+NPE+FS
Item no. 5096987

1,000 V, per tracker
PVG- C1000K 200
Item no. 5088435

1,500 V, 2 trackers
PVG-C1000K 110
Item no. 5088415

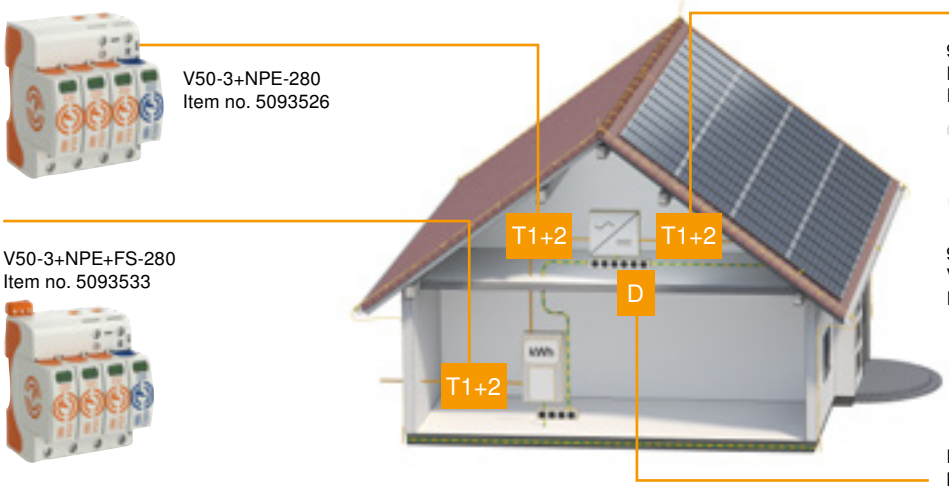
1,000 V, per tracker
V20-C 3-PH-1000
Item no. 5094608

1,500 V, per tracker
V-PV-T2-1500
Item no. 5094210

Data cable protection device Cat6
ND-IP66-RJ-RJ
Item no. 5081807

Buildings with lightning protection

with the separation distance **not** maintained (LPS 3 or 4)



V50-3+NPE-280
Item no. 5093526

V50-3+NPE+FS-280
Item no. 5093533

900 V, 1 Tracker
PVG-BC 900K 200
Item no. 5088430

900 V, 2 trackers
PVG-BC 900K 220
Item no. 5088440

900 V, per tracker
V25-B+C 3-PH900
Item no. 5097447

1,500 V, per tracker
V-PV-T1+2-1500
Item no. 5094240

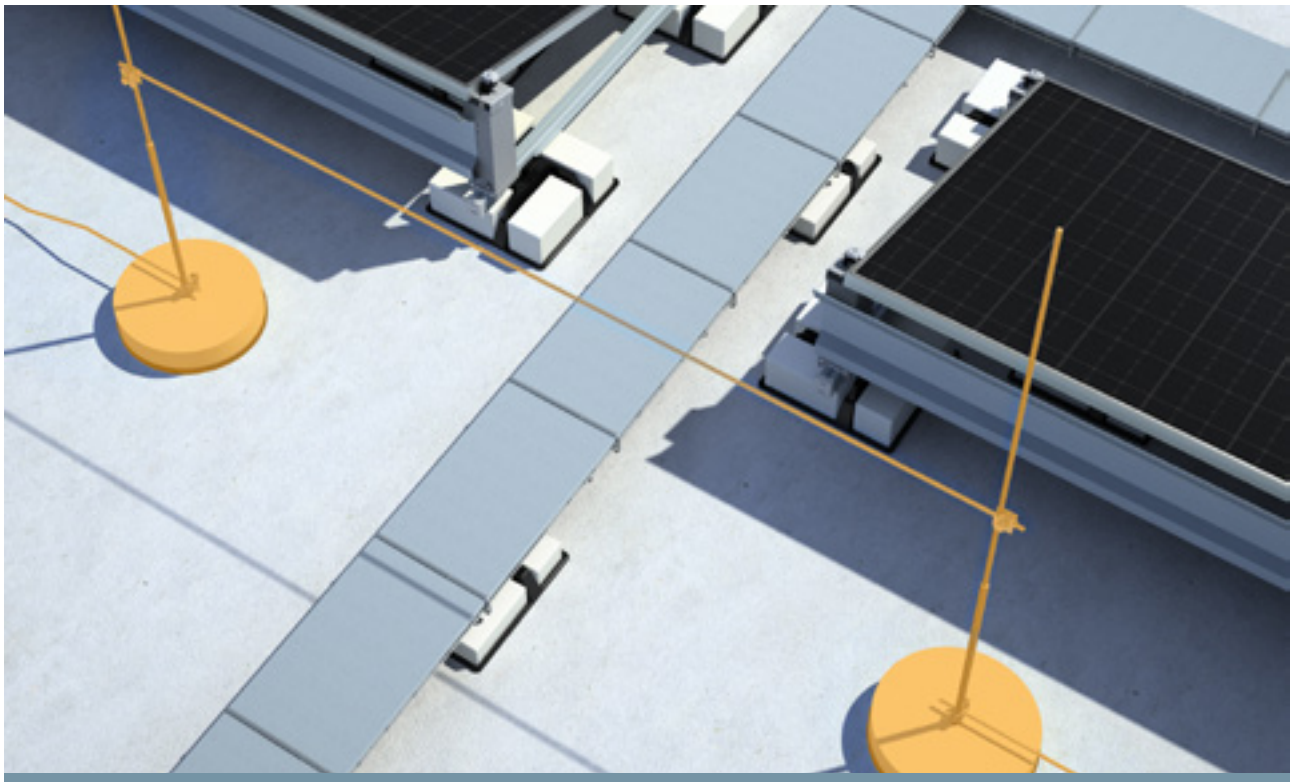
Data cable protection device Cat6
ND-IP66-RJ-LSA
Item no. 5081808

The whole package

The OBO surge protection portfolio has a modular structure and offers solutions for almost all applications:

- Lightning current arrester type 1 and type 1+2 photovoltaic DC side
- Surge protection type 2 photovoltaic DC side
- Lightning current arrester type 1+2 AC side 230/400 V
- Surge protection type 2 AC side 230/400 V
- Surge protection for information and data technology

The pre-assembled photovoltaic system solutions for the most common requirements are particularly practical – they require only minimal installation effort. Do you need special solutions, e.g. with isolator switch or fuses? Please get in touch with us.



If the separation distance cannot be maintained for structural reasons, OBO offers suitable solutions for integrating the PV system into the lightning protection system with lightning current carrying capacity.

T1+2 arrester if the separation distance cannot be maintained

If the separation distance in accordance with IEC/ EN 62305-3 cannot be maintained for structural reasons, the PV system must be integrated into the lightning protection system via tested components with a lightning current carrying capacity of 16 mm² Cu or 50 mm² Al (RD8).

Lightning protection components for the connection must be tested to IEC/ EN 62561-1.

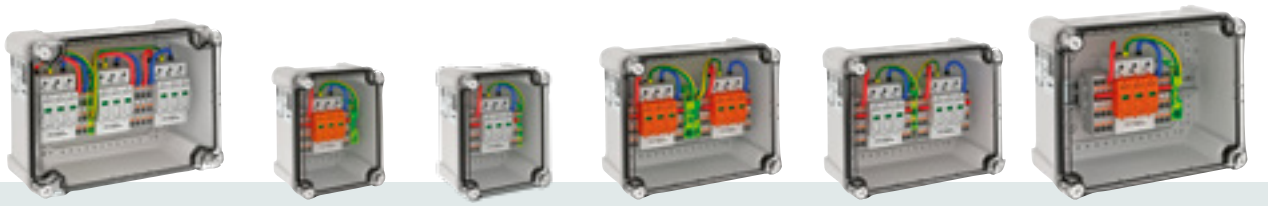
The necessary lightning protection equipotential bonding achieved in this way connects all metallic and electrically conductive components of the system, including the earthing system, to the standardised lightning protection system. **According to IEC/ EN 62305-3, -4, surge protective devices (SPDs) type 1+2 (class I+II) must be used for the cables leading into the building. This applies both at the roof and the ground level, for the AC as well as the DC side of the PV power supply system.** VDE 0100-443 and VDE 0100-712 are decisive in terms of the necessity of surge protection measures.

V25 combination arrester, type 1+2 for PV systems

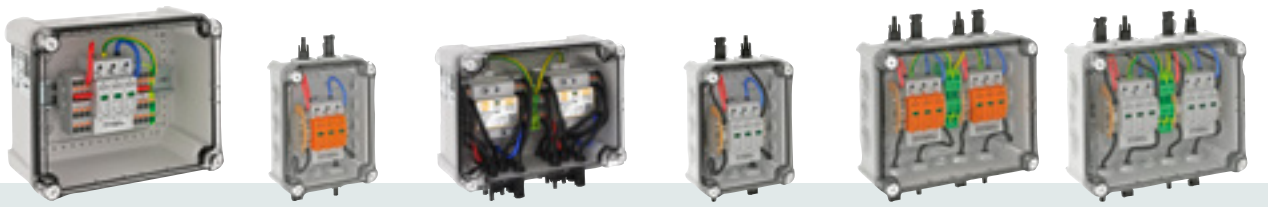
Protecting PV systems effectively against surges

OBO has revised its portfolio of generator connection boxes for the DC protection of PV systems. The boxes are pre-terminated with lightning and surge protection and now secure the DC-side entry of the PV inverter even more effectively and reliably.

5088400 5088405 5088410 5088415 5088420 5088460



5088425 5088430 5088435 5088440 5088445 5088450



5088455 5088564 5088562 5088554 5088565 5088556

5088635 5088640 5088651 5088654 5088660

5093596 5095383 5081807 5081808 6570105

Item no.	Type	Applica-tion	Umax	Arrester class (type)	Number of MPP trackers	Max. number of strings per MPP entry ▸ exit
5088400	PVG-BC 900K 100	DC	900 V	T1+2	1	1 ▸ 1
5088405	PVG- C1000K 100	DC	1,000 V	T2	1	1 ▸ 1
5088410	PVG-BC 900K 110	DC	900 V	T1+2	2	1 ▸ 1
5088415	PVG-C1000K 110	DC	1,000 V	T2	2	1 ▸ 1
5088420	PVG-BC 900K 111	DC	900 V	T1+2	3	1 ▸ 1
5088460	PVG-BC 900K 222	DC	900 V	T1+2	3	2 ▸ 1
5088425	PVG- C1000K 111	DC	1,000 V	T2	3	1 ▸ 1
5088430	PVG-BC 900K 200	DC	900 V	T1+2	1	3 ▸ 2
5088435	PVG- C1000K 200	DC	1,000 V	T2	1	3 ▸ 2
5088440	PVG-BC 900K 220	DC	900 V	T1+2	2	3 ▸ 2
5088445	PVG-C1000K 220	DC	1,000 V	T2	2	3 ▸ 2
5088450	PVG-BC 900K 400	DC	900 V	T1+2	1	4 ▸ 4 or 5 ▸ 3
5088455	PVG- C1000K 400	DC	1,000 V	T2	1	4 ▸ 4 or 5 ▸ 3
5088554	PVG-C1000S100	DC	1,000 V	T2	1	MC4: 1 ▸ 1
5088565	VG-BC900S11	DC	900 V	T1+2	2	MC4: 1 ▸ 1
5088556	PVG-C1000S110	DC	1,000 V	T2	2	MC4: 1 ▸ 1
5088564	VG-BC900S1	DC	900 V	T1+2	1	MC4: 1 ▸ 1
5088462	PVG-BC 1500M 110	DC	1,500 V	T1+2	2	MC4: 3 ▸ 1
5088635	VG-BC DC TS900	DC	900 V	T1+2	1	1 ▸ 1
5088640	VG-BC PV900KS4	DC	900 V	T1+2	1	4 ▸ 1
5088651	VG-C DCPH1000-4S	DC	1,000 V	T2	1	4 ▸ 1
5088654	VG-C PV1000KS4	DC	1,000 V	T2	1	4 ▸ 1
5088660	VG-C DC-TS1000	DC	1,000 V	T2	1	1 ▸ 1
5093596	VG-V50-3+NPE-280	AC	230/400 V AC	T1+2	TN-C, TN-S, TT	1 ▸ 1
5095383	VG-V20-3+NPE-280	AC	230/400 V AC	T2	TN-C, TN-S, TT	1 ▸ 1
5081807	ND-IP66-RJ-RJ	Data	48 V	D1+C1+2	Cat 6A	RJ45 ▸ RJ45
5081808	ND-IP66-RJ-LSA	Data	48 V	D1+C1+2	Cat 6A	RJ45 ▸ LSA+
6570105	WB WPR	Heat and weather protection cover, stainless steel, black powder-coated				

Generator connection boxes

Surge protection for photovoltaic systems – the new generation of OBO generator connection boxes

Product advantages

- Quick and secure connection of cables via terminals with push-in technology
- High degree of protection: IP66, IK07, UV-resistant
- The generator connection boxes are stackable, which not only saves on fastening materials but also on space and time
- Delivery comes complete with cable glands, membrane pressure balance plug and outer fastening
- Safe: very good protection level through Y-circuit
- Tested surge protection with a 5-year warranty
- Mounting instructions and technical data can be accessed easily via QR code
- Also available as a variant with original STÄUBLI MC4 plug/socket angle: IP66, IK07, UV-resistant

Powerful protection against surges

With various arrester series types, the OBO portfolio always offers the right surge protection for every PV system.

Product features

V20 series

- Complete unit consisting of plug-in varistor arrester with thermo-dynamic disconnection device and visual function indicator
- Fault-resistant Y-circuit in accordance with EN 50539-12
- The FS variant has a potential-free changeover contact for remote signalling
- Discharge capacity up to 40 kA (8/20) per pole
- Low protection level

V25/V50 series

- Complete unit consisting of plug-in varistor arrester with thermo-dynamic disconnection device and visual function indicator
- Fault-resistant Y-circuit in accordance with EN 50539-12
- The FS variant has a potential-free changeover contact for remote signalling
- Discharge capacity up to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low protection level

V-PV series

- Error-resistant Y-circuit with status display
- The FS variant has a potential-free changeover contact for remote signalling
- As T1 or T1+2 variant
- Application range up to 1,500 V DC
- Discharge capacity up to 12.5 kA (10/350) and 40 kA (8/20)
- Low protection level

Surge protection devices for the safe discharge of partial lightning currents

Due to their exposed location on roofs or in open fields, photovoltaic systems are particularly at risk from lightning strikes and surges. Comprehensive lightning and surge protection is therefore essential, to ensure the continuous availability of the system. OBO offers a whole range of surge protective devices that reliably discharge partial lightning currents and thus ensure a protected PV system.

For DC applications


5094605


5094576


5094608


5094574


5094210


5094212


5093623


5093625


5097447


5097448


5094230


5094232

For AC applications


5094242


5094240


5095253


5095333


5093526

Data technology


5093533


5096987


5081800

Item No.	Type	Applica-tion	Arrester class (type)	Umax	Protection level	Number of MPP trackers/strings	Discharge capacity
5094605	V20-C 3PH-600	DC	T2	600 V	< 2.6	1	40 kA (08/20)
5094576	V20-C 3PHFS-600	DC	T2	600 V	< 2.6	1	40 kA (8/20)
5094608	V20-C 3-pH-1000	DC	T2	1,000 V	< 4.0	1	40 kA (8/20)
5094574	V20-C 3PHFS-1000	DC	T2	1,000 V	< 4.0	1	40 kA (8/20)
5094210	V-PV-T2-1500	DC	T2	1,500 V	< 4.5	1	40 kA (8/20)
5094212	V-PV-T2-1500FS	DC	T2	1,500 V	< 4.5	1	40 kA (8/20)
5093623	V50-B+C 3PH600	DC	T1+2	600 V	< 2.6	1	12.5 kA (10/350)
5093625	V50-B+C 3PHFS600	DC	T1+2	600 V	< 2.6	1	12.5 kA (10/350)
5097447	V25-B+C 3PH900	DC	T1+2	900 V	< 3.0	1	12.5 kA (10/350)
5097448	V25-B+C 3PHFS900	DC	T1+2	900 V	< 3.0	1	7 kA (10/350)
5094230	V-PV-T1+2-1000	DC	T1+2	1,000 V	< 3.3	1	12.5 kA (10/350)
5094232	V-PV-T1+2-1000FS	DC	T1+2	1,000 V	< 3.3	1	12.5 kA (10/350)
5094242	V-PV-T1+2-1500FS	DC	T1+2	1,500 V	< 4.5	1	12.5 kA (10/350)
5094240	V-PV-T1+2-1500	DC	T1+2	1,500 V	< 4.5	1	12.5 kA (10/350)
5095253	V20-3+NPE-280	AC	T2	280 V	< 1.3	TNC, TN-S, TT	60 kA (8/20)
5095333	V20-3+NPE+FS-280	AC	T2	280 V	< 1.3	TNC, TN-S, TT	60 kA (8/20)
5093526	V50-3+NPE-280	AC	T1+2	280 V	< 1.5	TNC, TN-S, TT	50 kA (10/350)
5093533	V50-3+NPE+FS-280	AC	T1+2	280 V	< 1.5	TNC, TN-S, TT	50 kA (10/350)
5096987	MCF100-3+NPE+FS	AC	T1+2	255 V	< 1.5	TNC, TN-S, TT	100 kA (10/350)
5081800	ND-CAT6A/EA	Data	C1+2	58 V	< 0.7	Cat 6A	7 kA (8/20)

OBO Bettermann Holding GmbH & Co. KG
P.O. Box 1120
58694 Menden
GERMANY

Customer Service
Tel.: +49 (0)2373 89-1700
export@obo.de

www.obo-bettermann.com

Building Connections