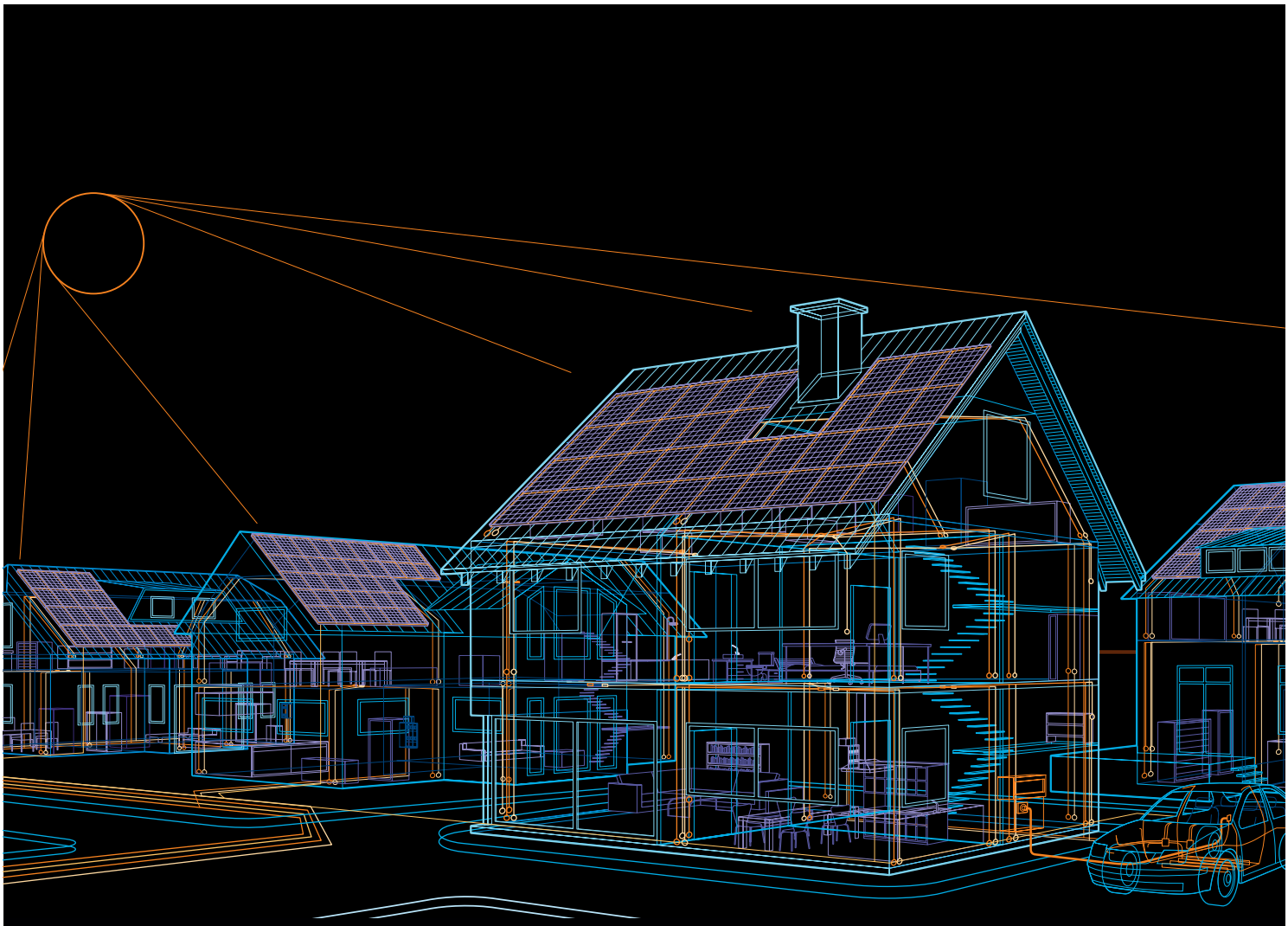


Brochure

Solar energy
Lightning and surge protective devices

Power and productivity
for a better world™

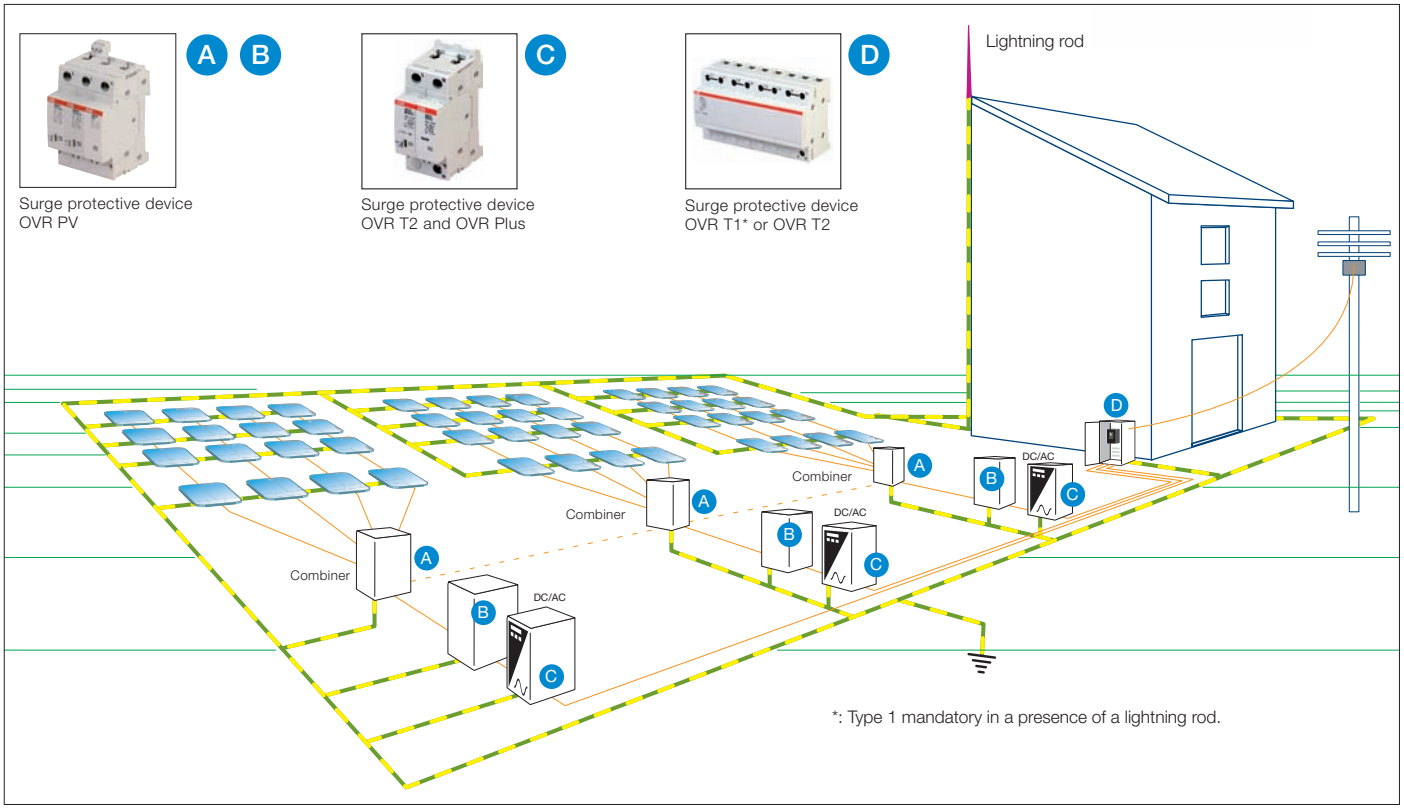
Surge protective devices

ABB surge protection solution for solar energy

ABB has always been very active in creating products and solutions with low environmental impact and searching and developing new technologies, anticipating customer needs.

Today, renewable energies play a fundamental role in future energy policy along with a more friendly impact on our environment. Solar energy, is with no doubt an energy source of huge potential, one that can be exploited without harming the environment.

With its will to always offer the more efficient solution along with a safe and reliable protection to equipment, ABB and its long experience in creating surge protective devices (SPDs), has developed specific SPDs, the OVR PV range. Thus with the OVR T1, the OVR T2 and the OVR TC range, the OVR PV ensure the safety of your solar equipment.



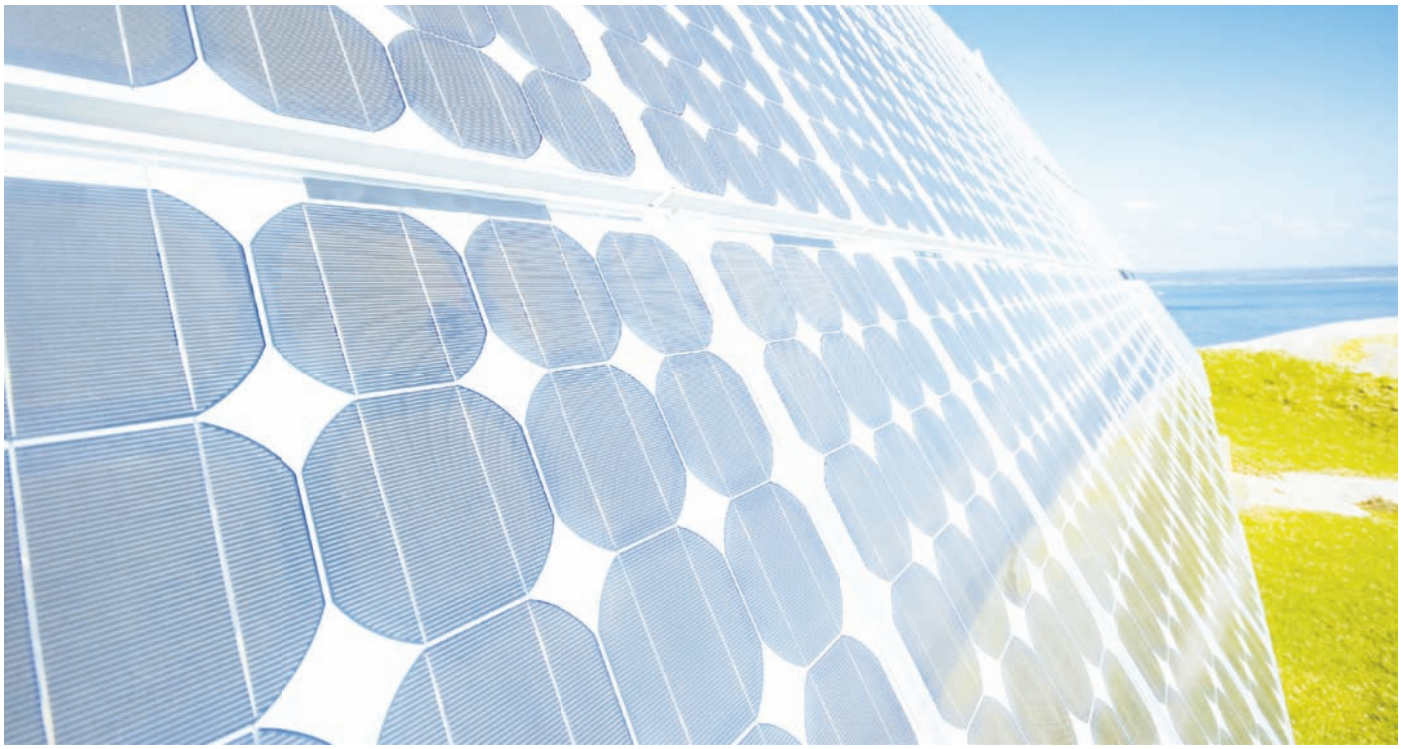


ABB specific OVR PV

MOVs (Metal Oxyde Varistors) are mainly used in SPDs Type 2, some Type 3 and in SPDs designed for solar applications.

Their quick response time gives a good protection to the equipment. However, they have a shorter life time than other technologies (like spark gap or gas tube used for the Type 1) and when they aging, they finish their life (EoL) in short circuit.

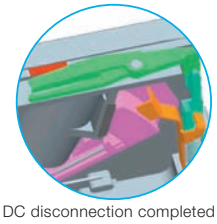
When this occurs, it is very important to be able to disconnect the SPD. Thus, every SPD using MOVs must have an internal thermal disconnection.

A specific back-up protection (fuses or MCBs) is also generally recommended. However, on PV-DC networks due to low current and high DC voltages, it is much more difficult to disconnect the MOV of the SPD in case of end of life in short circuit.

Thanks to the specific DC disconnection of the OVR PV, with very quick response time and the isolation of the disconnection device from the MOV, OVR PV offer a very safe and reliable protection.

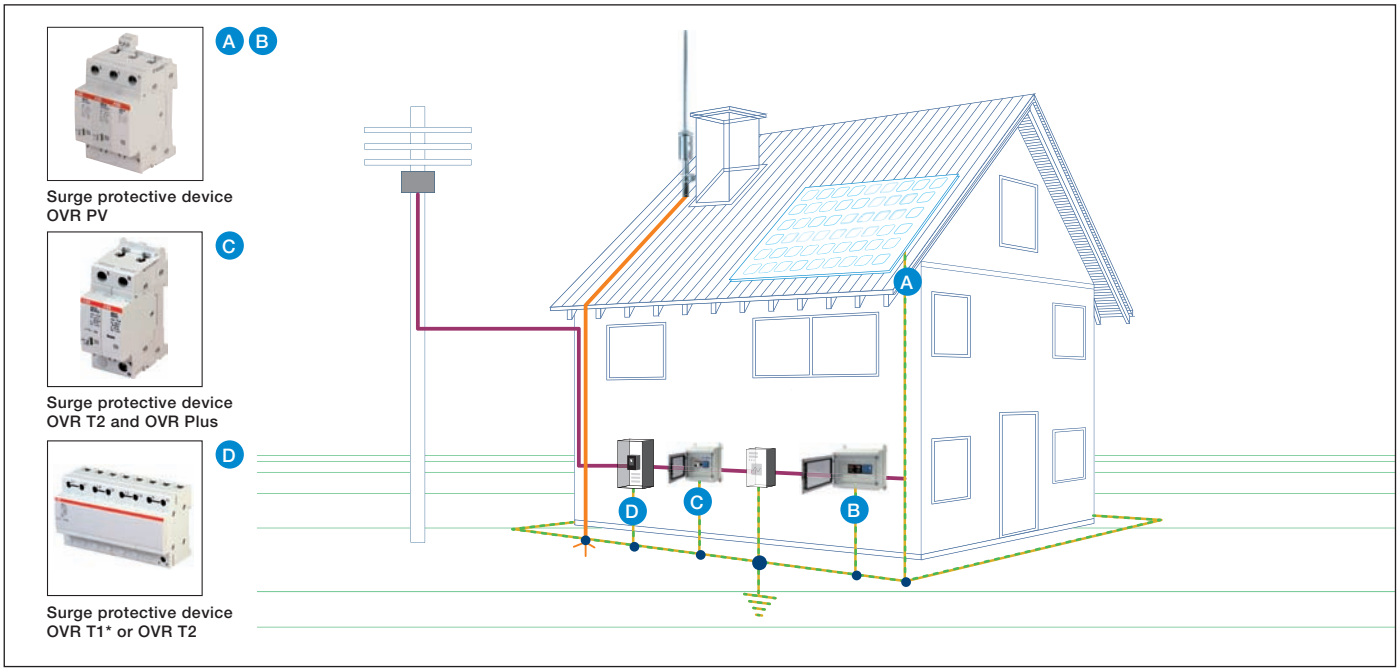
DC SPD disconnection in normal condition

Fast DC disconnection in progress

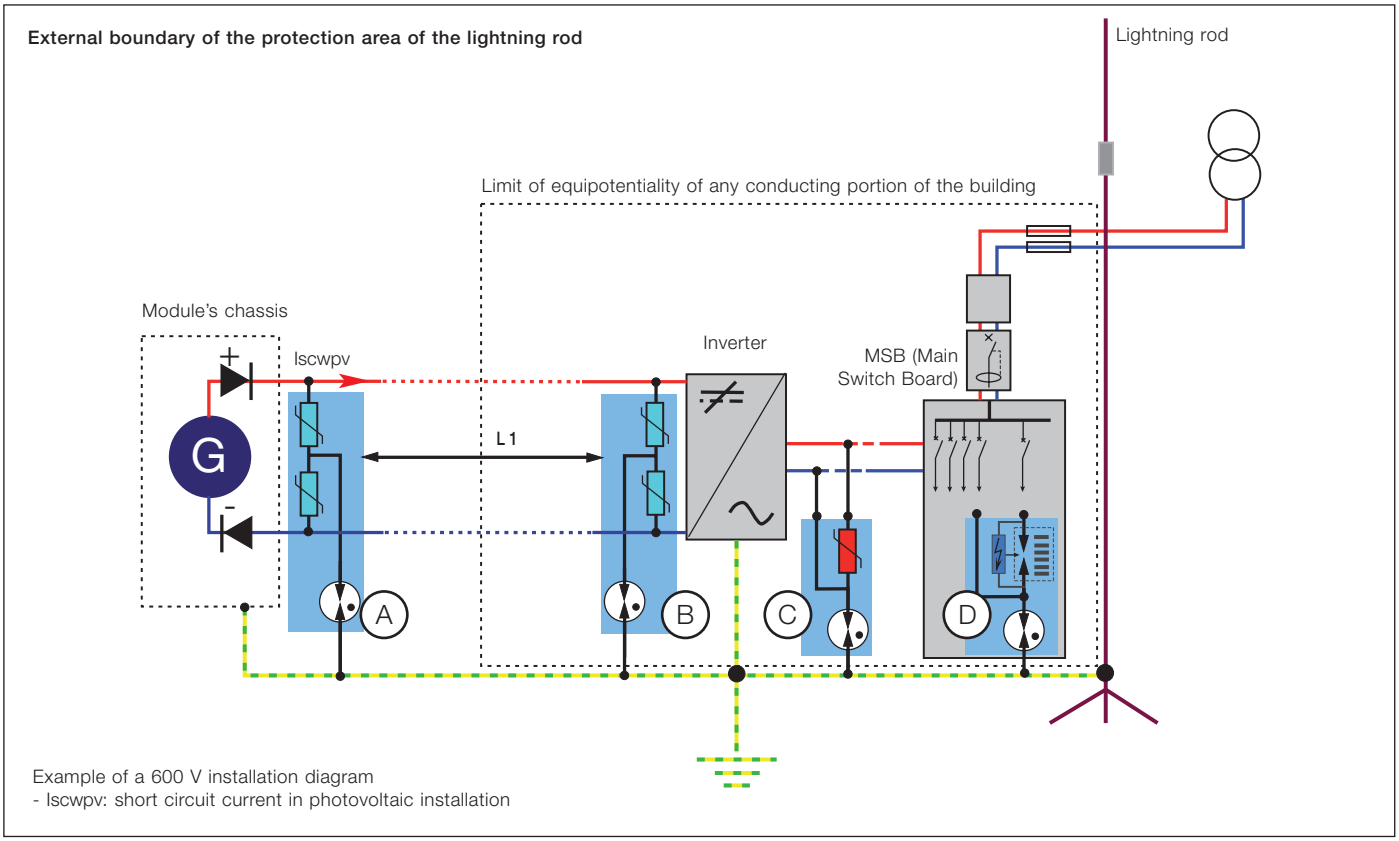


DC disconnection completed and isolation from the MOV in end of life

Protection of connected systems
Residential application



*: OVR T1 mandatory in a presence of a lightning rod.



Example of a 600 V installation diagram
- Iscwpv: short circuit current in photovoltaic installation

For more detail on our complete range of OVR surge protective devices, please consult us.

Protection of connected systems
Residential application

Configuration of the surge protective devices of the whole installation for residential application

SPDs location	Role	Options	Comments
A	Protection of cells	If the distance L1 < 10 m, only OVR PV in A or B is recommended.	Connection to the chassis should be as short and rectilinear as possible. The surge protective device depending on the environment should be installed in a leak-proof casing.
B	Protection of the inverter input on the DC side	If the distance L1 < 10 m, only OVR PV in A or B is recommended.	Connection to the earthing bar and to the ground of the inverter on the DC side should be as short and rectilinear as possible.
C	Protection of the inverter output on the AC side	Routine installation	Connection to the earthing bar and to the ground of the inverter on the AC side should be as short and rectilinear as possible.
D	AC head protection at the entrance of the building	Routine installation	Connection to the earthing bar should be as short and rectilinear as possible.

Selection of surge protective devices, DC portion

SPDs locations	Ucpv	Imax	Up	Iscwpv	Order code	Type
A B	670 V	40 kA	1.4 kV	100 A	**2CTB 803 953 R5300**	OVR PV 40-600 P
A B	670 V	40 kA	1.4 kV	100 A	**2CTB 803 953 R5400**	OVR PV 40-600 P TS*
A B	1000 V	40 kA	3.8 kV	100 A	**2CTB 803 953 R6400**	OVR PV 40-1000 P
A B	1000 V	40 kA	3.8 kV	100 A	**2CTB 803 953 R6500**	OVR PV 40-1000 P TS*

TS*: auxiliary contact

Selection of surge protective devices, AC portion (TN/TT earthing system, Ph+N. Other surge protective devices see OVR catalog)

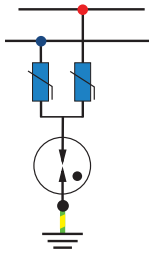
SPDs location	Lightning rod presence	Order code	Type
D	Yes	**2CTB 815 201 R0800**	OVR HL 15 440 s P TS
C	Yes	**2CTB 803 952 R1100** or **2CTB 803 701 R0100**	OVR T2 1N 40 275 P or OVR PLUS N1 40
D	No	**2CTB 803 952 R1100** or **2CTB 803 701 R0100**	OVR T2 1N 40 275 P or OVR PLUS N1 40
C	No	**2CTB 803 952 R1100** or **2CTB 803 701 R0100**	OVR T2 1N 40 275 P or OVR PLUS N1 40

OVR PV surge protective devices

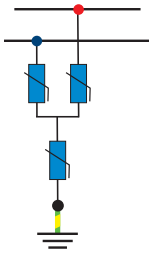
OVR PV surge protective devices for protecting photovoltaic systems are particularly suitable:

- Modular systems with pluggable cartridges for easy maintenance (without breaking the circuit),
- Fitted with remote auxiliary contacts for monitoring the operating status (TS),
- No follow current,
- No risk of + and - inversion.

OVR PV
surge protective
device (A or B)



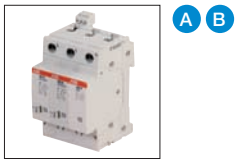
600 V OVR PV
SPDs diagram
(A or B)



1000 V OVR PV
SPDs diagram
(A or B)

Dimensions	
L 42.5 mm X A 85 mm X P 63 mm	
Cartridges for maintenance in 600 V	
2CTB 803 950 R0000	OVR PV 40-600 C
Cartridges for maintenance in 600 V: neutral	
2CTB 803 950 R0300	OVR PV MC
Cartridges for maintenance in 1000 V	
2CTB 803 950 R0100	OVR PV 40-1000 C

Protection of connected systems for power plant



A B

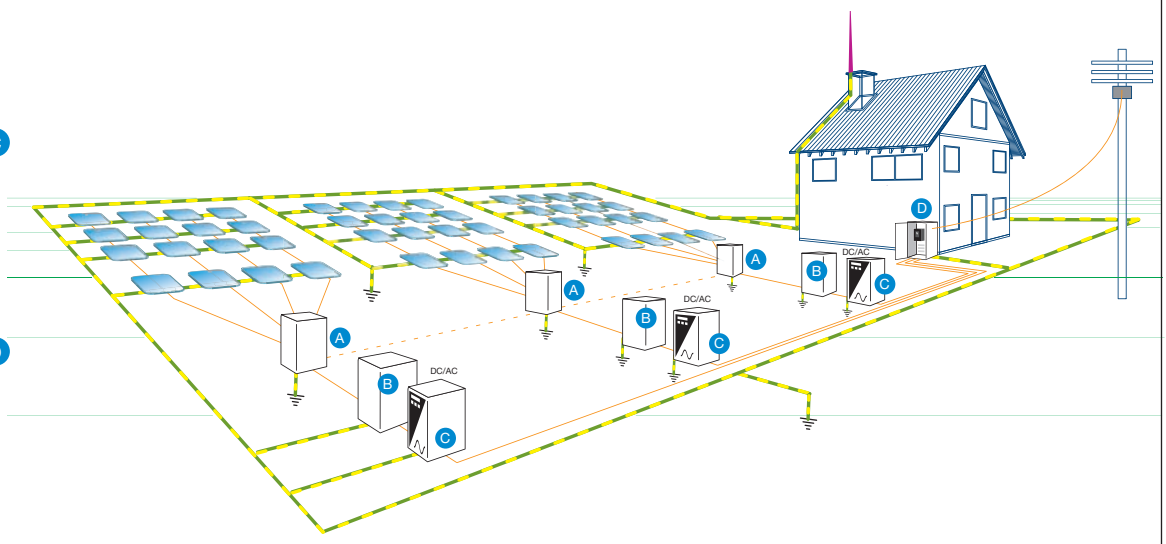
Surge protective device
OVR PV

C

Surge protective device
OVR T2 and OVR Plus

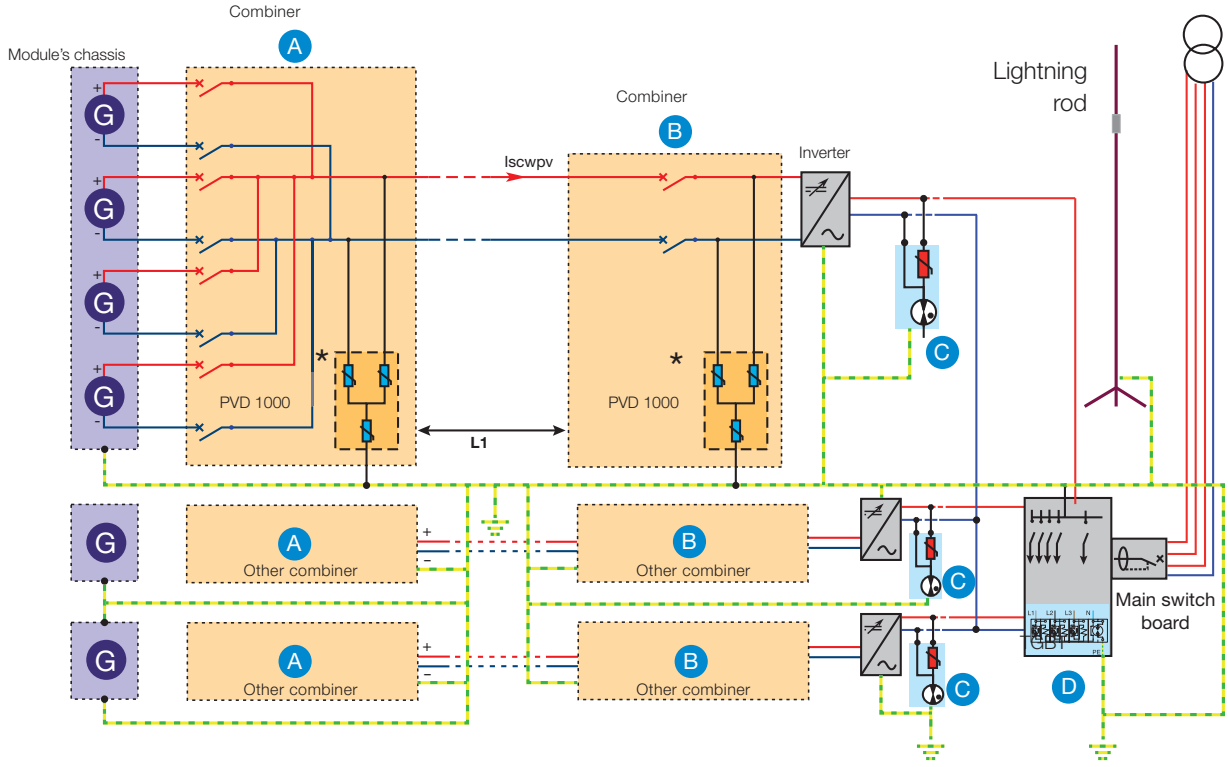
D

Surge protective device
OVR T1* or OVR T2



Example of typical installation

*: OVR T1 mandatory in a presence of a lightning rod.



* If Iscwpv > 100 A DC, consult us.

For more detail on our complete range of OVR surge protective devices, please consult us.

Protection of connected systems for power plant

Configuration of the surge protective devices of the whole installation for power plant

SPDs location	Role	Options	Comments
A	Protection of cells	If the distance L1 < 10 m, only OVR PV in A or B is recommended.	Connection to the chassis should be as short and rectilinear as possible. The surge protective device depending on the environment should be installed in a leak-proof casing.
B	Protection of the inverter input on the DC side	If the distance L1 < 10 m, only OVR PV in A or B is recommended.	Connection to the earthing bar and to the ground of the inverter on the DC side should be as short and rectilinear as possible.
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Selection of surge protective devices, DC portion

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A B	1000 V	40 kA	3.8 kV	100 A	**2CTB 803 953 R6500**	OVR PV 40-1000 P TS*

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Selection of surge protective devices, AC portion (TN/TT earthing system, Ph+N. Other surge protective devices see OVR catalog)

SPDs location	Lightning rod presence	Order code	Type
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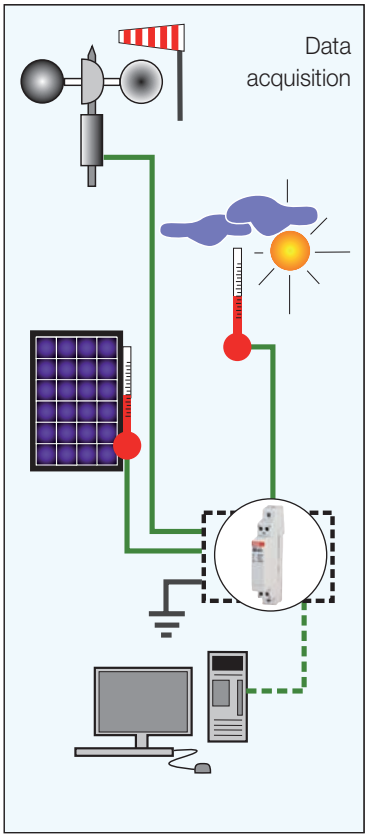
C	Yes	**2CTB 803 952 R1100** or **2CTB 803 701 R0100**	OVR T2 1N 40 275 P or OVR PLUS N1 40
D	No	**2CTB 803 952 R1100** or **2CTB 803 701 R0100**	OVR T2 1N 40 275 P or OVR PLUS N1 40
C	No	**2CTB 803 952 R1200**	OVR T2 1N 15 275 P

Protection of data lines

Selection guide according to use



SPDs order code	SPDs type	Signal voltage
2CTB 804 820 R0000	OVR TC 06V P	6 V
2CTB 804 820 R0100	OVR TC 12V P	12 V
2CTB 804 820 R0200	OVR TC 24V P	24 V
2CTB 804 820 R0300	OVR TC 48V P	48 V
2CTB 804 820 R0500	OVR TC 200FR P	220 V
2CTB 804 820 R0400	OVR TC 200V P	220 V

Contact us

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