



# Surge Protection Devices OVR Range, System pro *M* compact®

OVR PLUS N1 40  
No upstream MCB or fuse required





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Causes of transient overvoltages

Overvoltages due to direct lightning strikes

These can take two forms:

- When lightning **strikes a lightning conductor or the roof of a building** which is earthed, the lightning current is dissipated into the ground. The impedance of the ground and the current flowing through it create large difference of potential: this is the overvoltage. This overvoltage then propagates throughout the building via the cables, damaging equipment along the way.
- When lightning **strikes an overhead low voltage line**, the latter conducts high currents which penetrate into the building creating large overvoltages. The damage caused by this type of overvoltage is usually spectacular (e.g. fire in the electrical switchboard causing the destruction of buildings and industrial equipment) and results in explosions.



Direct lightning strike on a lightning conductor or the roof of a building



Direct lightning strike on an overhead line

Overvoltages due to the indirect effects of lightning strikes

The overvoltages previously mentioned are also found when lightning strikes in the vicinity of a building, due to the increase in potential of the ground at the point of impact. The electromagnetic fields created by the lightning current generate inductive and capacitive coupling, leading to other overvoltages.

Within a radius up to several kilometres, the electromagnetic field caused by lightning in clouds can also create sudden increases in voltage. Although less spectacular than in the previous case, irreparable damage is also caused to so called sensitive equipment such as fax machines, computer power supplies and safety and communication systems.



Increase in ground potential



Magnetic field



Electrostatic field

**Surge arrester:**

Device designed to limit transient overvoltages and run-off lightning currents. It consists of at least one non-linear component. It must comply with European standard EN 61643-11.

**1.2/50 wave:**

Standardized overvoltage waveform created on networks and which adds to the network's voltage.

**8/20 wave:**

Current waveform which passes through equipment when subjected to an overvoltage (low energy).

**10/350 wave:**

Current waveform which passes through equipment when subjected to an overvoltage due to a direct lightning strike.

**Type 1 surge arrester:**

Surge arrester designed to run-off energy caused by an overvoltage comparable to that of a direct lightning strike. It has successfully passed testing to the standard with the 10/350 wave (class I test).

**Type 2 surge arrester:**

Surge arrester designed to run-off energy caused by an overvoltage comparable to that of an indirect lightning strike or an operating overvoltage. It has successfully passed testing to the standard with the 8/20 wave (class II test).

**$U_p$ :**

Voltage protection level.

Parameter characterising surge arrester operation by the level of voltage limitation between its terminals and which is selected from the list of preferred values in the standard. This value is greater than the highest value obtained during voltage limitation measurements (at  $I_n$  for class I and II tests).

**$I_n$ :**

Nominal discharge current.

Peak current value of an 8/20 waveform (15 times) flowing in the surge arrester. It is used to determine the  $U_p$  value of the surge arrester.

**$I_{max}$ :**

Maximum discharge current for class II testing.

Peak current value of an 8/20 waveform flowing in the surge arrester with an amplitude complying with the class II operating test sequence.

$I_{max}$  is greater than  $I_n$ .

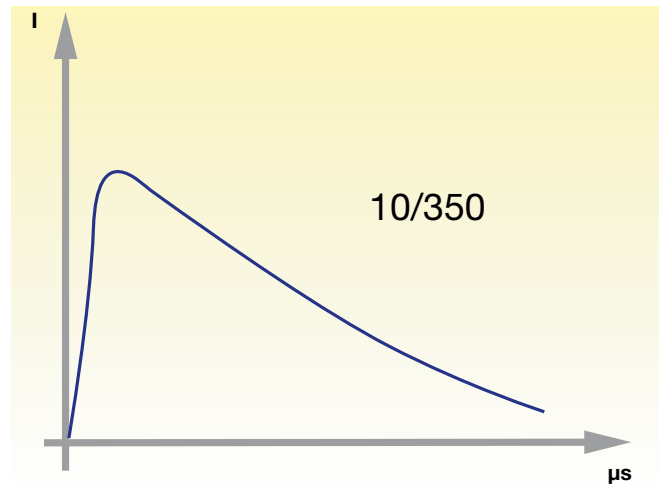
**$I_{imp}$ :**

Impulse current for class I testing.

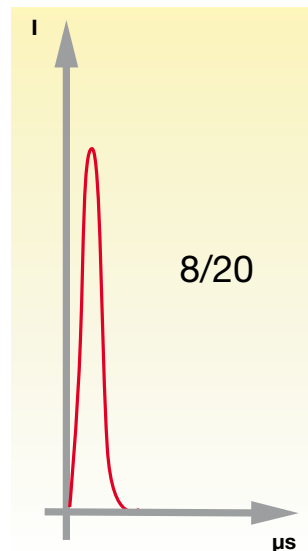
The impulse current  $I_{imp}$  is defined by a peak current  $I_{peak}$  and a charge Q, and tested in compliance with the operating test sequence. It is used to classify surge arresters for class I testing (the 10/350 wave corresponds to this definition).

**$U_n$ :**

Nominal AC voltage of the network : nominal voltage between phase and neutral (AC rms value).



Type 1 Surge Arresters  
 $I_{imp}$ : current wave



Type 2 Surge Arresters  
 $I_{max}$ : current wave

Terminology of SPD electrical characteristics

**U<sub>c</sub>:**  
Maximum continuous operating voltage (IEC 61643-1).  
Maximum rms or dc voltage which can be continuously applied in surge arrester protection mode. It is equal to the rated voltage.

**N<sub>g</sub>:**  
Lightning strike density expressed as the number of ground lightning strikes per km<sup>2</sup> and per year.

**U<sub>t</sub>:**  
Temporary overvoltage withstand.  
Maximum rms or dc overvoltage that the surge arrester can be subjected to and which exceeds the maximum voltage for continuous operation U<sub>c</sub> for a specified time.

**I<sub>fi</sub>:**  
Follow current interrupting rating I<sub>fi</sub> (kArms).  
It is a parameter for spark-gaps and gas discharge tubes (Type 1 SPDs) and does not concern varistors. I<sub>fi</sub> is the rms-value of the follow current, which can be interrupted by the SPD under U<sub>c</sub>. It is the prospective short-circuit current that a SPD is able to interrupt by itself. I<sub>fi</sub> of the SPD should be equal to or higher than the prospective short-circuit current at the point of installation (I<sub>p</sub>). If not, the upstream fuse will melt each time the spark-gap ignites.

**I<sub>p</sub>:**  
Prospective short-circuit current of a power supply (I<sub>p</sub>) (kArms).  
I<sub>p</sub> is the current which would flow at a given location in case of short-circuit at this location.

Common mode and / or differential mode protection

**Common mode**

Common mode overvoltages appear between the live conductors and earth, e.g. phase/earth or neutral/earth.

A live conductor not only refers to the phase conductors but also to the neutral conductor.

This overvoltage mode destroys equipment connected to earth (class I equipment) and also equipment not connected to earth (class II equipment) which is located near an earthed mass and which does not have sufficient electrical isolation (a few kilovolts).

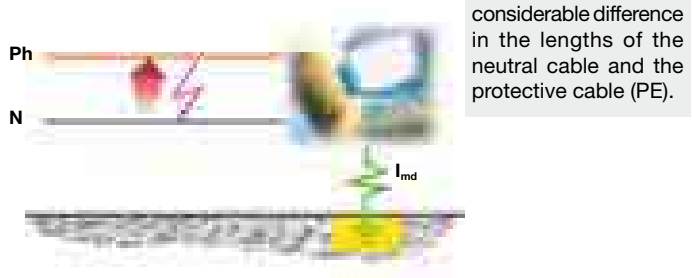
Class II equipment not located near an earthed mass is theoretically protected from this type of attack.

**Differential mode**

Differential mode overvoltages circulate between live conductors: phase/phase or phase/neutral.

These overvoltages have a potentially high damaging effect for all equipment connected to the electrical network, especially 'sensitive' equipment.

**Note:**  
Differential mode overvoltages affect the TT earthing system.  
These overvoltages also affect the TN-S earthing system if there is a



Keraunic world map



Protection mode

**Common mode (MC):** protection between live conductors and earth.

**Differential mode (MD):** protection between phase and neutral conductors.

2 < Ng ≤ 8

8 < Ng < 18

### Impulse withstand voltage of equipment

Equipment tolerance levels are classified according to 4 categories (as indicated in the following table) according to IEC 60364-4-44, IEC 60664-1 and IEC 60730-1.

Categories	$U_n$		Examples
	230 / 400 V	400 / 690 V	
I	1500 V	2500 V	Equipment containing particularly sensitive electronic circuits : – computer workstations, computers, TV, HiFi, Video, Alarms, etc; – household appliances with electronic programmers, etc.
II	2500 V	4000 V	Domestic electrical equipment with mechanical programmers, portable tools, etc.
III	4000 V	6000 V	Distribution panels, switchgear (circuit-breakers, isolators, power socket bases, etc.), ducting and its accessories (cables, busbars, junction boxes, etc.).
IV	6000 V	8000 V	Equipment for industrial use and equipment such as fixed motors permanently connected to the fixed installation, Electrical meters, principle overcurrent protection equipment, remote measurement devices, etc.

Whatever the type of overvoltage protection used, the maximum voltage corresponds to category II.

$U_p$  max = 2500 V if  $U_n$  = 230 V.

However, it should be noted that some equipment requires a particularly low protection level.

E.g. medical equipment, UPSs (with very sensitive electronics)  $U_n$  < 0.5 kV.

The protection level  $U_p$  is chosen according to the equipment to be protected.

**Note:**

In certain cases, protection components can be integrated into the equipment.

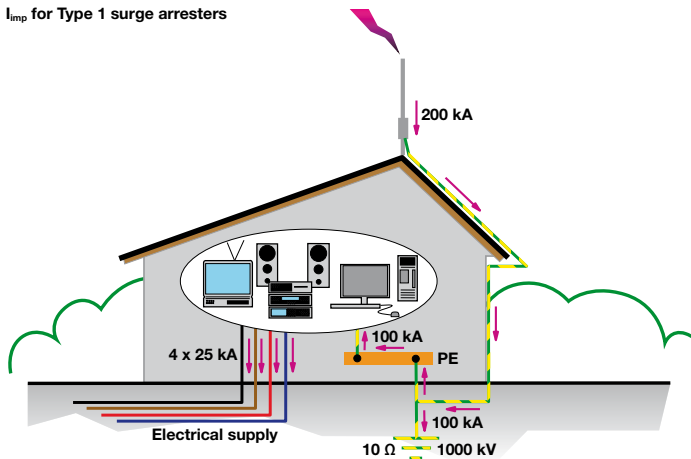
In this case, the manufacturer must communicate the type of protection that has been integrated.

### Selection - Choice of $I_{imp}$ and $I_{max}$ of the lightning current surge arrester

The run-off capacity of a surge arrester is determined by its electrical characteristics, and must be chosen according to the level of risk.

The choice of  $I_{imp}$  for Type 1 surge arrester in case of a 200 kA direct lightning strike (around 95% of strikes are less than 200 kA: IEC 62 305-1, Basic values of lightning current parameters), is 25 kA for each power line.

$I_{imp}$  for Type 1 surge arresters



**ABB recommends a minimum  $I_{imp}$  of 25 kA for Type 1 surge arresters based on the following calculation :**

- Prospective direct lightning strike current I: 200 kA (only 1% of discharges > 200 kA).
- Distribution of current within the building: 50 % to ground and 50 % to the electrical network (according to international standards IEC 61 643-12 Annex I-1-2).
- Equal distribution of the current in each of the conductors (3 L + N):

$$I_{imp} = \frac{100 \text{ kA}}{4} = 25 \text{ kA.}$$

**$I_{max}$  for Type 2 surge arresters**

Optimization of $I_{max}$ for Type 2 surge arresters				
$N_g$	< 2	$2 \leq N_g < 3$	$3 \leq N_g < 4$	$4 < N_g$
$I_n$ (kA)	5	20	30	60
$I_{max}$ (kA)	15	40	70	120

**Note:**

ABB defines its Type 2 surge arresters according to their maximum current ( $I_{max}$ ).

For a given  $I_{max}$  value, there is a corresponding nominal current value ( $I_n$ ).

**End of life indicator of the surge arrester**

This option enables indication of the surge arrester's state via a mechanical indicator which changes from white to red as the surge arrester comes to end-of-life. When this occurs, the surge arrester must be changed as protection is no longer guaranteed.

**Safety Reserve (s) system**

In case of current surge exceeding the maximum capacity of the device, the surge arrester will switch to the Safety reserve position and the remote indicator (TS) will switch to defect.

Consequently, the user is warned in advance and has more response time to replace the cartridge, because in Safety reserve position the protection is still ensured due to the 2-stage disconnecting system.

**Pluggable**

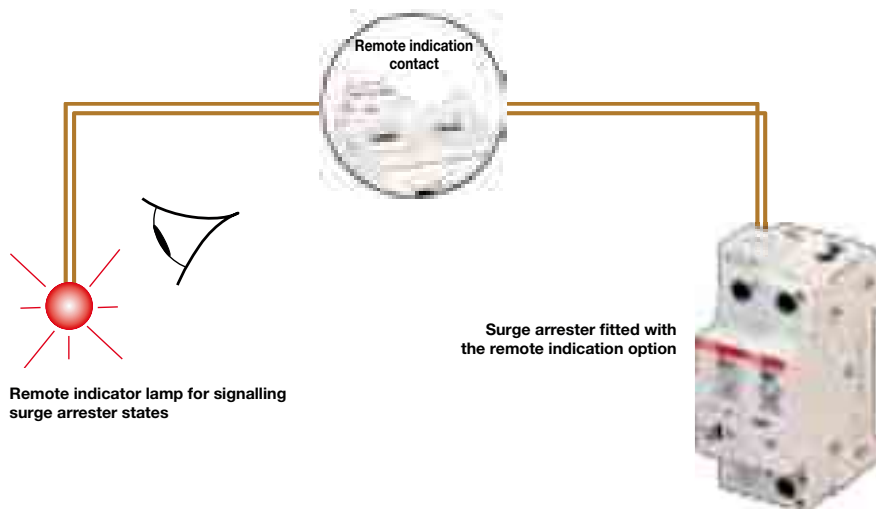
The pluggable feature of ABB surge arresters facilitates maintenance. Should one or more worn cartridges need to be replaced, the electrical circuit does not have to be isolated nor do the wires have to be removed.

**Remote indication (TS)**

This function, achieved by wiring a 3-point 1A volt-free contact, enables the operational state of the surge arrester to be checked remotely (maintenance premises).

**Technical features of the integrated auxiliary contact**

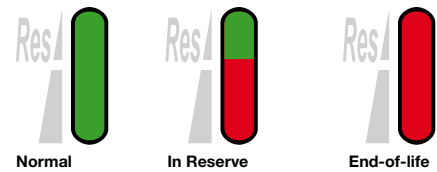
- Contact complement: 1 NO (1 normally open contact), 1 NC (1 normally closed contact).
- Min. load: 12 V D.C. - 10 mA.
- Max. load: 250 V A.C. - 1 A.
- Connection cross-section: 1.5 mm<sup>2</sup>.



**End-of-life indicator**



**Safety Reserve system**



**NOTE:**

A faulty surge arrester does not interrupt continuity of service (if wired such that priority is given to continuity of service), it simply disconnects itself. But, the equipment is no longer protected.



**NOTE:**

Pluggable surge arrester cartridges have a foolproof system (Neutral cartridges different to Phase cartridges) preventing incorrect operations when replacing a cartridge.



Principle of coordination for Surge Protective Devices

After having defined the characteristics of the incoming surge arrester, the protection must be completed with one or more additional surge arresters.

The incoming surge arrester does not provide effective protection for the whole installation by itself. Certain electrical phenomena can double the protection's residual voltage if cable lengths exceed 10m. Surge arresters must be coordinated when they are installed (refer to the tables below).

Coordination required if:

- The incoming surge arrester does not reach the protection voltage ( $U_p$ ) by itself.
- The incoming surge arrester is more than 10m away from the equipment to be protected.

Recommended solution

Use of modular Type 2 surge arresters.

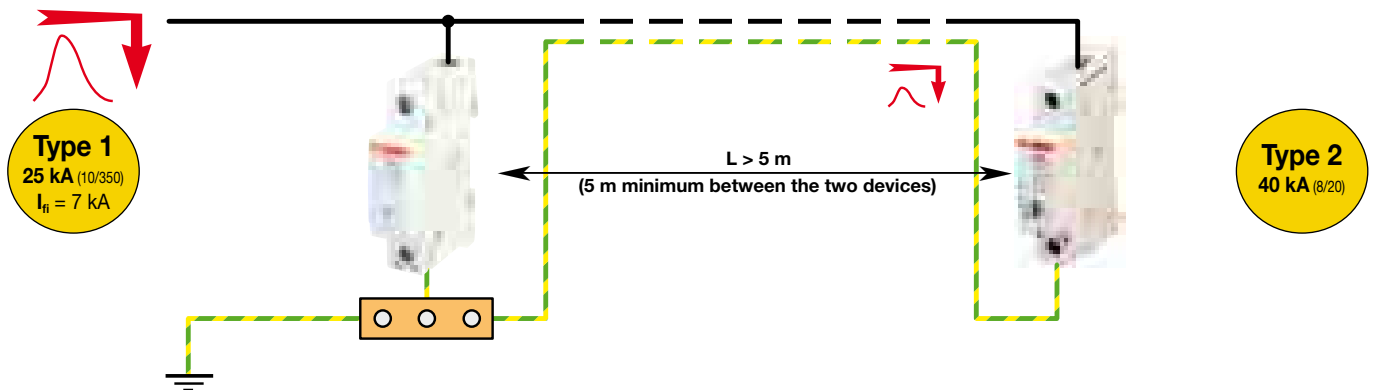
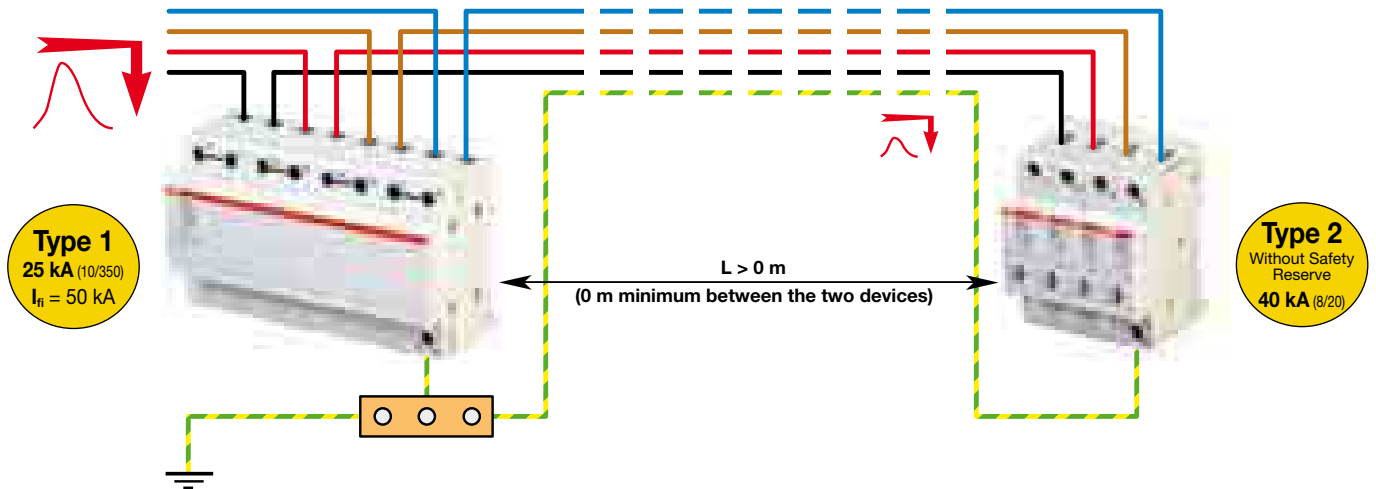
Note:

The coordination of Type 2 surge arresters is analysed using their respective maximum discharge currents  $I_{max}$  (8/20) starting from the installation's incoming switchboard and working towards the equipment which is to be protected, taking into account the progressive reduction in  $I_{max}$ .

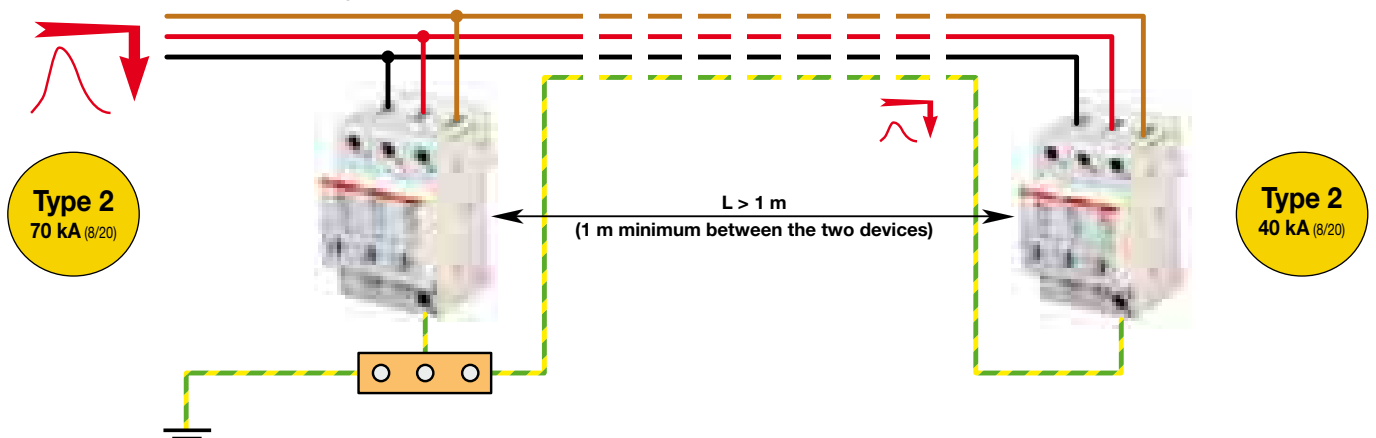
E.g. 70 kA followed by 40 kA.

All ABB Type 2 surge arresters coordinate between each other by respecting a minimum distance of 1m between them.

Coordination between Type 1 and Type 2 surge arrester



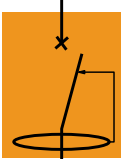
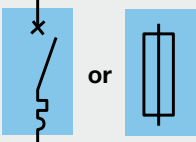

Coordination between Type 2 surge arresters



Installation rules for SPDs: choice of associated  
breaking devices (fuse/circuit breaker)

Choice of disconnecter

Surge arresters must be associated with upstream short-circuit protection and residual current protection against indirect contact (usually already present in the installation).

	Function	Application
	Protection against indirect contact	<ul style="list-style-type: none"> <li>Residual current circuit-breaker compulsory for TT systems</li> <li>Residual current circuit-breaker possible for TN-S, IT and TN-C-S systems</li> <li>Residual current circuit-breaker forbidden for TN-C systems</li> </ul> If a residual current circuit-breaker is used, it is preferable to use a type S.
	Protection against fault currents	The breaking device associated with the surge arrester can be either a circuit breaker or a fuse. Its rating should take into consideration the surge arrester's characteristics and the short-circuit current of the installation.
	Thermal protection	Thermal protection is integrated into the surge arrester.

Maximum circuit breaker or fuse protection rating depending on  $I_{max}$  or  $I_{imp}$  of surge arrester and perspective ( $I_p$ ) short circuit current at SPD location .



Type 1 surge arresters OVR T1 / OVR T1+2	Circuit breaker (Curve C)	Fuse (gG)
<b>limp(10/350): 25 kA</b> • $I_p = 0.3 \text{ kA to } I_{scw}$		$\leq 125 \text{ A}$
<b>Type 1+2 surge arresters OVR T1+2</b>		
<b>limp(10/350): 15 kA</b> • $I_p = 0.3 \text{ kA to } I_{scw}$		$\leq 125 \text{ A}$
<b>limp(10/350): 7 kA</b> • $I_p = 0.3 \text{ kA to } 2 \text{ kA}$	$\leq 25 \text{ A}$	$\leq 16 \text{ A}$
• $I_p = 2 \text{ kA to } 6 \text{ kA}$	$\leq 32 \text{ A}$	$\leq 25 \text{ A}$
• $I_p = 6 \text{ kA to } I_{scw}$	$\leq 50 \text{ A}$	$\leq 50 \text{ A}$
<b>Type 2 surge arresters OVR T2 pluggable or T2 &amp; T3 non pluggable</b>		
<b>Imax(8/20): 10 kA, 15 kA, 40 kA, 70 kA or 120 kA</b> • $I_p = 0.3 \text{ kA to } 2 \text{ kA}$	$\leq 25 \text{ A}$	$\leq 16 \text{ A}$
• $I_p = 2 \text{ kA to } 6 \text{ kA}$	$\leq 32 \text{ A}$	$\leq 25 \text{ A}$
• $I_p = 6 \text{ kA to } I_{scw}$	$\leq 50 \text{ A}$	$\leq 50 \text{ A}$
<b>Type 2 surge arresters OVR T2 non pluggable</b>		
<b>Imax(8/20): 15 kA or 40 kA</b> • $I_p = 0.3 \text{ kA to } I_{scw}$	$\leq 63 \text{ A}$	$\leq 125 \text{ A}$

Possible MCB's: Series S 941 N, SN 200, S 200 L, S 200 / S 200 M, and series S 200 P / S 500 / S 800.

$I_p$ : perspective short circuit at SPD location.

$I_{scw}$ : short-circuit withstand capacity.

Residential with OVR PLUS 1N 10 275



**Auto-protected**

With its integrated end of life protection by fuse, no need of additional MCB or fuse

**Compact**

2 modules only to save space. Easy to install

**State Indicator**

2 LEDs give the visual indication of the state of the SPD

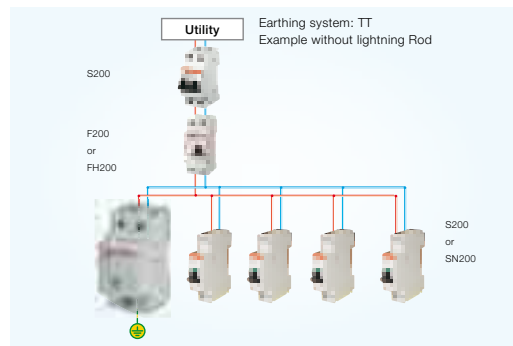
**Discharge current**

$I_n=5kA$ : nominal discharge current for residential application according to IEC61643-1

**Long life**

The safety reserve system ensures a long protection of your equipments.

**Recommended for low frequency lightning impacts areas**



Commercial building with OVR PLUS N1 40

**NEW**



**Auto-protected**

With its integrated end of life protection by MCB, no need of additional MCB or fuse

**Compact**

2 modules only to save space. Easy to install

**State Indicator**

Visual indication: The MCB lever position indicates the state of the surge arrester

Option: available auxiliary contact

**Discharge current**

With  $I_m^* 40kA$ , the OVR PLUS can be installed in high risk areas (keraunic level >25)

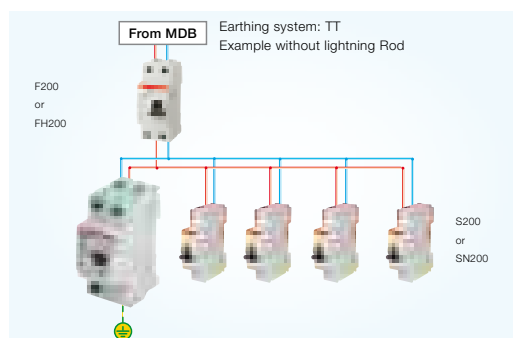
\*:  $I_{max}$  of the MOV

**Eco-Design and Recycling**

Innovative internal design: helps to reduce CO<sub>2</sub> emissions.

**Recommended for high frequency lightning impacts areas**

No upstream MCB  
or fuse required



Note: For order codes, see selection tables.

OVR Surge Protective Devices - Type 1 & Type 1+2



TECHNICAL FEATURES	Type 1 OVR T1 <span style="color:blue">■</span> 25 <span style="color:orange">■</span> TS Triggered spark-gap					
Technology	IEC 61643-1 / EN 61643-11					
Electrical features	1 / 1					
Standard	1 P <span style="color:blue">■</span>   1P <span style="color:blue">■</span> , 2P <span style="color:blue">■</span>   3P <span style="color:blue">■</span>   4P <span style="color:blue">■</span>   1P+N <span style="color:blue">■</span>   3P+N <span style="color:blue">■</span>					
Type / test class	IT - TT   TT*-TNS-TNC   TNC   TNS   TT - TNS   TT - TNS					
Poles	A.C.					
Types of networks	None					
Type of current	None					
Nominal voltage Un (L-N/L-L)	V	400	230	230/400	230	230/400
Max. cont. operating voltage Uc	V	440		255	-	-
Max. cont. operating voltage Uc (L-N / N-⊥)	V	-	-	-	255 / 255	255 / 255
Impulse current Iimp (10/350) per pole	kA	25	25	-	-	-
Impulse current Iimp (10/350) (L-N / N-⊥)	kA	-	-	-	25 / 50	25 / 100
I <sub>max</sub> discharge current (8/20) per pole (I <sub>max</sub> )	kA	-	-	-	-	-
I <sub>max</sub> discharge current (8/20) (L-N/N-terre) (I <sub>max</sub> )	kA	-	-	-	-	-
Nominal discharge current In (8/20) per pole	kA	25	25	-	-	-
Nominal discharge current In (8/20) (L-N / N-⊥)	kA	-	-	-	25 / 50	25 / 100
Voltage protection level Up	kV	2	2.5	-	-	-
Voltage protection level Up (L-N / N-⊥)	kV	-	-	-	2.5 / 2	2.5 / 2
Follow current interrupting rating If <sub>i</sub>	kArms	50	50	-	-	-
Follow current interrupting rating If <sub>i</sub> (L-N / N-⊥)	kArms	-	-	-	50 / 0.1	50 / 0.1
TOV (Temporary overvoltage) withstand U <sub>T</sub> (5s.)	V	690	400	-	-	-
TOV (Temporary overvoltage) withstand U <sub>T</sub> (L-N: 5s. / N-⊥ : 200ms.)	V	-	-	-	400 / 1200	400 / 1200
Continuous operating current I <sub>c</sub>	mA	None				
Short-circuit withstand capability	kArms	50				
Load current I <sub>load</sub> (for V-wiring)	A	125				
Maximum back-up fuse gG/gL		-				
Parallel Connection	A	≤125				
Serial Connection (V-wiring)	A	≤125				
Mechanical features						
Stocking and operating temperature	°C	-40 to +80				
Degree of protection		IP 20				
Fire resistance according to UL 94		V0				
Colour of Housing		Polyarylamide grey RAL 7035				
State indicator		Option (with TS)				
TS remote indicator		Option (TS)				
Installation						
Wire range (L, N, ⊥)						
solid wire	mm <sup>2</sup>	2.5 ... 50				
stranded wire	mm <sup>2</sup>	2.5 ... 35				
Stripping length (L, N, ⊥)	mm	15				
Tightening torque (L, N, ⊥)	Nm	3.5				

TECHNICAL FEATURES OF THE INTEGRATED AUXILIARY CONTACT (TS)

Electrical features		
Contact complement		1NO (1 normally open contact), +1NC (1 normally closed contact)
Min. load		6 V D.C. - 10 mA
Max. load		250 V A.C. - 5 A
Continuous operating current	mA	10
Installation		
Connection cross-section	mm <sup>2</sup>	1.5

TT\* : in TT network for L/N protection only

OVR Surge Protective Devices - Type 1 & Type 1+2



	<b>Type 1</b> <b>OVR T1</b> <span style="background-color: #00a0e3; color: white; padding: 2px;">25</span> 255-7 <b>Triggered spark-gap</b>	<b>Type1+2</b> <b>OVR T1+2</b> <span style="background-color: #00a0e3; color: white; padding: 2px;">25</span> 255 TS <b>Triggered spark-gap/varistor</b>	<b>Type 1+2</b> <b>OVR T1+2</b> <span style="background-color: #00a0e3; color: white; padding: 2px;">15</span> 255-7 <b>Triggered spark-gap</b>	<b>Type 1+2</b> <b>OVR T1+2</b> <span style="background-color: #00a0e3; color: white; padding: 2px;">7</span> 275 s P <b>Varistor</b>
	IEC 61643-1 / EN 61643-11 1 / 1	IEC 61643-1 / EN 61643-11 1 / 1	IEC 61643-1 / EN 61643-11 1 / 1	IEC 61643-1 / EN 61643-11 1 / 1
	1P <span style="background-color: #00a0e3; color: white; padding: 2px;">-</span>   3P+N <span style="background-color: #00a0e3; color: white; padding: 2px;">3N</span> TT*-TNS-TNC   TT - TNS	TT* - TNS - TNC	1P <span style="background-color: #00a0e3; color: white; padding: 2px;">-</span>   3P+N <span style="background-color: #00a0e3; color: white; padding: 2px;">3N</span> TT*-TNS-TNC   TT - TNS	1P <span style="background-color: #00a0e3; color: white; padding: 2px;">-</span>   3P <span style="background-color: #00a0e3; color: white; padding: 2px;">3L</span>   4P <span style="background-color: #00a0e3; color: white; padding: 2px;">4L</span>   1P+N <span style="background-color: #00a0e3; color: white; padding: 2px;">1N</span>   3P+N <span style="background-color: #00a0e3; color: white; padding: 2px;">3N</span> TT*-TNS-TNC   TNC   TNS   TT - TNS   TT - TNS
	A.C.	A.C.	A.C.	A.C.
	230   230/400	230	230   230/400	230   230/400
	255 -	255	255 -	275   275
	- 255 / 255	-	- 255 / 255	-
	25 -	25	15 -	7 -
	- 25 / 100	-	- 15 / 50	- 7 / 12
	- -	40	60 -	- -
	- -	-	- 60/60	- 70/70
	25 -	25	15 -	6 -
	- 25 / 100	-	- 15 / 50	- 6 -
	2.5 -	1.5	1.5 -	0.9 -
	- 2.5 / 1.5	-	- 1.5 / 1.5	- 0.9 / 1.4
	7 -	15	7 -	- -
	- 7 / 0.1	-	- 7 / 0.1	- NA / 0.1
	650 -	334	650 -	334 -
	- 650 / 1200	-	- 650 / 1200	- 334 / 1200
	< 2 (LED)	< 1 (Varistor leakage)	< 2 (LED)	< 1
	50	50	50	50
	-	125	-	-
	≤125	≤125	≤125	≤50
	NA	125	NA	NA
	-40 to +80	-40 to +80	-40 to +80	-40 to +80
	IP 20	IP 20	IP 20	IP 20
	V0	V0	V0	V0
	Polyarylamide grey RAL 7035	Polyarylamide grey RAL 7035	Polyarylamide grey RAL 7035	PC grey RAL 7035
	Yes	Yes	Yes	Yes
	No	Yes	No	No
	2.5 ... 50	2.5 ... 50	2.5 ... 50	2.5 ... 25
	2.5 ... 35	2.5 ... 35	2.5 ... 35	2.5 ... 16
	15	15	15	12.5
	3.5	3.5	3.5	2.8
	-	1NO (1 normally open contact), +1NC (1 normally closed contact)	-	-
	-	12V D.C. - 10 mA	-	-
	-	250V A.C. - 1 A	-	-
	-	None	-	-
	-	1.5	-	-

TT\* : in TT network for L/N protection only



TECHNICAL FEATURES	Type 2 (pluggable) OVR T2 <span style="color:blue">■</span> <span style="color:green">■</span> <span style="color:orange">■</span> (s) P (TS)									
	Varistor									
Technology										
<b>Electrical features</b>	IEC 61643-1 / EN 61643-11									
Standard	2 / II									
Type / test class										
Poles	1P <span style="color:blue">■</span>	3P <span style="color:blue">■</span>	4P <span style="color:blue">■</span>	3P+N <span style="color:blue">■</span>	1P <span style="color:blue">■</span>	3P <span style="color:blue">■</span>	4P <span style="color:blue">■</span>	1P+N <span style="color:blue">■</span>	3P+N <span style="color:blue">■</span>	
Types of networks	IT - TT	IT-TT*	IT-TT**	TT - TNS - IT	TT-TNS-TNC	TNC	TNS	TT-TNS	TT-TNS	
Type of current	A.C.		A.C.		A.C.		A.C.		A.C.	
Nominal voltage Un (L-N/L-L)	V		V		V		V		V	
Max. cont. operating voltage Uc	V		V		V		V		V	
Max. cont. operating voltage Uc (L-N / N-⊥)	V		V		V		V		V	
Maximum discharge current Imax (8/20) per pole	kA		kA		kA		kA		kA	
Maximum discharge current Imax (8/20) (L-N / N-⊥)	kA		kA		kA		kA		kA	
Nominal discharge current In (8/20) per pole	kA		kA		kA		kA		kA	
Nominal discharge current In (8/20) (L-N / N-⊥)	kA		kA		kA		kA		kA	
Voltage protection level Up	kV		kV		kV		kV		kV	
Voltage protection level Up (L-N / N-⊥)	kV		kV		kV		kV		kV	
Residual voltage Ures at 3 kA per pole	kV		kV		kV		kV		kV	
Residual voltage Ures at 3kA (L-N / N-⊥)	kV		kV		kV		kV		kV	
Follow current interrupting rating Ifi	kArms		kArms		kArms		kArms		kArms	
Follow current interrupting rating Ifi (L-N / N-⊥)	kArms		kArms		kArms		kArms		kArms	
TOV (Temporary overvoltage) withstand Ur (5s.)	V		V		V		V		V	
TOV (Temporary overvoltage) withstand Ur (L-N: 5s./N-⊥: 200ms)	V		V		V		V		V	
Continuous operating current Ic	mA		mA		mA		mA		mA	
Short-circuit withstand capability	kArms		kArms		kArms		kArms		kArms	
Disconnecter										
gG -gL fuse	A		A		A		A		A	
curve C circuit breaker	A		A		A		A		A	
<b>Mechanical features</b>										
Stocking and operating temperature	°C									
Degree of protection	IP 20									
Fire resistance according to UL 94	V0									
Material of Housing	PC grey RAL 7035									
Pluggable cartridge	Yes									
Integrated thermal disconnecter	Yes									
State indicator	Yes									
Safety reserve	Option (s)									
TS remote indicator	Option (TS)									
<b>Installation</b>										
Wire range (L, N, ⊥)										
solid wire	mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>	
stranded wire	mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>		mm <sup>2</sup>	
Stripping length (L, N, ⊥)	mm		mm		mm		mm		mm	
Tightening torque (L, N, ⊥)	Nm		Nm		Nm		Nm		Nm	

**TECHNICAL FEATURES OF THE INTEGRATED AUXILIARY CONTACT (TS)**

<b>Electrical features</b>		
Contact complement	1NO (1 make contact), +1NC (1 normally closed contact)	
Min. load	12V D.C. - 10 mA	
Max. load	250V A.C. - 1 A	
Continuous operating current	mA	
Installation		
Connection cross-section	mm <sup>2</sup>	

TT\*: in TT network for L/N protection only    TT\*\*: for no neutral TT network only    TT\*\*\*: for TT network common mode protection only

OVR Surge Protective Devices - Type 2



Type 2 (non pluggable) OVR PLUS N1 40	Type 2 (non pluggable) OVR T2 275 Varistor		Type 2 Photovoltaic OVR PV P (TS) Varistor		Telecom / Dataline OVR TC VP						
IEC 61643-1 / EN 61643-11		IEC 61643-1 / EN 61643-11		IEC 61643-21							
2 / II		2 / II		TC							
1P+N N1	1P	4P 4L	3			1 pair					
TT - TNS	TT* - TNS - TNC	TNS	PV Systems			Dataline / Telecom					
A.C.	A.C.		D.C.	D.C.	Low current						
230	230	230/400	600	1000	6	12	24	48	200	200FR	
-	275		720	1200	7	14	27	53	220	220	
320	-	-			-						
Im = 40	15	40	40	40	10						
20 / 40	-	-	-	-	-						
20	5	20	20	20	5						
-	-	-	-	-	-						
20	1	1.4	-	-	15	20	35	70	700	300	
1.6 / 1.5	-	-	2.8 / 1.4	3.8	-						
-	1	0.9			-						
1/0.6	-	-			-						
NA		NA	-	-	-						
-		-	-	-	-						
-		334	-	-	-						
-		-	-	-	-						
< 1		< 1	< 0.05	< 0.05	140						
Isc = 15 kA		50	-	-	-						
Integrated MCB		-	-	-	-						
-		≤50	a)	a)	-						
-		≤50	-	-	-						
		-40 to +80		-40 to +80							
		IP 20		IP 20							
		V0		V0							
		PC grey RAL 7035		PC grey RAL 7035							
		No		Yes							
		Yes		Yes   Yes   Yes   Yes   No   Yes							
		Yes		No							
		No		No							
Optional (S2C-H6R) ABB (2CDS200912R0001)		No		No							
		2.5 ... 25		0.5 ... 2.5							
		2.5 ... 16		0.5 ... 2.5							
11		12.5	-								
		2.8		-							
		-		-							
		-		-							
		-		-							
		-		-							
		-		-							

TT\*: in TT network for L/N protection only    TT\*\*: for no neutral TT network only    TT\*\*\*: for TT network common mode protection only  
a) If Iscstc > 25 A, should choose fuse 4 A gR

OVR Surge Protective Devices

T1

Surge Protective Devices, Type 1 / Type 1+2

**Function:** Type 1 and Type 1+2 SPDs are Lightning Current Arresters. They can handle and divert high energy from lightning.

They are necessary when the installation is exposed to direct lightning (for example when the building is equipped with external lightning protection system or powered by aerial lines). They shall be installed at the line entrance of the installation (meter board or main distribution board).

ABB Type 1 and Type 1+2 SPDs are tested with wave-shape 10/350. Additionally, Type 1+2 SPDs are also tested with wave-shape 8/20 to guarantee protection against overvoltage of low energy from remote lightning stroke or from switching operations.

ABB Type 1+2 SPDs feature a better voltage protection level (**Up**) than Type 1 SPDs which make them suitable for protection of most of electrical and electronic equipment situated within the protective distance (up to 30 meters).

Type 1 Neutral SPDs are for TT networks when used in combination with phase SPDs Type 1 or Type 1+2.

**Application:** residential, commercial, industrial

**Standard:** IEC 61643-1 / EN 61643-11

10/350 current wave for SPDs Type 1, 10/350 & 8/20 for SPDs Type 1+2, spark-gap technology (no blow-out).

Nb. of poles	Impulse current (10/350) kA	Follow current interrupting level Ifi kArms	Voltage protection level Up kV	Nominal voltage Un V	Max. cont. operating voltage Uc V	Order details	Type code	Order code	EAN	Price 3660308	Price 1 piece group	Weight 1 piece unit	Pack 1 piece unit
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Type 1 (Ifi = 50 kA)

TNS, TNC, TT\*

1	25	50	2.5	230	255	<b>OVR T1 25 255</b>		2CTB815101R0100	<b>510877</b>			0.25	1
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IT (230/400 V), TT, TNC (400/690 V)

1	25	50	2	400	440	<b>OVR T1 25 440-50</b>		2CTB815101R9300	<b>514929</b>			0.27	1
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TNS (1 Ph+N), TT

2	25 <sup>(2)</sup>	50	2.5	230	255	<b>OVR T1 2L 25 255</b>		2CTB815101R1200	<b>510891</b>			0.50	1
2	25 <sup>(2)</sup>	50	2.5	230	255	<b>OVR T1 2L 25 255 TS<sup>(3)</sup></b>		2CTB815101R1100	<b>510945</b>			0.60	1

TT (1 Ph+N), TNS

1+N	25/50 <sup>(1)</sup>	50/0.1 <sup>(1)</sup>	2.5/2 <sup>(1)</sup>	230	255/255 <sup>(1)</sup>	<b>OVR T1 1N 25 255</b>		2CTB815101R1500	<b>510921</b>			0.50	1
1+N	25/50 <sup>(1)</sup>	50/0.1 <sup>(1)</sup>	2.5/2 <sup>(1)</sup>	230	255/255 <sup>(1)</sup>	<b>OVR T1 1N 25 255 TS<sup>(3)</sup></b>		2CTB815101R1000	<b>510976</b>			0.60	1

TNC

3	25 <sup>(2)</sup>	50	2.5	230/400	255	<b>OVR T1 3L 25 255</b>		2CTB815101R1300	<b>510907</b>			0.75	1
3	25 <sup>(2)</sup>	50	2.5	230/400	255	<b>OVR T1 3L 25 255 TS<sup>(3)</sup></b>		2CTB815101R0600	<b>510952</b>			0.85	1

TNS (3 Ph+N)

4	25 <sup>(2)</sup>	50	2.5	230/400	255	<b>OVR T1 4L 25 255</b>		2CTB815101R1400	<b>510914</b>			1.00	1
4	25 <sup>(2)</sup>	50	2.5	230/400	255	<b>OVR T1 4L 25 255 TS<sup>(3)</sup></b>		2CTB815101R0800	<b>510969</b>			1.10	1

TT, TNS

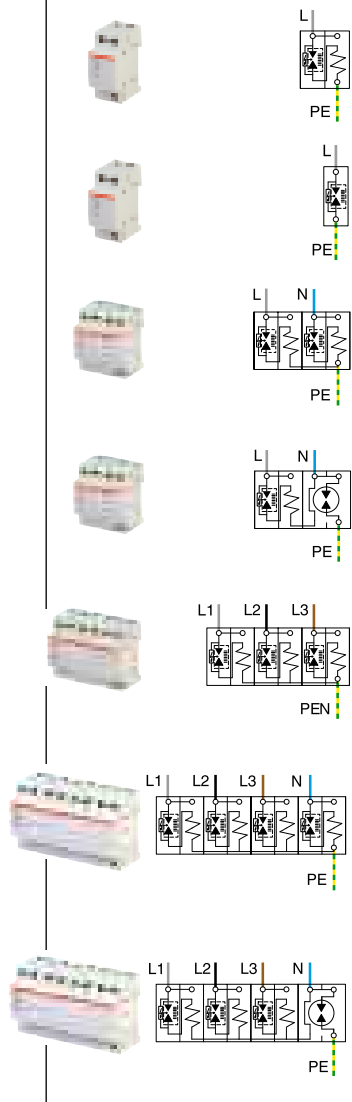
3+N	25/100 <sup>(1)</sup>	50/0.1 <sup>(1)</sup>	2.5/2 <sup>(1)</sup>	230/400	255/255 <sup>(1)</sup>	<b>OVR T1 3N 25 255</b>		2CTB815101R1600	<b>510938</b>			1.00	1
3+N	25/100 <sup>(1)</sup>	50/0.1 <sup>(1)</sup>	2.5/2 <sup>(1)</sup>	230/400	255/255 <sup>(1)</sup>	<b>OVR T1 3N 25 255 TS<sup>(3)</sup></b>		2CTB815101R0700	<b>510983</b>			1.10	1

(1) L-N / N-≡

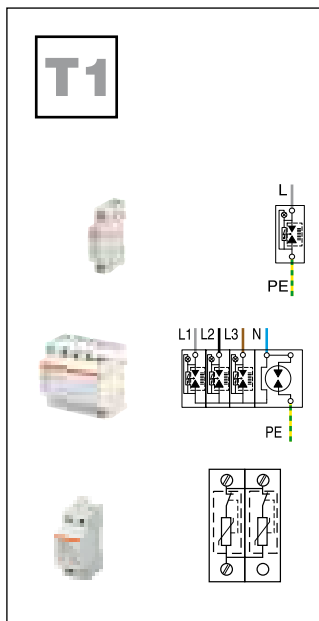
(2) per pole.

(3) TS: tele-signal contact for remote control of the status of the Surge Protective Device.

TT\*: in TT network for L/N protection only







Nb. of poles	Impulse current limp (10/350) kA	Follow current interrupting level Ifi kArms	Voltage protection level Up kV	Nominal voltage Un V	Max. cont. operating voltage Uc V	Order details	Bbn	Price	Price group	Weight	Pack
						Type code	Order code	EAN		kg	pc.

### Type 1 (Ifi = 7 kA)

TNS, TNC, TT\*

1	25	7	2.5	230	255	<b>OVR T1 25 255-7</b>	2CTB815101R8700	<b>514110</b>		0.12	1
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TT (3 Ph+N), TNS

3+N	25/100 <sup>(1)</sup>	7/0.1 <sup>(1)</sup>	2.5/1.5 <sup>(1)</sup>	230	255/255 <sup>(1)</sup>	<b>OVR T1 3N 25 255-7</b>	2CTB815101R8800	<b>514127</b>		0.60	1
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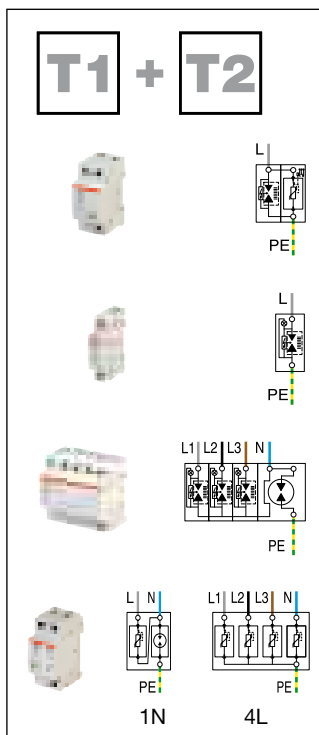
### OVR HL (classic)

TT, TNS, TNC, IT

1	15	NA	1.4	400	440	<b>OVR HL 15 440 s P TS</b>	2CTB815201R0800	<b>509802</b>		0.25	1
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TT, TNS

2	15	NA	1.4	400	440	<b>OVR HL 2L 15 440 s P TS</b>	2CTB815303R0400	<b>509826</b>		0.5	1
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### Type 1+2 (limp = 25 kA)

TNS, TNC, TT\*

1	25	15	1.5	230	255	<b>OVR T1+2 25 255 TS<sup>(3)</sup></b>	2CTB815101R0300	<b>510884</b>		0.30	1
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### Type 1+2 (limp = 15 kA)

TNS, TNC, TT\*

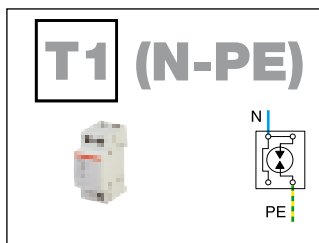
1	15	7	1.5	230	255	<b>OVR T1+2 15 255-7</b>	2CTB815101R8900	<b>514134</b>		0.12	1
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TT (3 Ph+N), TNS

3+N	15/50 <sup>(1)</sup>	7/0.1 <sup>(1)</sup>	1.5/1.5 <sup>(1)</sup>	230	255/255 <sup>(1)</sup>	<b>OVR T1+2 3N 15 255-7</b>	2CTB815101R9000	<b>514141</b>		0.60	1
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### Type 1+2 (limp = 7 kA)

1	7	0	0.9	230	275	<b>OVR T1+2 7 275s P</b>	2CTB815101R3900	<b>513403</b>		0.12	1
2	7	0	0.9/1.4	230	275	<b>OVR T1+2 1N 7 275s P</b>	2CTB815302R1000	<b>515728</b>		0.27	1
4	7	0	0.9/1.4	230	275	<b>OVR T1+2 3N 7 275s P</b>	2CTB815502R1000	<b>515735</b>		0.5	1
3	7	0	0.9	230	275	<b>OVR T1+2 3L 7 275s P</b>	2CTB815101R4000	<b>513410</b>		0.4	1
4	7	0	0.9	230	275	<b>OVR T1+2 4L 7 275s P</b>	2CTB815101R4100	<b>513427</b>		0.5	1
-	7	0	0.9	230	275	<b>OVR T1+2 7 275s C</b>	2CTB815101R3800	<b>513458</b>		0.1	1
-	7	0	1.4	230	275	<b>OVR T1+2 70 NC</b>	2CTB815101R5100	<b>515742</b>		0.05	1



### Type 1 Neutral

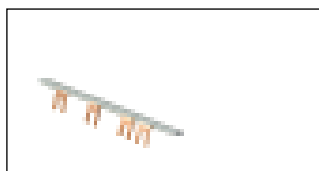
For TT networks when used in combination with phase SPDs Type 1 or Type 1+2

1	25	0.1	< 4	-	690	<b>OVR T1 25 N</b>	2CTB815101R9700	<b>517043</b> <span style="background-color: #0070C0; color: white; padding: 2px;">NEW</span>		0.25	1
1	50	0.1	1.5	-	255	<b>OVR T1 50 N</b>	2CTB815101R0400	<b>510853</b>		0.25	1
1	100	0.1	2	-	255	<b>OVR T1 100 N</b>	2CTB815101R0500	<b>510860</b>		0.25	1

(1) L-N / N-PE.

(3) TS: telesignal contact for remote control of the status of the Surge Protective Device.

TT\*: in TT network for L/N protection only



### Bus bar

For TT (3Ph+N) networks, this bus bar can be used to connect four single pole Type 1 & Type 1+2 SPDs (except for Type 1 with Ifi = 7 kA)

-	-	-	-	-	-	<b>Bus bar 3N</b>	2CTB815102R0400	<b>516091</b>		0.005	50
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OVR Surge Protective Devices

T2

Surge Protective Devices, Type 2

**Function:** Type 2 SPDs are surge arresters. They can handle energy from distant/ indirect lightning strikes or from switching operations. Type 2 SPDs can not discharge high energies from direct lightning like Type 1 SPDs but they feature lower protection level (Up). They are recommended at the incoming of installation for locations with no exposure to direct lightning impulses.

**Application:** residential, commercial, industrial

**Standard:** IEC 61643-1 / EN 61643-11

8/20 current wave, varistor technology.

Nb. of poles	Maxi. discharge current I <sub>max</sub> (8/20) kA	Nominal discharge current I <sub>n</sub> (8/20) kA	Voltage protection level U <sub>p</sub> kV	Nom. voltage U <sub>n</sub> V	Max. cont. operating voltage U <sub>c</sub> V	Order details	Bbn 3660308	Price 1 piece	Price group	Weight 1 piece	Pack unit
						Type code	Order code	Price	Price group	Weight	Pack
							EAN			kg	ppc.

Type 2 (pluggable)

TNS, TNC, TT\*

1	15	5	1.0	230	275	OVR T2 15 275 P	2CTB803851R2400	512840		0.12	1
1	40	20	1.4	230	275	OVR T2 40 275 P	2CTB803851R2300	512833		0.12	1
1	40	20	1.4	230	275	OVR T2 40 275s P	2CTB803851R2000	512826		0.12	1
1	40	20	1.4	230	275	OVR T2 40 275 P TS	2CTB803851R1700	514363		0.14	1
1	40	20	1.4	230	275	OVR T2 40 275s P TS <sup>(3)</sup>	2CTB803851R1400	512802		0.15	1
1	70	30	1.5	230	275	OVR T2 70 275 s P	2CTB803851R1900	512819		0.12	1
1	70	30	1.5	230	275	OVR T2 70 275s P TS <sup>(3)</sup>	2CTB803851R1300	512796		0.15	1

IT (230/400 V), TT

1	15	5	1.5	400	440	OVR T2 15 440 P	2CTB803851R1100	512772		0.12	1
1	40	20	1.9	400	440	OVR T2 40 440 P	2CTB803851R1200	512789		0.12	1
1	40	20	1.9	400	440	OVR T2 40 440 s P	2CTB803851R0800	512765		0.12	1
1	40	20	1.9	400	440	OVR T2 40 440 P TS	2CTB803851R0500	514370		0.14	1
1	40	20	1.9	400	440	OVR T2 40 440s P TS <sup>(3)</sup>	2CTB803851R0200	512741		0.15	1
1	70	30	2	400	440	OVR T2 70 440 s P	2CTB803851R0700	512758		0.12	1
1	70	30	2.0	400	440	OVR T2 70 440s P TS <sup>(3)</sup>	2CTB803851R0100	512734		0.15	1

TT, TNS, TNC, IT

1	120	60	2.5	400	440	OVR T2 120 440s P TS <sup>(3)</sup>	2CTB803951R1300	517036	<b>NEW</b>	0.12	1
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TT, TN-S (1 Ph+N) (Common + Differential mode protection)

1+N	15/70 <sup>(1)</sup>	5/30 <sup>(1)</sup>	1.0/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	OVR T2 1N 15 275 P	2CTB803952R1200	513106		0.22	1
1+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	OVR T2 1N 40 275 P	2CTB803952R1100	513250		0.27	1
1+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4	230	275/255 <sup>(1)</sup>	OVR T2 1N 40 275s P	2CTB803952R0800	513090		0.27	1
1+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	OVR T2 1N 40 275 P TS	2CTB803952R0500	514387		0.27	1
1+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	OVR T2 1N 40 275s P TS <sup>(3)</sup>	2CTB803952R0200	513076		0.27	1
1+N	70/70 <sup>(1)</sup>	30/30 <sup>(1)</sup>	1.5/1.4	230	275/255 <sup>(1)</sup>	OVR T2 1N 70 275 s P	2CTB803952R0700	513083		0.27	1
1+N	70/70 <sup>(1)</sup>	30/30 <sup>(1)</sup>	1.5/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	OVR T2 1N 70 275s P TS <sup>(3)</sup>	2CTB803952R0100	513069		0.27	1

TNC (Common mode protection)

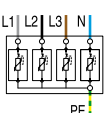
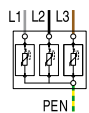
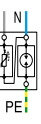
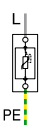
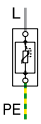
3	15 <sup>(2)</sup>	5 <sup>(2)</sup>	1.0	230	275	OVR T2 3L 15 275 P	2CTB803853R3400	512987		0.35	1
3	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 3L 40 275 P	2CTB803853R2400	513366		0.35	1
3	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 3L 40 275sP	2CTB803853R2200	512963		0.35	1
3	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 3L 40 275 P TS	2CTB803853R2500	514400		0.40	1
3	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 3L 40 275s P TS <sup>(3)</sup>	2CTB803853R2300	512970		0.40	1
3	70 <sup>(2)</sup>	30 <sup>(2)</sup>	1.5	230	275	OVR T2 3L 70 275 s P	2CTB803853R4100	512994		0.35	1
3	70 <sup>(2)</sup>	30 <sup>(2)</sup>	1.5	230	275	OVR T2 3L 70 275s P TS <sup>(3)</sup>	2CTB803853R4400	513007		0.40	1

TNS (3 Ph+N)

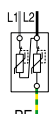
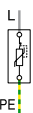
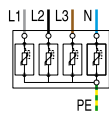
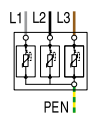
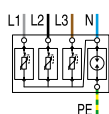
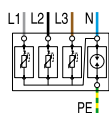
4	15 <sup>(2)</sup>	5 <sup>(2)</sup>	1.0	230	275	OVR T2 4L 15 275 P	2CTB803853R6000	513038		0.45	1
4	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 4L 40 275 P	2CTB 803853R5600	513274		0.45	1
4	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 4L 40 275sP	2CTB803853R5400	513021		0.45	1
4	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 4L 40 275 P TS	2CTB803853R5200	514417		0.50	1
4	40 <sup>(2)</sup>	20 <sup>(2)</sup>	1.4	230	275	OVR T2 4L 40 275s P TS <sup>(3)</sup>	2CTB803853R5000	513014		0.50	1
4	70 <sup>(2)</sup>	30 <sup>(2)</sup>	1.5	230	275	OVR T2 4L 70 275 s P	2CTB803919R0200	513045		0.45	1
4	70 <sup>(2)</sup>	30 <sup>(2)</sup>	1.5	230	275	OVR T2 4L 70 275s P TS <sup>(3)</sup>	2CTB803919R0400	513052		0.50	1

(1) L-N / N- $\pm$ . (2) per pole. (3) TS: telesignal contact for remote control of the status of the Surge Protective Device. The safety reserve (s) ensures a preventive maintenance of the installation.

TT\*: in TT network for L/N protection only



# T2



Nb. of poles	Maxi. discharge current I <sub>max</sub> (8/20) kA	Nominal discharge current I <sub>n</sub> (8/20) kA	Voltage protection level U <sub>p</sub> kV	Nom. voltage U <sub>n</sub> V	Max. cont. operating voltage U <sub>c</sub> V	Order details	Bbn 3660308	Price 1 piece	Price group	Weight 1 piece	Pack unit
						Type code	Order code	EAN	kg	ppc.	

### TT, TN-S (3 Ph+N) (Common + Differential mode protection)

3+N	15/70 <sup>(1)</sup>	5/30 <sup>(1)</sup>	1.0/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 15 275 P</b>	2CTB803953R1200	<b>513151</b>		0.45	1
3+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 40 275 P</b>	2CTB803953R1100	<b>513267</b>		0.45	1
3+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 40 275s P</b>	2CTB803953R0800	<b>513144</b>		0.45	1
3+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 40 275 P TS</b>	2CTB803953R0500	<b>514394</b>		0.50	1
3+N	40/70 <sup>(1)</sup>	20/30 <sup>(1)</sup>	1.4/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 40 275s P TS<sup>(3)</sup></b>	2CTB803953R0200	<b>513120</b>		0.50	1
3+N	70/70 <sup>(1)</sup>	30/30 <sup>(1)</sup>	1.5/1.4	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 70 275 s P</b>	2CTB803953R0700	<b>513137</b>		0.45	1
3+N	70/70 <sup>(1)</sup>	30/30 <sup>(1)</sup>	1.5/1.4 <sup>(1)</sup>	230	275/255 <sup>(1)</sup>	<b>OVR T2 3N 70 275s P TS<sup>(3)</sup></b>	2CTB803953R0100	<b>513113</b>		0.50	1

(1) L-N / N-PE. (2) per pole. (3) TS: telesignal contact for remote control of the status of the Surge Protective Device. The safety reserve (s) ensures a preventive maintenance of the installation.

### TT (3 Ph+N), TNS, IT

3+N	15	5	1.5/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 15-440 P</b>	2CTB803953R1300	<b>516800</b>		0.45	1
3+N	40	20	1.9/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 40-440 P</b>	2CTB803953R1400	<b>516817</b>		0.45	1
3+N	40	20	1.9/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 40-440 P TS<sup>(3)</sup></b>	2CTB803953R1500	<b>516824</b>		0.45	1
3+N	40	20	1.9/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 40-440s P TS<sup>(3)</sup></b>	2CTB803953R1600	<b>516831</b>		0.45	1
3+N	70	30	2/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 70-440s P</b>	2CTB803953R1700	<b>516848</b>		0.45	1
3+N	70	30	2/1.4 <sup>(1)</sup>	230	440/255 <sup>(1)</sup>	<b>OVR T2 3N 70-440s P TS<sup>(3)</sup></b>	2CTB803953R1800	<b>516855</b>		0.23	1

### TNC (3 Ph), TT\*\*, IT

3	40	20	1.9	230	440	<b>OVR T2 3L 40-440 P</b>	2CTB803853R2600	<b>516879</b>		0.35	1
3	40	20	1.9	230	440	<b>OVR T2 3L 40-440 P TS</b>	2CTB803853R2700	<b>516886</b>		0.40	1
3	70	30	2	230	440	<b>OVR T2 3L 70-440s P</b>	2CTB803853R4200	<b>516893</b>		0.35	1
3	70	30	2	230	440	<b>OVR T2 3L 70-440s P TS</b>	2CTB803853R4300	<b>516909</b>		0.40	1

### TNS, IT (3 Ph+N), TT\*\*\*

4	40	20	1.9/1.4 <sup>(1)</sup>	230	440	<b>OVR T2 4L 40-440 P</b>	2CTB803853R5100	<b>516916</b>		0.45	1
4	40	20	1.9/1.4 <sup>(1)</sup>	230	440	<b>OVR T2 4L 40-440 P TS</b>	2CTB803853R5300	<b>516923</b>		0.50	1
4	70	30	2/1.4 <sup>(1)</sup>	230	440	<b>OVR T2 4L 70-440s P</b>	2CTB803853R7000	<b>516930</b>		0.45	1
4	70	30	2/1.4 <sup>(1)</sup>	230	440	<b>OVR T2 4L 70-440s P TS</b>	2CTB803853R7100	<b>516947</b>		0.50	1

### Type 2 Neutral

1	70	30	1.4	230	255	<b>OVR T2 70 N P</b>	2CTB803953R1900	<b>516862</b>			
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### OVR Type 2 Special 24/48V AC & DC

These type 2 SPD's can be used in very low voltages & data lines for current higher than 140mA.

1	15	5	0.3	57	75	<b>OVR 15 75 P</b>	2CTB813851R2800	<b>504647</b>		0.12	1
1	15	5	0.3	57	75	<b>OVR 15 75 P TS</b>	2CTB813851R2700	<b>504630</b>		0.13	1
2	15	5	0.3/0.6	57	75	<b>OVR 2 15 75 P</b>	2CTB813852R1700	<b>504609</b>		0.22	1
2	15	5	0.3/0.6	57	75	<b>OVR 2 15 75 P TS</b>	2CTB813852R1600	<b>504593</b>		0.23	1
2	15	5	0.3/0.6	57	75	<b>OVR 2 15 75s P TS</b>	2CTB813852R1300	<b>504579</b>		0.23	1

Back-up protection by fuse: 16A gG under AC, 16A gR under DC

### Replacement cartridges for Surge Protective Devices Type 2

#### Phase cartridge, 75 V

-	15	5	0.3	57	75	<b>OVR 15 75 C</b>	2CTB813854R1400	<b>508892</b>		0.10	1
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#### Phase cartridge, 275 V

-	15	5	1.0	230	275	<b>OVR T2 15 275 C</b>	2CTB803854R1200	<b>513168</b>		0.10	1
-	40	20	1.4	230	275	<b>OVR T2 40 275 C</b>	2CTB803854R1000	<b>513182</b>		0.10	1
-	40	20	1.4	230	275	<b>OVR T2 40 275s C<sup>(1)</sup></b>	2CTB803854R0900	<b>513199</b>		0.10	1
-	70	30	1.5	230	275	<b>OVR T2 70 275s C<sup>(1)</sup></b>	2CTB803854R0700	<b>513229</b>		0.10	1

#### Neutral cartridge for products OVR T2 1N (..) & OVR T2 3N (..), 275 V

-	70	30	1.4	-	440	<b>OVR T2 70 N C</b>	2CTB803854R0000	<b>513243</b>		0.05	1
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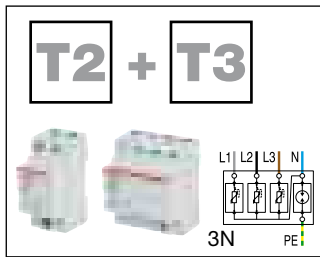
#### Phase cartridge, 440 V

-	15	5	1.5	400	440	<b>OVR T2 15 440 C</b>	2CTB803854R0600	<b>513175</b>		0.10	1
-	40	20	1.9	400	440	<b>OVR T2 40 440 C</b>	2CTB803854R0400	<b>513205</b>		0.10	1
-	40	20	1.9	400	440	<b>OVR T2 40 440s C<sup>(1)</sup></b>	2CTB803854R0300	<b>513212</b>		0.10	1
-	70	30	2.0	400	440	<b>OVR T2 70 440s C<sup>(1)</sup></b>	2CTB803854R0100	<b>513236</b>		0.10	1

TT\*\*: for no neutral TT network only

TT\*\*\*: for TT network common mode protection only

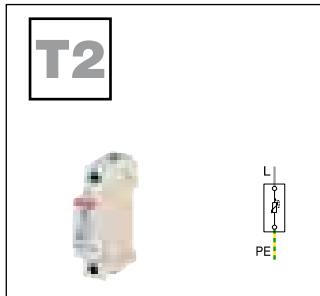
OVR Surge Protective Devices



Nb. of poles	Maxi. discharge current I <sub>max</sub> (8/20) kA	Nominal discharge current I <sub>n</sub> (8/20) kA	Voltage protection level U <sub>p</sub> kV	Voltage protection level U <sub>p</sub> at U <sub>oc</sub> kV	Voltage combination wave U <sub>oc</sub> kV	Nom. voltage U <sub>n</sub> V	Max. cont. operating voltage U <sub>c</sub> V	Order details	Bbn	Price	Price group	Weight	Pack
								Type code	Order code	EAN		kg	ppc.

Type 2 & Type 3 (non pluggable), TT, TNS

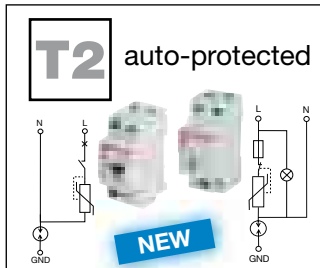
1+N	10	3	0.9/1.4	0.9/1.4	6	230	275	<b>OVR 1N 10 275</b>	2CTB813912R1000	<b>509208</b>		0.25	1
3+N	10	3	0.9/1.4	0.9/1.4	6	230	275	<b>OVR 3N 10 275</b>	2CTB813913R1000	<b>509215</b>		0.45	1



Nb. of poles	Maxi. discharge current I <sub>max</sub> (8/20) kA	Nominal discharge current I <sub>n</sub> (8/20) kA	Voltage protection level U <sub>p</sub> kV	Nom. voltage U <sub>n</sub> V	Max. cont. operating voltage U <sub>c</sub> V	Order details	Bbn	Price	Price group	Weight	Pack
						Type code	Order code	EAN		kg	ppc.

Type 2 (non pluggable), TT, TNS

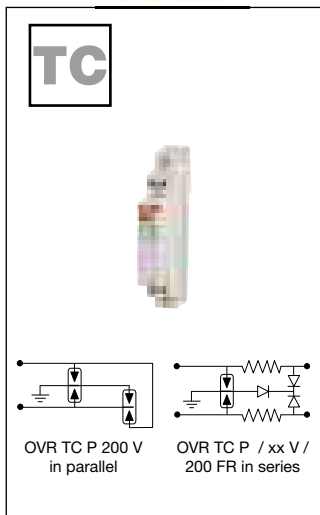
1	15	5	1	230	275	<b>OVR T2 15 275</b>	2CTB804200R0100	<b>514882</b>		0.12	1
1	40	20	1.4	230	275	<b>OVR T2 40 275</b>	2CTB804201R0100	<b>514103</b>		0.12	1
4	15	5	1	230	275	<b>OVR T2 4L 15 275</b>	2CTB804600R0500	<b>515612</b>		0.45	1
4	40	20	1.4	230	275	<b>OVR T2 4L 40 275</b>	2CTB804601R0500	<b>515988</b>		0.45	1



OVR Plus with integrated end of life protection (auto-protected), TT, TNS

1+N	10/10	5/5	1/1.4	230	275/255	<b>OVR Plus 1N 10 275</b>	2CTB813812R2600	<b>516770</b>		0.3	1
N+1	40*/40	20/40	1.6/1.5	230	320/255	<b>OVR Plus N1 40</b>	2CTB803701R0100	<b>517005</b>		0.26	1

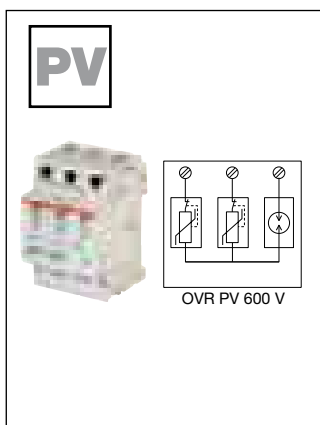
\*I<sub>m</sub> = I<sub>max</sub> MOV



Surge Protective Devices, Low current

The transmission line pluggable surge arresters (OVR TC P) provide protection against transient overvoltages for equipment connected to telephone lines (digital or analog), computer links or current loops, for applications such as RS-485, or 4-20 mA.

1	10	5	0.015	6		<b>OVR TC 6V P</b>	2CTB804820R0000	<b>515230</b>		0.05	1
1	10	5	0.02	12		<b>OVR TC 12V P</b>	2CTB804820R0100	<b>515247</b>		0.05	1
1	10	5	0.035	24		<b>OVR TC 24V P</b>	2CTB804820R0200	<b>515254</b>		0.05	1
1	10	5	0.07	48		<b>OVR TC 48V P</b>	2CTB804820R0300	<b>515261</b>		0.05	1
1	10	5	0.7	200		<b>OVR TC 200V P</b>	2CTB804820R0400	<b>515278</b>		0.05	1
1	10	5	0.3	200		<b>OVR TC 200FR P</b>	2CTB804820R0500	<b>515285</b>		0.05	1
-	10	5	0.015	7		<b>OVR TC 6V C</b>	2CTB804821R0000	<b>515292</b>		0.02	1
-	10	5	0.02	14		<b>OVR TC 12V C</b>	2CTB804821R0100	<b>515308</b>		0.02	1
-	10	5	0.035	27		<b>OVR TC 24V C</b>	2CTB804821R0200	<b>515315</b>		0.02	1
-	10	5	0.07	53		<b>OVR TC 48V C</b>	2CTB804821R0300	<b>515322</b>		0.02	1
-	10	5	0.7	220		<b>OVR TC 200V C</b>	2CTB804821R0400	<b>515339</b>		0.02	1
-	10	5	0.3	220		<b>OVR TC 200FR C</b>	2CTB804821R0500	<b>515346</b>		0.02	1
1	-	-	-	-	-	<b>Base OVR TC RJ11</b>	2CTB804840R1000	<b>515599</b>		0.02	1
2	-	-	-	-	-	<b>Base OVR TC RJ45</b>	2CTB804840R1100	<b>515605</b>		0.04	1



Surge Protective Devices, Photovoltaic

The photovoltaic pluggable surge arresters OVR PV provide protection for equipment on photovoltaic system (connected), against transient overvoltages that occur on the electrical network.

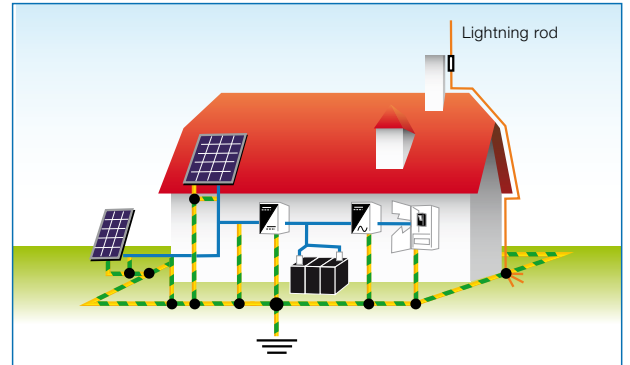
3	40	20	2.8/1.4	600	720	<b>OVR PV 40 600 P</b>	2CTB803953R5300	<b>516510</b>		0.27	1
3	40	20	2.8/1.4	600	720	<b>OVR PV 40 600 P TS</b>	2CTB803953R5400	<b>516527</b>		0.27	1
3	40	20	3.8	1000	1200	<b>OVR PV 40 1000 P</b>	2CTB803953R6400	<b>516534</b>		0.27	1
3	40	20	3.8	1000	1200	<b>OVR PV 40 1000 P TS</b>	2CTB803953R6500	<b>516541</b>		0.27	1

Replacement cartridges for Surge Protective Devices OVR PV

-	40	20	1.4	600	720	<b>OVR PV 40-600 C</b>	2CTB803950R0000	<b>516558</b>		0.10	1
-	40	20	1.9	1000	1200	<b>OVR PV 40-1000 C</b>	2CTB803950R0100	<b>516565</b>		0.10	1
-	70	30	1.4	1000	-	<b>OVR PV MC*</b>	2CTB803950R0300	<b>516756</b>		0.10	1

**Systems with battery**

- Photovoltaic standalone applications
- Possibility of installation between batteries and charger
- Data line if the current is higher than 140 mA



**Telecoms, wind turbines, industrial applications under very low voltage**

Between transformer 230/48V or 24V (AC-DC) and equipment to be protected, for example:

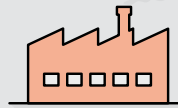
- PLC's
- Sensors



Available products for very low voltage applications

Description	Max discharge current I <sub>max</sub> (8/20)	Nominal discharge current I <sub>n</sub>	Nominal Voltage U <sub>n</sub>	Protection level U <sub>p</sub>
OVR 15 75 P <b>2CTB813851R2800</b>	15 kA	5 kA	57 V	0.3 kV
OVR 15 75 P TS <b>2CTB813851R2700</b>	15 kA	5 kA	57 V	0.3 kV
OVR 2 15 75 P <b>2CTB813852R1700</b>	15 kA	5 kA	57 V	0.3/0.6 kV
OVR 2 15 75 P TS <b>2CTB813852R1600</b>	15 kA	5 kA	57 V	0.3/0.6 kV
OVR 2 15 75s P TS <b>2CTB813852R1300</b>	15 kA	5 kA	57 V	0.3/0.6 kV

Industry, Commercial Building,  
Apartment Building



Sensitive equipment is directly connected downstream of the SPD ?

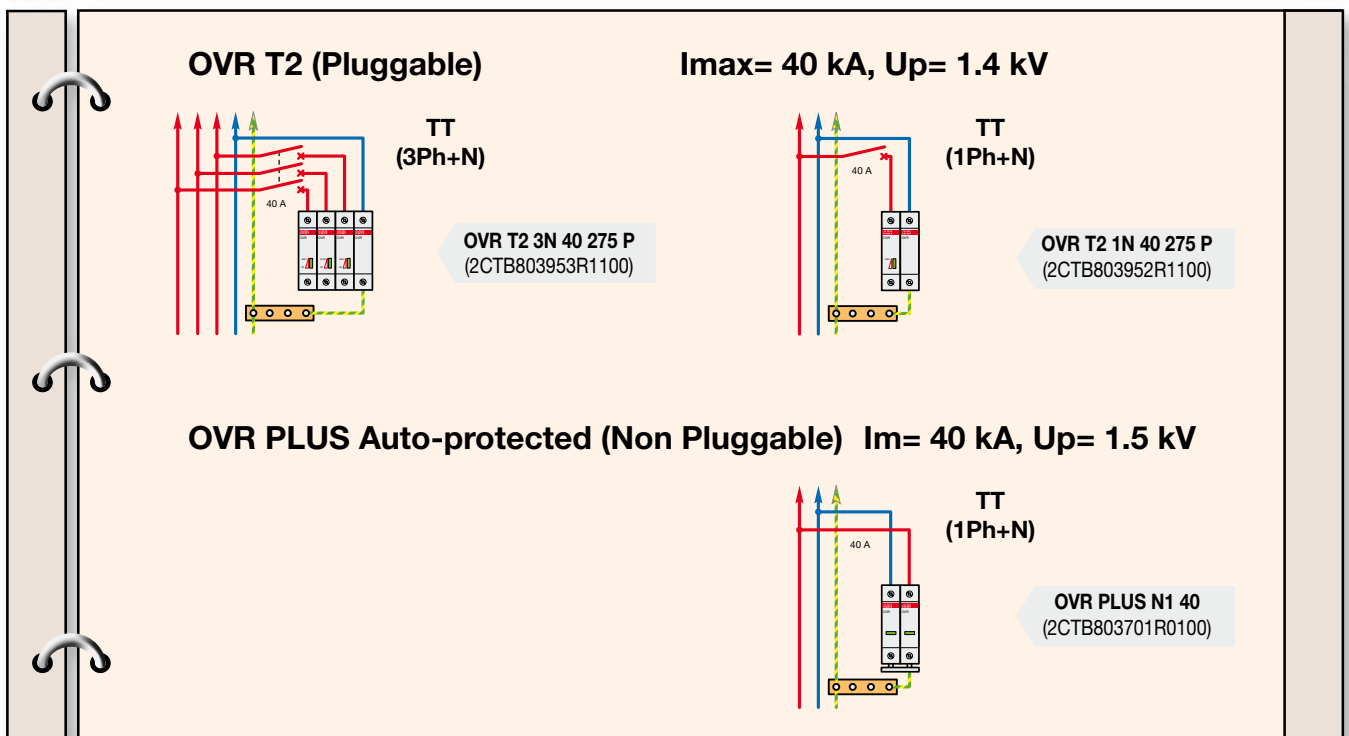
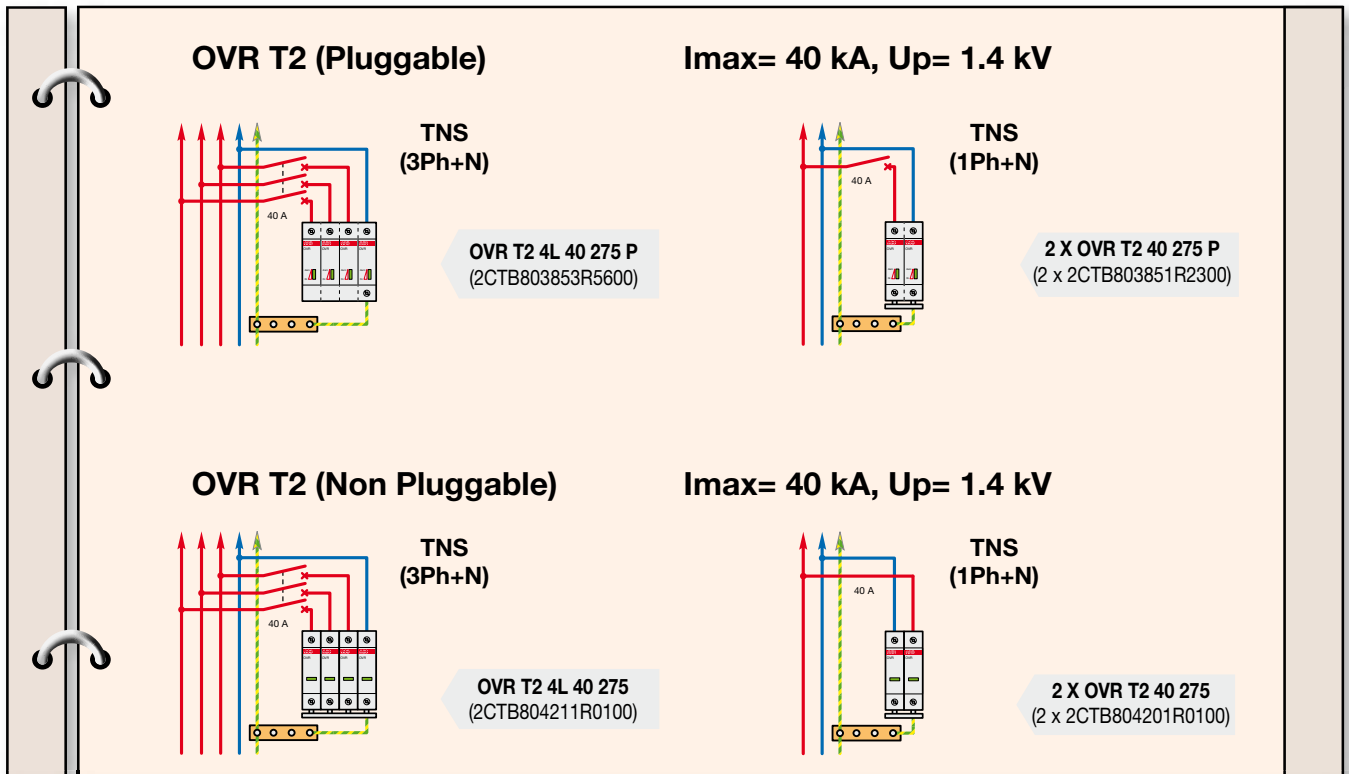
No

Yes

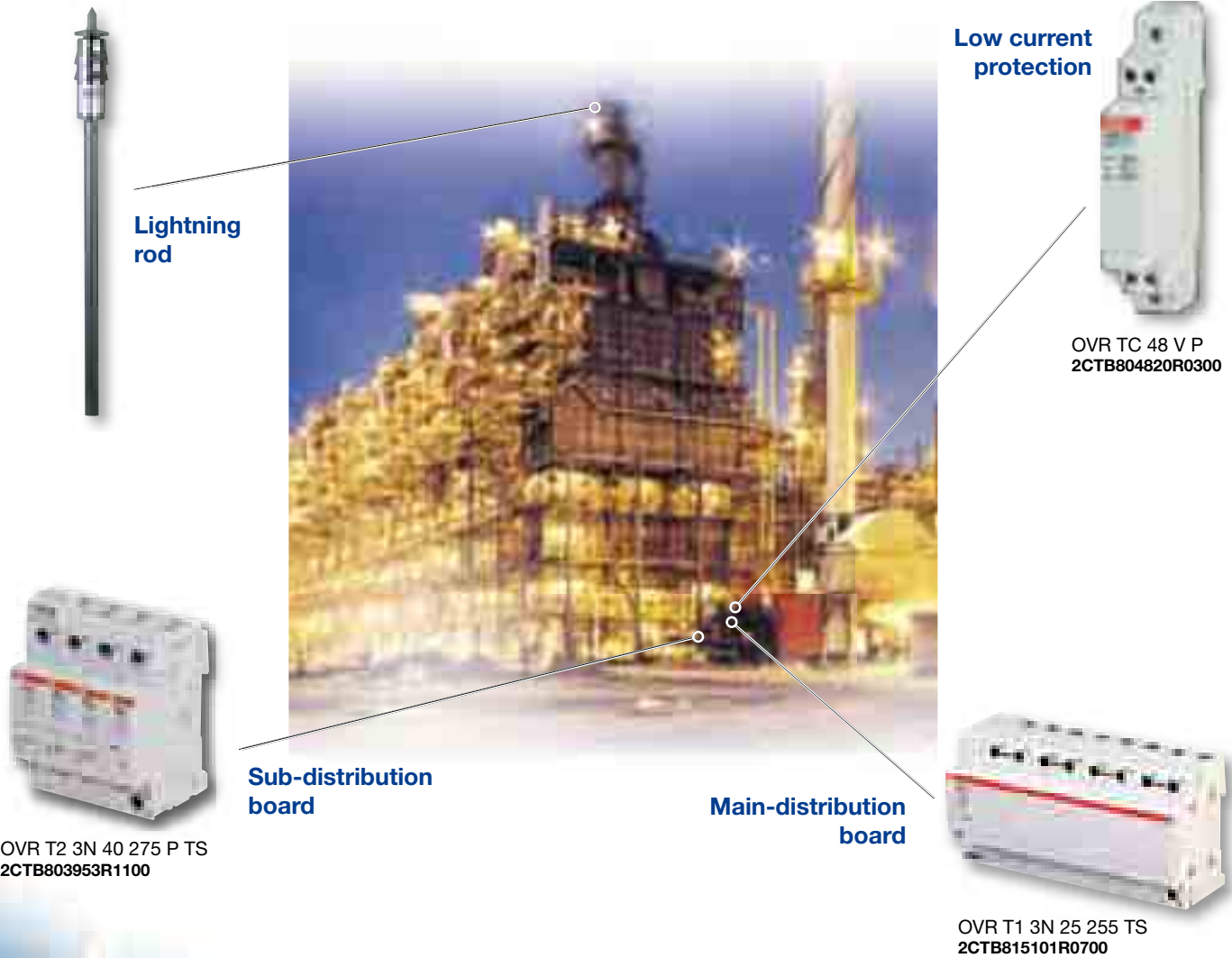
No tripping of the upstream fuse for Ip up to 7 kArms <sup>(1)</sup>	<p><b>SPD Type 1, Iimp= 25 kA/ pole, Up= 2.5 kV, Ifti= 7 kArms <sup>(1)</sup></b> <b>OVR T1</b></p> <p><b>TNC</b></p> <p>3 x OVR T1 25 255-7 (3 x 2CTB815101R8700)</p>	No tripping of the upstream fuse for Ip up to 15 kArms <sup>(1)</sup>
	<p><b>TNS</b></p> <p>4 x OVR T1 25 255-7 (4 x 2CTB815101R8700)</p>	
	<p><b>TT (3 Ph + N)</b></p> <p>OVR T1 3N 25 255-7 (2CTB815101R8800)</p>	
	<p><b>SPD Type 1+2, Iimp= 25 kA/ pole, Up= 1.5 kV, Ifti= 15 kArms <sup>(1)</sup></b> <b>OVR T1+2</b></p> <p><b>TNC</b></p> <p>3 x OVR T1+2 25 255 TS (3 x 2CTB815101R0300)</p>	
	<p><b>TNS</b></p> <p>4 x OVR T1+2 25 255 TS (4 x 2CTB815101R0300)</p>	
	<p><b>TT (3 Ph + N)</b></p> <p>3 x OVR T1+2 25 255 TS (2CTB815101R0300) + OVR T1 100 N (2CTB815101R0500)</p>	
No tripping of the upstream fuse for Ip up to 50 kArms <sup>(1)</sup>	<p><b>SPD Type 1, Iimp= 25 kA/ pole, Up= 2.5 kV, Ifti= 50 kArms <sup>(1)</sup></b> <b>OVR T1</b></p> <p><b>TNC</b></p> <p>OVR T1 3L 25 255 (2CTB815101R1300) or OVR T1 3L 25 255 TS (2CTB815101R0600)</p>	No tripping of the upstream fuse for Ip up to 50 kArms <sup>(1)</sup>
	<p><b>TNS</b></p> <p>OVR T1 4L 25 255 (2CTB815101R1400) or OVR T1 4L 25 255 TS (2CTB815101R0800)</p>	
	<p><b>TT (3 Ph + N)</b></p> <p>OVR T1 3N 25 255 (2CTB815101R1600) or OVR T1 3N 25 255 TS (2CTB815101R0700)</p>	
	<p><b>SPD Type 1, Iimp= 25 kA/ pole, Up= 2.5 kV, Ifti= 50 kArms <sup>(1)</sup></b> + <b>SPD Type 2, Imax= 40 kA/pole, Up= 1.4 kV</b> <b>OVR T1 + OVR T2</b></p> <p><b>TNC</b></p> <p>OVR T1 3L 25 255 (2CTB815101R1300) or OVR T1 3L 25 255 TS (2CTB815101R0600)</p> <p>+</p> <p>OVR T2 3L 40 275 P (2CTB803853R2400)</p>	
	<p><b>TNS</b></p> <p>OVR T1 4L 25 255 (2CTB815101R1400) or OVR T1 4L 25 255 TS (2CTB815101R0800)</p> <p>+</p> <p>OVR T2 4L 40 275 (2CTB804211R0100) or OVR T2 4L 40 275 P (2CTB803853R5600)</p>	
	<p><b>TT (3 Ph + N)</b></p> <p>OVR T1 3N 25 255 (2CTB815101R1600) or OVR T1 3N 25 255 TS (2CTB815101R0700)</p> <p>+</p> <p>OVR T2 3N 40 275 P (2CTB803953R1100)</p>	

**Additional SPD Type 2 in sub-distribution boards (for industry and big houses), or in each apartment (for apartment buildings) or at each floor/in each office (for office buildings).**






- Needed when the voltage protection level of the upstream Type 1 SPD is too high with regards to the withstand capability to overvoltage of the equipment to protect. No minimum distance for coordination is required between Type 1 SPD and Type 2 SPD, excepted between OVR T1xx xx 255-7 and Type 2, minimum distance required is 5 meters.
- Needed when the distance between the upstream SPD (Type 1, Type 1+2 or Type 2) and the equipment to be protected is too high. Additional Type 2 SPD close to the equipment to protect is recommended when this distance overcomes 10 meters and compulsory above 30 meters. Additional Type 2 SPD is not necessary when the distance is less than 10 meters and it shall not be installed for coordination reasons.





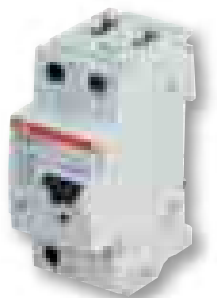


Equipment protection in industrial sector

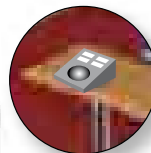
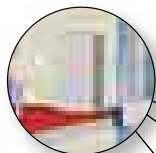
	Description	Impulse current $I_{imp}$ (10/350)	Follow current $I_{fi}$	Max. discharge current $I_{max}$ (8/20)	Nominal discharge current $I_n$	Nominal voltage $U_n$ (L/N-LL)	Protection level $U_p$
	OVR T1 3N 25 255 TS 2CTB815101R0700	25 kA	50 kA	/	25 kA	230/400 V	2.5 kV
	OVR T2 3N 40 275 P TS 2CTB803953R1100	/	/	40 kA	20 kA	230/400 V	1.4 kV
	OVR TC 48 V P 2CTB804820R0300	/	/	10 kA	5 kA	48 V	70 V
	Lightning rod OPR 30 stainless steel with mast 2CTB899800R7300	Please contact us and ask for leaflet 2CTC 432 004 B0202					
	Lightning rod OPR 60 stainless steel with mast 2CTB899800R7400	Please contact us and ask for leaflet 2CTC 432 004 B0202					



Commercial Building,  
Apartment Building



OVR PLUS N1 40  
2CTB803701R0100  
No upstream MCB or fuse  
required



OVR TC 24 V P  
2CTB804820R0200

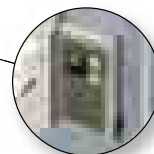
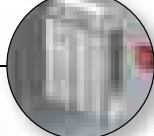
Interphone  
protection

Telephone  
protection



OVR TC 48 V P - ISDN (S.)  
2CTB804820R0300

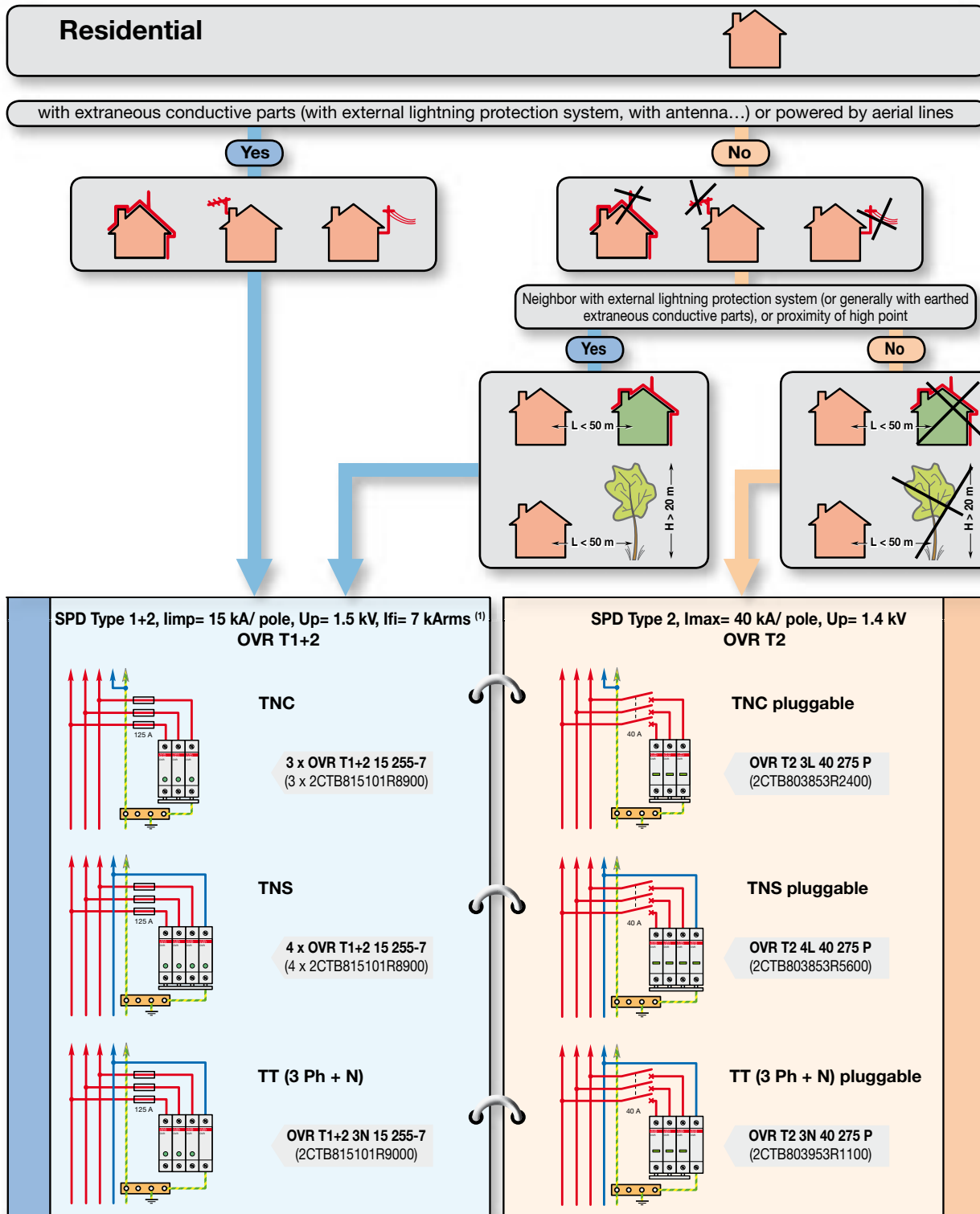
Automatic  
exchange  
protection



OVR T1 3N 25 255 TS  
2CTB815101R0700

Equipment protection in commercial sector

	Description	Impulse current $I_{imp}$ (10/350)	Follow current $I_{fi}$	Max. discharge current $I_{max}$ (8/20)	$C_2$ nominal discharge current $I_n$	Nominal voltage $U_n$	Protection level $U_p$
	OVR TC 24 V P 2CTB804820R0200	/	/	10 kA	5 kA	24 V	35 V
	OVR TC 48 V P 2CTB804820R0300	/	/	10 kA	5 kA	48 V	70 V
	OVR T1 3N 25 255 TS 2CTB815101R0700	25 kA	50 kA	/	25 kA	230 V	2.5 kV
	OVR PLUS N1 40 2CTB803701R0100	/	/	$I_m = 40$ kA $I_{max} = 20$ kA	20 kA	230 V	1.6 kV



(1) Taking into consideration of the prospective short-circuit current of the power supply ( $I_p$ ):

For Type 1 Products based on spark-gap technology when overvoltage reaches the SPD, an electrical arc is created between the electrodes of the spark-gap. This arc will short-circuit the phase to earth and will enable the surge to be discharged. Once the surge has been discharged, current from the mains (follow-current) will still flow through the SPD as the spark-gap is short-circuiting the phase to earth. If not interrupted by the SPD, this follow-current will cause the upstream fuse to melt.

The proposed Type 1 products in this selection table are able to interrupt the follow-current by themselves without tripping of the upstream fuse. For these solutions  $I_{fi} \geq I_p$  ( $I_{fi}$  is the follow-current interrupting rating of the SPD: it is the follow-current which can be interrupted by the SPD alone).

- Only required if a fuse of the same or a lower nominal value is not already provided in the upstream power supply.
- Maximum value allowed (fuse or MCB of lower value can be used). Only required if a fuse or MCB of the same or smaller nominal value is not provided in the upstream power supply.

Residential



Telephone protection



OVR TC 200 FR P  
2CTB804820R0400

Enclosure



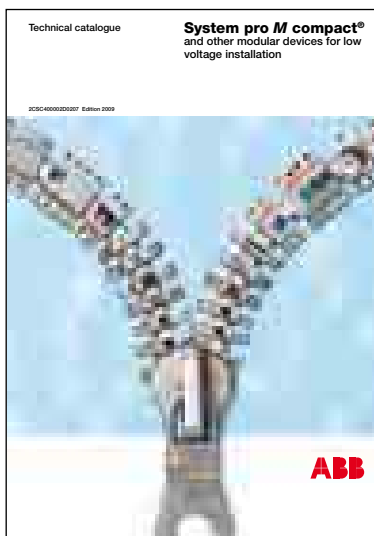
OVR PLUS 1N 10 275  
2CTB813812R2600  
No upstream MCB or fuse  
required

Equipment protection in the domestic sector

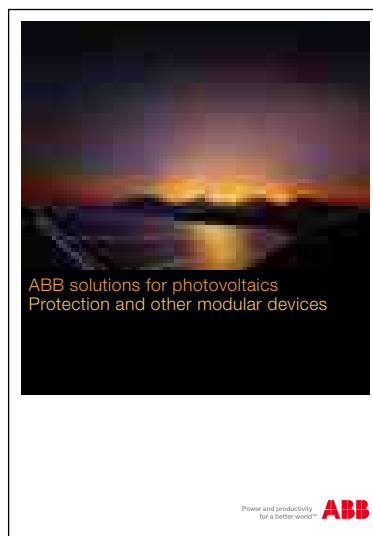
	Description	Max. discharge current $I_{max}$ (8/20)	$C_2$ nominal discharge current $I_n$	Nominal voltage $U_n$	Protection level $U_p$
	OVR TC 200 FR P 2CTB804820R0400	10 kA	5 kA	200 V	400 V
	OVR PLUS 1N 10 275 2CTB813812R2600	10 kA	5 kA	230 V	1 kV

ABB offers a complete list of documentation including our surge arresters with an environment of ABB components.

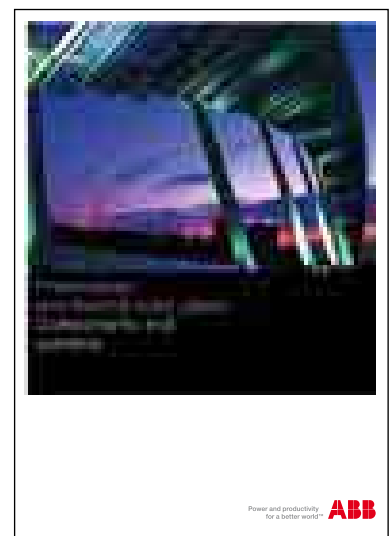
- ABB Technical catalogue for Din rail products
- ABB Din rail solutions for photovoltaics
- ABB complete offer for photovoltaic & thermal solar



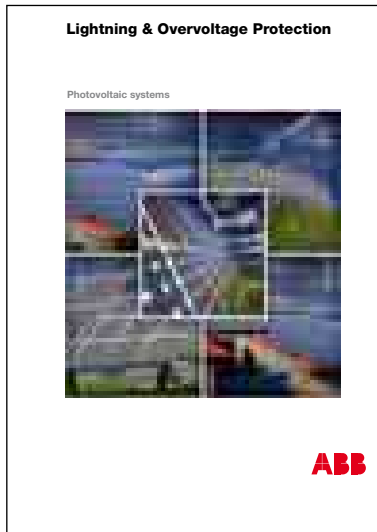
**Technical catalogue**  
System pro M compact®  
and other modular devices  
for low voltage installation



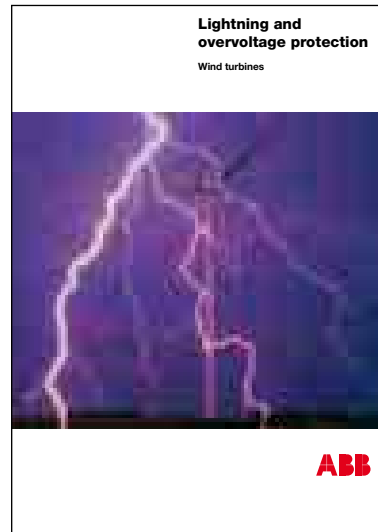
**Brochure**  
ABB solutions for photovoltaics  
Protection and other  
modular devices



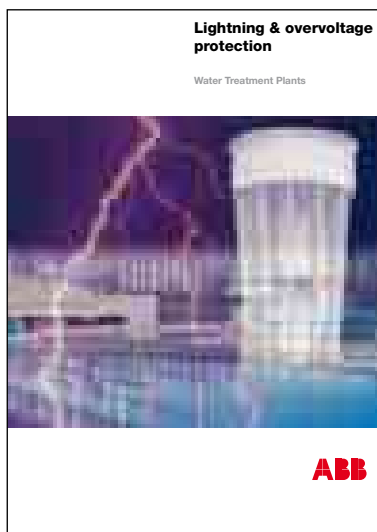
**Brochure**  
Photovoltaic and  
thermal solar plants  
Components and systems



Photovoltaic



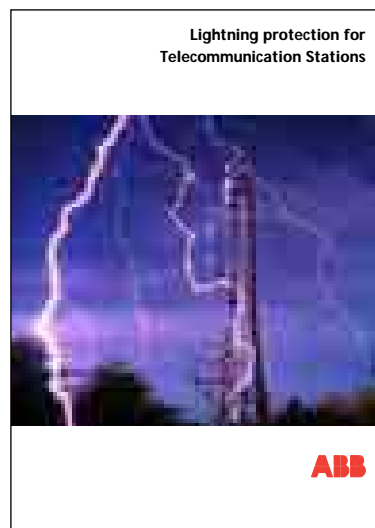
Wind turbine



Water



Low current



Telecom





# Contact us

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