

# Overvoltage protection

Low current surge arrester range



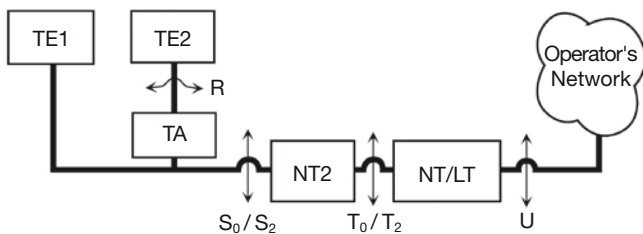
# Protection of Telephone Equipment

### **PSTN** (Public Switched Telephone Network)

Network making it possible to establish point-to-point communications by switching circuits. This network provides digital rate or guaranteed bandwidth, which can be used to transmit electronic data, faxes etc. via the use of a modem.

### **ISDN** (Integrated Service Digital Network)

Digital telecommunication service offered by public network operators, providing an end-to-end digital connection to transmit a broad range of signals (voice, data, text, images) accessible to the users via a limited number of standard interfaces.



- Basic rate: 144 kbps divided into two B channels of 64 kbps for transmission and one D channel of 16 kbps for signalling.
- Primary rate: 2048 kbps divided into 30 B channels of 64 kbps for transmission and one D channel of 64 kbps for signalling.
- Broadband access: access using multiple 2048 kbps rates.



## Telephone, Internet, Broadband Box

Name of the network	Type of link / application	Type of signal	Max. voltage of the signal	Max. carrier frequency	Max. downstream rate	Usual connection	Transmission support	SPD reference	
PSTN	"Old generation" telephone	Analog (voice)	180 V	3.4 kHz		Extensible or RJ11	1 twisted pair	<b>OVR TC 200 FR P</b>	
	Modem 56 K	Digital	180 V	3.8 kHz	56 kbps		1 twisted pair	<b>OVR TC 200 FR P</b>	
	xDSL	ADSL (Asymmetric DSL)	Digital	180 V	1.1 MHz	8 Mbps	RJ45	1 twisted pair	<b>OVR TC 200 FR P</b>
		ADSL 2+			2.2 MHz	20 Mbps		1 or 2 twisted pairs	<b>1 or 2 x OVR TC 200 FR P</b>
		HDSL			240 kHz	2 Mbps		1 or 2 twisted pairs	<b>2 or 3 x OVR TC 200 FR P</b>
VDSL	30 MHz	52 Mbps			1 twisted pair	<b>OVR TC 200V P</b>			

ISDN	Network - Network	U	Digital	100 V	120 kHz or 1 MHz	160 kbps or 1.9 Mbps	Screws	1 or 2 twisted pairs	See ISDN table below
	Network - User	Basic rate (T0) (2B+D)		2.5 V (40 V between pairs)	120 kHz	160 kbps	RJ45	2 twisted pairs	
		Primary rate (T2) (MIC) (30B+D)		2.5 V	1 MHz	1.9 Mbps			
	User - User	Basic rate (S0) (2B+D)		2.5 V (40 V between pairs)	120 kHz	160 kbps			
		Primary rate (S2) (30B+D)	2.5 V	1 MHz	1.9 Mbps				
	local Interface ISDN / PSTN (R)	Analog	180 V	3.4 kHz	56 kbps	Extensible or RJ11	1 twisted pair		

Note: In case of weak signal, use OVR TC 200 V P SPD (parallel protection)

## Lightning Arrester Selection - ISDN

Equipment		Application	Rate	Input link	SPD reference	Output link	SPD reference
NT1*	Network Termination 1	Facilitates the dialogue between the operator's network and the subscriber's installation	Basic	U	<b>OVR TC 200 FR P</b>	T0	<b>OVR TC 48 V P</b>
LT*	Line Termination		Primary	U	<b>OVR TC 200 FR P</b>	T2	<b>OVR TC 6 V P</b>
NT2 (PABX)	Network Termination 2 (Private Automatic Branch eXchange)	Private automatic exchange making it possible to connect the terminals to each other and external lines	Basic	T0	<b>OVR TC 48 V P</b>	S0	<b>OVR TC 48 V P</b>
			Primary	T2	<b>OVR TC 6 V P</b>	S2	<b>OVR TC 6 V P</b>
Digital TE1	ISDN terminal	Digital telephone or PC card	Basic	S0	<b>OVR TC 48 V P</b>	Voice or data	/
			Primary	S2	<b>OVR TC 6 V P</b>	Voice or data	/
TA	Terminal Adapter	ISDN adaptation to analogue terminal	Basic	S0	<b>OVR TC 48 V P</b>	R	<b>OVR TC 200 FR P</b>
			Primary	S2	<b>OVR TC 6 V P</b>	R	<b>OVR TC 200 FR P</b>
Analogue TE2	Analogue terminal	Analogue telephone or modem		R	<b>OVR TC 200 FR P</b>	Voice or data	/
GNT**	Generalised Network Termination	Facilitates the dialogue between the operator's network and the subscriber's installation	Basic (Numéris Duo or Numéris Itoo)	U	<b>OVR TC 200 FR P</b>	S0	<b>OVR TC 48 V P</b>
						Z1 and Z2	<b>OVR TC 48 V P</b>
Digital TE2	Specific telephone terminal	Digital terminal adaptable to GNT	Basic	S0 x 5	<b>5 x OVR TC 48 V P</b>	Voice or data	/
Analogue TE2	Analogue terminal	Analogue telephone or modem		Z1 or Z2	<b>OVR TC 48 V P</b>	Voice or data	/

\* Connected to an NT2

\*\* No NT2

Note:

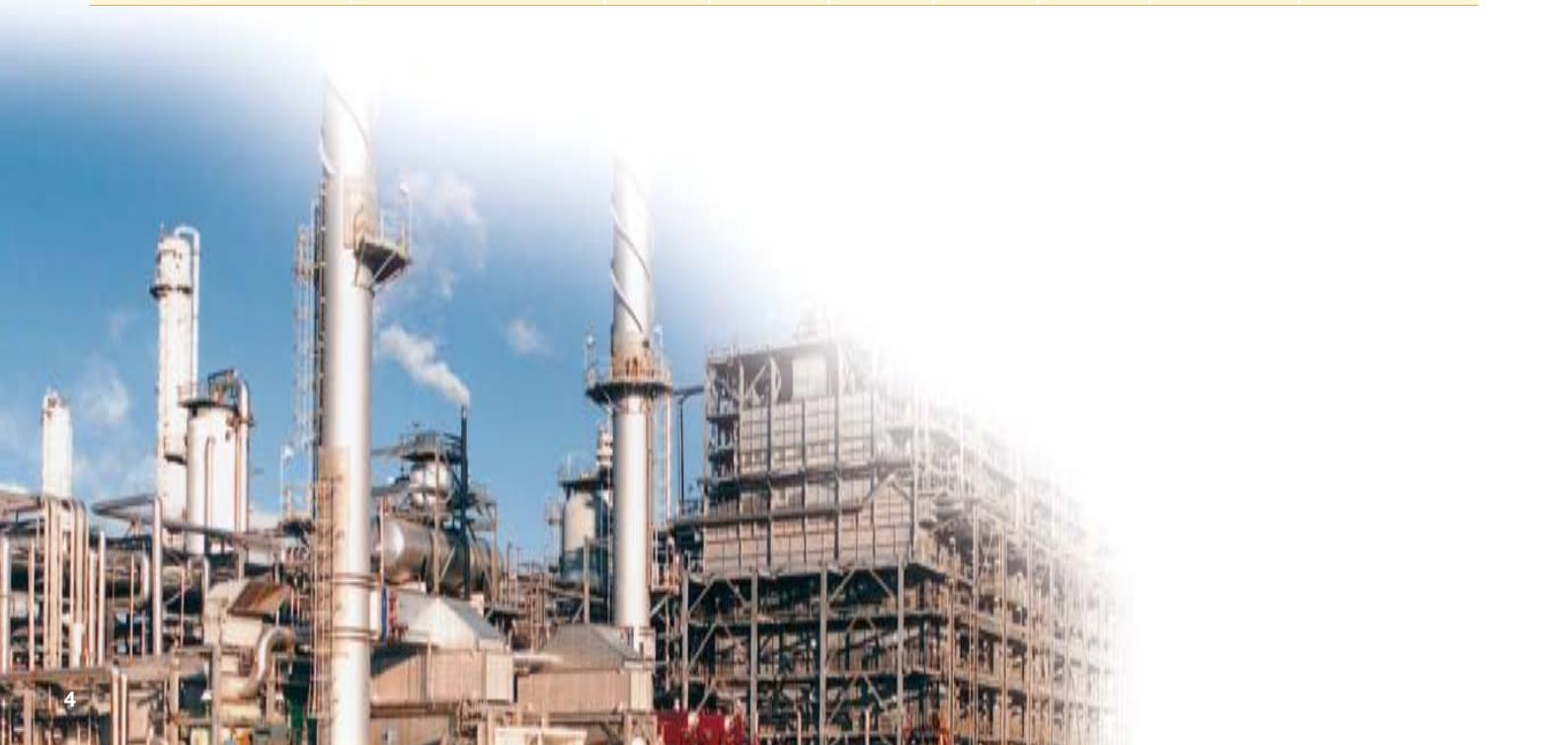
In case of NT1 power supply (if the distance between the operator and the subscriber is too big), don't forget to protect the supply box with a OVR T2 1N 40 275 P surge arrester.

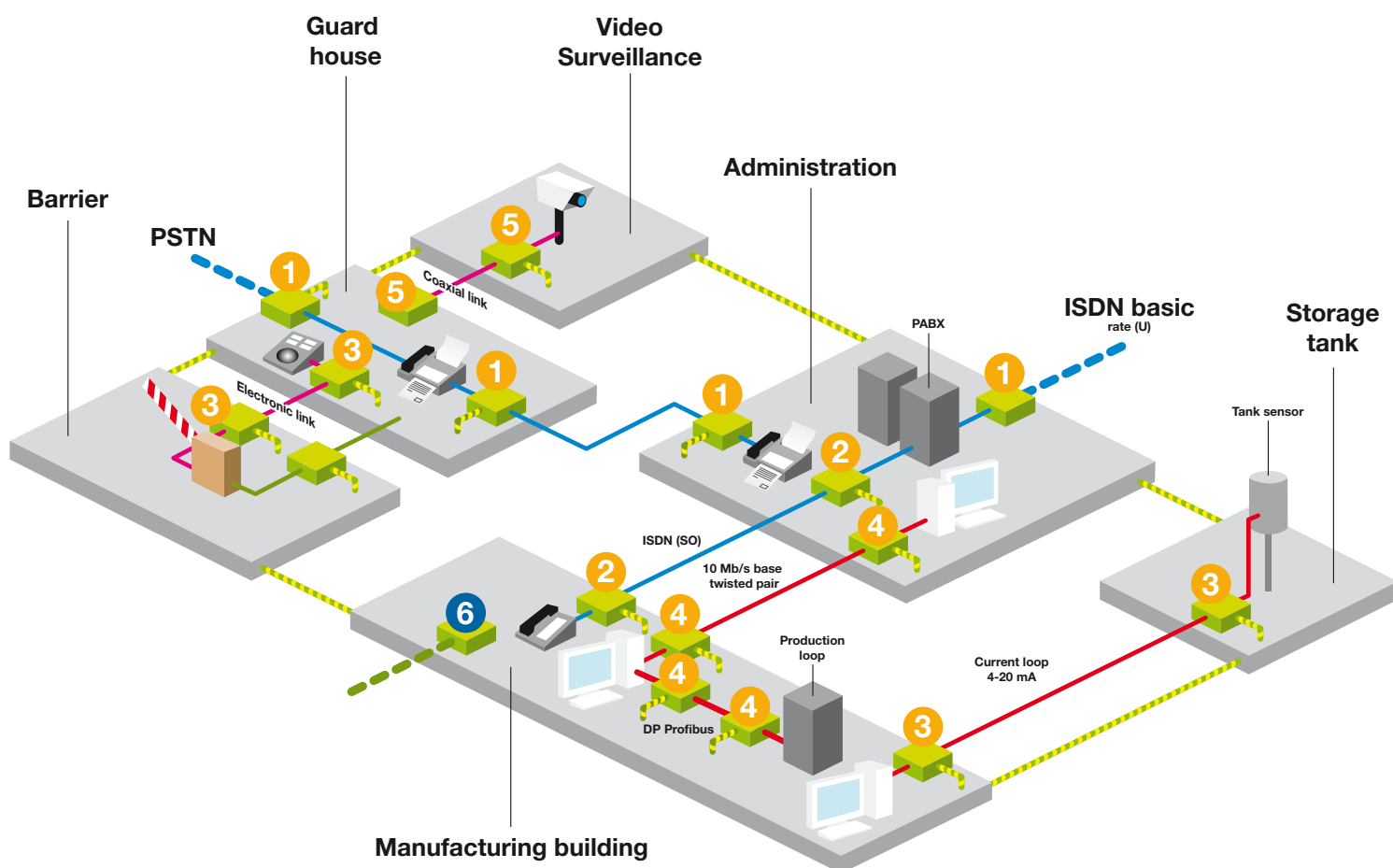


# Protection of Industrial / Electronic Networks and Radio Communication Equipment

## Field BUS System, Corporate Network, Control and Measurement

Name of the link		Application	Type of signal	Max. voltage of the signal	Nominal current	Max. rate	Usual connection	Transmission support	SPD reference
4 – 20 mA current loop	4 – 20 mA	Transmission of analogue signals over large distances	analogue	24 V	20 mA	20 kbps	Screws	1 twisted pair (simplex)	<b>OVR TC 24 V P</b>
	4 - 20 mA HART		analogue + digital					2 twisted pairs (full duplex)	<b>OVR TC 24 V P</b>
RS link	RS 232 (24 V)	Transmission of bits per voltage level on serial link	Digital	± 15 V	~ 100 mA	20 kbps	Screws or SUB-D9 or SUB-D25 or RJ45	4, 8 (RJ45), 9 (SUB-D9) or 25 (SUB-D25) threads	<b>(N threads/2) x OVR TC 24 V P</b>
				± 12 V				<b>(N threads/2) x OVR TC 12 V P</b>	
	-7 ... +12 V			35 Mbps		1 twisted pair		<b>OVR TC 12 V P</b>	
	± 6 V							<b>OVR TC 6 V P</b>	
10 Base T	Ethernet corporate network (local area network protocol)	Digital	5 V	~ 100 mA	10 Mbps	RJ45	2 twisted pairs	<b>2 x OVR TC 6 V P</b>	
100 Base T					100 Mbps			<b>2 x OVR TC 200 V P</b>	
Token ring					4, 16 ou 100 Mbps			<b>2 x OVR TC 6 V P or OVR TC 200 V P depending on rate</b>	
Field BUS	Foundation FieldBUS (H1, H2)	Communication between PC - Automation - Actuator - Sensor	Digital	32 V	10 - 30 mA	32 kbps - 2.5 Mbps	Screws or SUB-D9 or SUB-D25	1 twisted pair	<b>OVR TC 48 V P</b>
	Profibus DP			± 6 V	~ 100 mA	35 Mbps			<b>OVR TC 6 V P</b>
	Modbus			-7 ... +12 V	~ 100 mA				<b>OVR TC 12 V P</b>
EIB / KNX (ABB i bus)		Intelligent installation system	Digital	24 - 34 V	~ 10 mA	9.4 kbit/s	Screws	1 twisted pair	<b>OVR TC 48 V P</b>





**1** OVR TC 200 FR P  
2CTB804820R0400

**3** OVR TC 24 V P  
2CTB804820R0200

**5** Video protection  
8777 03 00



**2** OVR TC 48 V P  
2CTB804820R0300

**4** OVR TC 6 V P  
2CTB804820R0000

**6** OVR T1 3L 25 255  
2CTB815101R1300

## Equipment protection in the industrial 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 200 FR P 2CTB804820R0400	/	/	10 kA	5 kA	200 V	400 V
	OVR TC 48V P 2CTB804820R0300	/	/	10 kA	5 kA	48 V	70 V
	OVR TC 24V P 2CTB804820R0200	/	/	10 kA	5 kA	24 V	35 V
	OVR TC 6V P 2CTB804820R0000	/	/	10 kA	5 kA	6 V	15 V
	Video protection 8777 03 00	/	/	10 kA	/	/	20 V
	OVR T1 3L 25 255 2CTB815101R1300	25 kA	50 kA	/	25 kA	230 V	2.5 kV
	OVR T2 3N 40 275 s P TS 2CTB803953R0200	/	/	40 kA	20 kA	230 V	1.4 kV

## Practical Information

- Do not forget the equipotentiality of all the equipment, which must be connected to the site's earthing system.
- Install the lightning arrester as close as possible to the equipment to be protected.
- In the case of shielded data cables, the shielding is usually connected to the earth, via the Dataline surge arrester, on one side only.
- As a complement to low current protections, energy lightning arresters should be installed. All these protections must be earthed in an equipotential manner.



OVR T2 1N 40 275 P  
2CTB803952R1100



OVR TC 24 V P  
2CTB804820R0200

Interphone  
protection

Telephone  
protection

Automatic  
exchange  
protection

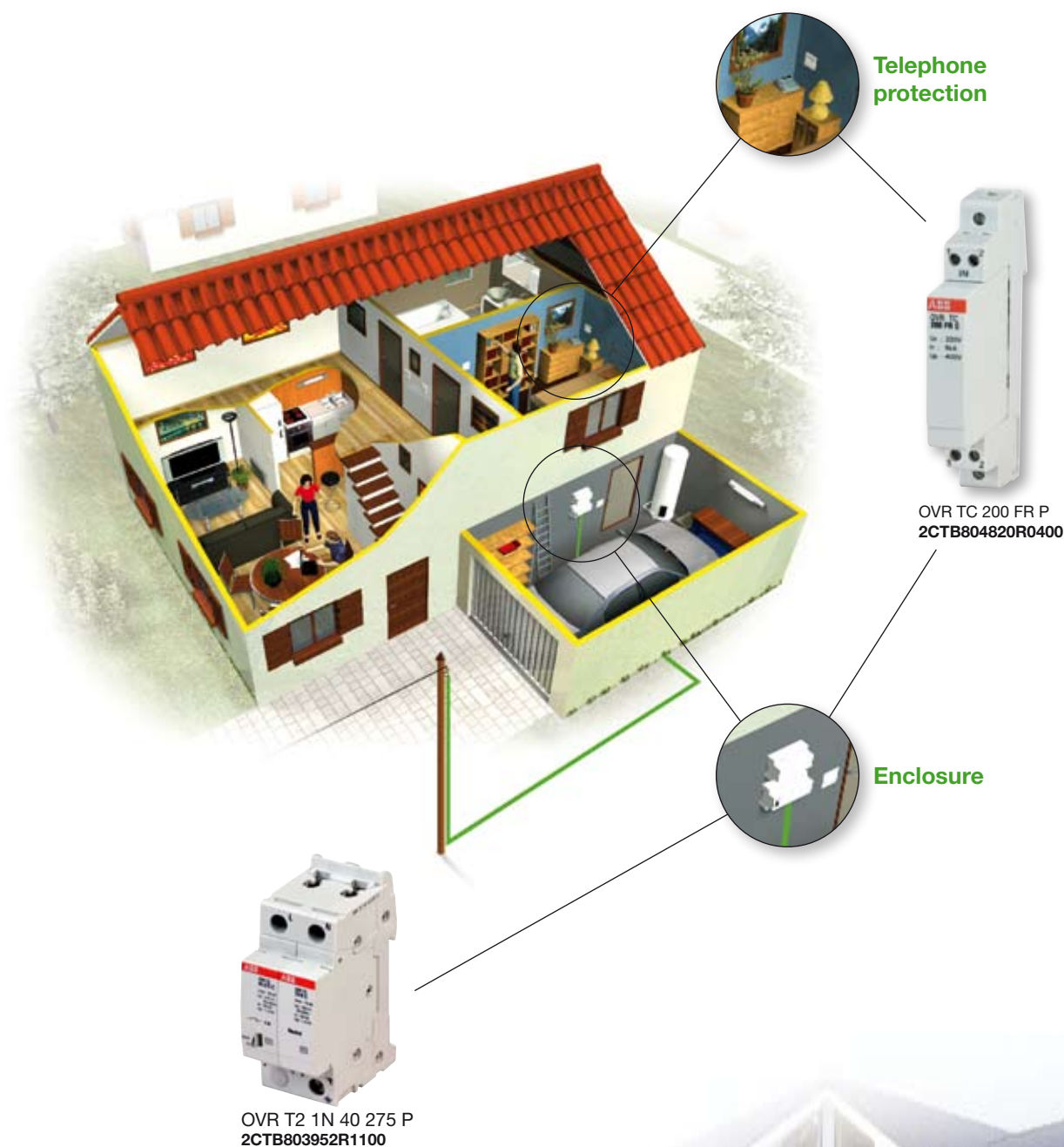
OVR TC 48 V P - ISDN (S<sub>0</sub>)  
2CTB804820R0300

OVR T1 3N 25 255 TS  
2CTB815101R0700



## Equipment protection in commercial sector

	Description	Impulse current $I_{imp}$ (10/350)	Follow current $I_{fl}$	Max. discharge current $I_{max}$ (8/20)	C <sub>2</sub> 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
MSB	OVR T1 3N 25 255 TS 2CTB815101R0700	25 kA	50 kA	/	25 kA	230 V	2.5 kV
SDB	OVR T2 1N 40 275 P 2CTB803952R1100	/	/	/	20 kA	230 V	1.4 kV





## 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 T2 1N 40 275 P 2CTB803952R1100	40 kA	20 kA	230 V	1.4 kV

# OVR TC .. P

## Electrical characteristics

	OVR TC 6 V P 2CTB804820R0000	OVR TC 12 V P 2CTB804820R0100	OVR TC 24 V P 2CTB804820R0200	OVR TC 48 V P 2CTB804820R0300	OVR TC 200 V P 2CTB804820R0500	OVR TC 200 FR P 2CTB804820R0400
Number of conductors protected	1 pair	1 pair	1 pair	1 pair	1 pair	1 pair
Test category	C2	C2	C2	C2	C2	C2
Maximum permanent voltage $U_c$	7 V	14 V	27 V	53 V	220 V	220 V
Limitation voltage $U_p$	15 V	20 V	35 V	70 V	700 V	400 V
$C_2$ nominal discharge current $I_n$ (8/20)	5 kA	5 kA	5 kA	5 kA	5 kA	5 kA
Maximum discharge current $I_{max}$ (8/20)	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
Alternating current endurance	10 A	10 A	10 A	10 A	/	10 A
Rated current $I_N$	140 mA	140 mA	140 mA	140 mA	/	140 mA
Series resistance	10 $\Omega$	10 $\Omega$	10 $\Omega$	10 $\Omega$	/	10 $\Omega$
Shielding - earth connection	Connected	Connected	Connected	Connected	Connected	Connected

## Mechanical characteristics

Maximum line sections	1.5 mm <sup>2</sup>
Length of line stripping	6 mm
Line coupling torque	0.2 Nm
Maximum shielding section	2.5 mm <sup>2</sup>
Length of shielding stripping	7 mm
Shielding coupling torque	0.4 Nm
Status indicator *	No

## Miscellaneous characteristics

Protection level	IP 20
Storage temperature	-40 °C to +80 °C
Operating temperature	-40 °C to +80 °C
Maximum height	2,000 m
Box material (cartridge socket)	PC grey RAL
Fire resistance as per UL 94	V0
Reference standard	CEI / EN 61643-21
Weight	50 g

## Maintenance

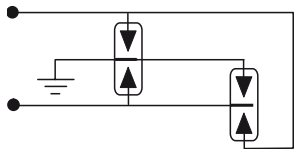
	OVR TC 6 V C 2CTB804821R0000	OVR TC 12 V C 2CTB804821R0100	OVR TC 24 V C 2CTB804821R0200	OVR TC 48 V C 2CTB804821R0300	OVR TC 200 V C 2CTB804821R0400	OVR TC 200 FR C 2CTB804821R0500
Replacement cartridges						

\*The OVR TC .. P lightning arrester is considered obsolete when there is loss of transmission

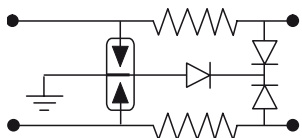
OVR TC pluggable surge arresters are also available with RJ 11 and RJ 45 sockets:  
 - Base TC RJ11 - 2CTB804840R1000 (base only)  
 - Base TC RJ45 - 2CTB804840R1100 (base only)

## Schematic diagrams

### Parallel OVR TC P 200 V

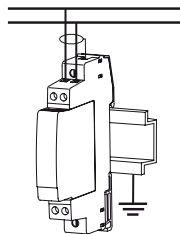


### Series OVR TC P / xx V / 200 FR



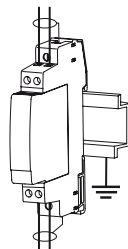
## Connections

### Parallel OVR TC P 200 V



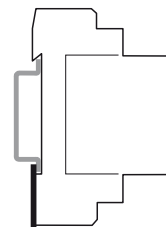
OVR TC P 200 V

### Series OVR TC P / xx V / 200 FR



OVR TC P 200 FR  
 OVR TC P 48 V  
 OVR TC P 24 V  
 OVR TC P 12 V  
 OVR TC P 06 V

## Fastening



Fastening by simple click onto DIN rail

Dimensions (mm)	L	H	P
OVR TC P (all models)	12.5	85	63



## Advantages of the OVR TC Pluggable Range



## OVR TC .. P Equipped with RJ Sockets



RJ 11 connection (width: 15 mm)



RJ 45 connection (width: 24 mm)

# Recognised Expertise in Lightning Protection

ABB Lightning Protection group, located in Bagnères-de-Bigorre in the Hautes Pyrénées, has several decades of experience and uses its technological expertise to provide protection against lightning and surge current.

In addition to up-to-date expertise with regard to its global lightning protection offer (external and internal), ABB Lightning Protection Group offers a wide range of lightning conductors and surge arresters to protect low current and power installations.



LESPS laboratory in  
Bagnères-de-Bigorre - France

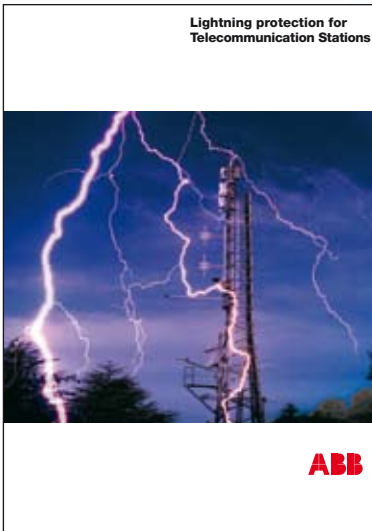


Test generator

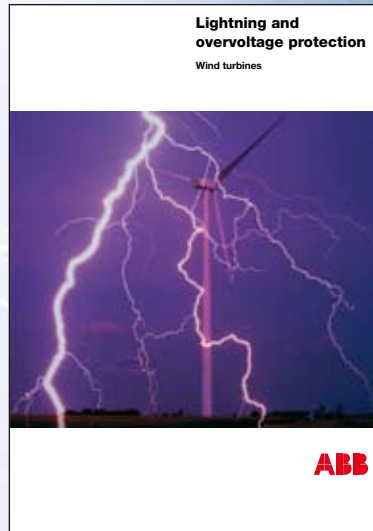
ABB Lightning Protection group has also at its disposal laboratory facilities with several generators capable of testing all the equipment in real conditions with different amplitude surge currents, and so to optimise protection solutions.



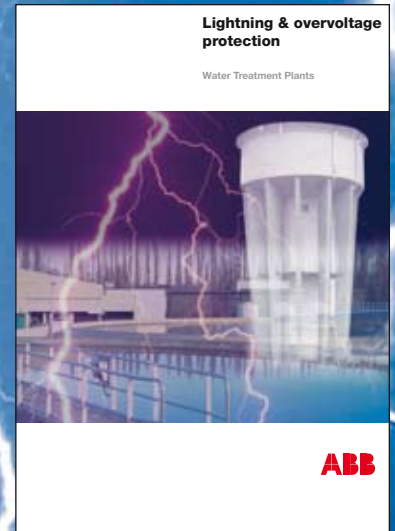
# The low current SPDs can be used in various applications



Telecom



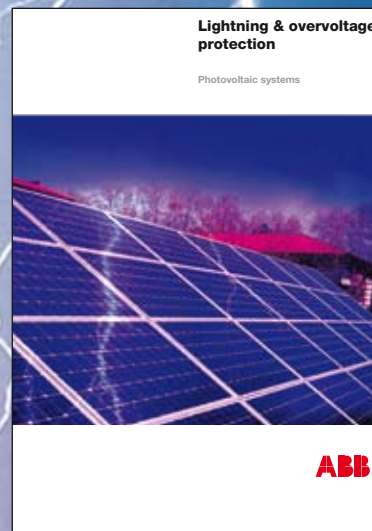
Wind turbine



Water treatment



OVR pro M compact



Photovoltaic

## A wide range of OVR brochures dedicated by applications





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