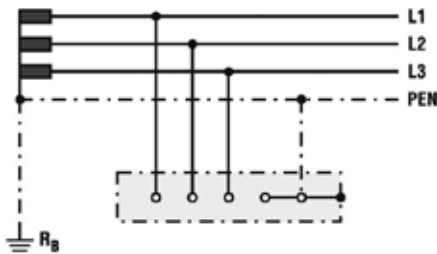


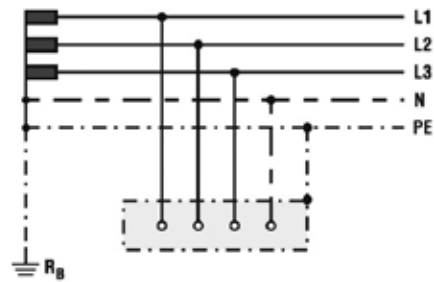
Surge arresters – ETITEC

ETITEC surge arresters are intended for protection of electrical installations and devices against overvoltage effects, which may occur in atmospheric discharges and switching overvoltages. The main part of surge arrester is ZnO non-linear varistor. Its main characteristic is ohmic nonlinearity, which depends strongly on the applied voltage at the clamps. All arresters have modular construction, a special feature is interchanging varistor part and visual signalization for varistor thermal failure. The signalization performed with a red flag, which appears when failure occurs. The models with RC mark are equipped with auxiliary contacts for signalization. ETI also provides SPD protection for PV systems - see Green Protect catalogue.

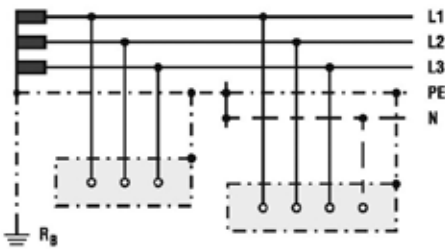
Common power distribution systems (Europe)



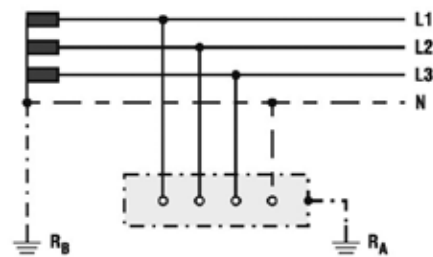
TN-C system



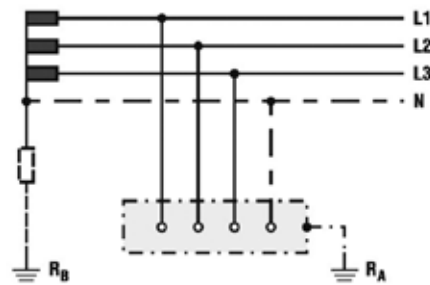
TN-S system



TN-C-S system



TT system



IT system

Surge protection of SIGNAL/CONTROL lines

ETITEC SIGNAL/CONTROL low voltage protective devices have been developed to protect against the effects of induced voltages onto data, signal and communication circuits. Coarse protection is provided by a three terminal gas discharge tube while fine protection is provided using a high speed silicon or metal oxide varistor stage. Care is taken to ensure coordination between these two stages without voltages or surge current blind spots occurring. The circuit topology consists of a multi-stage protector providing both common (longitudinal) mode and differential (transverse) mode protection.

ETITEC SIG EM-TD series provides overcurrent protection by PTC element, which provides a level of protection against short circuit or mains incursion. Internal thermal disconnectors are also employed to reduce the hazards of thermal runaway during fault conditions.

ETITEC SIG EMH-TC series is designed to minimize intercapacitance and shunt capacitance, thereby maximizing the operating frequency to 35MHz in most cases. Thermal protection is provided to reduce the hazards of thermal runaway should there be an inadvertent mains incursion fault.

ETITEC SIG EMS-TC series is intended for those applications where high ground potential rises may frequently occur, such as in locations close to electric railways. Thermal protection is provided to reduce the hazards of thermal runaway should there be an inadvertent mains incursion fault.

ETITEC SIG EMO series is intended for those application where higher than normal surge discharge levels may be experienced.

EM-RS485 has been developed to protect 2 pair data transmission circuits using the RS 485, RS 422 and V 11 protocol. The circuit consists of two balanced pairs with equipotential equalization between them. Equipotential equalization is also provided between signal ground and protective ground to avoid equipment damage from ground potential rises during surge activity.

Coarse protection is provided by a three terminal gas discharge tube while fine protection is provided using a high speed silicon stage which provides both common (longitudinal) mode protection from each line to protective ground, and differential (transverse) mode protection between each pair.

Care is taken to ensure coordination between these two stages without voltage or surge current blind spots occurring. Thermal protection is provided to reduce the hazards of thermal runaway should there be an inadvertent mains incursion fault.

ETITEC LAN series is intended to protect Local Area Networks (LAN) from over voltage surges and electrostatic discharges created by switching transients in buildings. LAN systems are particularly prone to such disturbances because of the often long cable lengths involved which behave like antennas to such atmospheric disturbances. It provides protection to all 8 lines in the UTP, STP and is Cat 6 capable. Ground potential equalization between signal and protective (network or PC chassis) ground is provided.

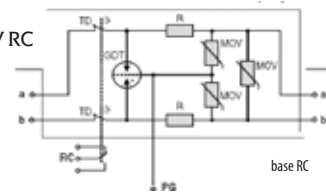
Advantages:

- indication window of faulty device
- remote signalisation (option)
- mounting on top hat fixing DIN rail
- high degree of protection
- PTC is the protective element
- metal snapper, new way of mounting on DIN rail (easier, quicker)

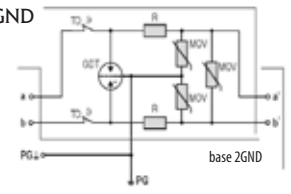
Surge protection of SIGNAL/CONTROL lines type EM-TD

Technical data		
Type	ETITEC EM-TD 110V	ETITEC EM-TD 24V
Protection construction	two parts: base extractable insert	
Number of protected pairs	1 (2 conductors)	
Nominal operating voltage Un	110V DC	24V DC
Max. continuous operating voltage	170V DC	28V DC
Rated spark overvoltage	184-264 V	30-36 V
Rated operating current IL at 25°C	1A	145 mA
Nominal discharge current In (8/20)	10kA	10 kA
Max. discharge current Imax (8/20)	20 kA	20 kA
Residual voltage at 5kA (8/20)	< 450 V	< 65 V
Response time t_A	< 25ns	< 1ns
Thermal protection	thermal disconnection in lines a and b	
Overcurrent protection	PTC resistor at $I > 0,3A$	
Insulation resistance	> 1 Gohm/100 V DC	> 24 Mohm/24 V DC
Serial resistance R	cca. 1ohm	cca. 9-11 ohm
Transverse capacitance C	90 pF	2,9 pF
Limit frequency f_G	10 Mhz	1,4 Mhz
Terminal cross section	Multi-strand to 6 mm ²	
Operating temperature J	- 40°C ... +80°C	- 25°C ... +50°C
Degree of protection	IP 20	
Casing material	thermoplastic; extinguishing degreeV-0	
Housing colour	yellow	
Dimensions DIN 43880	1 TE	
Mounting	on 35 mm DIN rail	

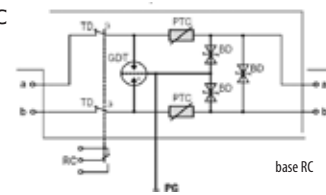
ETITEC EM-TD 110V RC



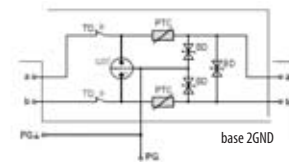
ETITEC EM-TD 110V 2 GND



ETITEC EM-TD 24V RC



ETITEC EM-TD 24V 2 GND

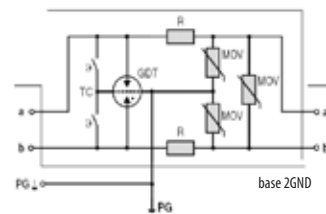


- LEGEND
 TD - terminal decoupler
 GDT - gas discharge tube
 MOV - varistor
 PTC - resistor with a positive temperature coefficient
 R - resistor
 BD - bi-directional diode
 SG - signal grounding
 PG - protective grounding

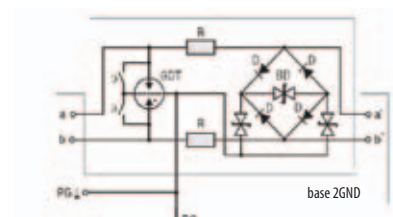
Surge protection of SIGNAL/CONTROL lines type EMH-TC

Technical data		
Type	ETITEC EMH-TC 110V	ETITEC EMH-TC 24V
Protection construction	two parts: base extractable insert	
Number of protected pairs	1 (2 conductors)	
Nominal operating voltage Un	110V DC	24V DC
Max. continuous operating voltage	170V DC	28V DC
Rated spark overvoltage	184-264 V	30-36 V
Rated operating current IL at 25°C	1A	1 A
Nominal discharge current In (8/20)	10kA	10 kA
Max. discharge current Imax (8/20)	20 kA	20 kA
Residual voltage at 5kA (8/20)	< 450 V	< 65 V
Response time t_A	< 25ns	< 1ns
Thermal protection	thermo clip	
Insulation resistance	> 1 Gohm/100 V DC	> 24 Mohm/24 V DC
Serial resistance R	cca. 1ohm	cca. 1ohm
Transverse capacitance C	150 pF	30 pF
Limit frequency f_G	10 Mhz	35 Mhz
Terminal cross section	Multi-strand to 6 mm ²	
Operating temperature J	- 40°C ... +80°C	
Degree of protection	IP 20	
Casing material	thermoplastic; extinguishing degreeV-0	
Housing colour	yellow	
Dimensions DIN 43880	1 TE	
Mounting	on 35 mm DIN rail	

ETITEC EMH-TC 110V 2 GND



ETITEC EMH-TC 24V 2 GND

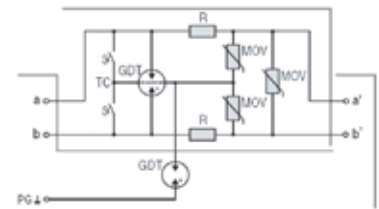


- LEGEND
 TD - terminal decoupler
 GDT - gas discharge tube
 MOV - varistor
 PTC - resistor with a positive temperature coefficient
 R - resistor
 BD - bi-directional diode
 SG - signal grounding
 PG - protective grounding

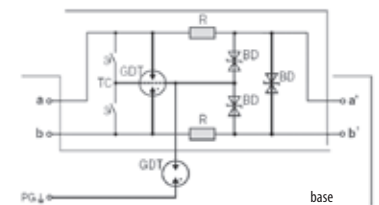
Surge protection of SIGNAL/CONTROL lines type EMS-TC

Technical data		
Type	ETITEC EMS-TC 110V	ETITEC EMS-TC 24V
Protection construction	two parts: base extractable insert	
Number of protected pairs	1 (2 conductors)	
Nominal operating voltage U_n	110V DC	24V DC
Max. continuous operating voltage	170V DC	28V DC
Rated spark overvoltage	a/b-PG; 420-680 V a/b; 184-264 V	a/b-PG; 350-500 V a/b; 30-36 V
Rated operating current I_L at 25°C	1A	1 A
Nominal discharge current I_n (8/20)	10kA	10 kA
Max. discharge current I_{max} (8/20)	20 kA	20 kA
Residual voltage at 5kA (8/20)	< 450 V	< 65 V
Response time t_A	a/b; < 25ns a/b-PG; 100ns	< 1ns a/b-PG; 100ns
Insulation resistance	> 1 Gohm/100 V DC	> 24 Mohm/24 V DC
Serial resistance R	cca. 1ohm	cca. 1ohm
Transverse capacitance C	a/b; 90 pF a/b-PG; 8pF	a/b; 1,9 pF a/b-PG; 8pF
Limit frequency f_G	10 Mhz	1,4 Mhz
Terminal cross section	Multi-strand to 6 mm ²	
Operating temperature J	- 40°C ... +80°C	
Degree of protection	IP 20	
Casing material	thermoplastic; extinguishing degreeV-0	
Housing colour	yellow	
Dimensions DIN 43880	1 TE	
Mounting	on 35 mm DIN rail	

ETITEC EMS-TC 110V



ETITEC EMS-TC 24V

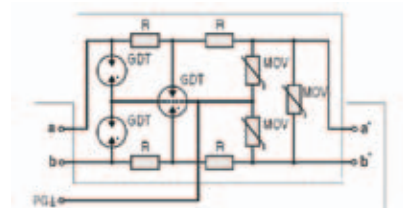


LEGEND
 TD - terminal decoupler
 GDT - gas discharge tube
 MOV - varistor
 R - resistor
 BD - bi-directional diode
 PG - protective grounding

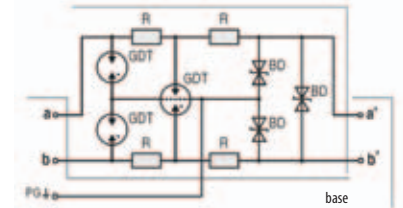
Surge protection of SIGNAL/CONTROL lines type EMO

Technical data		
Type	ETITEC EMO 110V	ETITEC EMO 24V
Protection construction	two parts: base + extractable insert	
Number of protected pairs	1 (2 conductors)	
Nominal operating voltage U_n	110V DC	24V DC
Max. continuous operating voltage	170V DC	28V DC
Rated spark overvoltage	a/b-PG; 184-264 V a/b; 184-264 V	a/b-PG; 30-36 V a/b; 30-36 V
Rated operating current I_L at 25°C	1 A	1 A
Nominal discharge current I_n (8/20)	20 kA	20 kA
Max. discharge current I_{max} (8/20)	30 kA	30 kA
Lightning impulse current (10-350)	5 kA	5 kA
Residual voltage at 5kA (8/20)	< 450 V	< 65 V
Response time t_A	< 25ns	< 1ns
Insulation resistance	> 1 Gohm/100 V DC	> 24 Mohm/24 V DC
Serial resistance R	cca. 2 ohm	cca. 2 ohm
Transverse capacitance C	150 pF	2,9 pF
Limit frequency f_G	10 Mhz	1,8 Mhz
Terminal cross section	Multi-strand to 6 mm ²	
Operating temperature J	- 40°C ... +80°C	
Degree of protection	IP 20	
Casing material	thermoplastic; extinguishing degreeV-0	
Housing colour	yellow	
Dimensions DIN 43880	1 TE	
Mounting	on 35 mm DIN rail	

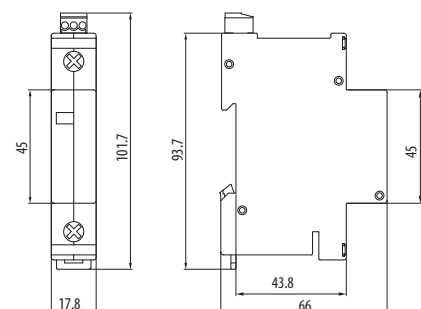
ETITEC EMO 110V



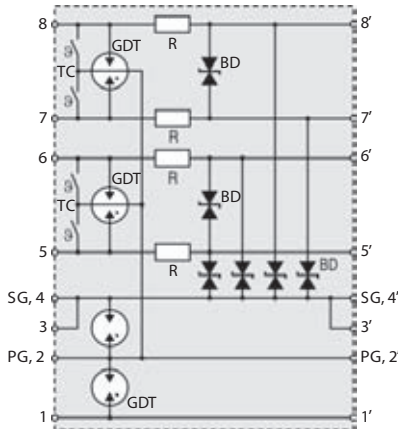
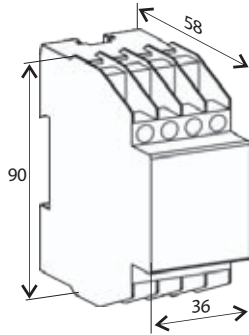
ETITEC EMO 24V



LEGEND
 GDT - gas discharge tube
 MOV - varistor
 R - resistor
 BD - bi-directional diode



ETITEC C EM-TD, EMH-TC, EMS-TC, EMO

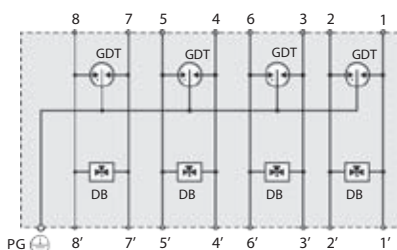
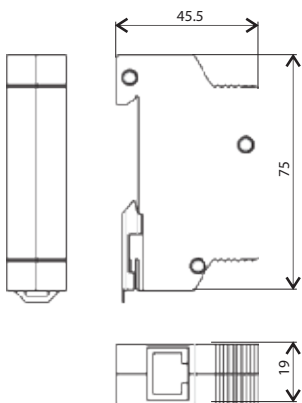


Legend:

- TC thermo-clip
- GDT gas discharge tube
- R resistor
- BD bi-directional TVS diode
- PG protective grounding
- SG signal grounding

Technical data ETITEC EM-RS485

Protection construction		Protective module
Number of protected pairs		2 (4 conductors)
Nominal operating voltage	U_n	5VDC
Max. continuous operating voltage	U_c	6VDC
Rated spark overvoltage	(5, 6, 7 & 8 - 4, 5, 6, 7)	6.5V - 8.5V
	(5-6 & 7-8)	6.5V - 8.5V
	(5, 6, 7 & 8 - 2, 3, 4)	78V - 116V
Rated operating current at 25°C	I_l	500mA
Nominal discharge current (8/20µs)	I_n	20kA
Residual voltage at 5 kA (8/20µs)		20V
Response time of overvoltage protection	t_A	< 1ns (5, 6, 7, 8 - SG)
Thermal protection		Thermo-clip in lines 5, 6, 7 and 8
Insulation resistance of the protection		6kΩ
Serial resistance	R	1.7 - 1.9Ω
Transverse capacitance	C	< 2nF
Limit frequency	f_G	> 1MHz
Terminal cross section		Multi-strand to 2 x 2.5mm ²
Operating temperature		-40°C ... +80°C
Degree of protection		IP 20
Housing material		Thermoplastic; gray, extinguishing degree V-0
Dimensions DIN 43880		2TE
Mounting EN 60715		



Legend:

- GDT gas discharge tube
- DB diode block
- PG protective grounding

Technical data ETITEC LAN

Protection construction		Protective module
Nominal operating voltage		48VDC
Max. continuous operating voltage		48VDC
Nominal operating current		1A
Nominal discharge current (8/20µs)	I_n	150A line - line
Total nominal discharge current (8/20µs)	I_n	10kA line - PG
Voltage protection level at I_n	U_p	150V line - line
		550V line - PG
Limit frequency	f_G	< 250MHz (Class E)
Response time of overvoltage protection	t_A	< 1ns
Connection		Input/Output: RJ45 sockets, all 4 line pairs protected
Operating temperature		-40°C ... +80°C
Degree of protection		IP 20
Housing material		Metal