Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

Lightning and Overvoltage Protection
ProTec T1

Special features:

- Available in a wide variety of operating voltages, 75 V to 750 V
- High impulse current capability using single MOV– 480 V and 750 V versions comes with reduced impulse current
- Sensitive state-of-the-art thermal disconnector
- Back-up fuse up to 315 A gG, 750 V version comes with 250 A gG
- Short circuit current rating up to 50 kA
- Vibration and shock withstand capability
- VDE-IEC Class I & II / EN Type 1+2 certified and Open Type 1 SPD Listed
- All modules, also N-PE, with operating state green-red
- Optional remote contact (RC) signaling

Compliance	IEC 61643-11:2011	EN 61643-11:2012	UL 1449 4th Edition
ProTec T1 Series	✓	✓	✓

The ProTec T1 series offers basic protection as a Type 1 surge protective device that comes with an extended maximum continuous operating voltage range span from 75 V to 750 V. Due to its Type 1 classification the product can be installed between boundaries OA – 1 and higher. The varistor based protection module features outstanding short-circuit currents up to 50 kA_{RMS} without using a back up to a main fuse nominal current of 315 A. All modules are equipped with state-of-the-art thermal disconnector and life-status monitoring (green-red). Due to a unique vibration-proof locking mechanism design, these products are suitable for use in high vibration environments. An optional remote contact (RC) feature offers a three-pole remote signaling terminal to remotely monitor the operating state of the device.

RoHS COMPLIANT

ProTec T1 1+0

12.5 kA Series

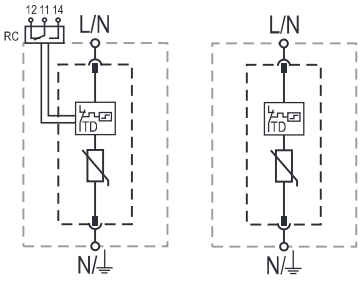
Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TN-S, TN-C, TT (only L-N)
Mode of Protection: L-PE, N-PE (only TN-S), L-PEN, L-N
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

Technical Data

ProTec T1-xxx-1+0(-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60 V	120 V	240 V	277 V	400 V	600 V
Maximum Continuous Operating Voltage (AC)	U_c	75 V	150 V	300 V	350 V	480 V	750 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA	50 kA	50 kA	50 kA	50 kA	35 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	12.5 kA	12.5 kA	12.5 kA	12.5 kA	10 kA	5 kA
Specific Energy	W/R	39 kJ/Ω	39 kJ/Ω	39 kJ/Ω	39 kJ/Ω	25 kJ/Ω	6.25 kJ/Ω
Charge	Q	6.25 As	6.25 As	6.25 As	6.25 As	5 As	2.5 As
Voltage Protection Level	U_p	700 V	1000 V	1500 V	1750 V	2100 V	3200 V
Response Time	t_A	< 25 ns					
Overcurrent Protection (max)		315 A / 250 A gG					250 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA / 50 kA					50 kA
TOV Withstand 5s	U_T	114 V	175 V	337 V	403 V	581 V	871 V
TOV 120min	U_T	114 V	229 V	442 V	529 V	762 V	1143 V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75 V	150 V	300 V	350 V	480 V	750 V
Voltage Protection Rating	VPR	330 V	600 V	900 V	1200 V	1500 V	2500 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	100 kA	200 kA	150 kA	150 kA	200 kA	150 kA
Mechanical & Environmental							
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]					
Permissible Operating Humidity	RH	5%...95%					
Altitude (max)		13123 ft [4000 m]					
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5 Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)					
Mounting		35 mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)					
Order Information							
Order Code		**75**	**150**	**300**	**350**	**480**	**750**
ProTec T1-xxx-1+0		59.0007	59.0009	59.0011	59.0013	59.0015	59.0017
ProTec T1-xxx-1+0-R (with remote contacts)		59.0008	59.0010	59.0012	59.0014	59.0016	59.0018
ProTec T1-xxx-P (plug)		59.0001	59.0002	59.0003	59.0004	59.0005	59.0006

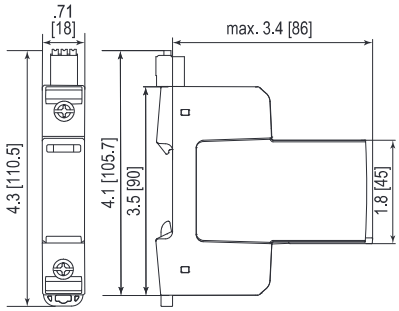
Internal Configuration



Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*

Complete Unit

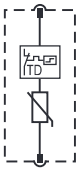


Complete Unit Dimensions & Packaging

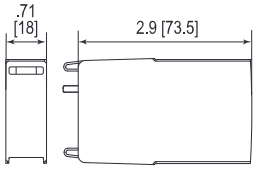
ProTec T1-xxx-1+0		75	150	300	350	480	750
Weight	pounds	.304	.355	.381	.423	.430	.437
	grams	138	161	173	192	195	198
ProTec T1-xxx-1+0-R							
Weight	pounds	.320	.370	.397	.439	.445	.452
	grams	145	168	180	199	202	205
DIN 43880 Dimension		1 TE / .71" [18]					
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]					
Standard Order Quantity		12 Units					

Plug Internal Configuration

ProTec T1-xxx-P



Spare Plug



Single Unit Dimensions & Packaging

ProTec T1-xxx-P		75	150	300	350	480	750
Weight	pounds	.152	.203	.229	.271	.278	.284
	grams	69	92	104	123	126	129
DIN 43880 Dimension		1 TE / .71" [18]					
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]					
Standard Order Quantity		28 Units					

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTec T1 2+0

12.5 kA Series

Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TN-S
Mode of Protection: L-PE, N-PE
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

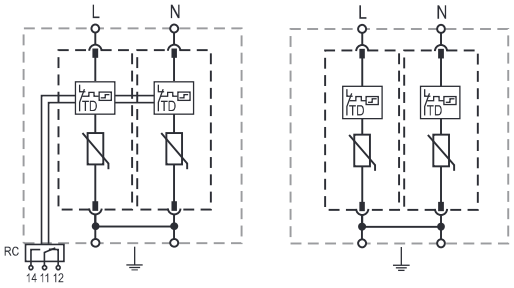
Technical Data

ProTec T1-xxx-2+0(-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω	6.25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	6.25As	5As	2.5As
Voltage Protection Level	U_p	700V	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25ns					
Overcurrent Protection (max)		315A / 250A gG					250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					50kA
TOV Withstand 5s	U_T	114V	175V	337V	403V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1200V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	200kA	150kA
Mechanical & Environmental							
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]					
Permissible Operating Humidity	RH	5%...95%					
Altitude (max)		13123 ft [4000m]					
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35mm² (Solid, Stranded) / 25mm² (Flexible)					
Mounting		35mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)					
Order Information							
Order Code		**75**	**150**	**300**	**350**	**480**	**750**
ProTec T1-xxx-2+0		59.0349	59.0019	59.0021	59.0023	59.0025	59.0027
ProTec T1-xxx-2+0-R (with remote contacts)		59.0350	59.0020	59.0022	59.0024	59.0026	59.0028
ProTec T1-xxx-P (plug)		59.0001	59.0002	59.0003	59.0004	59.0005	59.0006

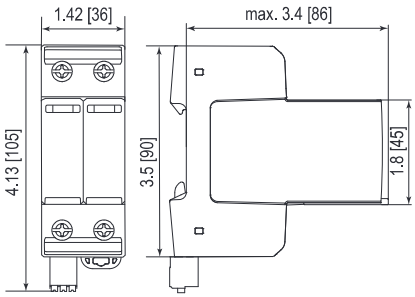
Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*



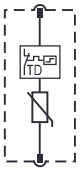
Complete Unit



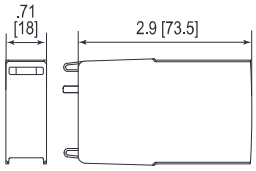
Complete Unit Dimensions & Packaging							
ProTec T1-xxx-2+0		**75**	**150**	**300**	**350**	**480**	**750**
Weight	pounds	.595	.697	.750	.833	.847	.860
	grams	270	316	340	378	384	390
ProTec T1-xxx-2+0-R							
Weight	pounds	.615	.717	.769	.853	.866	.880
	grams	279	325	349	387	393	399
DIN 43880 Dimension		2 TE / 1.42" [36]					
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]					
Standard Order Quantity		7 Units					

Plug Internal Configuration

ProTec T1-xxx-P



Spare Plug



Single Unit Dimensions & Packaging							
ProTec T1-xxx-P		**75**	**150**	**300**	**350**	**480**	**750**
Weight	pounds	.152	.203	.229	.271	.278	.284
	grams	69	92	104	123	126	129
DIN 43880 Dimension		1 TE / .71" [18]					
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]					
Standard Order Quantity		28 Units					

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTec T1 3+0

12.5 kA Series

Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

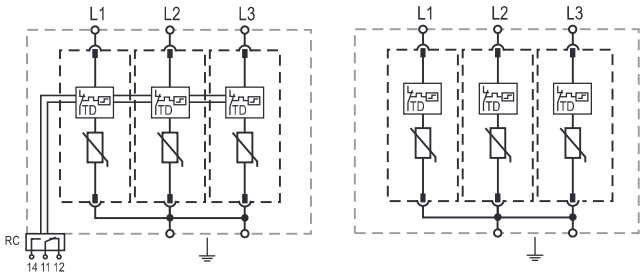
Technical Data

ProTec T1-xxx-3+0(-R)		150	300	350	480	750
IEC Electrical						
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω	6.25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	5As	2.5As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25ns				
Overcurrent Protection (max)		315A / 250A gG				250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA				50kA
TOV Withstand 5s	U_T	175V	337V	403V	581V	871V
TOV 120min	U_T	229V	442V	529V	762V	1143V
	mode	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1				
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	200kA	150kA
Mechanical & Environmental						
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]				
Permissible Operating Humidity	RH	5%...95%				
Altitude (max)		13123 ft [4000m]				
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5Nm]				
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)				
		35mm² (Solid, Stranded) / 25mm² (Flexible)				
Mounting		35mm DIN Rail, EN 60715				
Degree of Protection		IP 20 (built-in)				
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0				
Thermal Protection		Yes				
Operating State / Fault Indication		Green Flag / Not Green Flag				
Remote Contacts (RC)		Optional				
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)				
Order Information						
Order Code		150	300	350	480	750
ProTec T1-xxx-3+0		59.0029	59.0031	59.0033	59.0035	59.0037
ProTec T1-xxx-3+0-R (with remote contacts)		59.0030	59.0032	59.0034	59.0036	59.0038
ProTec T1-xxx-P (plug)		59.0002	59.0003	59.0004	59.0005	59.0006

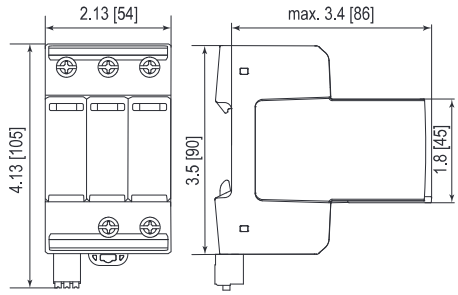
Internal Configuration

Legend

L	*Line Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*



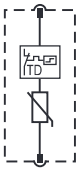
Complete Unit



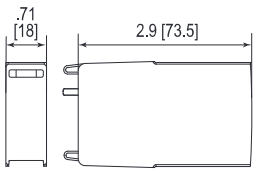
Complete Unit Dimensions & Packaging						
ProTec T1-xxx-3+0		**150**	**300**	**350**	**480**	**750**
Weigh	pounds	1.021	1.100	1.226	1.246	1.265
	grams	463	499	556	565	574
ProTec T1-xxx-3+0-R						
Weight	pounds	1.041	1.120	1.246	1.265	1.285
	grams	472	508	565	574	583
DIN 43880 Dimension		3 TE / 2.13" [54]				
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]				
Standard Order Quantity		5 Unit				

Plug Internal Configuration

ProTec T1-xxx-P



Spare Plug



Single Unit Dimensions & Packaging						
ProTec T1-xxx-P		**150**	**300**	**350**	**480**	**750**
Weight	pounds	.203	.229	.271	.278	.284
	grams	92	104	123	126	129
DIN 43880 Dimension		1 TE / .71" [18]				
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]				
Standard Order Quantity		28 Units				

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTec T1 4+0

12.5 kA Series

Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TN-S
Mode of Protection: L-PE, N-PE
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

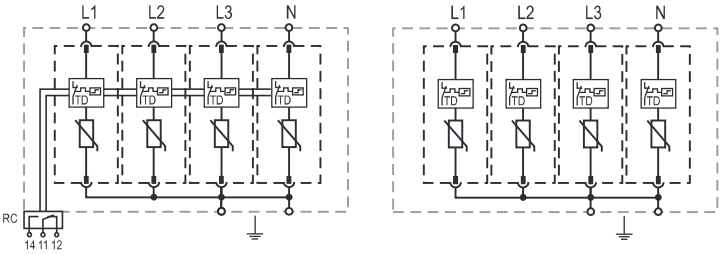
Technical Data

ProTec T1-xxx-4+0(-R)		150	300	350	480
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	10kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	5As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V
Response Time	t_A	< 25ns			
Overcurrent Protection (max)		315A / 250A gG			
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA			
TOV Withstand 5s	U_T	175V	337V	403V	581V
TOV 120min	U_T	229V	442V	529V	762V
	mode	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1			
UL Electrical					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	200kA
Mechanical & Environmental					
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity	RH	5%...95%			
Altitude (max)		13123 ft [4000m]			
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5Nm]			
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
		35mm² (Solid, Stranded) / 25mm² (Flexible)			
Mounting		35mm DIN Rail, EN 60715			
Degree of Protection		IP 20 (built-in)			
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection		Yes			
Operating State / Fault Indication		Green Flag / Not Green Flag			
Remote Contacts (RC)		Optional			
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)			
Order Information					
Order Code		**150**	**300**	**350**	**480**
ProTec T1-xxx-4+0		59.0039	59.0041	59.0351	59.0043
ProTec T1-xxx-4+0-R (with remote contacts)		59.0040	59.0042	59.0352	59.0044
ProTec T1-xxx-P (plug)		59.0002	59.0003	59.0004	59.0005

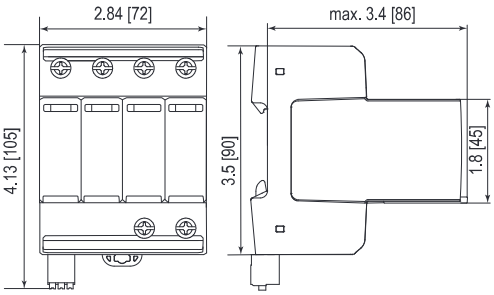
Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*



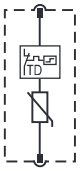
Complete Unit



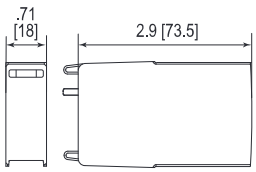
Complete Unit Dimensions & Packaging					
ProTec T1-xxx-4+0		**150**	**300**	**350**	**480**
Weight	pounds	1.310	1.415	1.583	1.609
	grams	594	642	718	730
ProTec T1-xxx-4+0-R					
Weight	pounds	1.329	1.435	1.603	1.629
	grams	603	651	727	739
DIN 43880 Dimension		4 TE / 2.84" [72]			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity		4 Units			

Plug Internal Configuration

ProTec T1-xxx-P



Spare Plug



Single Unit Dimensions & Packaging					
ProTec T1-xxx-P		**150**	**300**	**350**	**480**
Weight	pounds	.203	.229	.271	.278
	grams	92	104	123	126
DIN 43880 Dimension		1 TE / .71" [18]			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity		28 Units			

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTec T1 1+1

12.5 kA Series

Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

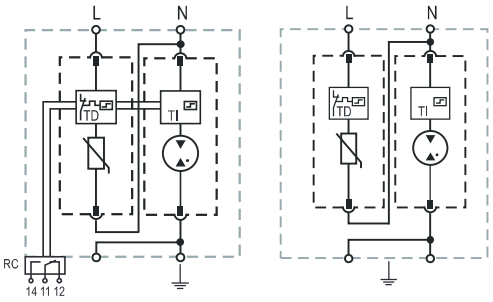
Technical Data

ProTec T1-xxx-1+1(-R)			75	150	300	350
IEC Electrical						
Nominal AC Voltage (50/60Hz)		U_o/U_n	60 V	120 V	240 V	277 V
Maximum Continuous Operating Voltage	(L-N)	U_c	75 V	150 V	300 V	350 V
	(N-PE)	U_c	305 V	305 V	305 V	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 50 kA			
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 100 kA			
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5kA / 50 kA			
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ/Ω / 625 kJ/Ω			
Charge	(L-N)/(N-PE)	Q	6.25 As / 25 As			
Voltage Protection Level	(L-N)/(N-PE)	U_p	700 V / 1500 V	1000 V / 1500 V	1500 V / 1500 V	1750 V / 1500 V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100 A_{RMS}			
Response Time	(L-N)/(N-PE)	t_A	< 25 ns / < 100 ns			
Overcurrent Protection (max)			315 A / 250 A gG			
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA			
TOV Withstand 5s	(L-N)	U_T	114 V	175 V	337 V	403 V
TOV 120min	(L-N)	U_T	114 V	229 V	442 V	529 V
		mode	Withstand	Safe Fail	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V			
Number of Ports			1			
UL Electrical						
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G)	MCOV	75 V / 305 V	150 V / 305 V	300 V / 305 V	350 V / 305 V
Voltage Protection Rating	(L-N)/(N-G)	VPR	330 V / 1200 V	600 V / 1200 V	900 V / 1200 V	1200 V / 1200 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA / 20 kA	20 kA / 20 kA	20 kA / 20 kA	20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	100 kA	200 kA	150 kA	150 kA
Mechanical & Environmental						
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity		RH	5%...95%			
Altitude (max)			13123 ft [4000 m]			
Terminal Screw Torque		M_{max}	39.9 lbf·in [4.5 Nm]			
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
			35 mm^2 (Solid, Stranded) / 25 mm^2 (Flexible)			
Mounting			35 mm DIN Rail, EN 60715			
Degree of Protection			IP 20 (built-in)			
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection			Yes			
Operating State / Fault Indication			Green Flag / Not Green Flag			
Remote Contacts (RC)			Optional			
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A			
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm^2 (Solid)			
Order Information						
Order Code			75	150	300	350
ProTec T1-xxx-1+1			59.0047	59.0049	59.0051	59.0053
ProTec T1-xxx-1+1-R (with remote contacts)			59.0048	59.0050	59.0052	59.0054
ProTec T1-xxx-P (plug L-N)			59.0001	59.0002	59.0003	59.0004
ProTube T1-50-P (plug N-PE)			59.0269	59.0269	59.0269	59.0269

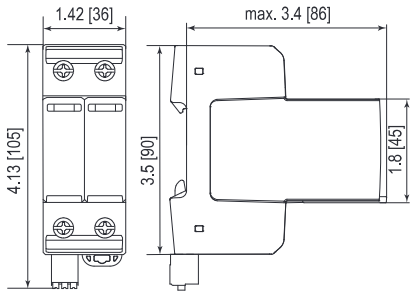
Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*



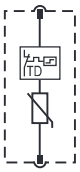
Complete Unit



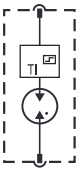
Complete Unit Dimensions & Packaging					
ProTec T1-xxx-1+1		**75**	**150**	**300**	**350**
Weight	pounds	.659	.710	.736	.778
	grams	299	322	334	353
ProTec T1-xxx-1+1-R					
Weight	pounds	.672	.723	.750	.791
	grams	305	328	340	359
DIN 43880 Dimension		2 TE / 1.42" [36]			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity		7 Units			

Plug Internal Configuration

ProTec T1-xxx-P



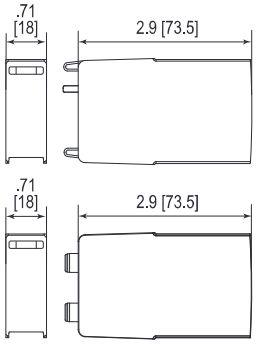
ProTube T1-50-P



Spare Plug

ProTec T1

ProTube T1



Single Unit Dimensions & Packaging					
ProTec T1-xxx-P		**75**	**150**	**300**	**350**
Weight	pounds	.152	.203	.229	.271
	grams	69	92	104	123
ProTube T1-50-P			**50**		
Weight	pounds		.214		
	grams		97		
DIN 43880 Dimension			1 TE / .71" [18]		
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity			28 Units		

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTec T1 3+1

12.5 kA Series

Class I • Class II • Type 1 • Type 2 • Type 1CA

Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

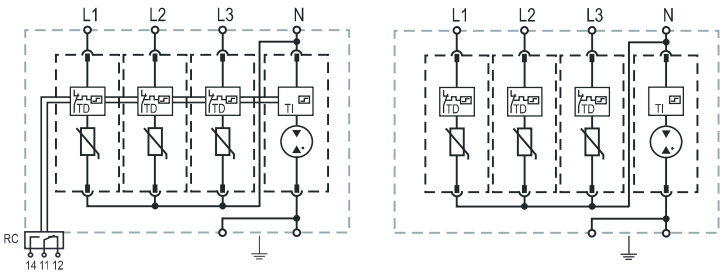
Technical Data

ProTec T1-xxx-3+1(-R)			300	350
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	277 V
Maximum Continuous Operating Voltage	(L-N)	U_c	300 V	350 V
	(N-PE)	U_c	305 V	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 50 kA	
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 100 kA	
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5 kA / 50 kA	
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ/Ω / 625 kJ/Ω	
Charge	(L-N)/(N-PE)	Q	6.25 As / 25 As	
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500 V / 1500 V	1750 V / 1500 V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100 A_{RMS}	
Response Time	(L-N)/(N-PE)	t_A	< 25 ns / < 100 ns	
Overcurrent Protection (max)			315 A / 250 A gG	
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA	
TOV Withstand 5s	(L-N)	U_T	337 V	403 V
TOV 120min	(L-N)	U_T	442 V	529 V
		mode	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V	
Number of Ports			1	
UL Electrical				
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G)	MCOV	300 V / 305 V	350 V / 305 V
Voltage Protection Rating	(L-N)/(N-G)	VPR	900 V / 1200 V	1200 V / 1200 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA / 20 kA	20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	150 kA	150 kA
Mechanical & Environmental				
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH	5%...95%	
Altitude (max)			13123 ft [4000 m]	
Terminal Screw Torque		M_{max}	39.9 lbf·in [4.5 Nm]	
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm^2 (Solid, Stranded) / 25 mm^2 (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm^2 (Solid)	
Order Information				
Order Code			300	350
ProTec T1-xxx-3+1			59.0059	59.0061
ProTec T1-xxx-3+1-R (with remote contacts)			59.0060	59.0062
ProTec T1-xxx-P (plug L-N)			59.0003	59.0004
ProTube T1-50-P (plug N-PE)			59.0269	59.0269

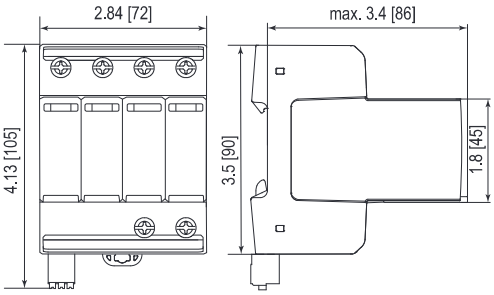
Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*



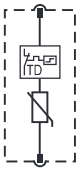
Complete Unit



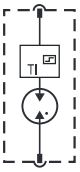
Complete Unit Dimensions & Packaging			
ProTec T1-xxx-3+1		**300**	**350**
Weight	pounds	1.466	1.592
	grams	665	722
ProTec T1-xxx-3+1-R			
Weight	pounds	1.486	1.612
	grams	674	724
DIN 43880 Dimension		4 TE / 2.84" [72]	
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		4 Units	

Plug Internal Configuration

ProTec T1-xxx-P



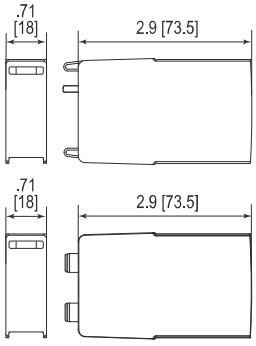
ProTube T1-50-P



Spare Plug

ProTec T1

ProTube T1



Single Unit Dimensions & Packaging			
ProTec T1-xxx-P		**300**	**350**
Weight	pounds	.229	.271
	grams	104	123
ProTube T1-50-P		**50**	
Weight	pounds	.214	
	grams	97	
DIN 43880 Dimension		1 TE / .71" [18]	
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		28 Units	

inches
[mm]

RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

Lightning and Overvoltage Protection

ProTube T1 0+1

Class I • Class II • Type 1 • Type 2 • Type 1CA

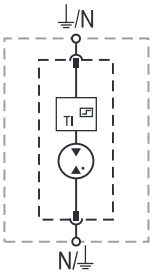
Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: N-PE
IEC/EN/UL Category: Class I+II / Type 1+2 / Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449 4th Edition

Technical Data

ProTube T1-xxx-0+1		50	100
IEC Electrical			
Maximum Continuous Operating Voltage	U_c	305 V	305 V
Nominal Discharge Current (8/20 µs)	I_n	50 kA	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	100 kA	150 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	50 kA	100 kA
Specific Energy	W/R	625 kJ/Ω	2500 kJ/Ω
Charge	Q	25 As	50 As
Voltage Protection Level	U_p	1500 V	1500 V
Follow Current Interrupt Rating	I_{fi}	100 A_{RMS}	100 A_{RMS}
Response Time	t_A	< 100 ns	< 100 ns
TOV Withstand 200ms	U_T	1200 V	1200 V
Number of Ports		1	1
UL Electrical			
Maximum Continuous Operating Voltage (AC)	MCOV	305 V	305 V
Voltage Protection Rating	VPR	1200 V	1200 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm^2 (Solid, Stranded) / 25 mm^2 (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Order Information			
Order Code		**50**	**100**
ProTube T1-xxx-0+1		59.0276	59.0278
ProTube T1-50-P (plug)		59.0269	-
ProTube T1-100-P (plug)		-	59.0271

ProTube T1 0+1

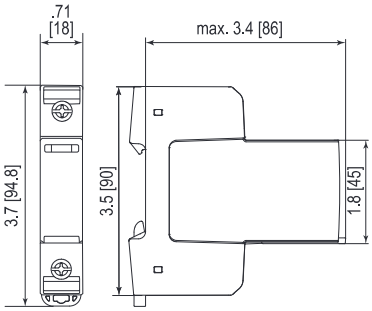
Internal Configuration



Legend

N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
TI	*Thermal Indication*

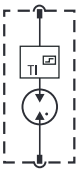
Complete Unit



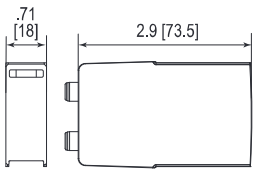
Complete Unit Dimensions & Packaging			
ProTube T1-xxx-0+1		**50**	**100**
Weight	pounds	.395	.434
	grams	179	197
DIN 43880 Dimension		1 TE / .71" [18]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		12 Units	

Plug Internal Configuration

ProTube T1-xxx-P



Spare Plug



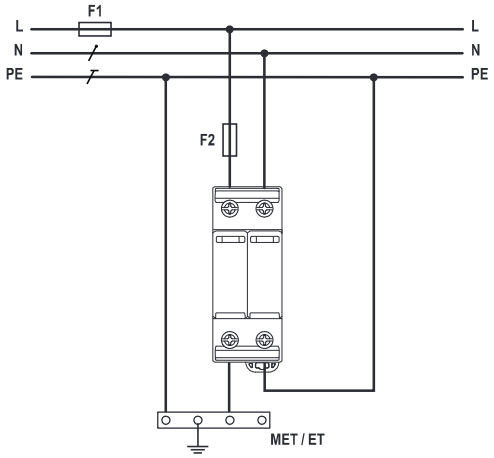
Single Unit Dimensions & Packaging			
ProTube T1-xxx-P		**50**	**100**
Weight	pounds	.214	.251
	grams	97	114
DIN 43880 Dimension		1 TE / .71" [18]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		28 Units	

inches
[mm]

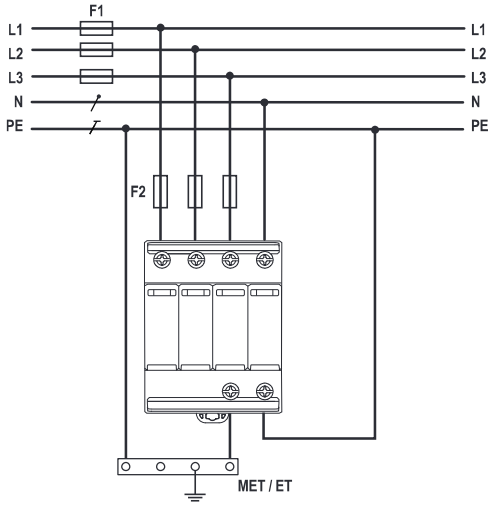
RoHS COMPLIANT

Applicable connection configurations can be found on page 68.

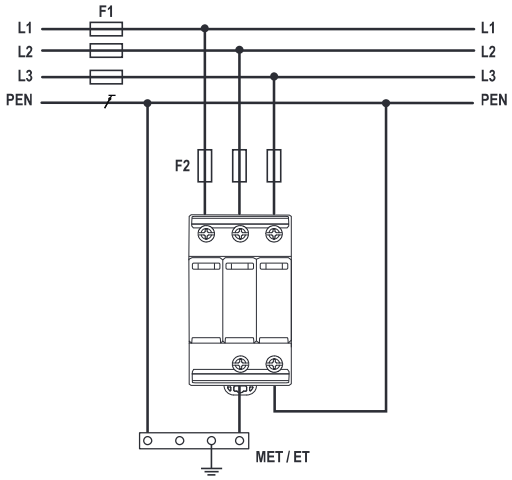
TN-S (Single-phase, 2+0, 1+1)



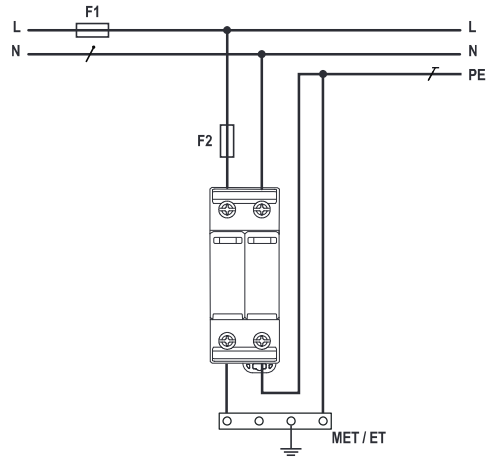
TN-S (Three-phase, 4+0, 3+1)



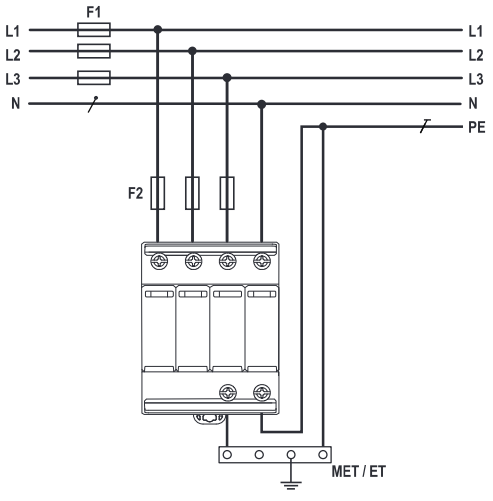
TN-C (Three-phase, 3+0)



TT (Single-phase, 1+1)



TT (Three-phase, 3+1)



N Neutral
PE Protective Earth
PEN Protective Earth & Neutral

Overcurrent Protection Rating for I_{SCCR} = 50 kA

F1 > 250 A gG → F2 = 250 A gG
F1 ≤ 250 A gG → ~~F2~~

Overcurrent Protection Rating for I_{SCCR} = 25 kA

F1 > 315 A gG → F2 = 315 A gG
F1 ≤ 315 A gG → ~~F2~~