

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, 75V to 750V
- High impulse current capability using single MOV–
480V and 750V versions come with reduced impulse current
- Sensitive state-of-the-art thermal disconnecter
- Back-up fuse up to 315 A gG, 750V version comes with 250 A gG
- Short circuit current rating up to 100 kA*
- Vibration and shock withstand capability
- All modules, also N-PE, with operating state green-red
- Optional remote contact (RC) signaling



IEC 61643-11:2011

EN 61643-11:2012 +A11:2018

UL 1449 5th Edition



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 75V to 750V. 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 100 kA* without using a back up to a main fuse nominal current of 315 A. All modules are equipped with state-of-the-art thermal disconnecter 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.

* VDE certified up to 50 kA, 100 kA additionally tested by VDE.



More Product Information

RoHS
COMPLIANT



Lightning and Overvoltage Protection

ProTec T1 1+0

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-N, L-PE, N-PE (only TN-S), 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 + A11:2018
 UL 1449 5th 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	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20 μ s)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 μ s)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350 μ s)	I_{imp}	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
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	700V	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25 ns					
Overvoltage Category		III					
Overcurrent Protection (max)		315 A / 250 A gG					
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA / 50 kA					
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 (8/20 μ s)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	200kA	150kA

Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)

Residual Voltage at 5 kA (8/20 μ s)	U_{res}	400V	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required		160 A gG					80 A gG

Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA					
Overcurrent Protection (max)		250 A gG					

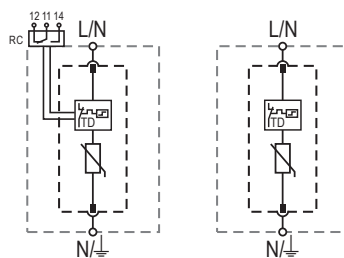
Mechanical & Environmental

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]					
Permissible Operating Humidity	RH	5%...95%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000 m]					
Terminal Screw Torque	M_{max}	40 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: 250V/1A, 125V/1 A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm ² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

<i>L</i>	Line Conductor Terminal
<i>N</i>	Neutral Conductor Terminal
$\downarrow$	PE/G Conductor Terminal
<i>RC</i>	Remote Contacts Terminal (Optional)
<i>TD</i>	Thermal Disconnect

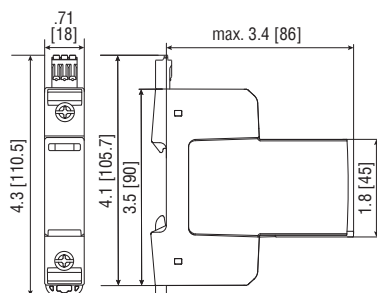


Order Information

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

Dimensions & Packaging

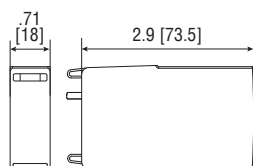
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 2+0

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 + A11:2018
 UL 1449 5th Edition



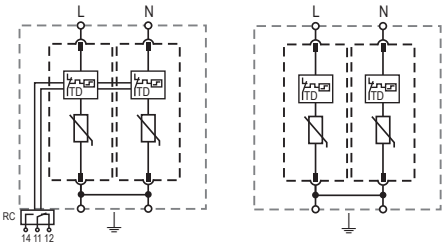
Technical Data

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	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20μs)	I _{max}	50 kA	50 kA	50 kA	50 kA	50 kA	35 kA
Impulse Discharge Current (10/350μs)	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	700V	1000V	1500V	1750V	2100V	3200V
Response Time	t _A	< 25 ns					
Overvoltage Category		III					
Overcurrent Protection (max)		315 A / 250 A gG					
Short-Circuit Current Rating (AC)	I _{SCCR}	25 kA / 50 kA					
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	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	200kA	150kA
Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)							
Residual Voltage at 5 kA (8/20 μs)	U _{res}	400V	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required		160A gG					
Additional Electrical Parameters - Extended (Additionally tested by VDE)							
Short-Circuit Current Rating (AC)	I _{SCCR}	100 kA					
Overcurrent Protection (max)		250 A gG					
Mechanical & Environmental							
Operating Temperature Range	T _a	-40 °F to +185 °F [-40 °C to +85 °C]					
Permissible Operating Humidity	RH	5%...95%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000m]					
Terminal Screw Torque	M _{max}	40 lbf-in [4.5Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35mm² (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: 250V/1A, 125V/1 A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnecter

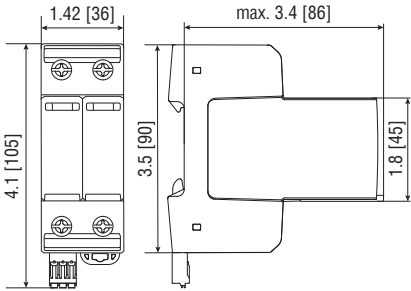


Order Information

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

Dimensions & Packaging

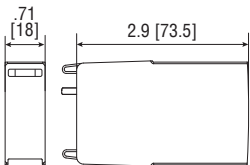
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 3+0

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 + A11:2018
 UL 1449 5th 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 (8/20 μ s)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 μ s)	I_{max}	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350 μ s)	I_{imp}	12.5 kA	12.5 kA	12.5 kA	10kA	5kA
Specific Energy	W/R	39kJ/ Ω	39kJ/ Ω	39kJ/ Ω	25kJ/ Ω	6.25kJ/ Ω
Charge	Q	6.25 As	6.25 As	6.25 As	5 As	2.5 As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25 ns				
Overvoltage Category		III				
Overcurrent Protection (max)		315 A / 250 A gG				
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA / 50 kA				
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 (8/20 μ s)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	200kA	150kA

Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)

Residual Voltage at 5 kA (8/20 μ s)	U_{res}	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required		160 A gG				80 A gG

Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA				
Overcurrent Protection (max)		250 A gG				

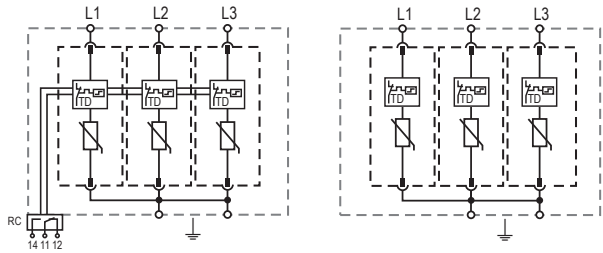
Mechanical & Environmental

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]				
Permissible Operating Humidity	RH	5%...95%				
Pollution Degree		2				
Altitude (max)		13123 ft [4000m]				
Terminal Screw Torque	M_{max}	40 lbf-in [4.5Nm]				
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: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm ² (Solid)				
Overvoltage Category		III				

Internal Configuration

Legend

- L Line Conductor Terminal
- ⬇ PEN/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect

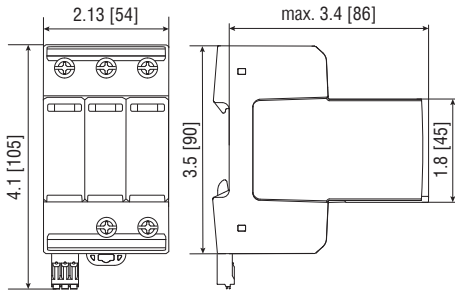


Order Information

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

Dimensions & Packaging

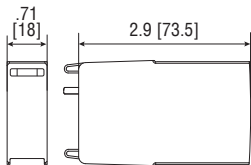
inches [mm]



Complete Unit

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 mm]			
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity			5 Unit			

Spare Plug



Single Unit

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 mm]			
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity			28 Units			

Lightning and Overvoltage Protection

ProTec T1 4+0

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 +A11:2018
 UL 1449 5th 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	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20µs)	I_{max}	50 kA	50 kA	50 kA	50 kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5 kA	12.5 kA	12.5 kA	10 kA
Specific Energy	W/R	39 kJ/Ω	39 kJ/Ω	39 kJ/Ω	25 kJ/Ω
Charge	Q	6.25 As	6.25 As	6.25 As	5 As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V
Response Time	t_A	< 25 ns			
Overvoltage Category		III			
Overcurrent Protection (max)		315 A / 250 A gG			
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA / 50 kA			
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	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA	150 kA	150 kA	200 kA

Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)

Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V	1100V	1300V	1500V
Minimum Backup fuse, if required		160 A gG			

Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA			
Overcurrent Protection (max)		250 A gG			

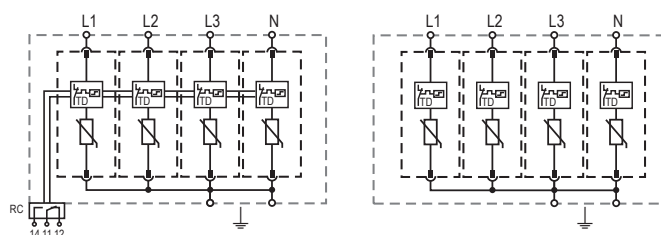
Mechanical & Environmental

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity	RH	5%...95%			
Pollution Degree		2			
Altitude (max)		13123 ft [4000 m]			
Terminal Screw Torque	M_{max}	40 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: 250V/1A, 125V/1 A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)			
Overvoltage Category		III			

Internal Configuration

Legend

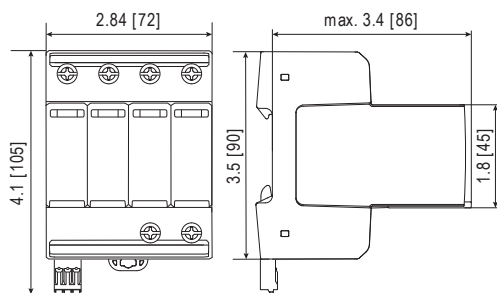
<i>L</i>	Line Conductor Terminal
<i>N</i>	Neutral Conductor Terminal
$\downarrow$	PE/G Conductor Terminal
<i>RC</i>	Remote Contacts Terminal (Optional)
<i>TD</i>	Thermal Disconnecter



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

Dimensions & Packaging

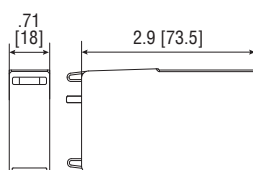


inches [mm]

Complete Unit

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

Spare Plug



Single Unit

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

ProTec T1 1+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: 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 +A11:2018
 UL 1449 5th Edition

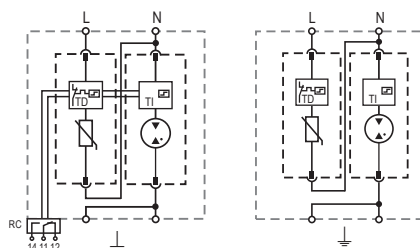
**Technical Data****ProTec T1-xxx-1+1(-R)**

		75	150	300	350
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_0/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 μ s)	(L-N)/(N-PE) I_n		20 kA / 50 kA		
Maximum Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_{max}		50 kA / 100 kA		
Impulse Discharge Current (10/350 μ s)	(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	700 V / 1500 V	1000 V / 1500 V	1500 V / 1500 V	1750 V / 1500 V
Follow Current Interrupt Rating (AC)	(N-PE) I_{fi}		100 A		
Response Time	(L-N)/(N-PE) t_A		< 25 ns / < 100 ns		
Overvoltage Category			III		
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 μ s)	(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
Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 μ s)	(L-N)/(N-PE) U_{res}	400 V / 305 V	800 V / 305 V	1100 V / 305 V	1300 V / 305 V
Minimum Backup fuse, if required			160 A gG		
Additional Electrical Parameters - Extended (Additionally tested by VDE)					
Short-Circuit Current Rating (AC)	I_{SCCR}		100 kA		
Overcurrent Protection (max)			250 A gG		
Mechanical & Environmental					
Operating Temperature Range	T_a		-40 °F to +185 °F [-40 °C to +85 °C]		
Permissible Operating Humidity	RH		5%...95%		
Pollution Degree			2		
Altitude (max)			13123 ft [4000 m]		
Terminal Screw Torque	M_{max}		40 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)		
Overvoltage Category			III		

Internal Configuration

Legend

<i>L</i>	Line Conductor Terminal
<i>N</i>	Neutral Conductor Terminal
$\perp$	PE/G Conductor Terminal
<i>RC</i>	Remote Contacts Terminal (Optional)
<i>TD</i>	Thermal Disconnect
<i>TI</i>	Thermal Indication

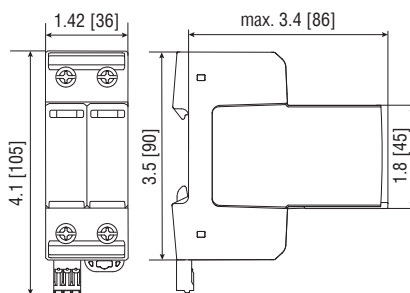


Order Information

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

Dimensions & Packaging

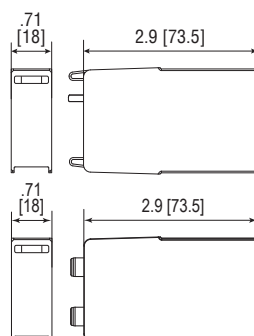
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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 mm]		
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity			28 Units		

ProTec T1 3+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: 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 + A11:2018
 UL 1449 5th Edition

**Technical Data****ProTec T1-xxx-3+1(-R)****300****350****IEC Electrical**

Nominal AC Voltage (50/60Hz)	U_0/U_n	240 V	277 V
Maximum Continuous Operating Voltage	(L-N) U_c (N-PE) U_c	300 V 305 V	350 V 305 V
Nominal Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_n	20 kA / 50 kA	
Maximum Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_{max}	50 kA / 100 kA	
Impulse Discharge Current (10/350 μ s)	(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 (AC)	(N-PE) I_{fi}	100 A	
Response Time	(L-N)/(N-PE) t_A	< 25 ns / < 100 ns	
Overvoltage Category		III	
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 μ s)	(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

Additional Electrical Parameters - Standard (Tests performed within Raycap testing laboratory only)

Residual Voltage at 5 kA (8/20 μ s)	(L-N)/(N-PE) U_{res}	1100 V/305 V	1300 V/305 V
Minimum Backup fuse, if required		160 A gG	

Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Overcurrent Protection (max)		250 A gG	

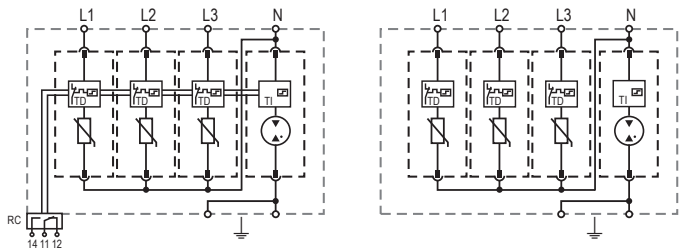
Mechanical & Environmental

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 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)	
Overvoltage Category		III	

Internal Configuration

Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- TI Thermal Indication

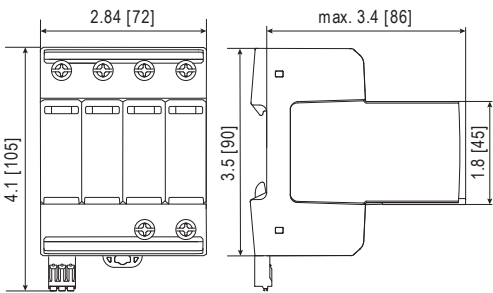


Order Information

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

Dimensions & Packaging

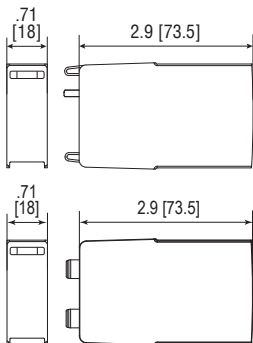
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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



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 +A11:2018
 UL 1449 5th Edition

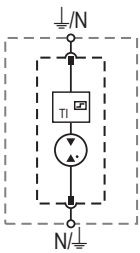
**Technical Data****ProTube T1-xxx-0+1**

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 (AC)	I _{fi}	100 A	100 A
Response Time	t _A	< 100 ns	< 100 ns
Overvoltage Category		III	
TOV Withstand 200ms	U _T	1200 V	1200 V
Number of Ports		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
Additional Electrical Parameters <i>(Tests performed within Raycap testing laboratory only)</i>			
Residual Voltage at 5 kA (8/20 μs)	U _{res}	305 V	305 V
Mechanical & Environmental			
Operating Temperature Range	T _a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M _{max}	40 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	

Internal Configuration

Legend

- N Neutral Conductor Terminal
- PE/G Conductor Terminal
- T1 Thermal Indication

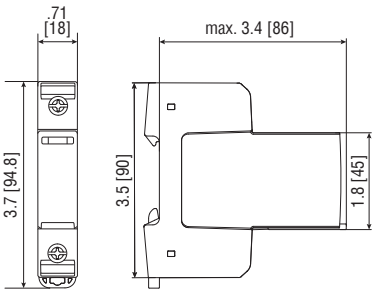


Order Information

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

Dimensions & Packaging

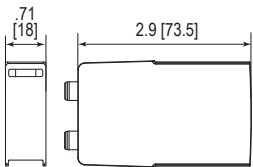
inches [mm]



Complete Unit

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

Spare Plug

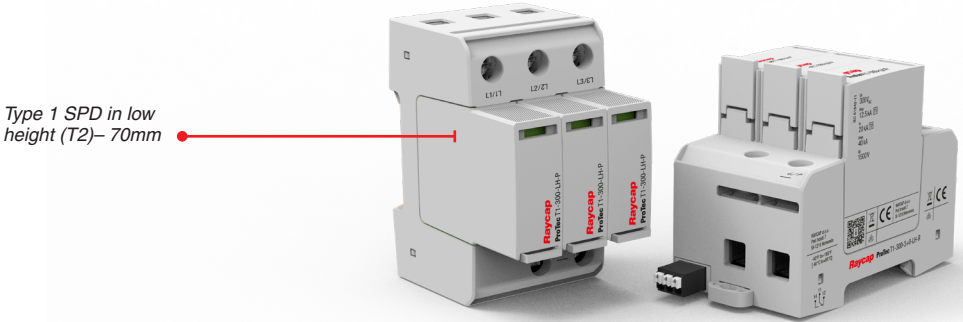


Single Unit

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

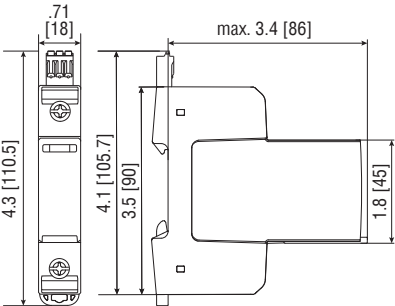


Lightning and Overvoltage Protection
ProTec T1-LH Series

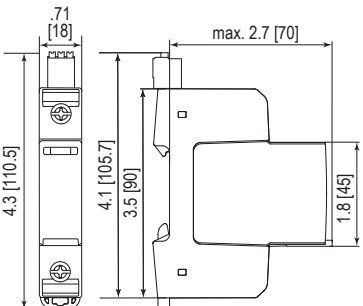


Product Comparison

	ProTec T1 Series	ProTec T1-LH Series
Feature & Specification		
Maximum Continuous Operating Voltage (AC) [U _c]	75 V to 750 V	300 V
Impulse Discharge Current (10/350µs) [I _{imp}]	up to 12.5 kA	12.5 kA
Nominal Discharge Current (8/20 µs) [I _n]	20 kA	20 kA
Maximum Discharge Current (8/20 µs) [I _{max}]	up to 50 kA	40 kA
Mechanical Specification		inches [mm]



ProTec T1 Series



ProTec T1-LH Series