

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 comes 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.



More Product Information

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



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-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 + A11:2018
 UL 1449 5th Edition

Technical Data

ProTec T1-xxx-1+0(-R)

IEC Electrical

		75	150	300	350	440**	480	750
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	230V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	440V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	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	39 kJ/Ω	25 kJ/Ω	6.25 kJ/Ω
Charge	Q	6.25 As	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	1800V	2100V	3200V
Response Time	t_A	< 25 ns						
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	440V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	440V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Withstand	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

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	1400V	1500V	2500V
Overcurrent Protection (min)		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

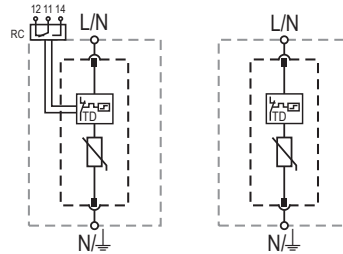
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]						
Permissible Operating Humidity	RH	5%...95%						
Altitude (max)		13123 ft [4000m]						
Terminal Screw Torque	M_{max}	40 lbf-in [4.5 Nm]						
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm² (Solid, Stranded) / 25 mm² (Flexible)						
Mounting		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) / 1.5 mm² (Solid)						

**No VDE and UL certification.

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



ProTec T1-xxx-1+0(-R)

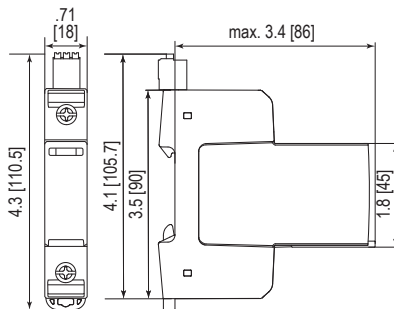
Order Information

Order Code	75	150	300	350	440**	480	750
ProTec T1-xxx-1+0	59.0007	59.0009	59.0011	59.0013	59.0531	59.0015	59.0017
ProTec T1-xxx-1+0-R (with remote contacts)	59.0008	59.0010	59.0012	59.0014	59.0532	59.0016	59.0018
ProTec T1-xxx-P (plug)	59.0001	59.0002	59.0003	59.0004	59.0539	59.0005	59.0006

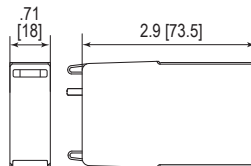
**No VDE and UL certification.

Dimensions & Packaging

inches [mm]



Spare Plug



Single Unit

ProTec T1-xxx-1+0	75	150	300	350	440**	480	750
Weight							
pounds	.304	.355	.381	.423	.439	.430	.437
grams	138	161	173	192	199	195	198

ProTec T1-xxx-1+0-R

Weight							
pounds	.320	.370	.397	.439	.454	.445	.452
grams	145	168	180	199	206	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

Single Unit

ProTec T1-xxx-P	75	150	300	350	440**	480	750
Weight							
pounds	.152	.203	.229	.271	.287	.278	.284
grams	69	92	104	123	130	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

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

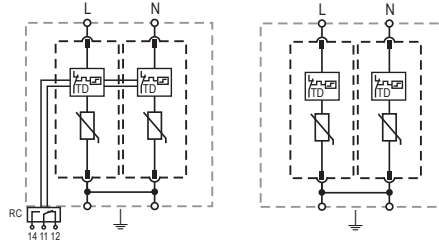
ProTec T1-xxx-2+0(-R)		75	150	300	350	440**	480	750
IEC Electrical								
Nominal AC Voltage (50/60Hz)	U _o /U _n	60V	120V	240V	277V	230 V	400V	600V
Maximum Continuous Operating Voltage (AC)	U _c	75V	150V	300V	350V	440V	480V	750V
Nominal Discharge Current (8/20μs)	I _n	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20μs)	I _{max}	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350μs)	I _{imp}	12.5kA	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39 kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	25 kJ/Ω	6.25 kJ/Ω
Charge	Q	6.25 As	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	1800V	2100V	3200V
Response Time	t _A	< 25 ns						
Overcurrent Protection (max)		315 A / 250 A gG						250 A gG
Short-Circuit Current Rating (AC)	I _{SCCR}	25kA / 50kA						50kA
TOV Withstand 5s	U _T	114V	175V	337V	403V	440V	581V	871V
TOV 120min	U _T	114V	229V	442V	529V	440V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Withstand	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
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	1400V	1500V	2500V
Overcurrent Protection (min)		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%						
Altitude (max)		13123 ft [4000m]						
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/0.5 A, 24V/0.5 A, 12V/0.5 A						
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)						

**No VDE and UL certification.

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



ProTec T1-xxx-2+0(-R)

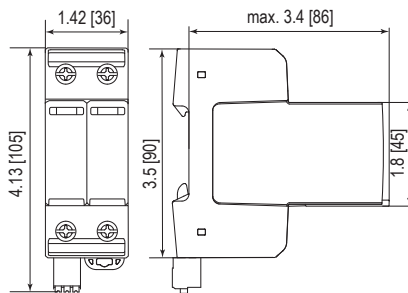
Order Information

Order Code	75	150	300	350	440**	480	750
ProTec T1-xxx-2+0	59.0349	59.0019	59.0021	59.0023	59.0533	59.0025	59.0027
ProTec T1-xxx-2+0-R (with remote contacts)	59.0350	59.0020	59.0022	59.0024	59.0534	59.0026	59.0028
ProTec T1-xxx-P (plug)	59.0001	59.0002	59.0003	59.0004	59.0539	59.0005	59.0006

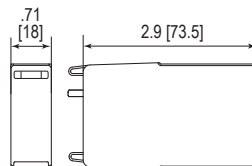
**No VDE and UL certification.

Dimensions & Packaging

inches [mm]



Spare Plug



Complete Unit

ProTec T1-xxx-2+0		75	150	300	350	440**	480	750
Weight	pounds	.595	.697	.750	.833	.864	.847	.860
	grams	270	316	340	378	392	384	390
ProTec T1-xxx-2+0-US-R								
Weight	pounds	.615	.717	.769	.853	.866	.884	.880
	grams	279	325	349	387	393	401	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				

Single Unit

ProTec T1-xxx-P		75	150	300	350	440**	480	750
Weight	pounds	.152	.203	.229	.271	.287	.278	.284
	grams	69	92	104	123	130	126	129
DIN 43880 Dimension					1 TE / .71" [18]			
Packaging Dimensions (HxWxL)			4.3 × 4.5 × 13.8" [109 × 115 × 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	440**	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	230V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	440V	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	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	1000V	1500V	1750V	1800V	2100V	3200V
Response Time	t_A	< 25ns					
Overcurrent Protection (max)		315 A / 250 A gG					
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					
TOV Withstand 5s	U_T	175V	337V	403V	440V	581V	871V
TOV 120min	U_T	229V	442V	529V	440V	762V	1143V
	mode	Safe Fail	Safe Fail	Safe Fail	Withstand	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	1400V	1500V	2500V
Overcurrent Protection (min)		160 A gG					80 A gG

Additional Electrical Parameters - Extended (Additionally tested by VDE)

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

Mechanical & Environmental

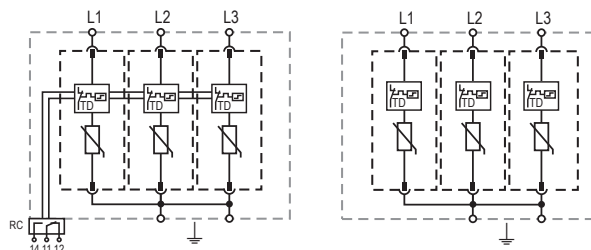
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]					
Permissible Operating Humidity	RH	5%...95%					
Altitude (max)		13123 ft [4000m]					
Terminal Screw Torque	M_{max}	40 lbf-in [4.5Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm ² (Solid, 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) / 1.5mm ² (Solid)					

**No VDE and UL certification.

Internal Configuration

Legend

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



ProTec T1-xxx-3+0(-R)

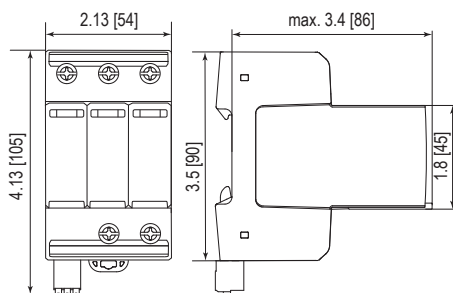
Order Information

Order Code	150	300	350	440**	480	750
ProTec T1-xxx-3+0	59.0029	59.0031	59.0033	59.0535	59.0035	59.0037
ProTec T1-xxx-3+0-R (with remote contacts)	59.0030	59.0032	59.0034	59.0536	59.0036	59.0038
ProTec T1-xxx-P (plug)	59.0002	59.0003	59.0004	59.0539	59.0005	59.0006

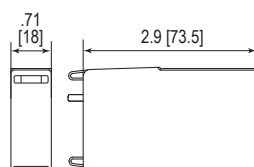
**No VDE and UL certification.

Dimensions & Packaging

inches [mm]



Spare Plug



Complete Unit

ProTec T1-xxx-3+0		150	300	350	440**	480	750
Weigh	pounds	1.021	1.100	1.226	1.272	1.246	1.265
	grams	463	499	556	577	565	574
ProTec T1-xxx-3+0-R							
Weight	pounds	1.041	1.120	1.246	1.292	1.265	1.285
	grams	472	508	565	586	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			

Single Unit

ProTec T1-xxx-P		150	300	350	440**	480	750
Weight	pounds	.203	.229	.271	.287	.278	.284
	grams	92	104	123	130	126	129
DIN 43880 Dimension				1 TE / .71" [18]			
Packaging Dimensions (HxWxL)			4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]				
Standard Order Quantity				28 Units			

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)**

IEC Electrical						
Nominal AC Voltage (50/60Hz)	U _o /U _n	120V	240V	277V	230V	400V
Maximum Continuous Operating Voltage (AC)	U _c	150V	300V	350V	440V	480V
Nominal Discharge Current (8/20 μs)	I _n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 μs)	I _{max}	50kA	50kA	50kA	50kA	50kA
Impulse Discharge Current (10/350 μs)	I _{imp}	12.5kA	12.5kA	12.5kA	12.5kA	10kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	6.25As	5As
Voltage Protection Level	U _p	1000V	1500V	1750V	1800V	2100V
Response Time	t _A	< 25 ns				
Overcurrent Protection (max)	315 A / 250 A gG					
Short-Circuit Current Rating (AC)	I _{SCCR}	25 kA / 50kA				
TOV Withstand 5s	U _T	175V	337V	403V	440V	581V
TOV 120min	U _T	229V	442V	529V	440V	762V
	mode	Safe Fail	Safe Fail	Safe Fail	Withstand	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 (8/20 μs)	I _n	20kA	20kA	20kA	-	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	-	200kA
Additional Electrical Parameters - Standard <i>(Tests performed within Raycap testing laboratory only)</i>						
Residual Voltage at 5 kA (8/20 μs)	U _{res}	800V	1100V	1300V	1400V	1500V
Overcurrent Protection (min)	160A gG					
Additional Electrical Parameters - Extended <i>(Additionally tested by VDE)</i>						
Short-Circuit Current Rating (AC)	I _{SCCR}	100kA				
Overcurrent Protection (max)	250A gG					
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}	40 lbf-in [4.5Nm]				
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/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)				

**No VDE and UL certification.

Connection Configurations can be found in QR Code link on intro page.

www.raycap.com

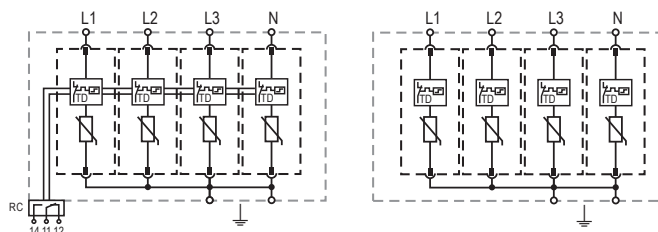
RoHS COMPLIANT

Information contained in this document is subject to change at any time without notice.

Internal Configuration

Legend

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



ProTec T1-xxx-4+0(-R)

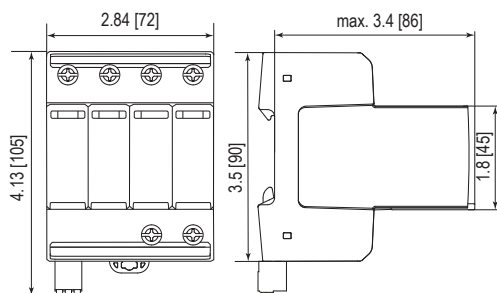
Order Information

Order Code	150	300	350	440**	480
ProTec T1-xxx-4+0	59.0039	59.0041	59.0351	59.0537	59.0043
ProTec T1-xxx-4+0-R (with remote contacts)	59.0040	59.0042	59.0352	59.0538	59.0044
ProTec T1-xxx-P (plug)	59.0002	59.0003	59.0004	59.0539	59.0005

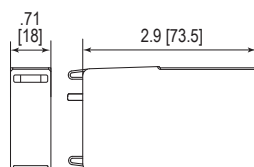
**No VDE and UL certification.

Dimensions & Packaging

inches [mm]



Spare Plug



Complete Unit

ProTec T1-xxx-4+0	150	300	350	440**	480
Weight	pounds	1.310	1.415	1.583	1.508
	grams	594	642	718	684
ProTec T1-xxx-4+0-R					
Weight	pounds	1.329	1.435	1.603	1.519
	grams	603	651	727	689
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				

Single Unit

ProTec T1-xxx-P	150	300	350	440**	480
Weight	pounds	.203	.229	.271	.287
	grams	92	104	123	130
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				

Lightning and Overvoltage Protection

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

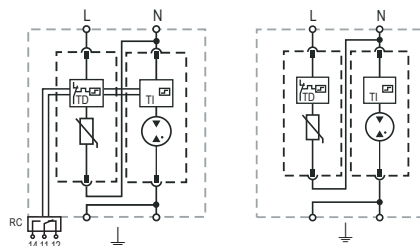
Technical Data

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		
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
Overcurrent Protection (min)			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%			
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)			

Internal Configuration

Legend

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



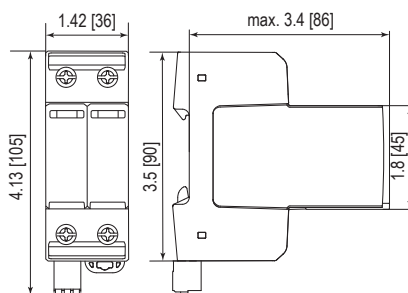
ProTec T1-xxx-1+1(-R)

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]

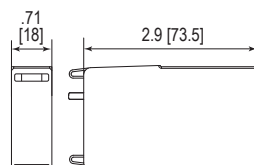


Complete Unit

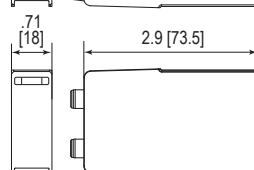
ProTec T1-xxx-1+1	75	150	300	350
Weight	pounds	.659	.710	.736
	grams	299	322	334
ProTec T1-xxx-1+1-R				
Weight	pounds	.672	.723	.750
	grams	305	328	340
DIN 43880 Dimension	2 TE / 1.42" [36]			
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity	7 Units			

Spare Plug

ProTec T1



ProTube T1



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]		
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	300 V	350 V
	(N-PE) U_c	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	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	
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
Overcurrent Protection (min)		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	

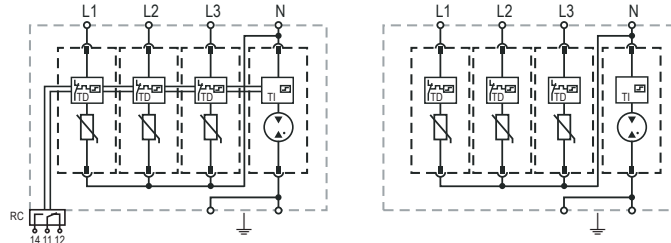
Mechanical & Environmental

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
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)	

Internal Configuration

Legend

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



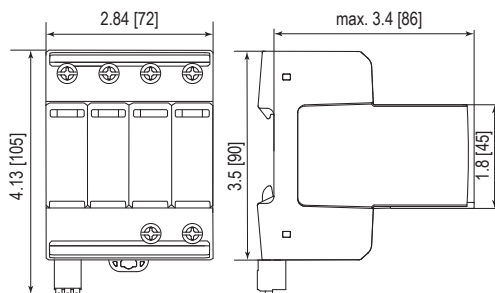
ProTec T1-xxx-3+1(-R)

Order Information

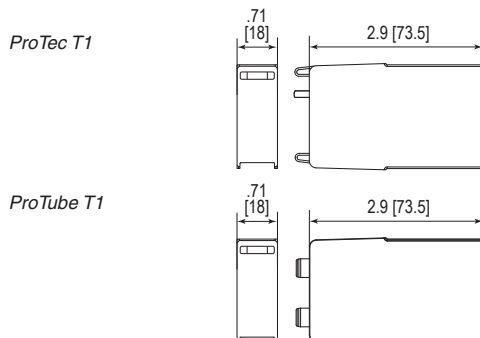
Order Code	300	350
ProTec T1-xxx-3+1	59.0059	59.0061
ProTec T1-xxx-3+1-R (with remote contacts)	59.0060	59.0062
ProTec T1-xxx-P (plug L-N)	59.0003	59.0004
ProTube T1-50-P (plug N-PE)	59.0269	59.0269

Dimensions & Packaging

inches [mm]



Spare Plug



Complete Unit

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	

Single Unit

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	

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 +A11:2018
 UL 1449 5th Edition

Technical Data

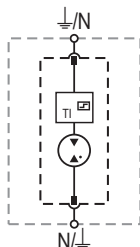
ProTube T1-xxx-0+1

		50	100
IEC Electrical			
Maximum Continuous Operating Voltage	U_c	305 V	305 V
Nominal Discharge Current (8/20 μ s)	I_n	50 kA	100 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	100 kA	150 kA
Impulse Discharge Current (10/350 μ s)	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
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 μ s)	I_n	20 kA	20 kA
Additional Electrical Parameters (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 μ s)	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%	
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	

Internal Configuration

Legend

<i>N</i>	Neutral Conductor Terminal
	PE/G Conductor Terminal
<i>T1</i>	Thermal Indication



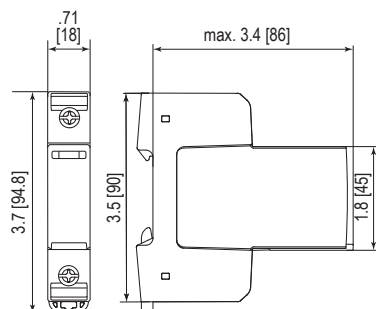
ProTube T1-xxx-0+1(-R)

Order Information

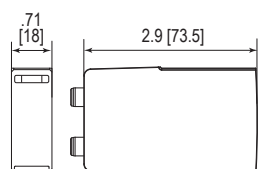
Order Code	50	100
ProTube T1-xxx-0+1	59.0276	59.0278
ProTube T1-50-P (plug)	59.0269	-
ProTube T1-100-P (plug)	-	59.0271

Dimensions & Packaging

inches [mm]



Spare Plug



Complete Unit

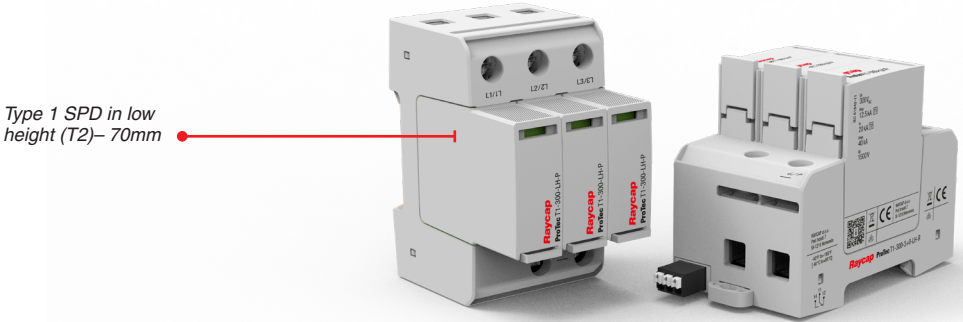
ProTube T1-xxx-0+1	50	100
Weight	pounds	.395
	grams	179
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity	12 Units	

Single Unit

ProTube T1-xxx-P	50	100
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	

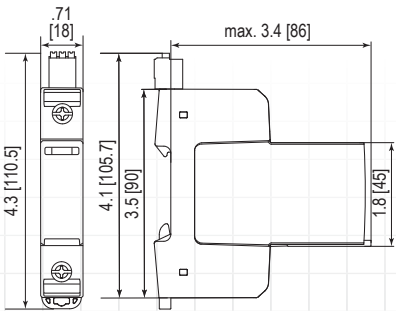


Lightning and Overvoltage Protection
ProTec T1-LH Series

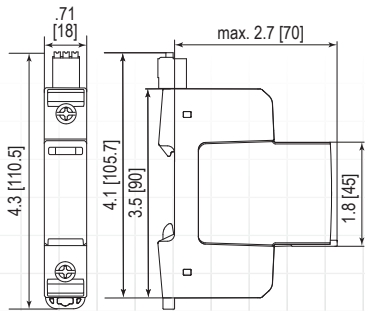


Product Comparison

	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 (10/350 μ s) [I_{imp}]	up to 12.5 kA	12.5 kA
Nominal Discharge Current (8/20 μ s) [I_n]	20 kA	20 kA
Maximum Discharge Current (8/20 μ s) [I_{max}]	up to 50 kA	40 kA
Mechanical Specification		inches [mm]



ProTec T1 Series



ProTec T1-LH Series