

A dramatic night cityscape with a lightning bolt striking the sky. The city lights are visible at the bottom, and the lightning bolt is a bright white streak against the dark, cloudy sky.

**Raycap**

Surge Protection for  
Low Voltage Power Systems

C A T A L O G

2 0 2 2

2 0 2 3























## About Raycap

Raycap was founded in 1987 with a vision of creating and providing solutions that protect the world's infrastructure. From telecommunications to new and traditional energy networks, and from transportation systems to industrial applications of all types, Raycap is there with solutions to ensure equipment uptime in spite of harsh electrical environments. The company strives to keep its customers' sophisticated, mission-critical equipment running seamlessly and continuously, and is driven to make ongoing advancements in its surge protection technologies and product offerings.





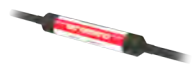





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Product	Page			$U_c$	$I_{imp}$ (10/350 $\mu$ s)	$I_{max}$ (8/20 $\mu$ s)	$I_n$ (8/20 $\mu$ s)	Location	
TYPE 1 + 2	ProTec T1SF 25kA Series with integrated backup fuse	15			275 V	25kA	65kA	25kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	ProTec T1S 35kA & 50kA Series	19			275, 440 V	35kA <hr/> 50kA	50kA <hr/> 50kA	35kA <hr/> 50kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	ProTec T1S 25kA Series	25			275, 440 V	25kA	Up to 65kA	25kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	ProTec T1HS 25kA Series	45			300 V	25kA	65kA	25kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	ProTec T1H 12.5kA Series	57			300 V	12.5kA	65kA	20kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	ProTec T1 12.5kA Series	73			75, 150, 300, 350, 440, 480, 750 V	Up to 12.5kA	Up to 50kA	20kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• Behind the power meter</li> </ul>
	ProTec T1-LH 12.5kA Series with T2 size plug	88			300 V	12.5kA	40kA	20kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• Behind the power meter</li> </ul>
	SafeBloc B 12.5kA & 25kA Series	104			150, 275, 440 V	Up to 25kA	Up to 100kA	Up to 25kA	<ul style="list-style-type: none"> <li>• First level of protection</li> <li>• In front of the power meter</li> </ul>
	SafeBloc B WT TCG	104			750 V	12.5kA	40kA	12.5kA	<ul style="list-style-type: none"> <li>• Wind Turbine Systems</li> </ul>
	ProBloc B 12.5kA & 25kA Series	104			150, 275, 320 V	Up to 25kA	Up to 100kA	Up to 25kA	<ul style="list-style-type: none"> <li>• First step of protection</li> <li>• Behind the power meter</li> </ul>
TYPE 2	ProTec T2F with integrated backup fuse	105			300, 440 V		Up to 40kA	Up to 20kA	<ul style="list-style-type: none"> <li>• Second level of protection</li> <li>• With integrated backup fuse</li> </ul>
	ProTec T2H	119			300 V		50kA	20kA	<ul style="list-style-type: none"> <li>• Second level of protection</li> </ul>

Low Voltage Power Systems

	Product	Page		$U_c$	$I_{imp}$ (10/350 $\mu$ s)	$I_{max}$ (8/20 $\mu$ s)	$I_n$ (8/20 $\mu$ s)	Location	
TYPE 2	ProTec T2	135		75, 150, 300, 350, 480, 550, 750V		Up to 50kA	20kA	• Second level of protection	
	ProTec T2-ADV	151		75, 150, 300, 350, 480V		50kA	20kA	• Second level of protection	
	SafeTec T2	165		75, 150, 300, 350, 480, 550, 750, 880V		Up to 50kA	20kA	• Second level of protection	
TYPE 2+3	ProTec T2 CM-L-E	181		275, 440V		20kA	10kA	• Second and third level of protection	
AC & PV PCB	PCB Socket T1&T2, PV T1&T2	193		Up to 880V Up to 750VDC	Up to 25kA $I_{Total}$ up to 12.5kA	Up to 65kA Up to 40kA	Up to 40kA	• AC & PV systems	
	PV Direct Mount Plugs	195		Up to 750VDC	$I_{Total}$ up to 12.5kA	Up to 40kA	Up to 20kA	• PV systems	
DC TYPE 1 + 2 & TYPE 2	ProTec T1-5Y-PV	197		1100 VDC	$I_{Total}$ 10kA	40kA	20kA	• PV DC side	
	ProTec T2-5Y-PV	202		1100 VDC		40kA	20kA	• PV DC side	
	ProTec T1-PV-S ProTec T1-PV	206		600, 1100, 1500VDC	$I_{Total}$ 12.5kA	Up to 60kA	20kA	• PV DC side	
	ProTec T2-PV	210		250, 600, 1100, 1500 VDC		Up to 50kA	20kA	• PV DC side	
	PV Box T1 3Y PV Box T1 5Y	213		1100 / 1500VDC	$I_{Total}$ 12.5kA	Up to 50kA	20kA	• PV DC side	
	PV Box T2 3Y PV Box T2 5Y	218		1100 / 1500VDC		40kA	Up to 20kA	• PV DC side	
	DC SPD	ProBloc B DC SafeTec T2 DC	231		1000 VDC	$I_{Total}$ up to 12.5kA		20kA	• Fast chargers • DC systems

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TYPE 3	ProTec DMDR	237		34, 60, 75, 150VDC		Up to 4kA	$U_{oc}$ up to 6kV	<ul style="list-style-type: none"> <li>Fine DC protection</li> </ul>
	MPE Mini & MPE Mini LED	240		275V			$I_{cw}$ 3kA	<ul style="list-style-type: none"> <li>Cable ducts &amp; wiring outlets</li> </ul>
TYPE 2 / CLASS 1L	EPZ 100/350 Ex	243		240, 350VDC	25kA	100kA		<ul style="list-style-type: none"> <li>Explosive environments</li> </ul>
	ProTec AQS	243		150, 275, 320, 440V		40kA	20kA	<ul style="list-style-type: none"> <li>Overhead power lines</li> </ul>
SURGE MONITORING	ProSEC II + <i>Surge Counter</i>	246						<ul style="list-style-type: none"> <li>Main or Sub-distribution board</li> <li>Installed on SPD ground conductor</li> </ul>
	ProSLS <i>Leackage Current Monitoring</i>	247						<ul style="list-style-type: none"> <li>Main or Sub-distribution board</li> <li>Installed on SPD line conductors</li> </ul>
	ProAlarm <i>Failure Indication Device</i>	248						<ul style="list-style-type: none"> <li>Main or Sub-distribution board</li> <li>Wired to SPD remote contact</li> </ul>
	ProSCT <i>Component Tester</i>	249						<ul style="list-style-type: none"> <li>Portable SPD component tester</li> </ul>
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## Typical SPD Technologies



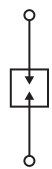
### SPD Based on MOV Technology

- No problems with follow current  $I_{fi}$
- Quick response time  $t_A$  at  $\leq 25\text{ns}$  results in low residual voltage
- Responds well to low overvoltages
- High surge capacity up to 50kA 10/350 $\mu\text{s}$



### SPD Based on GDT Technology

- High surge capacity up to 100kA 10/350 $\mu\text{s}$
- No exhaust of ionized gases
- For TT systems as galvanic separator between N-PE conductors



### SPD Based on PGDT Technology

- Low residual voltage – suitable for the protection of sensitive electronic loads
- Low follow-current conduction once triggered - extended operation life and no nuisance tripping of upstream protective devices
- Safe operation – no venting of conductive ionized gases, encapsulated multi-cell gas discharge technology
- Safe end-of-life behavior – internal thermal disconnection
- Optimized design - implemented in half the footprint of other voltage-switching technologies



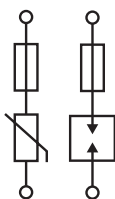
### Combination (Hybrid) Type SPD Based on Combined GDT and MOV Technology

- No follow current  $I_{fi}$
- Quick response time  $t_A$  at  $\leq 25\text{ns}$  results in low residual voltage
- Responds well to low overvoltages
- High surge capacity up to 25kA 10/350 $\mu\text{s}$
- Intended for applications without Leakage Current



### SPD Based on Advanced Protection Technology

- Selective design of Metal Oxide Varistors ensures a staged end-of-life
- Stages are sequentially disconnected
- Residual protection indicated by Green > Yellow > Red flag
- IEC Class II to 50kA (25kA + 25kA) 8/20
- Ideal for critical applications where a level of protection must be retained at all times - e.g. hospitals



### Combination SPD Based on PGDT or MOV Technology with Integrated Backup Fuse

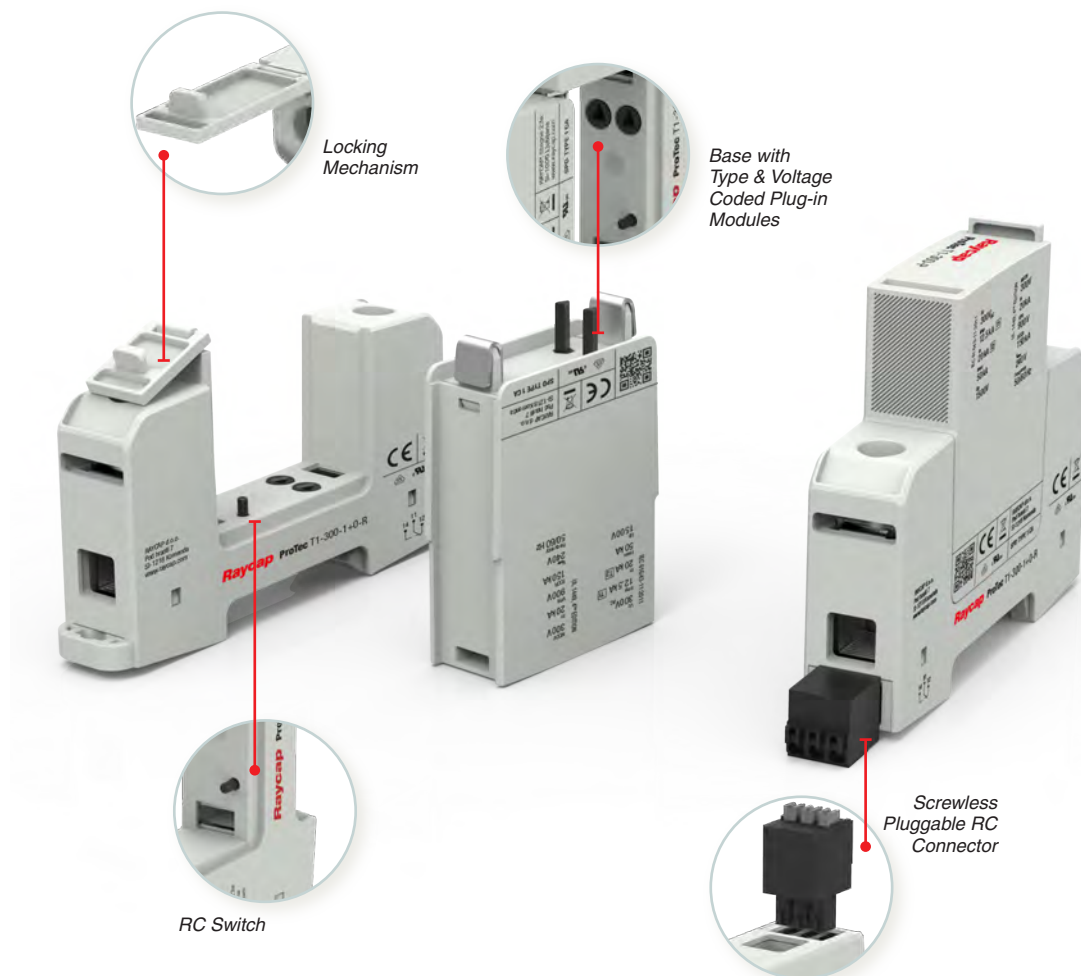
- The coordinated tripping characteristics of the thermal disconnection mechanism and integrated backup fuse provide full-range fault current protection and end-of-life disconnection for enhanced safety
- Reduced installation space requirements, installation costs, wiring time and complexity
- Shorter connecting cables improve voltage protection level across installation points
- Enables installation on networks with low prospective short circuit currents

## Pluggable Single Pole & Multi-pole Surge Protective Devices



### Housing Design Features

- Contemporary design
- Low residual protection level
- High durability due to redesigned thermal disconnection mechanism
- No external back-up fuse required up to 315A
- Locking mechanism for secure placement in high vibration environments
- Remote signaling using tool-free remote contact
- Easily visible mechanical lifetime indicator
- Replacement plugs provide ease of installation and preventive maintenance
- Easy replacement during servicing
- Meets IEC/EN 61643-11 and UL 1449 5th Edition





## Surge Protective Devices with Open Type UL Listed Certificate

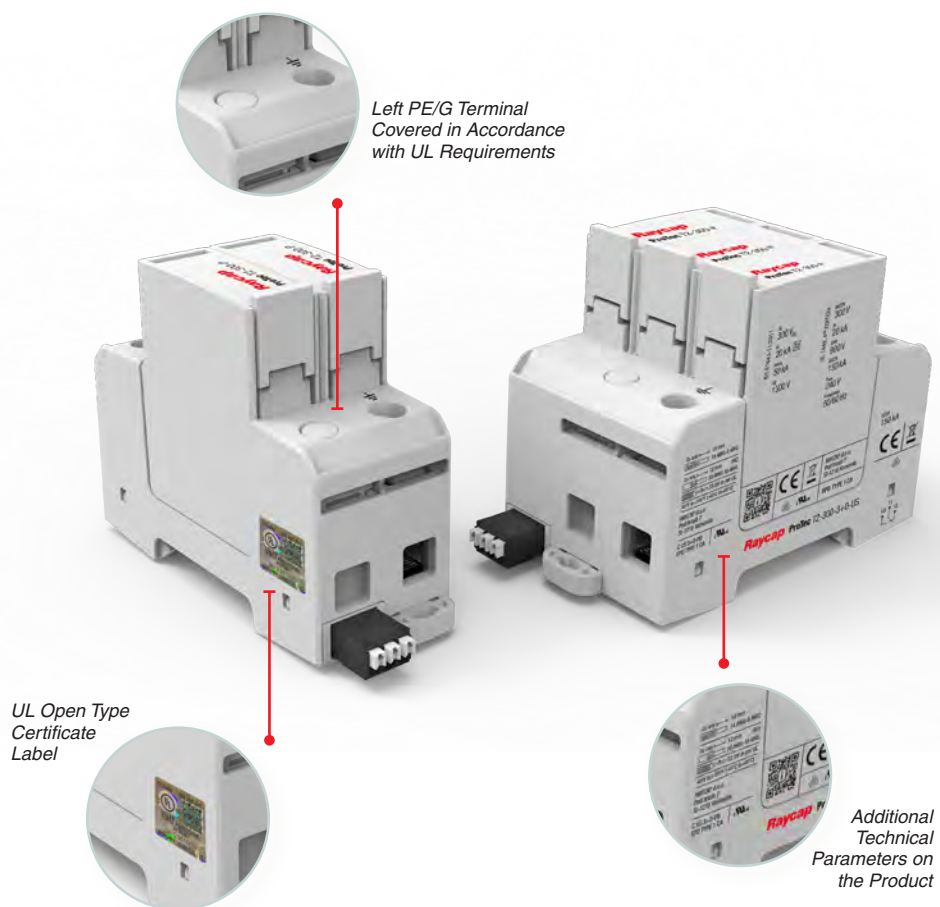


### Open Type 1 SPD Listed

- Compliance: NFPA 79 (2018)
- Contemporary design
- Pluggable versions available
- Suitable for European and US Market
- One PE/G Terminal is covered
- Open Type UL Listed Certificate label on the product
- Both Open Type UL Listed and UL Recognized

### Available Product Groups

- ProTec T1 Series
- ProTec T2H Series
- ProTec T2 Series
- ProTec T2 ADV Series
- SafeTec T2 Series
- ProTec T1 and T2 PV Series



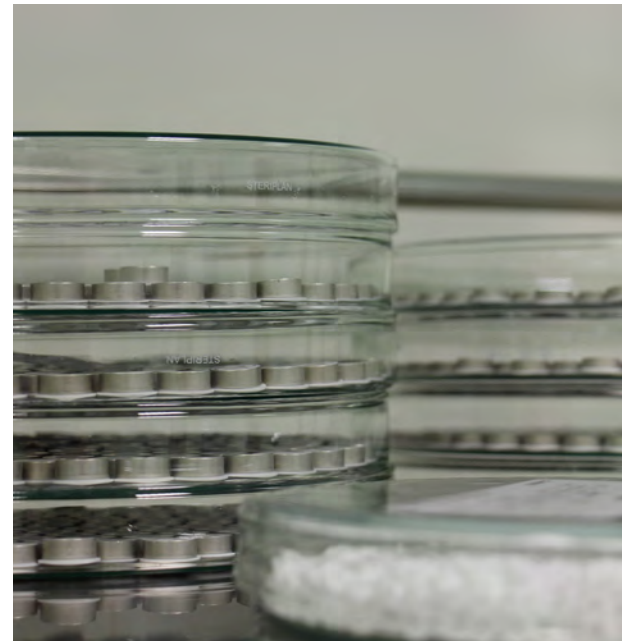
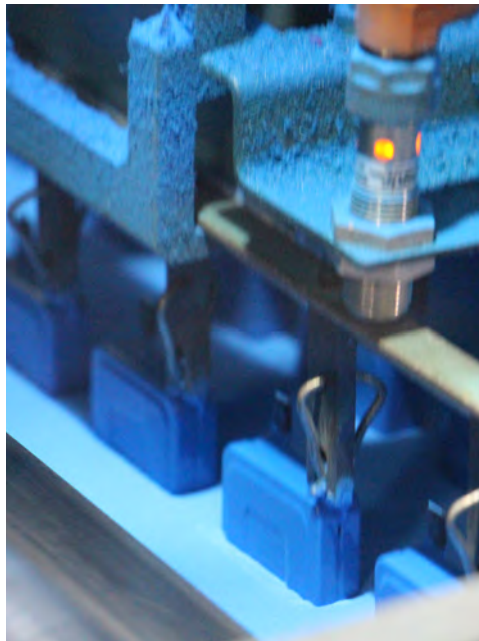
## R&D and Manufacturing Capabilities

### Custom Engineering Solutions & Single Source Components

Successful custom engineering solutions require three ingredients: Expertise, the proper testing facilities and access to the best prototype equipment available. Raycap has all three. Experience has shown that each application has different requirements, and thus more than 60% of all Raycap design projects have been developed as custom solutions. Raycap's global design team is responsive to requests no matter the complexity of the problem or geographical region. Because of its multiple worldwide production facilities, the company is capable of working around the clock to design, prototype, develop and manufacture quick product turnarounds within extremely short time frames.

Raycap's surge protection products are certified by global standards bodies and the company's testing facilities include IEC and VDE certified R&D labs in Europe, and a UL certified test lab in the United States.

Raycap has a comprehensive technology range that includes surge arresters and metal oxide varistors (MOVs) as well as classic gas discharge tubes (GDTs) and our proprietary and Phase GDT technology (PGDT). Our production is characterized by an exceptionally high level of vertical integration in our products and their core elements. This enables a high degree of supply availability and guarantees our customers the best quality and reliability in procurement at all times.

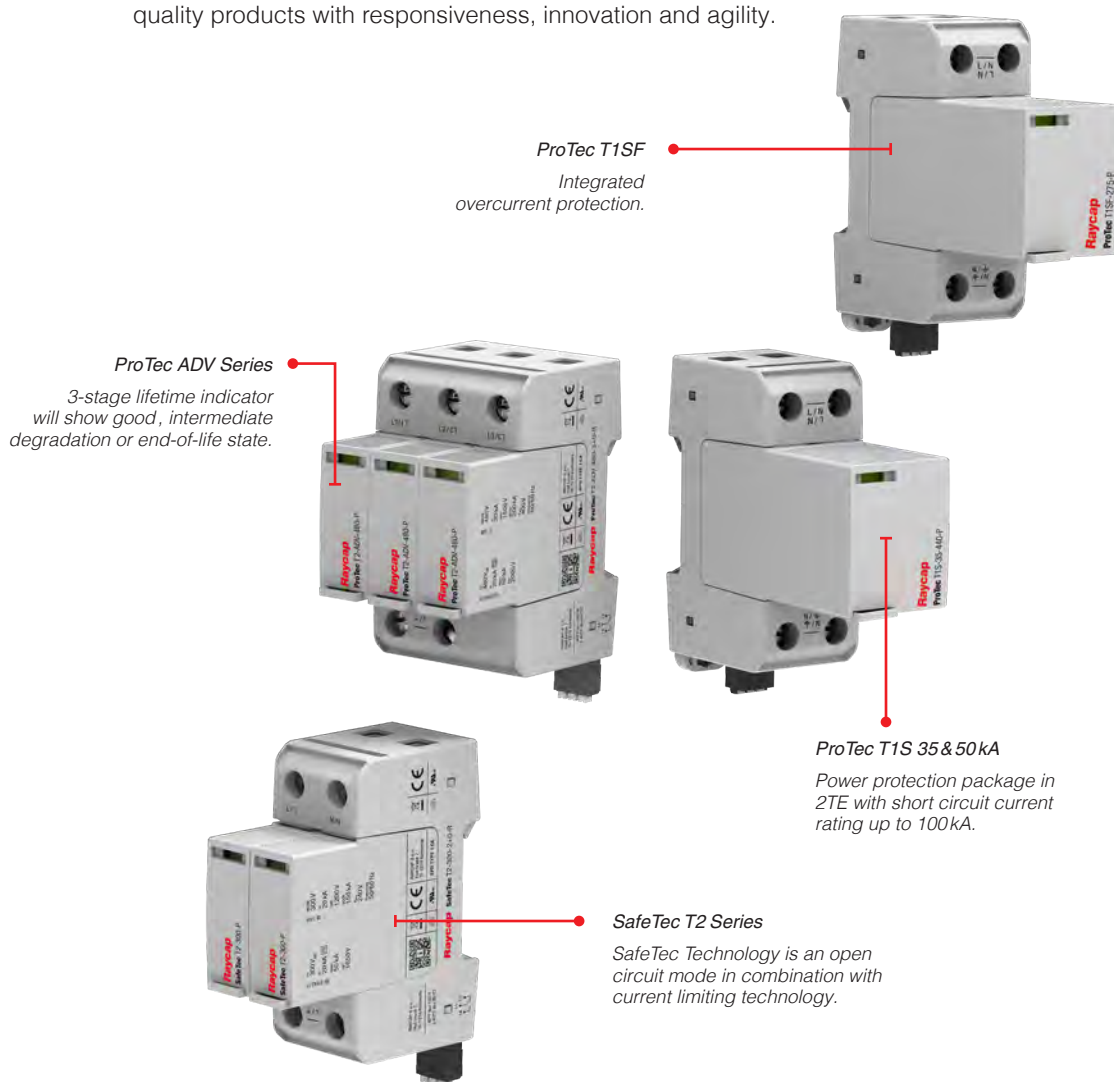


## Unique Surge Protection Technologies



### Advanced Engineering Solutions

The company combines advanced engineering, superior product design, technology and manufacturing capability with a deep understanding of the needs of the customer to create unique technological solutions for mission-critical applications. Raycap's comprehensive understanding of customer needs and the industries in which they operate is crucial to our ability to develop effective solutions that integrate the latest technology with the highest quality of service. The Raycap team of talented, highly experienced staff works together with customers to find the best-fit solutions. As a result, more than 60% of our products delivered are custom-built for unique customer applications and to their specifications. From rigorous internal and independent testing to a consultative customer-focused approach, Raycap is determined to deliver the highest quality products with responsiveness, innovation and agility.



## An innovative approach to Class I voltage-switching Surge Protective Devices



Phase GDT based Technology

### Phase Gas Discharge Tube (PGDT)

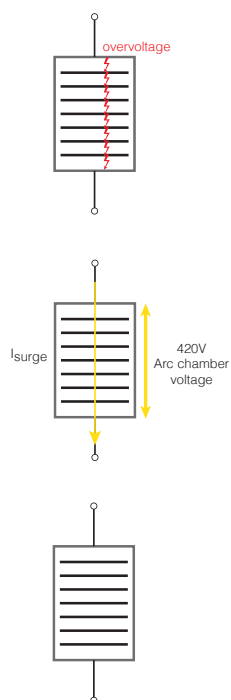


#### Special features:

- Suitable for the protection of sensitive electronics
- Applicable in networks with high short-circuit currents (up to 100kA)
- Less stress on the installation as SPD doesn't conduct follow current after surge
- No tripping of upstream overcurrent protection or catastrophic end-of-life
- No damage to the cabinet in case of SPD failure
- No ventilation of cabinet needed, side-by-side installation
- Long lifetime due to no follow current conduction.

Raycap's ProTec T1S Series of Surge Protective Devices (SPD) is based on Phase Gas Discharge Tube (PGDT) technology that was developed over several years. This premium voltage-switching technology enables the SPDs to be half the width of a standard 25kA Class I DIN Rail SPD without compromising performance. The compact power package enables 35kA and 50kA in a 2TE housing. The innovative design is based on multi-cell, encapsulated spark gap technology that provides inherently greater safety by significantly reducing the follow-current conducted over the power supply each time the device is triggered into conduction by an overvoltage or surge event. By limiting the large follow-current typical of conventional gap technologies, the expected lifetime of the SPDs can be prolonged and nuisance tripping of upstream overcurrent protection devices minimized.

#### Operation of Phase GDT voltage-switching technology:



In the event of an overvoltage (transient, switching), an avalanche breakdown occurs between the opposing electrodes and Phase GDT starts to conduct.

The surge current starts to flow and the overall arc voltage between the end electrodes of the Phase GDT is sufficiently high, for example 420V, and prevents any follow-current conduction during the surge event.

After the surge event, there is no significant follow-current through the device.

*Phase GDT voltage-switching technology has a series connection of several gaps which are located inside the GDTs housing.*



More Details



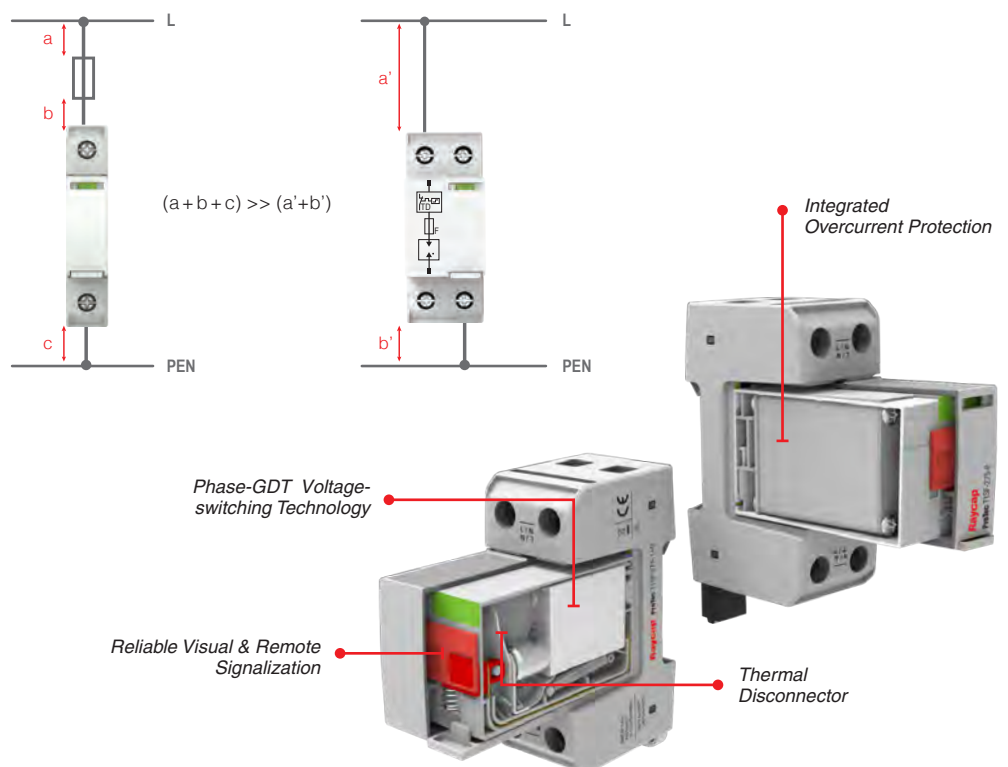


Phase-GDT based Technology  
**ProTec T1SF, SPD with Integrated Backup Fuse**

**Special features:**

- Enhanced safety: The coordinated tripping characteristics of the thermal disconnection mechanism and integrated backup fuse provide a full-range fault current protection and end-of-life disconnection
- Reduced installation space requirements, installation costs, wiring time and complexity
- Shorter connecting cables: improved voltage protection level across installation points
- Enables installation on networks with low prospective currents
- Visual and remote signalization of the device status.

By integrating the backup fuse and eliminating the external one, the Raycap ProTec T1SF (when compared to conventional Type 1 arresters with external backup fuses) offers up to 50% less space requirement in the control cabinet. The product features enhanced safety via coordinated tripping characteristics of the thermal disconnecter and the integrated fuse, and fault-current protection on networks with high prospective currents. Raycap's ProTec T1SF with its Phase-GDT and integrated backup fuse technologies makes the overall installation faster, safer, error-proof and cost-effective while omitting the time-consuming process of external fuse dimensioning. Selectivity of the installation fusing now plays a subordinate role since the combination device is already correctly configured, providing surge and short-circuit protection. Additionally, by omitting external backup fusing, large industrial disconnectors can be protected against surges with the upstream installation of ProTec T1SF.



More Details



## Raycap Technology ProTec ADV Series

### Special features:

- Advanced redundancy notification serves to warn users of the need for a maintenance check due to overvoltage activities in the system
- Clear green-yellow-red indicators
- Vibration and shock withstand capability
- Sensitive and reliable disconnecter
- Full redundancy

ProTec T2-ADV features an advanced three-stage life status indicator showing an intermediate degradation status before the arrester's end-of-life state, thus indicating possible problems or needed maintenance, before the unit reaches end-of-life.

The product's advantage is based on the use of specially treated varistors that provide reliable determination of the first switching disconnection and segmentation or redundancy based on two powerful separate varistors, both which are functionally connected. Compared to the ProTec T2, the T2-ADV features a two-step visual indication which changes from green to yellow as soon as the maximum load capacity of the particular arrester is reached, and activates the floating changeover contact (RC). While in yellow status the connected equipment is continually protected against fatal overvoltage effects.



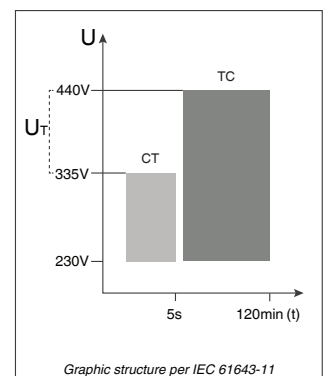
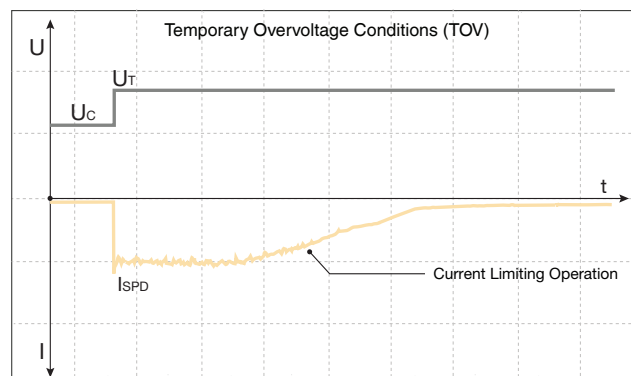
## Raycap Technology SafeTec Surge Protection

### Special features:

- Good protection level
- For use in situations where TOVs or switching transients are present on a distribution network
- Features open circuit mode in combination with current limiting technology
- 5-year warranty, 10-year life span
- Low-maintenance cost
- Modular, pluggable, field replaceable modules

SafeTec delivers a reliable solution for all overvoltages, surges and transients. The all in one technology is suitable for DC and AC applications. The SafeTec technology is an open circuit mode in combination with current limiting technology. This current limiting control prevents permanent disconnection during adverse temporary overvoltage (TOV) conditions.

Driven by the need for higher reliability, system cost reductions and market needs, SafeTec technology addresses significant performance improvements. The technology serves as a current limiter in the event of unexpected faults in power supply networks and ensures that the maximum current through the MOV in the initial state of conductivity is a few ampere. The current balance is quickly established at a level of about 10mA. The unique SafeTec technology ensures that the current does not exceed the energy handling capability of the MOV and prevents unwanted SPD disconnection from the power supply.



- Maximum Continuous Operating Voltage
- Temporary Overvoltage (TOV)
- Current Flow Through SPD

- SafeTec Technology-TC
- Conventional Technology-CT



SafeTec T2-300-1+0-R



SafeTec T2-300-2+0-R

## Notes





## Pluggable Single Pole Surge Protective Devices (SPDs)

### Overvoltage Protection with Integrated Fuse **ProTec T1SF Series**



#### Special features:

- Integrated backup fuse
- Leakage current free product for installation in the pre-metering area
- Shorter connecting cables - low voltage protection level
- Reduced installation space requirements, costs, wiring time and complexity
- Sensitive and reliable state-of-the-art disconnecter
- Visual and remote signalization of the device status
- Short circuit current rating up to 100kA\*



IEC 61643-11:2011

EN 61643-11:2012+A11:2018



Raycap's new ProTec T1SF Series is based on its Phase Gas Discharge Tube (PGDT) technology, and a new integrated fuse technology. The products ensure safe thermal and fault-current disconnection on networks with prospective currents as low as 300 A and as high as 100,000 A.\* On networks with high prospective currents, SPDs with integrated fuses provide enhanced safety and fault-current protection due to the coordinated tripping characteristics of the thermal disconnect and the integrated fuse.



More Product Information

\* VDE certified up to 75kA, 100kA additionally tested by VDE.



# Lightning and Overvoltage Protection with Integrated Fuse

## ProTec T1SF 1+0

Class I • Class II • Type 1 • Type 2



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 Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1SF-xxx-1+0(-R)

275

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	275 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$
Charge	Q	12.5 As
Voltage Protection Level	$U_p$	1500 V
Response Time	$t_A$	< 100 ns
Overcurrent Protection		Not Required
Short-Circuit Current Rating (AC)	$I_{SCCR}$	75 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	75 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1200 V
Overcurrent Protection (min)		Not Required

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		Not Required

#### Mechanical & Environmental

Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

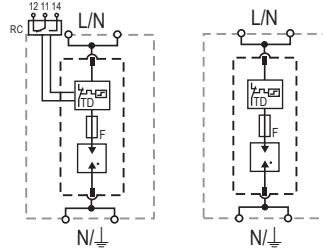
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



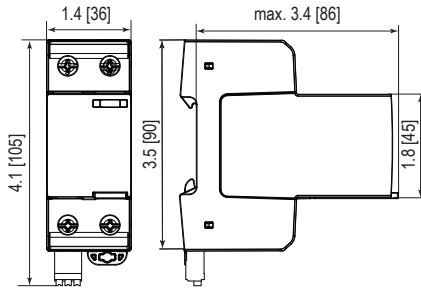
### ProTec T1SF-xxx-1+0(-R)

#### Order Information

Order Code	275
ProTec T1SF-xxx-1+0	59.A500
ProTec T1SF-xxx-1+0-R (with remote contacts)	59.A501
ProTec T1SF-xxx-P (plug)	59.A502

## Dimensions & Packaging

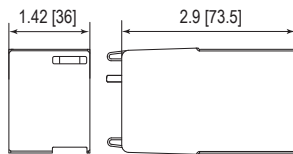
inches [mm]



#### Complete Unit

ProTec T1SF-xxx-1+0		275
Weight	pounds [grams]	.727 [330]
ProTec T1SF-xxx-1+0-R		275
Weight	pounds [grams]	.736 [334]
DIN 43880 Dimension		2TE / 1.42 [36]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

## Spare Plug



#### Single Unit

ProTec T1SF-xxx-P		275
Weight	pounds [grams]	.427 [194]
DIN 43880 Dimension		2TE / 1.42 [36]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		16 Units



## Additional System Application Options

### ProTec T1SF Series

#### Main use:

- Heavy industry installations
- Transformer stations

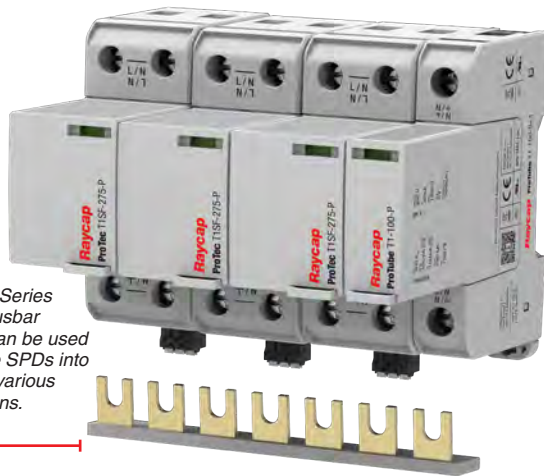
#### Benefits:

- Smallest in-class solution on the market
- 16 mm<sup>2</sup> wiring can always be used\*

*\*Installation of live conductors must be internal short-circuit proof between phases or between phase and earth.*

#### ProBar Busbars

The ProBar Accessories Series is a series of insulated busbar interconnections which can be used to easily connect multiple SPDs into single protection unit for various systems and configurations.



3+1 Configuration for TN-S and TT System Wiring



3+0 Configuration for TN-C System Wiring

Connection Options	Line to Line	Neutral to Ground	BusBar Connection
3+0 Configuration for TN-C System Wiring	3 x ProTec T1SF-275-1+0(-R) Order Code: 59.A500 or 59.A501	-	ProBar 1+6 Order Code: 501 342
3+1 Configuration for TN-S and TT System Wiring	3 x ProTec T1SF-275-1+0(-R) Order Code: 59.A500 or 59.A501	1 x ProTec ProTube T1-100-0+1 Order Code: 59.0278	ProBar 1+7 Order Code: 501 343

## Pluggable Single Pole Surge Protective Devices (SPDs)

### Overvoltage Protection (PGDT Technology) **ProTec T1S 35kA & 50kA Series**



#### Special features:

- Leakage current free solution, Class I,  $I_{imp} = 35kA \text{ \& } 50kA$
- Low voltage protection level,  $U_p < 2.5kV$
- Can be installed in IT systems (Only SPD with  $U_c 440V$ )
- No external backup fuse required up to 500 A
- Vibration and shock withstand capability
- Sensitive and reliable state-of-the-art disconnecter
- Short circuit current rating up to 100kA
- Compact power package, 35kA & 50kA  $I_{imp}$  in 2 TE



IEC 61643-11:2011

EN 61643-11:2012+A11:2018



The ProTec T1S combines lightning current and surge arrester performance. The multi-gap tube technology enables the extinction of follow current under severe short-circuit conditions at a wider range, from just a few kA up to 50kA, while also preventing the tripping of upstream fuses, thus ensuring sustainable system operation. Ease of installation in single or three phase systems is further simplified by universal energy coordination with not only Raycap's units but any other brand without additional cable length. By using a unique thermal disconnection mechanism, optimal system protection can be achieved under all kinds of overloads, setting world standards in "spark-gap" performance technologies. The operating state indicator requires no power to operate, instantly showing the operating state of the surge protective device. Besides the visual mechanical indicator, products featuring remote contacts (RC) provide a three-pole remote signaling terminal that enables users to remotely monitor the operating state of their devices.



More Product Information

RoHS  
COMPLIANT  CE

# Lightning and Overvoltage Protection

## ProTec T1S-50 1+0

Class I • Class II • Type 1 • Type 2

50kA Series



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 Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-50-xxx-1+0(-R)

275

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	275 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	50 kA
Specific Energy	W/R	625 kJ/ $\Omega$
Charge	Q	25 As
Voltage Protection Level	$U_p$	1500 V
Rated Load Current	$I_L$	100 A
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		500 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	100 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000 V
Overcurrent Protection (min)		500 A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		500 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		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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

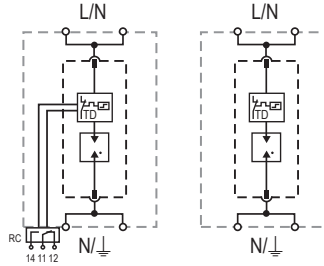
Connection Configurations can be found in QR Code link on intro page.

RoHS COMPLIANT

## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



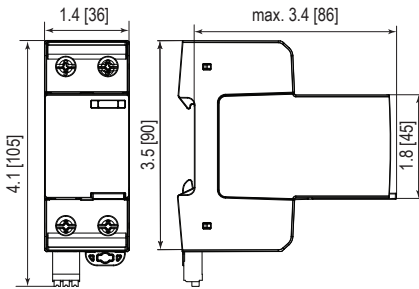
### ProTec T1S-50-xxx-1+0(-R)

#### Order Information

Order Code	275
ProTec T1S-50-xxx-1+0	59.A533
ProTec T1S-50-xxx-1+0-R (with remote contacts)	59.A534
ProTec T1S-50-xxx-P (plug)	59.A535

## Dimensions & Packaging

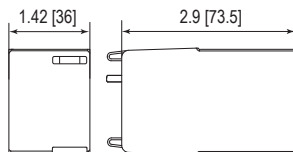
inches [mm]



#### Complete Unit

ProTec T1S-50-xxx-1+0		275
Weight	pounds [grams]	.623 [283]
ProTec T1S-50-xxx-1+0-R		275
Weight	pounds [grams]	.643 [292]
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



#### Single Unit

ProTec T1S-50-xxx-P		275
Weight	pounds [grams]	.412 [187]
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		16 Units

# Lightning and Overvoltage Protection

## ProTec T1S-35 1+0

Class I • Class II • Type 1 • Type 2

35kA Series



Location of Use: Main Distribution Boards  
Network Systems: TN-S, TN-C, TT (only L-N), IT (only 440V)

Mode of Protection: L-PE, N-PE (only TN-S and IT), L-PEN, L-N  
IEC/EN Category: Class I+II / Type 1+2

Housing: Pluggable Design

Compliance: IEC 61643-11:2011  
EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-35-xxx-1+0(-R)

275

440

#### IEC Electrical

		275	440
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	35kA	35kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	35kA	35kA
Specific Energy	W/R	306.25 kJ/ $\Omega$	306.25 kJ/ $\Omega$
Charge	Q	17.5 As	17.5 As
Voltage Protection Level	$U_p$	1500V	2500V
Rated Load Current	$I_L$	100A	100A
Response Time	$t_A$	< 100ns	< 100ns
Overcurrent Protection (max)		500A gG	400A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	100kA	100kA
TOV Withstand 120min	$U_T$	442V	762V
TOV Safe Fail 200ms	$U_T$	-	1640V
Number of Ports		1	1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V	1500V
Overcurrent Protection (min)		400A gG	400A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	
Overcurrent Protection (max)		500A gG	400A 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		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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

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

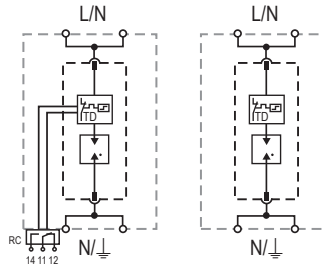
RoHS COMPLIANT  CE



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



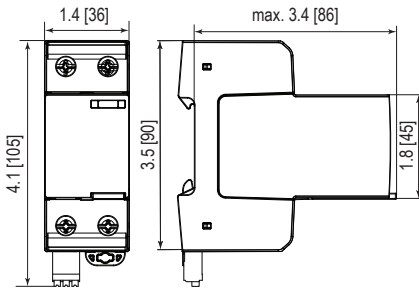
### ProTec T1S-35-xxx-1+0(-R)

#### Order Information

Order Code	275	440
ProTec T1S-35-xxx-1+0	59.A530	59.A536
ProTec T1S-35-xxx-1+0-R (with remote contacts)	59.A531	59.A537
ProTec T1S-35-xxx-P (plug)	59.A532	59.A538

## Dimensions & Packaging

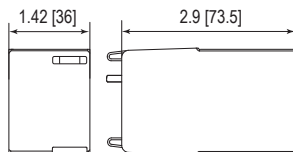
inches [mm]



#### Complete Unit

ProTec T1S-35-xxx-1+0	275	440	
Weight	pounds [grams]	.623 [283]	.656 [298]
ProTec T1S-35-xxx-1+0-R	275	440	
Weight	pounds [grams]	.643 [292]	.676 [307]
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



#### Single Unit

ProTec T1S-35-xxx-P	275	440	
Weight	pounds [grams]	.412 [187]	.445 [202]
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	16 Units		



## Connection Accessories

### ProTec T1S 35kA & 50kA Series

- Products with  $U_c$  440V are suitable for IT system applications
- Busbar connection accessories available for different configurations
- Compatible with other SPDs in the same product range

3+1 Configuration for TT and System Wiring



1+1 Configuration for TT System Wiring

#### ProBar Busbars

The ProBar Accessories Series is a series of insulated busbar interconnections which can be used to easily connect multiple SPDs into a single protection unit for various systems and configurations.



Connection	Options for 275V	Options for 440V
Line to Line	ProTec T1S-35-275-1+0(-R) Order Code: 59.A530 or 59.A531	ProTec T1S-35-440-1+0(-R) Order Code: 59.A536 or 59.A537
	ProTec T1S-50-275-1+0(-R) Order Code: 59.A533 or 59.A534	-
Neutral to Ground	ProTube T1S-100-0+1 Order Code: 59.0744	ProTube T1S-440-100-0+1 Order Code: 59.A529

For each application use only products of the same voltage.

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



Overvoltage Protection (PGDT Technology)

### ProTec T1S



#### Special features:

- Leakage current free solution, Class I,  $I_{imp} = 25\text{ kA}$
- Low voltage protection level,  $U_p < 2.5\text{ kV}$
- Can be installed in IT systems (only SPD with  $U_c 440\text{ V}$ )
- No external arrester backup fuse required up to 315 A
- Vibration and shock withstand capability
- Sensitive and reliable state-of-the-art disconnecter
- Short circuit current rating up to 100 kA\*
- Compact power package, 25 kA  $I_{imp}$  in 1 TE



IEC 61643-11:2011

EN 61643-11:2012+A11:2018



The ProTec T1S product family is based on a heavy-duty multi-gap technology that offers compelling benefits in the smallest case size while retaining high levels of safety performance. By using the most advanced gas discharge tube, Raycap's new ProTec T1S range combines lightning current and surge arrester performance. Its modular and flexible design makes the ProTec T1S series the ideal solution for electrical installations with limited space. Classified as Type 1+2 device, the T1S can be installed between boundaries OA – 1 and higher. The multi-gap tube technology enables follow current extinction under severe short-circuit conditions through wider range from just a few kA up to 100 kA\* while preventing the tripping of upstream fuses, thus ensuring sustainable system operation. Ease of installation in single or three phase system is furthermore simplified with universal energy coordination not only with Raycap's units but any other brand without additional cable length. By using a unique thermal disconnection mechanism optimal system protection can be achieved under all kinds of overloads, setting new standards in "spark" gap performance technologies. The operating state indicator needs no power to show the operating state of the surge protective device. Besides visual mechanical indication, the remote contacts (RC) feature 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 T1S 1+0

Class I • Class II • Type 1 • Type 2

25kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-S, TN-C, TT (only L-N), IT (only 440)  
 Mode of Protection: L-PE, N-PE (only TN-S and IT), L-PEN, L-N  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-xxx-1+0(-R)		275	440*
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$	156.2 kJ/ $\Omega$
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	$U_p$	1500V	2500V
Response Time	$t_A$	< 100 ns	< 100 ns
Overcurrent Protection (max)		315 A gG	315 A gG / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA	50 kA / 100 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	50 kA	50 kA / 100 kA
TOV 120min	$U_T / mode$	442V/Withstand	762V / Safe Fail
TOV Safe Fail 200ms	$U_T$	-	1640V
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1400V	1500V
Overcurrent Protection (min)		250 A gG	250 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA
Overcurrent Protection (max)		315 A gG	250 A gG
<b>Mechanical &amp; Environmental</b>			
Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Altitude		6562 ft [2000m]	
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

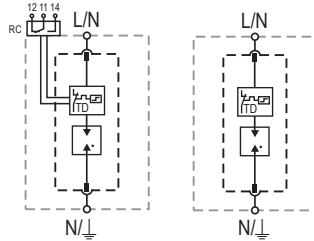
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
- ⏚ PE Conductor Terminal
- RC* Remote Contacts Terminal (Optional)
- TD* Thermal Disconnecter



### ProTec T1S-xxx-1+0(-R)

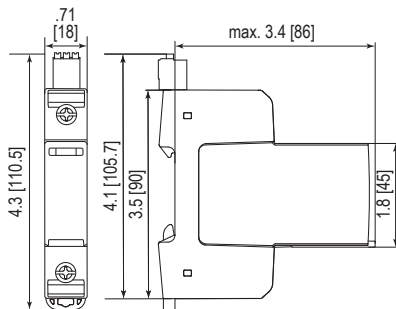
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-1+0	59.0738	59.A517
ProTec T1S-xxx-1+0-R (with remote contacts)	59.0739	59.A518
ProTec T1S-xxx-P (plug)	59.0384	59.A515

\*No VDE Certification.

## Dimensions & Packaging

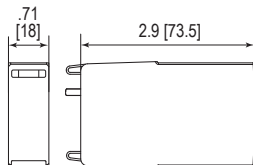
inches [mm]



#### Complete Unit

ProTec T1S-xxx-1+0	275	440*	
Weight	pounds [grams]	.381 [173]	.392 [178]
ProTec T1S-xxx-1+0-R	275	440*	
Weight	pounds [grams]	.396 [180]	.407 [185]
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		

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*	
Weight	pounds [grams]	.231 [105]	.242 [110]
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 T1S 2+0

Class I • Class II • Type 1 • Type 2

25 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-S, IT (only 440)  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-xxx-2+0(-R)		275	440*
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$	156.2 kJ/ $\Omega$
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	$U_p$	1500V	2500V
Response Time	$t_A$	< 100 ns	< 100 ns
Overcurrent Protection (max)		315 A gG	315 A gG / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA	50 kA / 100 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	50 kA	50 kA / 100 kA
TOV 120min	$U_T / mode$	442V/Withstand	762V / Safe Fail
TOV Safe Fail 200ms	$U_T$	-	1640V
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1400V	1500V
Overcurrent Protection (min)		250 A gG	250 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA
Overcurrent Protection (max)		315 A gG	250 A gG
<b>Mechanical &amp; Environmental</b>			
Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Altitude		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

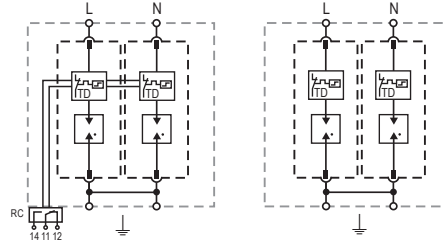
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T1S-xxx-2+0(-R)

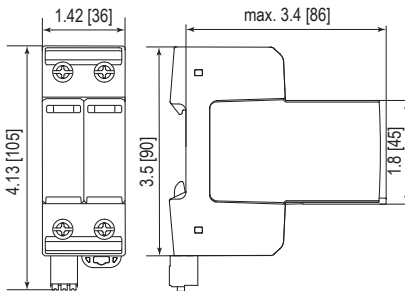
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-2+0	59.0740	59.A519
ProTec T1S-xxx-2+0-R (with remote contacts)	59.0741	59.A520
ProTec T1S-xxx-P (plug)	59.0384	59.A515

\*No VDE Certification.

## Dimensions & Packaging

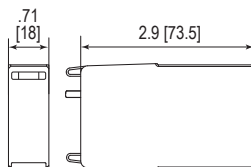
inches [mm]



#### Complete Unit

ProTec T1S-xxx-2+0	275	440*
Weight	pounds [grams] .749 [340]	.771 [350]
ProTec T1S-xxx-2+0-R	275	440*
Weight	pounds [grams] .769 [349]	.791 [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	

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*
Weight	pounds [grams] .231 [105]	.242 [110]
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 T1S 3+0

### Class I • Class II • Type 1 • Type 2

25 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-C, IT (only 440)  
 Mode of Protection: L-PEN  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

## Technical Data

ProTec T1S-xxx-3+0(-R)		275	440*
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$	156.2 kJ/ $\Omega$
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	$U_p$	1500V	2500V
Response Time	$t_A$	< 100 ns	< 100 ns
Overcurrent Protection (max)		315 A gG	315 A gG / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA	50 kA / 100 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	50 kA	50 kA / 100 kA
TOV 120min	$U_T$ / mode	442V/Withstand	762V / Safe Fail
TOV Safe Fail 200ms	$U_T$	-	1640V
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1400V	1500V
Overcurrent Protection (min)		250 A gG	250 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA
Overcurrent Protection (max)		315 A gG	250 A gG
<b>Mechanical &amp; Environmental</b>			
Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Altitude		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

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

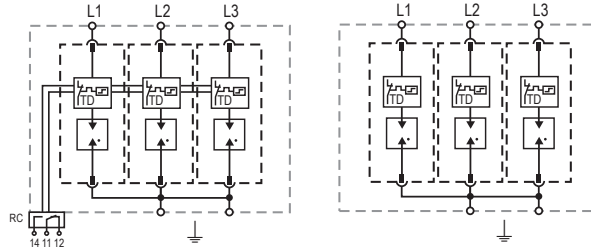




## Internal Configuration

### Legend

- L Line Conductor Terminal
- ⏏ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



### ProTec T1S-xxx-3+0(-R)

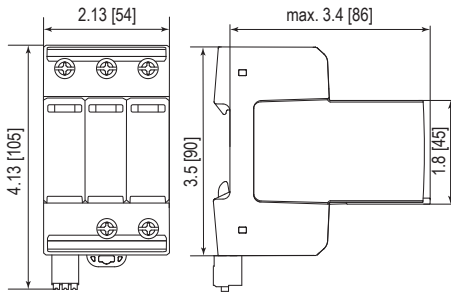
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-3+0	59.0742	59.A521
ProTec T1S-xxx-3+0-R (with remote contacts)	59.0743	59.A522
ProTec T1S-xxx-P (plug)	59.0384	59.A515

\*No VDE Certification.

## Dimensions & Packaging

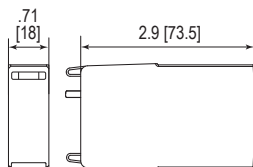
inches [mm]



#### Complete Unit

ProTec T1S-xxx-3+0	275	440*	
Weight	pounds [grams]	1.100 [499]	1.133 [514]
ProTec T1S-xxx-3+0-R	275	440*	
Weight	pounds [grams]	1.119 [508]	1.166 [529]
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 Units		

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*	
Weight	pounds [grams]	.231 [105]	.242 [110]
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 T1S 4+0

Class I • Class II • Type 1 • Type 2

25 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-S, IT (only 440)  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:212+A11:2018

### Technical Data

ProTec T1S-xxx-4+0(-R)

275

440\*

#### IEC Electrical

		275	440*
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$	156.2 kJ/ $\Omega$
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	$U_p$	1500V	2500V
Response Time	$t_A$	< 100 ns	< 100 ns
Overcurrent Protection (max)		315 A gG	315 A gG / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA	50 kA / 100 kA
Follow Current Interrupt Rating (AC)	$I_{fi}$	50 kA	50 kA / 100 kA
TOV 120min	$U_T / mode$	442V/Withstand	762V / Safe Fail
TOV Safe Fail 200ms	$U_T$	-	1640V
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1400V	1500V
Overcurrent Protection (min)		250 A gG	250 A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA	
Overcurrent Protection (max)		315 A gG	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		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

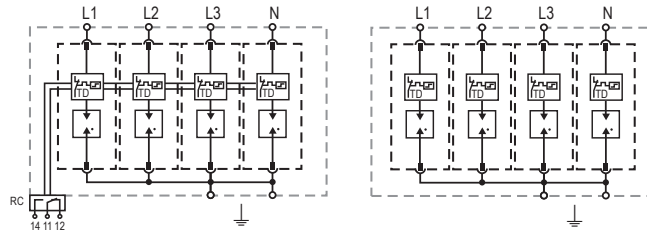
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T1S-xxx-4+0(-R)

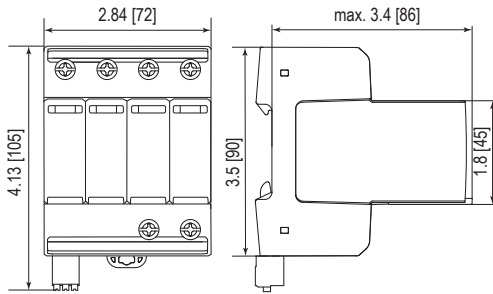
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-4+0	59.0744	59.A523
ProTec T1S-xxx-4+0-R (with remote contacts)	59.0745	59.A524
ProTec T1S-xxx-P (plug)	59.0384	59.A515

\*No VDE Certification.

## Dimensions & Packaging

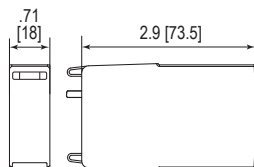
inches [mm]



#### Complete Unit

ProTec T1S-xxx-4+0	275	440*
Weight	pounds [grams] 1.481 [672]	1.526 [692]
ProTec T1S-xxx-4+0-R	275	440*
Weight	pounds [grams] 1.501 [681]	1.545 [701]
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	

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*
Weight	pounds [grams] .231 [105]	.242 [110]
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 T1S 1+1

Class I • Class II • Type 1 • Type 2

25kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-xxx-1+1(-R)

275

440\*

#### IEC Electrical

		275	440*
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	275V / 305V	440V / 440V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	25kA / 100kA	25kA / 100kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65kA / 150kA	50kA / 100kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	25kA / 100kA	25kA / 100kA
Specific Energy	(L-N) / (N-PE) W/R	156.2kJ/ $\Omega$ / 2500 kJ/ $\Omega$	156.2kJ/ $\Omega$ / 2500 kJ/ $\Omega$
Charge	(L-N) / (N-PE) Q	12.5As / 50As	12.5As / 50As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500V / 1500V	2500V / 2500V
Response Time	(L-N) / (N-PE) $t_A$	< 100ns / < 100ns	< 100ns / < 100ns
Overcurrent Protection (max)		315A gG	315A gG / 250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	50kA	50kA / 100kA
Follow Current Interrupt Rating (AC)	(L-N) $I_{fi}$	50kA	50kA / 100A
	(N-PE)	100A	100A
TOV 120min	(L-N) $U_T$ / mode	442V/Withstand	762V / Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V	1200V
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1400V / 305V	1500V / 305V
Overcurrent Protection (min)		250A gG	250A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$		100kA
Overcurrent Protection (max)		315A gG	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		6562 ft [2000m]	
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

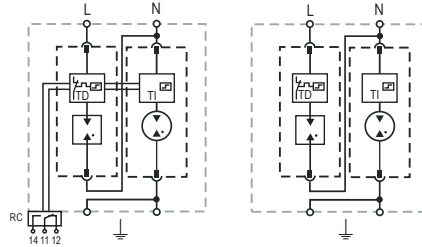
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T1S-xxx-1+1(-R)

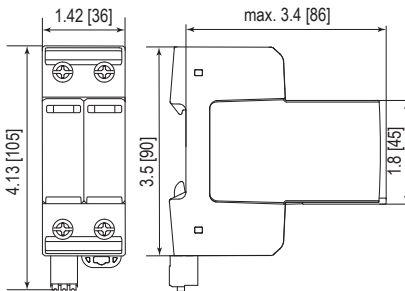
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-1+1	59.0746	59.A525
ProTec T1S-xxx-1+1-R (with remote contacts)	59.0747	59.A526
ProTec T1S-xxx-P (plug L-N)	59.0384	59.A515
ProTube T1S-100-P (plug N-PE)	59.0386	
ProTube T1S-440-100-P (plug N-PE)		59.A516

\*No VDE Certification.

## Dimensions & Packaging

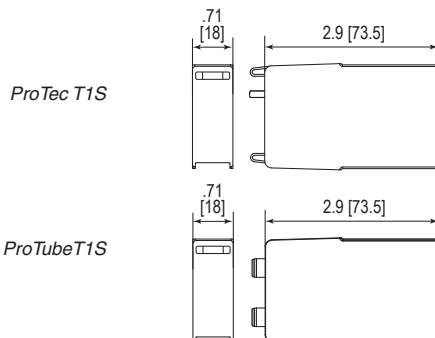
inches [mm]



#### Complete Unit

ProTec T1S-xxx-1+1	275	440*	
Weight	pounds [grams]	.773 [351]	.785 [356]
ProTec T1S-xxx-1+1-R	275	440*	
Weight	pounds [grams]	.787 [357]	.798 [362]
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



#### Single Unit

ProTec T1S-xxx-P	275	440*	
Weight	pounds [grams]	.231 [105]	.242 [110]
ProTube T1S-100-P	100		
Weight	pounds [grams]	.253 [115]	
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 T1S 3+1

Class I • Class II • Type 1 • Type 2

25kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-xxx-3+1(-R)

275

440\*

#### IEC Electrical

		275	440*
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	275V / 305V	440V / 440V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	25 kA / 100 kA	25 kA / 100 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65 kA / 150 kA	50 kA / 100 kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	25 kA / 100 kA	25 kA / 100 kA
Specific Energy	(L-N) / (N-PE) W/R	156.2 kJ/ $\Omega$ / 2500 kJ/ $\Omega$	156.2 kJ/ $\Omega$ / 2500 kJ/ $\Omega$
Charge	(L-N) / (N-PE) Q	12.5 As / 50 As	12.5 As / 50 As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500V / 1500V	2500V / 2500V
Response Time	(L-N) / (N-PE) $t_A$	< 100 ns / < 100 ns	< 100 ns / < 100 ns
Overcurrent Protection (max)		315 A gG	315 A gG / 250 A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	50 kA	50 kA / 100 kA
Follow Current Interrupt Rating (AC)	(L-N) $I_{fi}$	50 kA	50 kA / 100 A
	(N-PE)	100 A	100 A
TOV 120min	(L-N) $U_T$ / mode	442V / Withstand	762V / Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V	1200V
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1400V / 305V	1500V / 305V
Overcurrent Protection (min)		250 A gG	250 A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA
Overcurrent Protection (max)		315 A gG	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		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

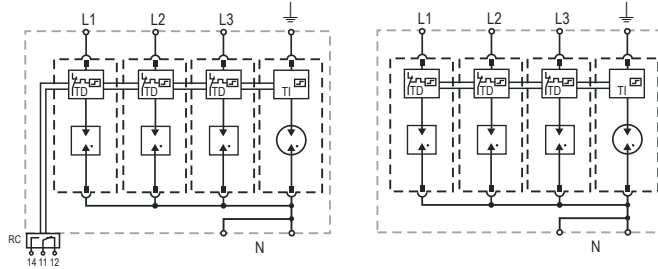
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T1S-xxx-3+1(-R)

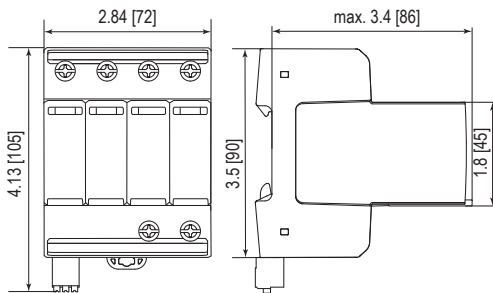
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-3+1	59.0748	59.A527
ProTec T1S-xxx-3+1-R (with remote contacts)	59.0749	59.A528
ProTec T1S-xxx-P (plug L-N)	59.0384	59.A515
ProTube T1S-100-P (plug N-PE)	59.0386	-
ProTube T1S-440-100-P (plug N-PE)	-	59.A516

\*No VDE Certification.

## Dimensions & Packaging

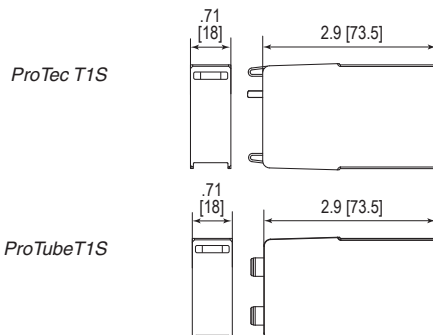
inches [mm]



#### Complete Unit

ProTec T1S-xxx-3+1	275	440*
Weight	pounds [grams] 1.503 [682]	1.537 [697]
ProTec T1S-xxx-3+1-R	275	440*
Weight	pounds [grams] 1.523 [691]	1.556 [706]
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	

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*
Weight	pounds [grams] .231 [105]	.242 [110]
ProTube T1S-100-P	100	
Weight	pounds [grams] .253 [115]	
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 T1S 3+1 N

Class I • Class II • Type 1 • Type 2

25kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T1S-xxx-3+1-N(-R)

275

440\*

#### IEC Electrical

		275	440*
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	400V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	275V / 305V	440V / 440V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	25kA / 100kA	25kA / 100kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65kA / 150kA	50kA / 100kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	25kA / 100kA	25kA / 100kA
Specific Energy	(L-N) / (N-PE) W/R	156.2kJ/ $\Omega$ / 2500 kJ/ $\Omega$	156.2kJ / 2500 kJ/ $\Omega$
Charge	(L-N) / (N-PE) Q	12.5As / 50As	12.5As / 50As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1700V / 1500V	2500V / 2500V
Response Time	(L-N) / (N-PE) $t_A$	< 100ns / < 100ns	< 100ns / < 100ns
Overcurrent Protection (max)		315A gG	315A gG / 250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	50kA	50kA / 100kA
Follow Current Interrupt Rating (AC)	(L-N) $I_{fi}$	50kA	50kA / 100A
	(N-PE)	100A	100A
TOV 120min	(L-N) $U_T$ / mode	442V / Withstand	762V / Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V	1200V
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1400V / 305V	1500V / 305V
Overcurrent Protection (min)		250A gG	250A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$		100kA
Overcurrent Protection (max)		315A gG	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		6562 ft [2000m]	
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*No VDE Certification.

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

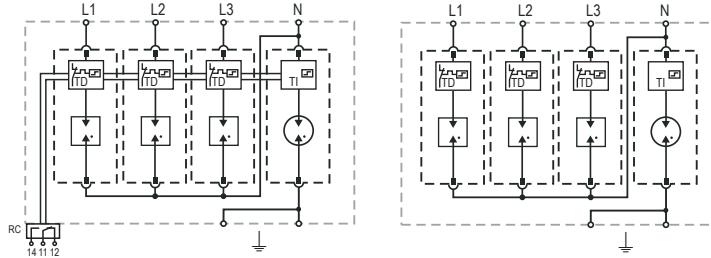




## Internal Configuration

### Legend

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



### ProTec T1S-xxx-3+1-N(-R)

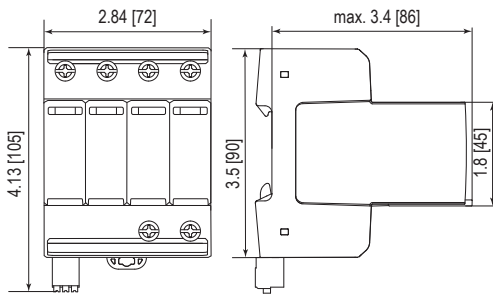
#### Order Information

Order Code	275	440*
ProTec T1S-xxx-3+1-N	59.0382	59.A657
ProTec T1S-xxx-3+1-N-R (with remote contacts)	59.0383	59.A658
ProTec T1S-xxx-N-P (plug L-N)	59.0385	-
ProTec T1S-xxx-P (plug L-N)	-	59.A515
ProTube T1S-100-P (plug N-PE)	59.0386	-
ProTube T1S-440-100-P (plug N-PE)	-	59.A516

\*No VDE Certification.

## Dimensions & Packaging

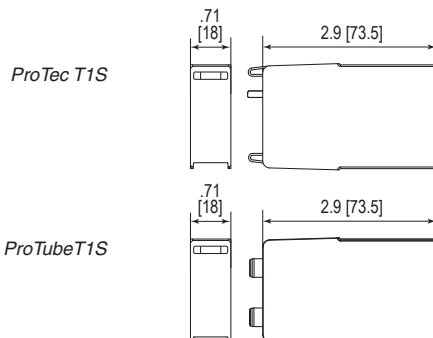
inches [mm]



#### Complete Unit

ProTec T1S-xxx-3+1-N	275	440*	
Weight	pounds [grams]	1.503 [682]	1.537 [697]
ProTec T1S-xxx-3+1-N-R	275	440*	
Weight	pounds [grams]	1.523 [691]	1.556 [706]
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		

## Spare Plug



#### Single Unit

ProTec T1S-xxx-P	275	440*	
Weight	pounds [grams]	.231 [105]	.242 [110]
ProTube T1S-100-P	100		
Weight	pounds [grams]	.253 [115]	
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 T1S-100-0+1**  
 Class I • Class II • Type 1 • Type 2

25 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

**ProTube T1S-xxx-0+1** **100**

IEC Electrical		
Maximum Continuous Operating Voltage (AC)	$U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	100 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	150 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	100 kA
Specific Energy	W/R	2500 kJ/ $\Omega$
Charge	Q	50 As
Voltage Protection Level	$U_p$	2500 V
Response Time	$t_A$	< 100 ns
Follow Current Interrupt Rating (AC)	$I_{fi}$	100 A
TOV 200ms	$U_T / mode$	1200 V / Withstand
Number of Ports		1

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


Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305 V
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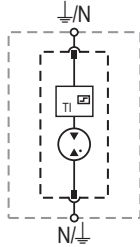
**Mechanical & Environmental**

Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		6562 ft [2000 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

## Internal Configuration

### Legend

- N* Neutral Conductor Terminal
-  PE Conductor Terminal
- Tl* Thermal Indication



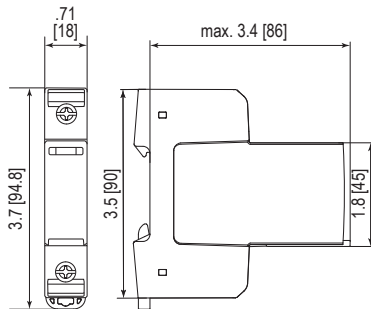
### ProTube T1S-xxx-0+1

#### Order Information

Order Code	100
ProTube T1S-xxx-0+1	59.A744
ProTube T1S-100-P (plug)	59.0386

## Dimensions & Packaging

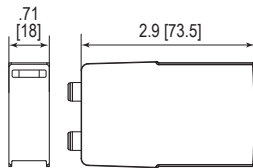
inches [mm]



#### Complete Unit

ProTube T1S-xxx-0+1		100
Weight	pounds [grams]	1.503 [682]
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

## Spare Plug



#### Single Unit

ProTube T1S-100-P		100
Weight	pounds [grams]	.253 [115]
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 T1S-440-100-0+1**  
 Class I • Class II • Type 1 • Type 2

25 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

ProTube T1S-440-xxx-0+1

100

**IEC Electrical**

Maximum Continuous Operating Voltage (AC)	$U_c$	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	100kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	100kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	100kA
Specific Energy	W/R	2500 kJ/ $\Omega$
Charge	Q	50As
Voltage Protection Level	$U_p$	2500V
Response Time	$t_A$	< 100ns
Follow Current Interrupt Rating (AC)	$I_{fi}$	100A
TOV 200ms	$U_T / mode$	1200V / Withstand
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	440V
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**Mechanical & Environmental**

Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		6562 ft [2000m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

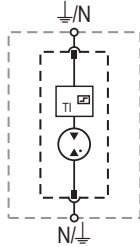
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- N* Neutral Conductor Terminal
- $\perp$  PE Conductor Terminal
- TI* Thermal Indication



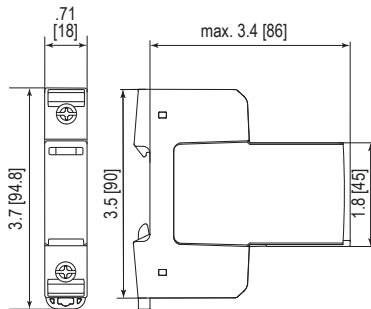
### ProTube T1S-440-xxx-0+1

#### Order Information

Order Code	100
ProTube T1S-440-xxx-0+1	59.A529
ProTube T1S-440-100-P (plug)	59.A516

## Dimensions & Packaging

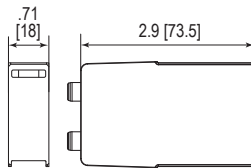
inches [mm]



#### Complete Unit

ProTube T1S-440-xxx-0+1	100
Weight	pounds [grams] .403 [183]
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

## Spare Plug



#### Single Unit

ProTube T1S-440-100-P	100
Weight	pounds [grams] .253 [115]
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

# Notes



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



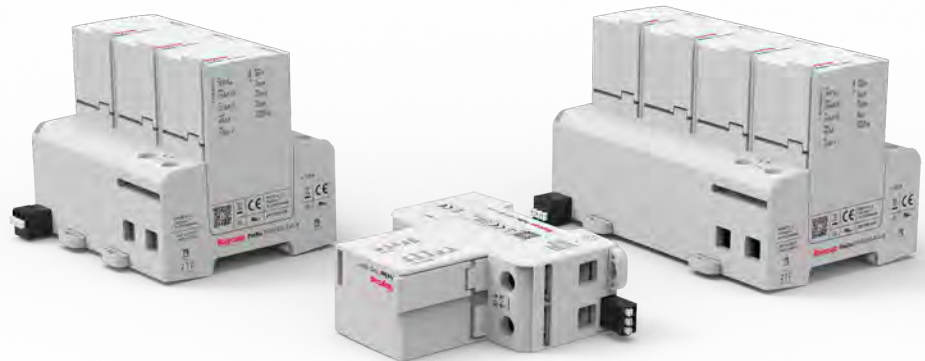
Lightning and Overvoltage Protection

### ProTec T1HS



#### Special features:

- Leakage current free hybrid topology
- High discharge capacity due to unique design impulse discharge current of 25 kA
- Energy coordinated with other ProTec families without additional cable length
- State-of-the-art thermal disconnecter
- Backup fuse up to 315 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 Type 1+2 modular surge protective device contains two high rated stand-alone varistors in series with a gas discharge tube that, in combination with a state-of-the-art space-saving thermal disconnection mechanism, ensure optimal system protection under all kinds of overloads. The series connection isolates the varistor from the grid, making it suitable for use upstream of meter panels in low-voltage consumer installations while making it immune to temporary overvoltage. The operating state requires no power to operate and instantly shows the health of the surge protective indicator. Besides a visual mechanical indicator, an optional remote contact (RC) device features a three-pole remote signaling terminal to 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 T1HS 1+0**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

25 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11: 2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTec T1HS-xxx-1+0(-R)

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$
Charge	Q	12.5 As
Voltage Protection Level	$U_p$	1500 V
Rated Load Current	$I_L$	100 A
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1280 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1100 V
Overcurrent Protection (min)		250 A gG

**Additional Electrical Parameters - Extended** (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		315 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		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		4 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

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

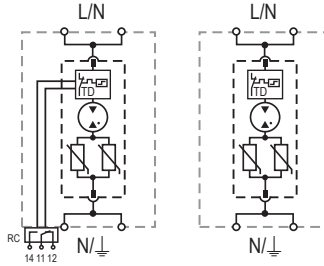




## Internal Configuration

### Legend

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



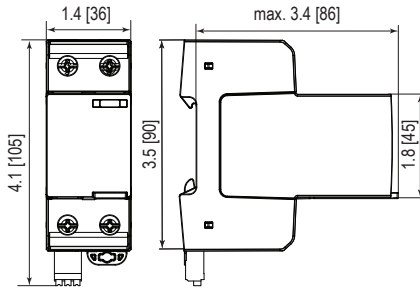
### ProTec T1HS-xxx-1+0(-R)

#### Order Information

Order Code	300
ProTec T1HS-xxx-1+0	59.A594
ProTec T1HS-xxx-1+0-R (with remote contacts)	59.A595
ProTec T1HS-xxx-P (plug)	59.0302

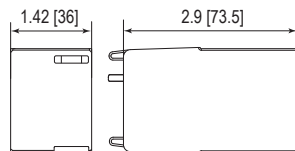
## Dimensions & Packaging

inches [mm]



Complete Unit		
<b>ProTec T1HS-xxx-1+0</b>		<b>300</b>
Weight	pounds [grams]	.650 [295]
<b>ProTec T1HS-xxx-1+0-R</b>		
Weight	pounds [grams]	.670 [304]
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



Single Unit		
<b>ProTec T1HS-xxx-01-P</b>		<b>300</b>
Weight	pounds [grams]	.364 [165]
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		16 Units

# Lightning and Overvoltage Protection

## ProTec T1HS 3+0

Class I • Class II • Type 1 • Type 2 • Type 4CA

25 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11: 2011  
 EN 61643-11: 2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1HS-xxx-3+0(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$
Charge	Q	12.5 As
Voltage Protection Level	$U_p$	1500 V
Rated Load Current	$I_L$	100 A
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

#### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1280 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1100 V
Overcurrent Protection (min)		250 A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		315 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		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		4 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

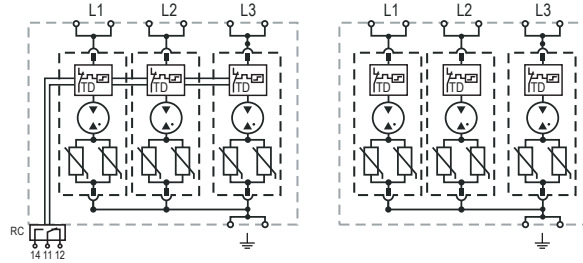
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



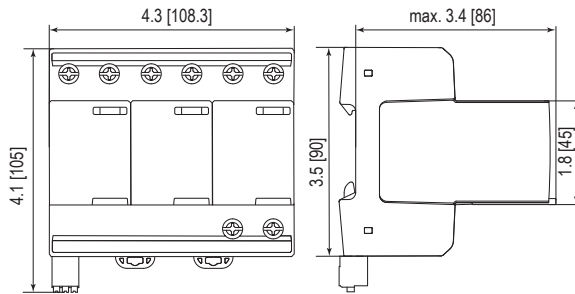
### ProTec T1HS-xxx-3+0(-R)

#### Order Information

Order Code	300
ProTec T1HS-xxx-3+0	59.0304
ProTec T1HS-xxx-3+0-R (with remote contacts)	59.0305
ProTec T1HS-xxx-P (plug)	59.0302

## Dimensions & Packaging

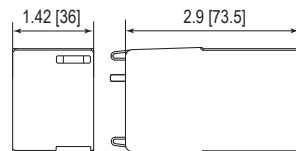
inches [mm]



#### Complete Unit

ProTec T1HS-xxx-3+0	300
Weight	pounds [grams] 1.892 [858]
ProTec T1HS-xxx-3+0-R	
Weight	pounds [grams] 1.914 [868]
DIN 43880 Dimension	6 TE / 4.3" [108.3]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	3 Units

## Spare Plug



#### Single Unit

ProTec T1HS-xxx-P	300
Weight	pounds [grams] .364 [165]
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	16 Units

Lightning and Overvoltage Protection  
**ProTec T1HS 4+0**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

25 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11: 2011  
 EN 61643-11: 2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTec T1HS-xxx-4+0(-R)		300
<b>IEC Electrical</b>		
Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	25 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	25 kA
Specific Energy	W/R	156.2 kJ/ $\Omega$
Charge	Q	12.5 As
Voltage Protection Level	$U_p$	1500 V
Rated Load Current	$I_L$	100 A
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1
<b>UL Electrical</b>		
Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1280 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)		
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1100 V
Overcurrent Protection (min)		250 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)		
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		315 A gG
<b>Mechanical &amp; Environmental</b>		
Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		4 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

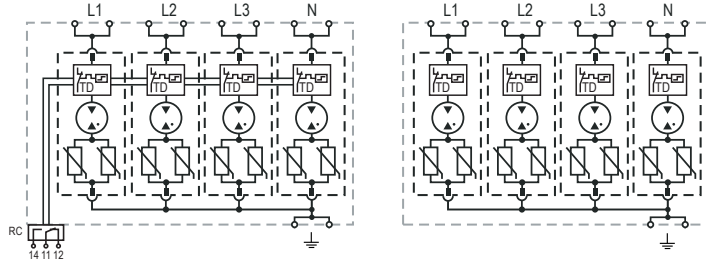
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



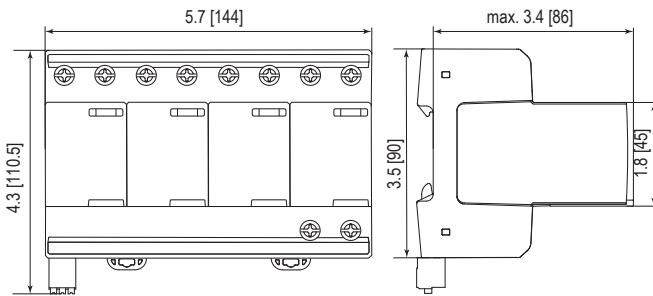
### ProTec T1HS-xxx-4+0(-R)

#### Order Information

Order Code	300
ProTec T1HS-xxx-4+0	59.0260
ProTec T1HS-xxx-4+0-R (with remote contacts)	59.0261
ProTec T1HS-xxx-P (plug)	59.0302

## Dimensions & Packaging

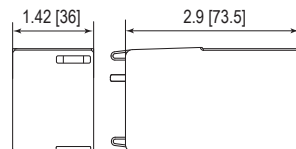
inches [mm]



#### Complete Unit

ProTec T1HS-xxx-4+0	300
Weight	pounds [grams] 2.502 [1135]
ProTec T1HS-xxx-4+0-R	
Weight	pounds [grams] 2.522 [1144]
DIN 43880 Dimension	8 TE / 5.7" [144]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	2 Units

## Spare Plug



#### Single Unit

ProTec T1HS-xxx-P	300
Weight	pounds [grams] .364 [165]
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	16 Units

# Lightning and Overvoltage Protection

## ProTec T1HS 3+1

Class I • Class II • Type 1 • Type 2 • Type 4CA

25 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11: 2011  
 EN 61643-11: 2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1HS-xxx-3+1(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	300 V / 305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	25 kA / 100 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65 kA / 130 kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	25 kA / 100 kA
Specific Energy	(L-N) / (N-PE) W/R	156.2 kJ/ $\Omega$ / 2500 kJ/ $\Omega$
Charge	(L-N) / (N-PE) Q	12.5 As / 50 As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500 V / 1500 V
Rated Load Current	$I_L$	100 A
Response Time	(L-N) / (N-PE) $t_A$	< 100 ns / < 100 ns
Overcurrent Protection (max)		315 A gG
Short-Circuit Current Rating (AC)	$I_{scCR}$	50 kA
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100 A <sub>RMS</sub>
TOV Withstand 120min	(L-N) $U_T$	442 V
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
Measured Limiting Voltage	(L-N)/(N-G) MLV	1280 V / 1000 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1100 V / 305 V
Overcurrent Protection (min)		250 A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{scCR}$	100 kA
Overcurrent Protection (max)		315 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		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		4 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

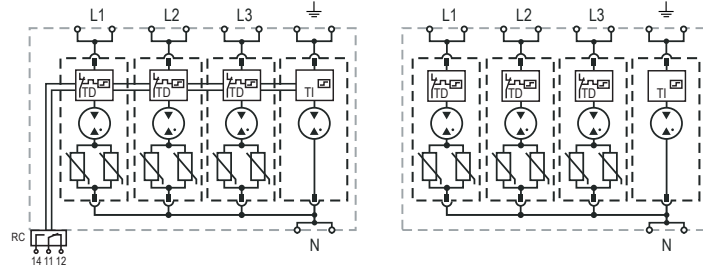
Connection Configurations can be found in QR Code link on intro page.



## 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



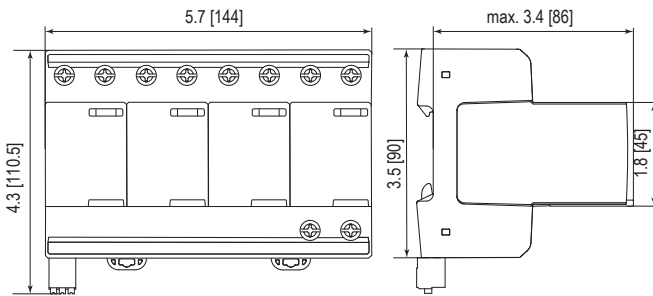
### ProTec T1HS-xxx-3+1(-R)

#### Order Information

Order Code	<b>300</b>
ProTec T1HS-xxx-3+1	59.0306
ProTec T1HS-xxx-3+1-R (with remote contacts)	59.0307
ProTec T1HS-xxx-P (plug L-N)	59.0302
ProTube T1HS-100-P (plug N-PE)	59.0303

## Dimensions & Packaging

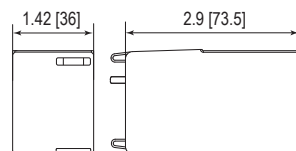
inches [mm]



#### Complete Unit

<b>ProTec T1HS-xxx-3+1</b>	<b>300</b>
Weight	pounds [grams] 2.348 [1065]
<b>ProTec T1HS-xxx-3+1-R</b>	
Weight	pounds [grams] 2.368 [1074]
DIN 43880 Dimension	8 TE / 5.7 [144]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	2 Units

## Spare Plug



#### Single Unit

<b>ProTec T1HS-xxx-P</b>	<b>300</b>
Weight	pounds [grams] .364 [165]
<b>ProTube T1HS-100-P</b>	<b>100</b>
Weight	pounds [grams] 0.209 [95]
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	16 Units

Lightning and Overvoltage Protection  
**ProTube T1HS 0+1**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

25 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11: 2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTube T1HS-xxx-0+1(-R)

100

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	100 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	130 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	100 kA
Specific Energy	W/R	2500 kJ/ $\Omega$
Charge	Q	50 As
Voltage Protection Level	$U_p$	1500 V
Rated Load Current	$I_L$	100 A
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
Follow Current Interrupt Rating	$I_{fi}$	100 A <sub>RMS</sub>
TOV Withstand 200ms	$U_T$	1200 V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	MCOV	305 V
Measured Limiting Voltage	MLV	1000 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305 V
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**Mechanical & Environmental**

Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		4 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

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

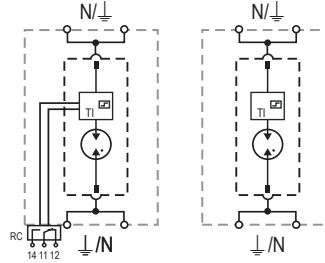




## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
- $\perp$  PE/G Conductor Terminal
- RC* Remote Contacts Terminal (Optional)
- TD* Thermal Disconnect



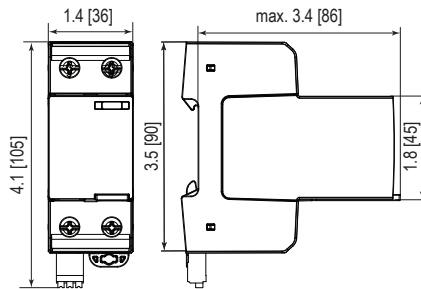
### ProTube T1HS-xxx-0+1(-R)

#### Order Information

Order Code	100
ProTube T1HS-xxx-0+1	59.A596
ProTube T1HS-xxx-0+1-R (with remote contacts)	59.A597
ProTube T1HS-100-01-P (plug)	59.0720

## Dimensions & Packaging

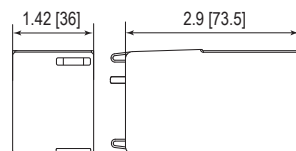
inches [mm]



#### Complete Unit

ProTube T1HS-xxx-0+1		300
Weight	pounds [grams]	.496 [225]
ProTube T1HS-xxx-0+1-R		
Weight	pounds [grams]	.515 [234]
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



#### Single Unit

ProTube T1HS-100-01-P		100
Weight	pounds [grams]	0.209 [95]
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		16 Units

# Notes



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



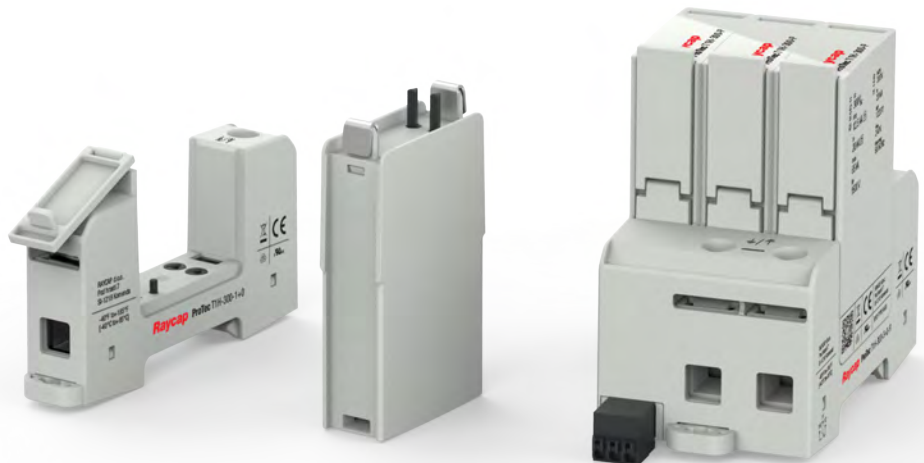
Lightning and Overvoltage Protection

### ProTec T1H



#### Special features:

- Leakage current free hybrid topology
- Energy coordinated with other ProTec families without additional cable length
- State-of-the-art thermal disconnecter
- Backup fuse up to 315A gG
- Short circuit current rating up to 100kA\*
- Vibration and shock withstand capability
- All modules, also N-PE, with operating state green-red
- Optional remote contact signaling



IEC 61643-11:2011

EN 61643-11:2012+A11:2018

UL 1449 5th Edition



The ProTec T1H modular surge protection device provides high durability due to its leakage-free performance ensured by a special series connection of a varistor and a gas discharge tube. The product family is ideal as a supplement to the basic ProTec T1 product family, available for single or three-phase TN-S, TT and TN-C systems, with a maximum continuous operating voltage of 300VAC where a complete absence of leakage current is required. With its Type 1 classification, the ProTec T1H can be installed between boundaries 0b – 1 and higher. The varistor-based protection modules feature outstanding short-circuit currents up to 100kA\* without using a back up to a main fuse, with a nominal current of 315A. The device can be installed upstream of meter panels in low-voltage consumer installations. An optional remote contact (RC) features a three-pole remote signaling terminal that enables remote monitoring of the device's operating state.

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



More Product Information



# Lightning and Overvoltage Protection

## ProTec T1H 1+0

Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1H-xxx-1+0(-R)		300
<b>IEC Electrical</b>		
Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500 V
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25 kA / 50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1
<b>UL Electrical</b>		
Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1220 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)		
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800 V
Overcurrent Protection (min)		160 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)		
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
Overcurrent Protection (max)		250 A gG
<b>Mechanical &amp; Environmental</b>		
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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

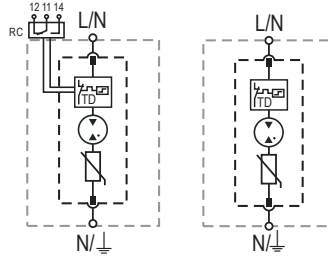
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



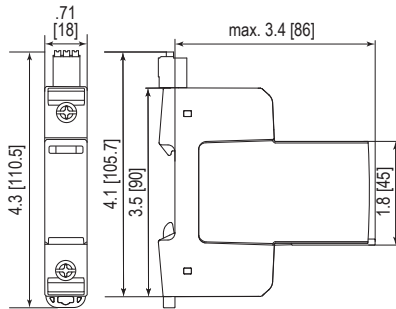
### ProTec T1H-xxx-1+0(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-1+0	59.0310
ProTec T1H-xxx-1+0-R (with remote contacts)	59.0311
ProTec T1H-xxx-P (plug)	59.0308

## Dimensions & Packaging

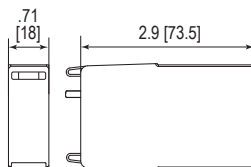
inches [mm]



#### Complete Unit

ProTec T1H-xxx-1+0	300
Weight	pounds [grams] .375 [170]
ProTec T1H-xxx-1+0-R	
Weight	pounds [grams] .390 [177]
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

## Spare Plug



#### Single Unit

ProTec T1H-xxx-P	300
Weight	pounds [grams] .223 [101]
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 T1H 2+0**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTec T1H-xxx-2+0(-R)

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500 V
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25 kA / 50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1220 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

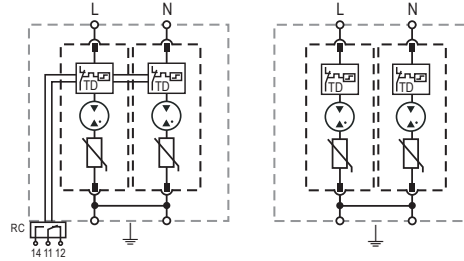
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



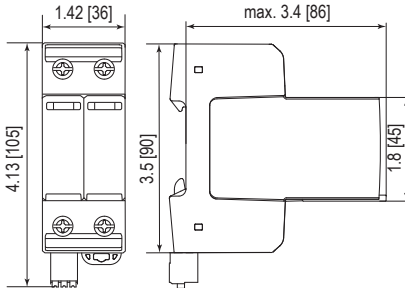
### ProTec T1H-xxx-2+0(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-2+0	59.0312
ProTec T1H-xxx-2+0-R (with remote contacts)	59.0313
ProTec T1H-xxx-P (plug)	59.0308

## Dimensions & Packaging

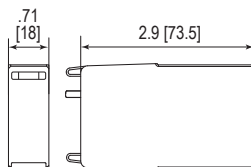
inches [mm]



#### Complete Unit

ProTec T1H-xxx-2+0	300	
Weight	pounds [grams]	.736 [334]
ProTec T1H-xxx-2+0-R		
Weight	pounds [grams]	.756 [343]
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



#### Single Unit

ProTec T1H-xxx-P	300	
Weight	pounds [grams]	.223 [101]
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 T1H 3+0**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTec T1H-xxx-3+0(-R)

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500 V
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25 kA / 50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1220 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

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

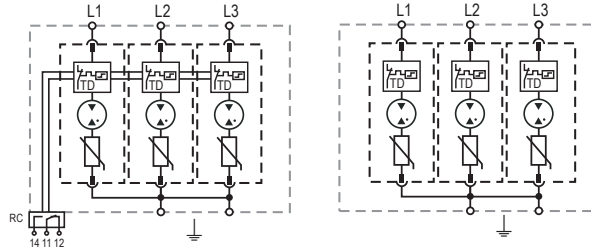




## Internal Configuration

### Legend

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



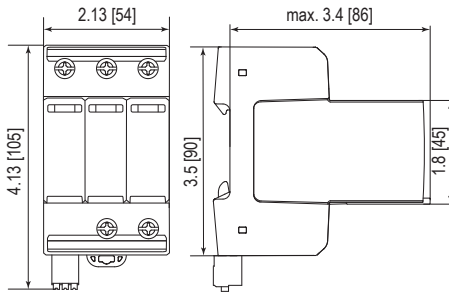
### ProTec T1H-xxx-3+0(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-3+0	59.0314
ProTec T1H-xxx-3+0-R (with remote contacts)	59.0315
ProTec T1H-xxx-P (plug)	59.0308

## Dimensions & Packaging

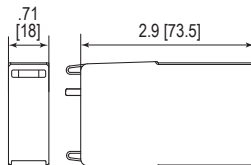
inches [mm]



#### Complete Unit

ProTec T1H-xxx-3+0	300
Weight	pounds [grams] 1.080 [490]
ProTec T1H-xxx-3+0-R	
Weight	pounds [grams] 1.100 [499]
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 Units

## Spare Plug



#### Single Unit

ProTec T1H-xxx-P	300
Weight	pounds [grams] .223 [101]
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 T1H 4+0

Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1H-xxx-4+0(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500 V
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		315 A / 250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25 kA / 50 kA
TOV Withstand 120min	$U_T$	442 V
Number of Ports		1

#### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Measured Limiting Voltage	MLV	1220 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

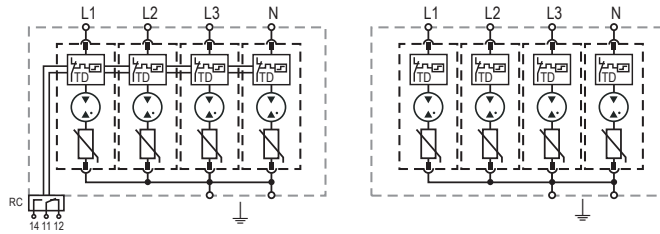
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



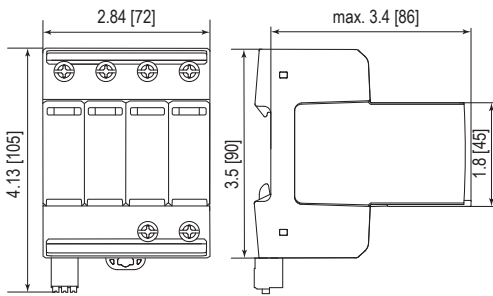
### ProTec T1H-xxx-4+0(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-4+0	59.0316
ProTec T1H-xxx-4+0-R (with remote contacts)	59.0317
ProTec T1H-xxx-P (plug)	59.0308

## Dimensions & Packaging

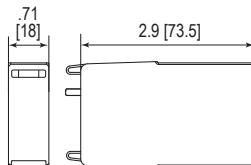
inches [mm]



#### Complete Unit

ProTec T1H-xxx-4+0	300
Weight	pounds [grams] 1.389 [630]
ProTec T1H-xxx-4+0-R	
Weight	pounds [grams] 1.409 [639]
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

## Spare Plug



#### Single Unit

ProTec T1H-xxx-P	300
Weight	pounds [grams] .223 [101]
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 T1H 1+1**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTec T1H-xxx-1+1(-R)

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	300V / 305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	20kA / 50kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65kA / 100kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	12.5kA / 50kA
Specific Energy	(L-N) / (N-PE) W/R	39kJ/ $\Omega$ / 625kJ/ $\Omega$
Charge	(L-N) / (N-PE) Q	6.25As / 25As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500V / 1500V
Response Time	(L-N) / (N-PE) $t_A$	< 100ns / < 100ns
Overcurrent Protection (max)		315A / 250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25kA / 50kA
Follow Current Interrupt Rating (AC)	(N-PE) $I_{fi}$	100A
TOV Withstand 120min	(L-N) $U_T$	442V
TOV Withstand 200ms	(N-PE) $U_T$	1200V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	(L-N) / (N-G) MCOV	300V / 305V
Measured Limiting Voltage	(L-N) / (N-G) MLV	1220V / 1800V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-G) $I_n$	20kA / 20kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	800V / 305V
Overcurrent Protection (min)		160A gG

**Additional Electrical Parameters - Extended** (Additionally tested by VDE)

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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

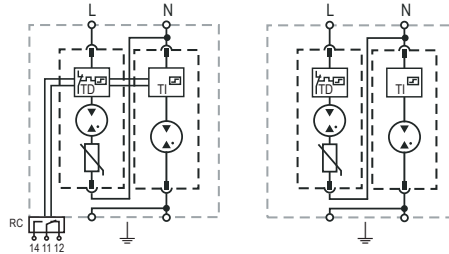
Connection Configurations can be found in QR Code link on intro page.



## 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



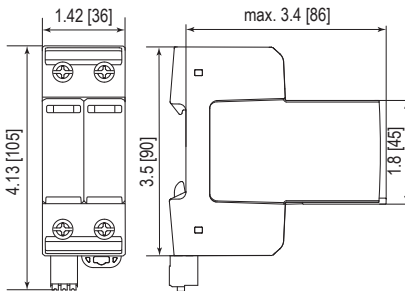
### ProTec T1H-xxx-1+1(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-1+1	59.0318
ProTec T1H-xxx-1+1-R (with remote contacts)	59.0319
ProTec T1H-xxx-P (plug L-N)	59.0308
ProTube T1H-50-P (plug N-PE)	59.0309

## Dimensions & Packaging

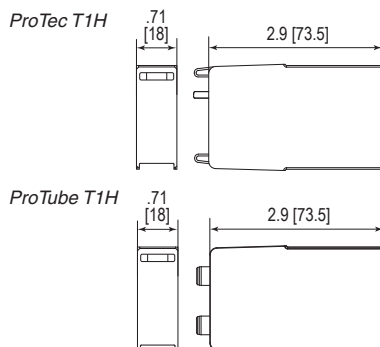
inches [mm]



#### Complete Unit

ProTec T1H-xxx-1+1		300
Weight	pounds [grams]	.730 [331]
ProTec T1H-xxx-1+1-R		300
Weight	pounds [grams]	.743 [337]
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



#### Single Unit

ProTec T1H-xxx-P		300
Weight	pounds [grams]	.223 [101]
ProTube T1H-50-P		50
Weight	pounds [grams]	.214 [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 T1H 3+1

Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1H-xxx-3+1(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	300 V / 305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	20 kA / 50 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	65 kA / 100 kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N) / (N-PE) $I_{imp}$	12.5 kA / 50 kA
Specific Energy	(L-N) / (N-PE) W/R	39 kJ/ $\Omega$ / 625 kJ/ $\Omega$
Charge (L-N) / (N-PE)	Q	6.25 As / 25 As
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500 V / 1500 V
Response Time	(L-N) / (N-PE) $t_A$	< 100 ns / < 100 ns
Overcurrent Protection (max)		315 A / 250 A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25 kA / 50 kA
Follow Current Interrupt Rating (AC)	(N-PE) $I_{fi}$	100 A
TOV Withstand 120min	(L-N) $U_T$	442 V
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
Measured Limiting Voltage	(L-N) / (N-G) MLV	1220 V / 1800 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-G) $I_n$	20 kA / 20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	800 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

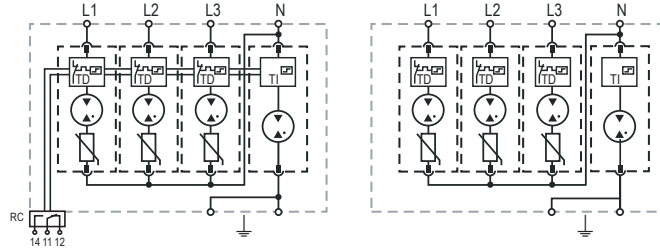
Connection Configurations can be found in QR Code link on intro page.



## 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



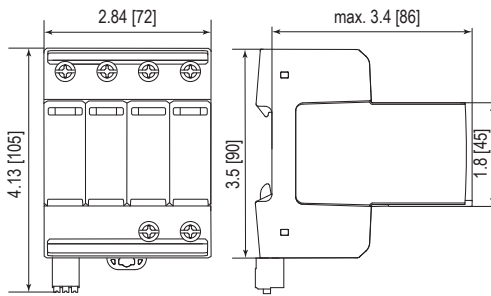
### ProTec T1H-xxx-3+1(-R)

#### Order Information

Order Code	300
ProTec T1H-xxx-3+1	59.0320
ProTec T1H-xxx-3+1-R (with remote contacts)	59.0321
ProTec T1H-xxx-P (plug L-N)	59.0308
ProTube T1H-50-P (plug N-PE)	59.0309

## Dimensions & Packaging

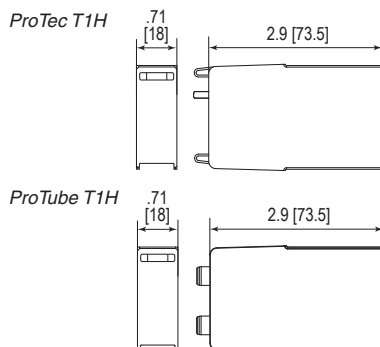
inches [mm]



#### Complete Unit

ProTec T1H-xxx-3+1	300
Weight	pounds [grams] 1.446 [656]
ProTec T1H-xxx-3+1-R	300
Weight	pounds [grams] 1.466 [665]
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

## Spare Plug



#### Single Unit

ProTec T1H-xxx-P	300
Weight	pounds [grams] .223 [101]
ProTube T1H-50-P	50
Weight	pounds [grams] .214 [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 T1H 50 0+1**  
 Class I • Class II • Type 1 • Type 2 • Type 4CA

12.5 kA Series



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 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTube T1H-xxx-0+1

50

**IEC Electrical**

Maximum Continuous Operating Voltage (AC)	$U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	100 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	50 kA
Specific Energy	W/R	625 kJ/ $\Omega$
Charge	Q	25 As
Voltage Protection Level	$U_p$	1500 V
Follow Current Interrupt Rating (AC)	$I_{fi}$	100 A
Response Time	$t_A$	< 100 ns
TOV Withstand 200ms	$U_T$	1200 V
Number of Ports		1

**UL Electrical**

Maximum Continuous Operating Voltage (AC)	MCOV	305 V
Measured Limiting Voltage	MLV	1800 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305 V
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**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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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

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

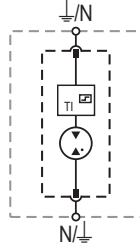




## Internal Configuration

### Legend

- N* Neutral Conductor Terminal
- $\perp$  PE/G Conductor Terminal
- Tl* Thermal Indication



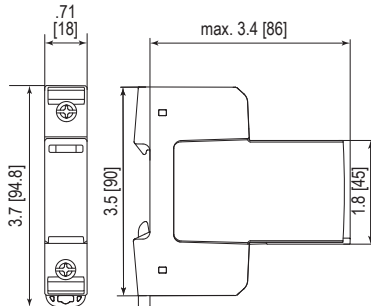
### ProTube T1H-xxx-0+1

#### Order Information

Order Code	50
ProTube T1H-xxx-0+1	59.0340
ProTube T1H-50-P (plug)	59.0309

## Dimensions & Packaging

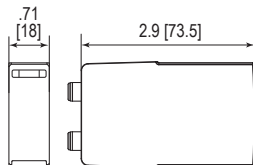
inches [mm]



#### Complete Unit

ProTube T1H-50-0+1		50
Weight	pounds [grams]	.395 [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

## Spare Plug



#### Single Unit

ProTube T1H-50-P		50
Weight	pounds [grams]	.214 [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

# Notes



## 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 100kA\*
- 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

Open Type 1 SPD Listed



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 100kA\* without using a back up to a main fuse nominal current of 315A. 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 50kA, 100kA additionally tested by VDE.



More Product Information



**ProTec T1 1+0****Class I • Class II • Type 1 • Type 2 • Type 1CA • Open Type 1 SPD Listed**

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,  
 Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-1+0-US(-R)		75	150	300	350	440**	480	750
<b>IEC Electrical</b>								
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 (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5kA	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	25 kJ/ $\Omega$	6.25 kJ/ $\Omega$
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)	$I_{SCCR}$	25 kA / 50 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						
<b>UL Electrical</b>								
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	-	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	-	200kA	150kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)								
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	800V	1100V	1300V	1400V	1500V	2500V
Overcurrent Protection (min)		160 A gG						80 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)								
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA						
Overcurrent Protection (max)		250 A gG						
<b>Mechanical &amp; Environmental</b>								
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]						
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]						

\*\*No VDE and UL certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



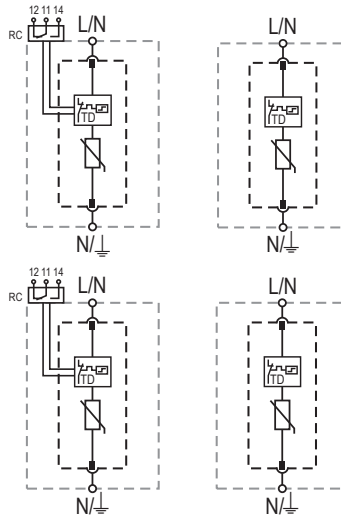
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



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

#### Order Information VDE Certified and UL Recognized Products

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.

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

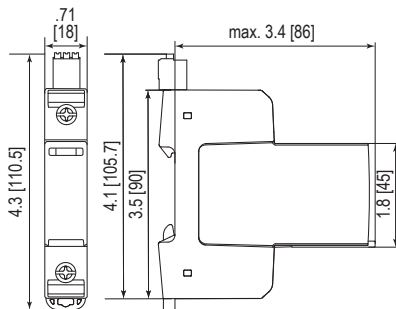
#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	440**	480	750
ProTec T1-xxx-1+0-US	59.B001	59.B003	59.B005	59.B007	-	59.B009	59.B011
ProTec T1-xxx-1+0-US-R (with remote contacts)	59.B002	59.B004	59.B006	59.B008	-	59.B010	59.B012
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]



#### Complete Unit UL Recognized Products

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

#### Complete Unit UL Listed Products

ProTec T1-xxx-1+0-US	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-US-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]

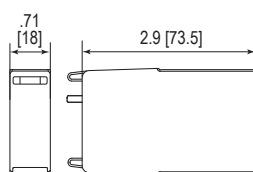
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

12 Units

## Spare Plug



#### 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

**ProTec T1 2+0****Class I • Class II • Type 1 • Type 2 • Type 1CA • Open Type 1 SPD Listed**

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,  
 Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-2+0-US(-R)		75	150	300	350	440**	480	750
<b>IEC Electrical</b>								
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 (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5kA	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	39 kJ/ $\Omega$	25 kJ/ $\Omega$	6.25 kJ/ $\Omega$
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)	$I_{SCCR}$	25 kA / 50 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						
<b>UL Electrical</b>								
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	-	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	-	200kA	150kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)								
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	800V	1100V	1300V	1400V	1500V	2500V
Overcurrent Protection (min)		160 A gG						80 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)								
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA						
Overcurrent Protection (max)		250 A gG						
<b>Mechanical &amp; Environmental</b>								
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]						
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]						

\*\*No VDE and UL certification.

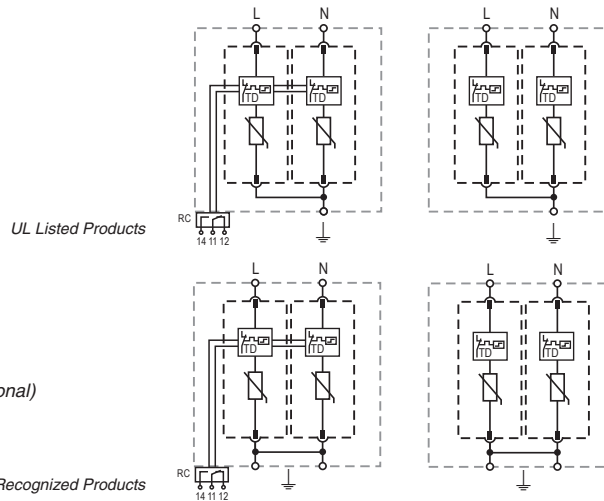
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

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

#### Order Information VDE Certified and UL Recognized Products

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.

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

For UL Listed products one PE/G Conductor Terminal is covered/closed.

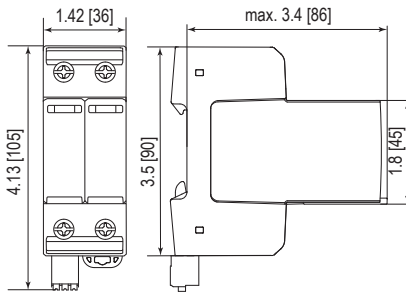
#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	440**	480	750
ProTec T1-xxx-2+0-US	59.B013	59.B015	59.B017	59.B019	-	59.B021	59.B023
ProTec T1-xxx-2+0-US-R (with remote contacts)	59.B014	59.B016	59.B018	59.B020	-	59.B022	59.B024
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]



#### Complete Unit UL Recognized Products

ProTec T1-xxx-2+0	75	150	300	350	440**	480	750
Weight							
	pounds	.595	.697	.750	.833	.864	.860
	grams	270	316	340	378	392	390

#### ProTec T1-xxx-2+0-R

Weight							
	pounds	.615	.717	.769	.853	.866	.884
	grams	279	325	349	387	393	401

#### Complete Unit UL Listed Products

ProTec T1-xxx-2+0-US	75	150	300	350	440**	480	750
Weight							
	pounds	.575	.677	.730	.813	.844	.840
	grams	261	307	331	369	383	381

#### ProTec T1-xxx-2+0-US-R

Weight							
	pounds	.595	.697	.749	.833	.846	.860
	grams	270	316	340	378	384	390

DIN 43880 Dimension

2 TE / 1.42" [36]

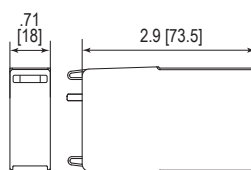
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

7 Units

## Spare Plug



#### Single Unit

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

**ProTec T1 3+0****Class I • Class II • Type 1 • Type 2 • Type 1CA • Open Type 1 SPD Listed**

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,  
 Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-3+0-US(-R)		150	300	350	440**	480	750
<b>IEC Electrical</b>							
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/ $\Omega$	39kJ/ $\Omega$	39kJ/ $\Omega$	39kJ/ $\Omega$	25kJ/ $\Omega$	6.25kJ/ $\Omega$
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					250 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25kA / 50kA					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					
<b>UL Electrical</b>							
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	-	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	-	200kA	150kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)							
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800V	1100V	1300V	1400V	1500V	2500V
Overcurrent Protection (min)		160 A gG					80 A gG
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)							
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA					
Overcurrent Protection (max)		250 A gG					
<b>Mechanical &amp; Environmental</b>							
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]					
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]					

\*\*No VDE and UL certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

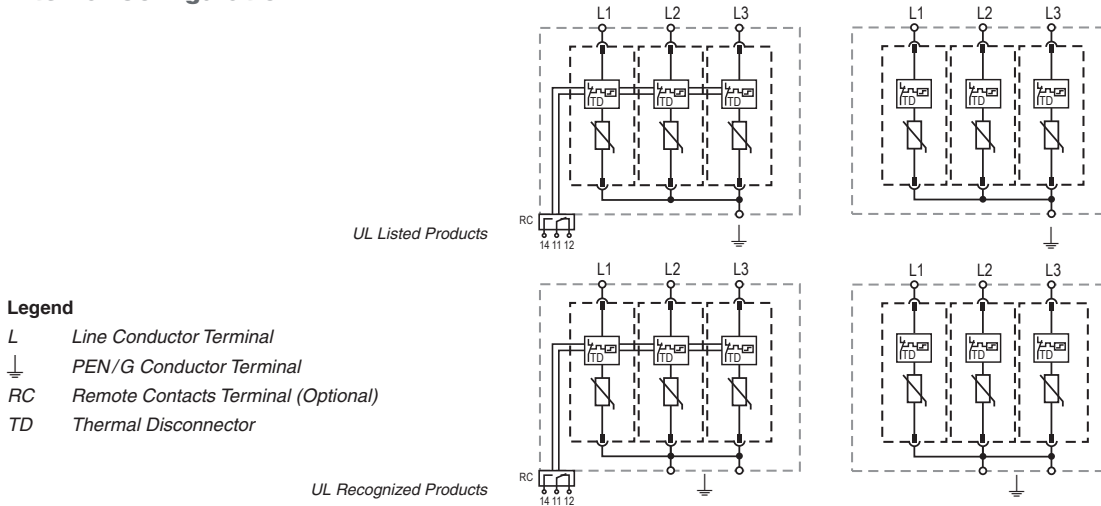
Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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





## Internal Configuration



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

#### Order Information VDE Certified and UL Recognized Products

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.

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

For UL Listed products one PE/G Conductor Terminal is covered/closed.

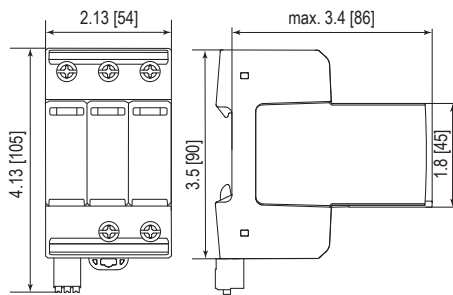
#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	440**	480	750
ProTec T1-xxx-3+0-US	59.B025	59.B027	59.B029	-	59.B031	59.B033
ProTec T1-xxx-3+0-US-R (with remote contacts)	59.B026	59.B028	59.B030	-	59.B032	59.B034
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]



#### Complete Unit UL Recognized Products

ProTec T1-xxx-3+0	150	300	350	440**	480	750	
Weight	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

#### Complete Unit UL Listed Products

ProTec T1-xxx-3+0-US	150	300	350	440**	480	750	
Weight	pounds	1.001	1.080	1.206	1.252	1.226	1.245
	grams	454	490	547	568	556	565

#### ProTec T1-xxx-3+0-US-R

Weight	pounds	1.021	1.100	1.226	1.272	1.245	1.265
	grams	463	499	556	577	565	574

DIN 43880 Dimension

3 TE / 2.13" [54]

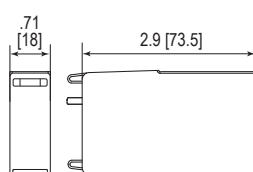
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

5 Unit

## Spare Plug



#### 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 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

28 Units

# Lightning and Overvoltage Protection

12.5 kA Series

## ProTec T1 4+0

Class I • Class II • Type 1 • Type 2 • Type 1CA • Open Type 1 SPD Listed



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, Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-4+0-US(-R)

150 300 350 440\*\* 480

#### IEC Electrical

		150	300	350	440**	480
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5kA	12.5kA	12.5kA	12.5kA	10kA
Specific Energy	W/R	39kJ/ $\Omega$	39kJ/ $\Omega$	39kJ/ $\Omega$	39kJ/ $\Omega$	25kJ/ $\Omega$
Charge	Q	6.25As	6.25As	6.25As	6.25As	5As
Voltage Protection Level	$U_p$	1000V	1500V	1750V	1800V	2100V
Response Time	$t_A$			< 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
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 $\mu$ s)	$I_n$	20kA	20kA	20kA	-	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	-	200kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	800V	1100V	1300V	1400V	1500V
Overcurrent Protection (min)				160 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]				
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]				

\*\*No VDE and UL certification.

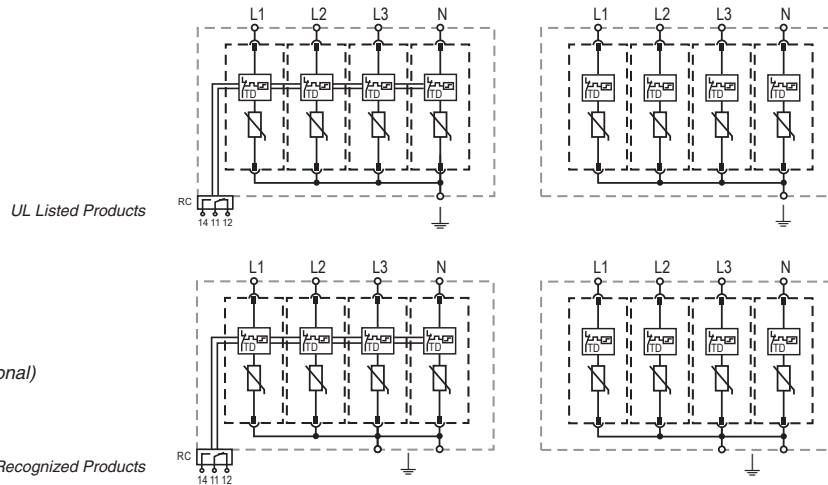
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

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

#### Order Information VDE Certified and UL Recognized Products

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.

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

For UL Listed products one PE/G Conductor Terminal is covered/closed.

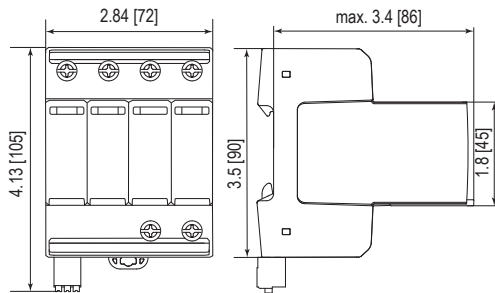
#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	440**	480
ProTec T1-xxx-4+0-US	59.B035	59.B037	59.B039	-	59.B041
ProTec T1-xxx-4+0-US-R (with remote contacts)	59.B036	59.B038	59.B040	-	59.B042
ProTec T1-xxx-P (plug)	59.0002	59.0003	59.0004	59.0539	59.0005

\*\*No VDE and UL certification.

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T1-xxx-4+0	150	300	350	440**	480	
Weight	pounds	1.310	1.415	1.583	1.508	1.609
	grams	594	642	718	684	730

#### ProTec T1-xxx-4+0-R

Weight	pounds	1.329	1.435	1.603	1.519	1.629
	grams	603	651	727	689	739

#### Complete Unit UL Listed Products

ProTec T1-xxx-4+0-US	150	300	350	440**	480	
Weight	pounds	1.290	1.395	1.563	1.488	1.589
	grams	585	633	709	675	721

#### ProTec T1-xxx-4+0-US-R

Weight	pounds	1.309	1.415	1.583	1.499	1.609
	grams	594	642	718	680	730

DIN 43880 Dimension

4 TE / 2.84" [72]

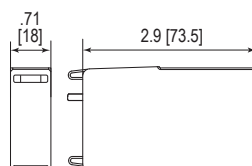
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

4 Units

## Spare Plug



#### Single Unit

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

**ProTec T1 1+1****Class I • Class II • Type 1 • Type 2 • Type 1CA • Open Type 1 SPD Listed**

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,  
 Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-1+1-US(-R)	75	150	300	350	
<b>IEC Electrical</b>					
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 $\mu$ s)	(L-N)/(N-PE) $I_n$		20 kA / 50 kA		
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$		50 kA / 100 kA		
Impulse Discharge Current (10/350 $\mu$ s)	(L-N)/(N-PE) $I_{imp}$		12.5 kA / 50 kA		
Specific Energy	(L-N)/(N-PE) W/R		39 kJ/ $\Omega$ / 625 kJ/ $\Omega$		
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
TOV Withstand 200ms	(N-PE) $U_T$		1200 V		
Number of Ports			1		
<b>UL Electrical</b>					
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 $\mu$ 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
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 $\mu$ 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		
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)					
Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA		
Overcurrent Protection (max)			250 A gG		
<b>Mechanical &amp; Environmental</b>					
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449			
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

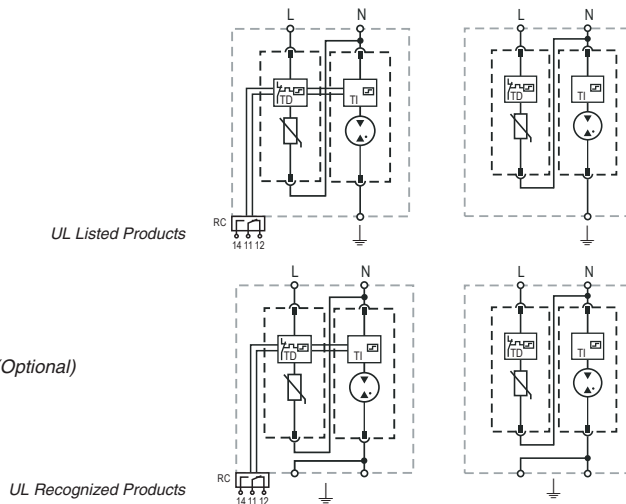
Connection Configurations can be found in QR Code link on intro page.



## 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



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

#### Order Information VDE Certified and UL Recognized Products

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

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

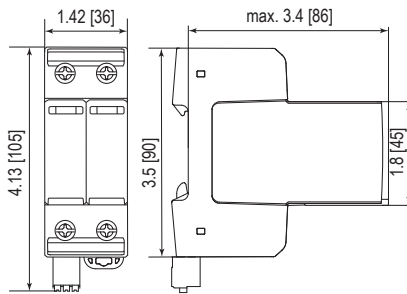
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350
ProTec T1-xxx-1+1-US	59.B043	59.B045	59.B047	59.B049
ProTec T1-xxx-1+1-US-R (with remote contacts)	59.B044	59.B046	59.B048	59.B050
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 UL Recognized Products

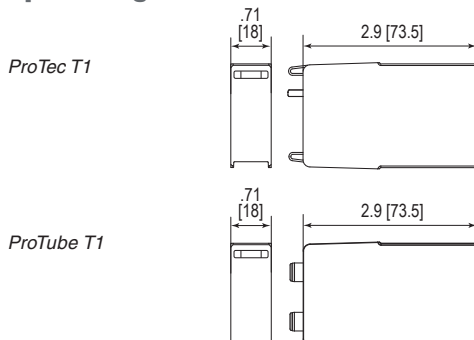
ProTec T1-xxx-1+1	75	150	300	350	
Weight	pounds	.659	.710	.736	.778
	grams	299	322	334	353
<b>ProTec T1-xxx-1+1-R</b>					
Weight	pounds	.672	.723	.750	.791
	grams	305	328	340	359

#### Complete Unit UL Listed Products

ProTec T1-xxx-1+1-US	75	150	300	350	
Weight	pounds	.639	.690	.716	.758
	grams	290	313	325	344
<b>ProTec T1-xxx-1+1-US(-R)</b>					
Weight	pounds	.652	.703	.730	.771
	grams	296	319	331	350

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



#### Single Unit

ProTec T1-xxx-P	75	150	300	350	
Weight	pounds	.152	.203	.229	.271
	grams	69	92	104	123
<b>ProTube T1-50-P</b>					
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 • Open Type 1 SPD Listed**

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,  
 Open Type 1 SPD Listed  
 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) & ProTec T1-xxx-3+1-US(-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 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 50 kA	
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50 kA / 100 kA	
Impulse Discharge Current (10/350 $\mu$ s)	(L-N)/(N-PE) $I_{imp}$	12.5 kA / 50 kA	
Specific Energy	(L-N)/(N-PE) W/R	39 kJ/ $\Omega$ / 625 kJ/ $\Omega$	
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) $U_T$	mode	442 V
		Safe Fail	529 V
TOV Withstand 200ms	(N-PE) $U_T$	1200 V	Safe Fail
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 $\mu$ 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 $\mu$ 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]	
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]	

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



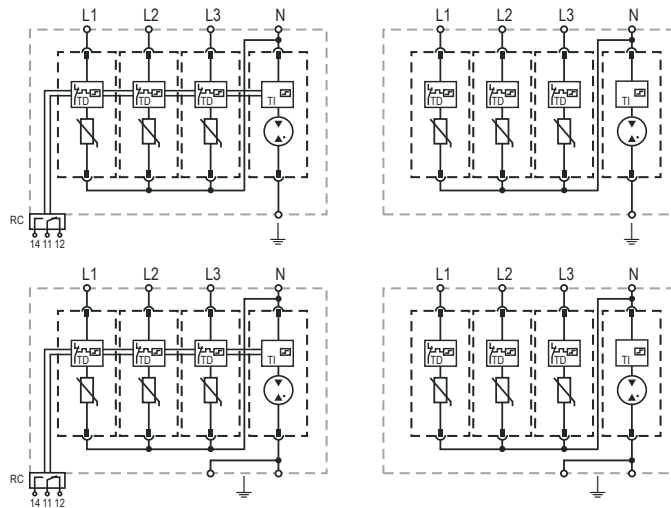
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



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

#### Order Information VDE Certified and UL Recognized Products

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

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

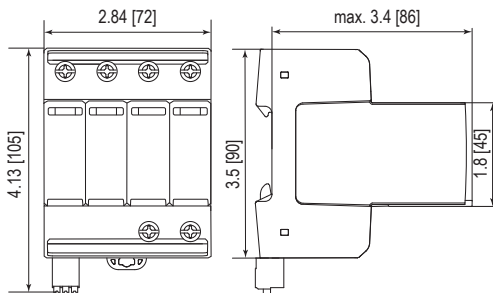
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300	350
ProTec T1-xxx-3+1-US	59.B051	59.B053
ProTec T1-xxx-3+1-US-R (with remote contacts)	59.B052	59.B054
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 UL Recognized Products

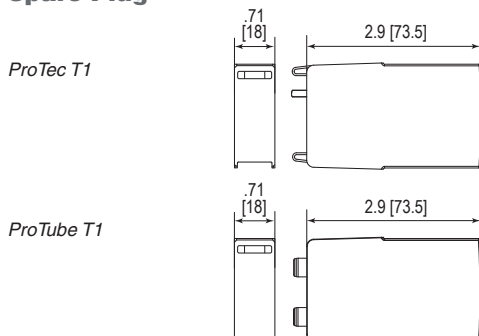
ProTec T1-xxx-3+1		300	350
Weight	pounds	1.466	1.592
	grams	665	722
ProTec T1-xxx-3+1-R			
Weight	pounds	1.486	1.612
	grams	674	724

#### Complete Unit UL Listed Products

ProTec T1-xxx-3+1-US		300	350
Weight	pounds	1.446	1.572
	grams	656	7113
ProTec T1-xxx-3+1-US(-R)			
Weight	pounds	1.466	1.592
	grams	665	715

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

## Spare Plug



#### 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 • Open Type 1 SPD Listed



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, Open Type 1 SPD Listed  
 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-US

50

100

#### IEC Electrical

		50	100
Maximum Continuous Operating Voltage	$U_c$	305 V	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	50 kA	100 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	100 kA	150 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	50 kA	100 kA
Specific Energy	W/R	625 kJ/ $\Omega$	2500 kJ/ $\Omega$
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

		50	100
Maximum Continuous Operating Voltage (AC)	MCOV	305V	305V
Voltage Protection Rating	VPR	1200V	1200V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA

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

		50	100
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305V	305V

#### 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.


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



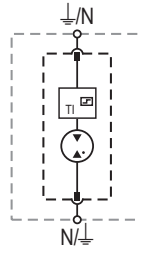


## Internal Configuration

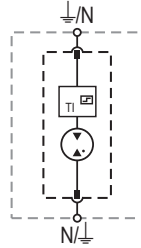
### Legend

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

UL Listed Products



UL Recognized Products



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

#### Order Information VDE Certified and UL Recognized Products

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

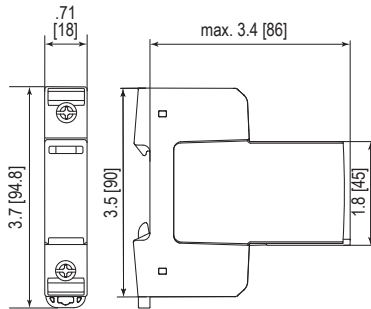
### ProTube T1-xxx-0+1-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	50	100
ProTube T1-xxx-0+1-US	59.B231	59.B232
ProTube T1-50-P (plug)	59.0269	-
ProTube T1-100-P (plug)	-	59.0271

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

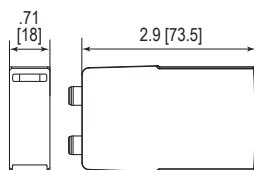
ProTube T1-xxx-0+1	50	100	
Weight	pounds	.395	.434
	grams	179	197

#### Complete Unit UL Listed Products

ProTube T1-xxx-0+1-US	50	100	
Weight	pounds	.395	.434
	grams	179	197

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

## Spare Plug



#### Single Unit

ProTube T1-xxx-P	50	100	
Weight	pounds	.214	.251
	grams	97	114

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

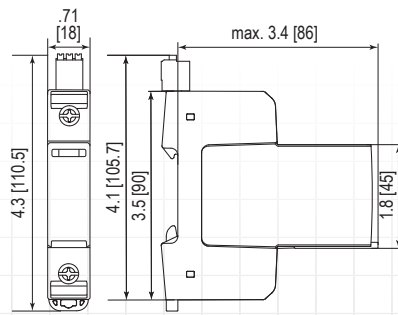
Lightning and Overvoltage Protection  
**ProTec T1-LH Series**

Type 1 SPD in low height (T2)– 70mm

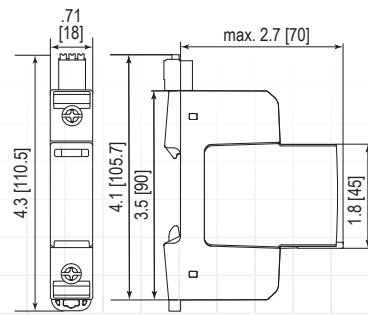


**Product Comparison**

	ProTec T1 Series	ProTec T1-LH Series
<b>Feature &amp; Specification</b>		
Maximum Continuous Operating Voltage (AC) [U <sub>c</sub> ]	75 V to 750 V	300 V
Impulse Discharge Current (10/350µs) [I <sub>imp</sub> ]	up to 12.5 kA	12.5 kA
Nominal Discharge Current (8/20 µs) [I <sub>n</sub> ]	20 kA	20 kA
Maximum Discharge Current (8/20 µs) [I <sub>max</sub> ]	up to 50 kA	40 kA
<b>Mechanical Specification</b>		inches [mm]



ProTec T1 Series



ProTec T1-LH Series

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

### Lightning and Overvoltage Protection

#### ProTec T1-LH Series

##### Special features:

- Type 1 SPD in low (T2) height – 70mm
- High discharge capacity –  $I_{imp} = 12.5 \text{ kA}$
- Continuous Operating Voltage  $U_c$  300V
- Back-up fuse up to 160 A gG
- Short circuit current rating up to 50kA
- 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



For installations where space is at a premium and would benefit from a slightly reduced module height, the Raycap ProTec LH series offers an alternative form factor with a shorter module height of 70 mm in the T2 product versions. With performance specifications similar to the ProTec T1 products, the "LH" model versions are excellent for installing in cabinets with extreme space depth restrictions. The ProTec T1-LH series offers basic protection as a Type 1 surge protective device that comes with continuous operating voltage of 300 V. Product offers Type 1 classification for installations between boundaries OA – 1 and higher in only 70 mm module height. The varistor based protection module features outstanding short-circuit currents up to 50kA without using a back up to a main fuse nominal current of 160A. 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



**ProTec T1 1+0 LH**

Class I • Class II • Type 1 • Type 2



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 Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

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

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500V
Response Time	$t_A$	< 25 ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 5s	$U_T$	337V
TOV 120min	$U_T$	442V
	mode	Safe Fail
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V
Overcurrent Protection (min)		160 A gG

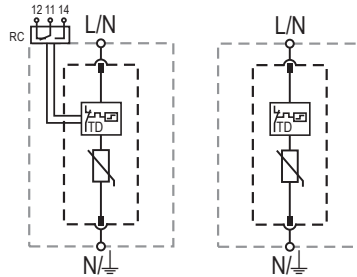
**Mechanical & Environmental**

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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

## Internal Configuration

### Legend

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



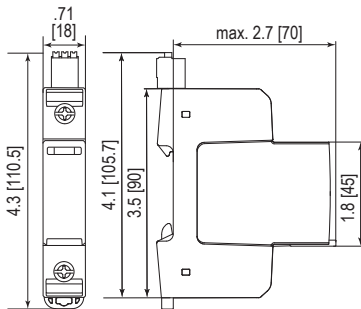
### ProTec T1-xxx-1+0-LH(-R)

#### Order Information

Order Code	<b>300</b>
ProTec T1-xxx-1+0-LH	59.A371
ProTec T1-xxx-1+0-LH-R (with remote contacts)	59.A372
ProTec T1-xxx-LH-P (plug)	59.A383

## Dimensions & Packaging

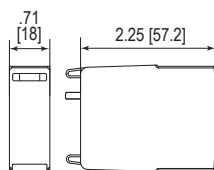
inches [mm]



#### Complete Unit

<b>ProTec T1-xxx-1+0-LH</b>	<b>300</b>
Weight	pounds .414
	grams 188
<b>ProTec T1-xxx-1+0-LH-R</b>	
Weight	pounds .421
	grams 191
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

## Spare Plug



#### Single Unit

<b>ProTec T1-xxx-LH-P</b>	<b>300</b>
Weight	pounds .255
	grams 116
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]
Standard Order Quantity	24 Units

**ProTec T1 2+0 LH**

Class I • Class II • Type 1 • Type 2



Location of Use: Main Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data****ProTec T1-xxx-2+0-LH(-R)****300****IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500V
Response Time	$t_A$	< 25 ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 5s	$U_T$	337V
TOV 120min	$U_T$	442V
	mode	Safe Fail
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V
Overcurrent Protection (min)		160 A gG

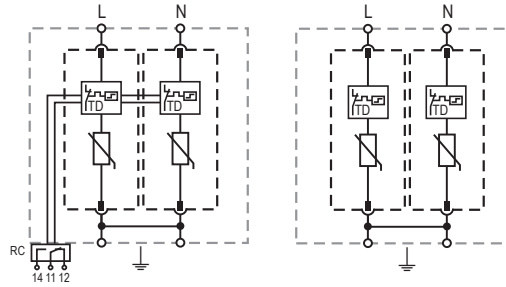
**Mechanical & Environmental**

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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
- $\perp$  PE Conductor Terminal
- RC* Remote Contacts Terminal (Optional)
- TD* Thermal Disconnecter



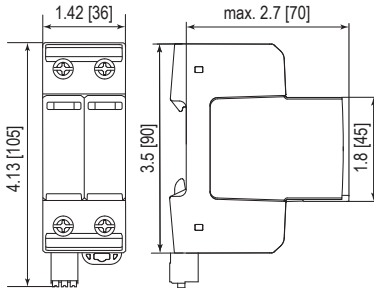
### ProTec T1-xxx-2+0-LH(-R)

#### Order Information

Order Code	300
ProTec T1-xxx-2+0-LH	59.A373
ProTec T1-xxx-2+0-LH-R (with remote contacts)	59.A374
ProTec T1-xxx-LH-P (plug)	59.A383

## Dimensions & Packaging

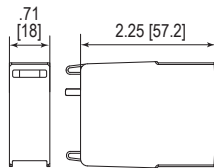
inches [mm]



#### Complete Unit

ProTec T1-xxx-2+0-LH		300
Weight	pounds	.809
	grams	367
ProTec T1-xxx-2+0-LH-R		
Weight	pounds	.820
	grams	372
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



#### Single Unit

ProTec T1-xxx-LH-P		300
Weight	pounds	.255
	grams	116
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]	
Standard Order Quantity	24 Units	

Lightning and Overvoltage Protection  
**ProTec T1 3+0 LH**  
 Class I • Class II • Type 1 • Type 2

12.5 kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-C  
 Mode of Protection: L-PEN  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

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

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500V
Response Time	$t_A$	< 25 ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 5s	$U_T$	337V
TOV 120min	$U_T$	442V
	mode	Safe Fail
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V
Overcurrent Protection (min)		160 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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

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

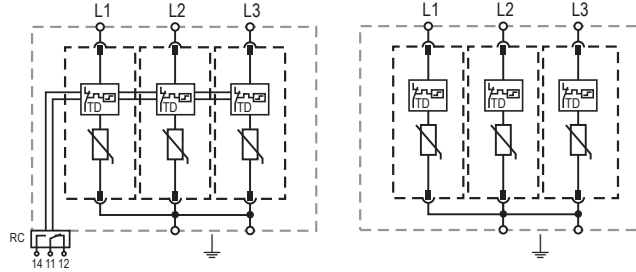




## Internal Configuration

### Legend

- L Line Conductor Terminal
- ⏏ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



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

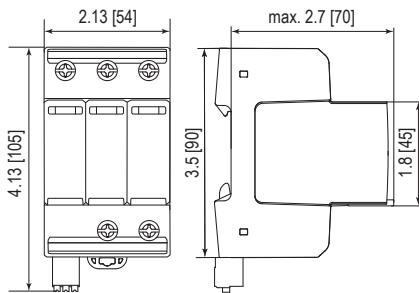
300

#### Order Information

Order Code	300
ProTec T1-xxx-3+0-LH	59.A375
ProTec T1-xxx-3+0-LH-R (with remote contacts)	59.A376
ProTec T1-xxx-LH-P (plug)	59.A383

## Dimensions & Packaging

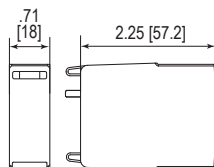
inches [mm]



#### Complete Unit

ProTec T1-xxx-3+0-LH		300
Weight	pounds	1.177
	grams	534
ProTec T1-xxx-3+0-LH-R		
Weight	pounds	1.190
	grams	540
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

## Spare Plug



#### Single Unit

ProTec T1-xxx-LH-P		300
Weight	pounds	.255
	grams	116
DIN 43880 Dimension		1 TE / .71" [18]
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]
Standard Order Quantity		24 Units

Lightning and Overvoltage Protection  
**ProTec T1 4+0 LH**  
 Class I • Class II • Type 1 • Type 2

12.5kA Series



Location of Use: Main Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

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

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA
Specific Energy	W/R	39 kJ/ $\Omega$
Charge	Q	6.25 As
Voltage Protection Level	$U_p$	1500V
Response Time	$t_A$	< 25 ns
Overcurrent Protection (max)		160 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA
TOV Withstand 5s	$U_T$	337V
TOV 120min	$U_T$	442V
	mode	Safe Fail
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V
Overcurrent Protection (min)		160 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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

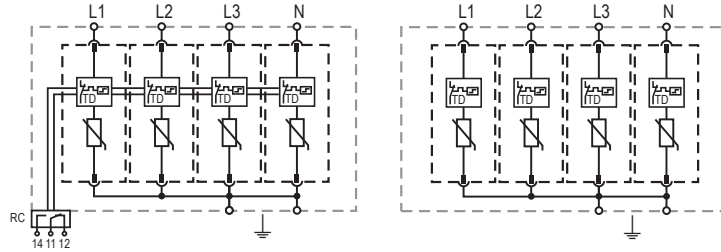
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



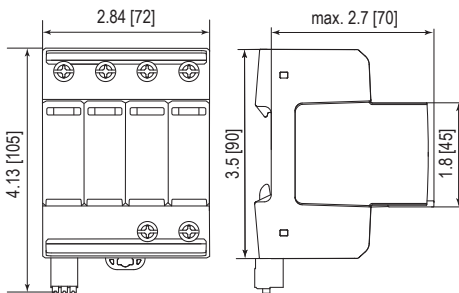
### ProTec T1-xxx-4+0-LH(-R)

#### Order Information

Order Code	300
ProTec T1-xxx-4+0-LH	59.A377
ProTec T1-xxx-4+0-LH-R (with remote contacts)	59.A378
ProTec T1-xxx-LH-P (plug)	59.A383

## Dimensions & Packaging

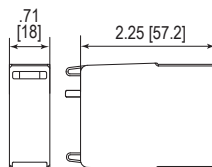
inches [mm]



#### Complete Unit

ProTec T1-xxx-4+0-LH		300
Weight	pounds	1.558
	grams	707
ProTec T1-xxx-4+0-LH-R		
Weight	pounds	1.576
	grams	715
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	

## Spare Plug



#### Single Unit

ProTec T1-xxx-LH-P		300
Weight	pounds	.255
	grams	116
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]	
Standard Order Quantity	24 Units	

**ProTec T1 1+1 LH**

Class I • Class II • Type 1 • Type 2



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

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

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage	(L-N) $U_c$	300 V
	(N-PE) $U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 50 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	40 kA / 100 kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N)/(N-PE) $I_{imp}$	12.5 kA / 50 kA
Specific Energy	(L-N)/(N-PE) W/R	39 kJ/ $\Omega$ / 625 kJ/ $\Omega$
Charge	(L-N)/(N-PE) Q	6.25 As / 25 As
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1500 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)		160 A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	50 kA
TOV Withstand 5s	(L-N) $U_T$	337 V
TOV 120min	(L-N) $U_T$	442 V
	mode	Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700 V / 305 V
Overcurrent Protection (min)		160 A gG

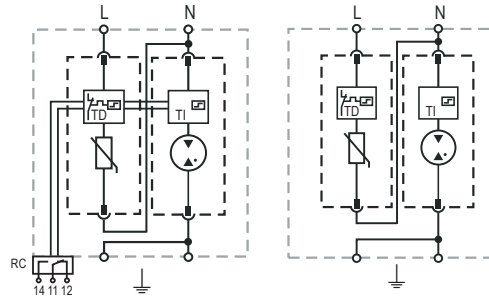
**Mechanical & Environmental**

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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

## Internal Configuration

### Legend

L	Line Conductor Terminal
N	Neutral Conductor Terminal
⏚	PE Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnect
TI	Thermal Indication



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

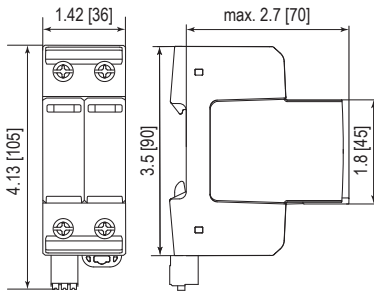
300

#### Order Information

Order Code	300
ProTec T1-xxx-1+1-LH	59.A379
ProTec T1-xxx-1+1-LH-R (with remote contacts)	59.A380
ProTec T1-xxx-LH-P (plug L-N)	59.A383
ProTube T1-50-LH-P (plug N-PE)	59.A385

## Dimensions & Packaging

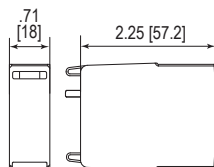
inches [mm]



#### Complete Unit

<b>ProTec T1-xxx-1+1-LH</b>	<b>300</b>
Weight	pounds .679
	grams 308
<b>ProTec T1-xxx-1+1-LH-R</b>	
Weight	pounds .687
	grams 312
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



#### Single Unit

<b>ProTec T1-xxx-LH-P</b>	<b>300</b>
Weight	pounds .255
	grams 116
<b>ProTube T1-50-LH-P</b>	<b>50</b>
Weight	pounds .112
	grams 51
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]
Standard Order Quantity	24 Units

**ProTec T1 3+1 LH**

Class I • Class II • Type 1 • Type 2



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

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

300

**IEC Electrical**

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage	(L-N) $U_c$	300 V
	(N-PE) $U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 50 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	40 kA / 100 kA
Impulse Discharge Current (10/350 $\mu$ s)	(L-N)/(N-PE) $I_{imp}$	12.5 kA / 50 kA
Specific Energy	(L-N)/(N-PE) W/R	39 kJ/ $\Omega$ / 625 kJ/ $\Omega$
Charge	(L-N)/(N-PE) Q	6.25 As / 25 As
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1500 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)		160 A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	50 kA
TOV Withstand 5s	(L-N) $U_T$	337 V
TOV 120min	(L-N) $U_T$	442 V
	mode	Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700 V / 305 V
Overcurrent Protection (min)		160 A gG

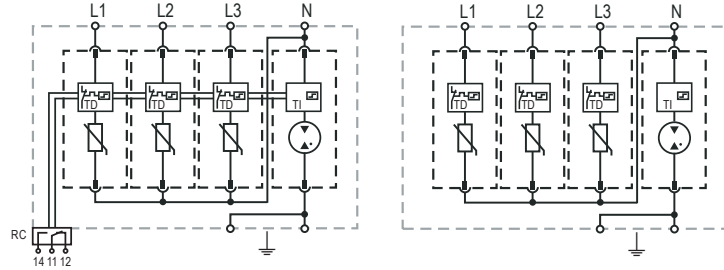
**Mechanical & Environmental**

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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

## Internal Configuration

### Legend

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



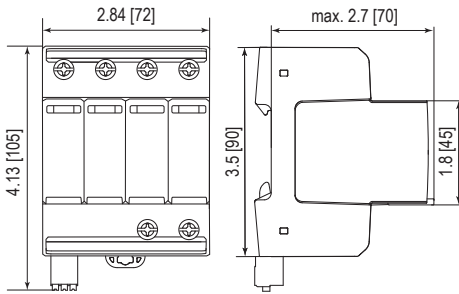
### ProTec T1-xxx-3+1-LH(-R)

#### Order Information

Order Code	<b>300</b>
ProTec T1-xxx-3+1-LH	59.A381
ProTec T1-xxx-3+1-LH-R (with remote contacts)	59.A382
ProTec T1-xxx-LH-P (plug L-N)	59.A383
ProTube T1-50-LH-P (plug N-PE)	59.A385

## Dimensions & Packaging

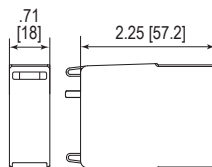
inches [mm]



#### Complete Unit

<b>ProTec T1-xxx-3+1-LH</b>	<b>300</b>
Weight	pounds 1.419
	grams 644
<b>ProTec T1-xxx-3+1-LH-R</b>	
Weight	pounds 1.441
	grams 654
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

## Spare Plug



#### Single Unit

<b>ProTec T1-xxx-LH-P</b>	<b>300</b>
Weight	pounds .255
	grams 116
<b>ProTube T1-50-LH-P</b>	<b>50</b>
Weight	pounds .112
	grams 51
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]
Standard Order Quantity	24 Units

# Lightning and Overvoltage Protection

## ProTube T1 0+1 LH

Class I • Class II • Type 1 • Type 2



Location of Use: Main Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: N-PE  
 IEC/EN Category: Class I+II / Type 1+2  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTube T1-xxx-0+1-LH

50

#### IEC Electrical

Maximum Continuous Operating Voltage	$U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	100 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	50 kA
Specific Energy	W/R	625 kJ/ $\Omega$
Charge	Q	25 As
Voltage Protection Level	$U_p$	1500 V
Follow Current Interrupt Rating (AC)	$I_{fi}$	100 A
Response Time	$t_A$	< 100 ns
TOV Withstand 200ms	$U_T$	1200 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305 V
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#### Mechanical & Environmental

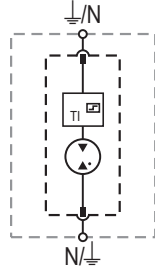
Operating Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	40 lbf-in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm <sup>2</sup> (Solid, Stranded)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



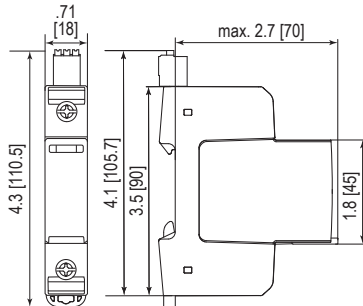
### ProTube T1-xxx-0+1-LH

#### Order Information

Order Code	50
ProTube T1-xxx-0+1-LH	59.A384
ProTube T1-50-LH-P (plug)	59.A385

## Dimensions & Packaging

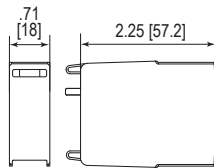
inches [mm]



#### Complete Unit

ProTube T1-xxx-0+1-LH		50
Weight	pounds	.268
	grams	122
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	

## Spare Plug



#### Single Unit

ProTube T1-xxx-LH-P		50
Weight	pounds	.112
	grams	51
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]	
Standard Order Quantity	24 Units	

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



### SafeBloc B(R) TCG

RoHS COMPLIANT



#### Special features:

- Leakage current free design
- High Energy MOV and GDT
- Compact design
- ÖVE-IEC Class I & II / EN Type 1+2 certified
- All modules including N-PE, with operating state fault indication green-red



### ProBloc B(R)

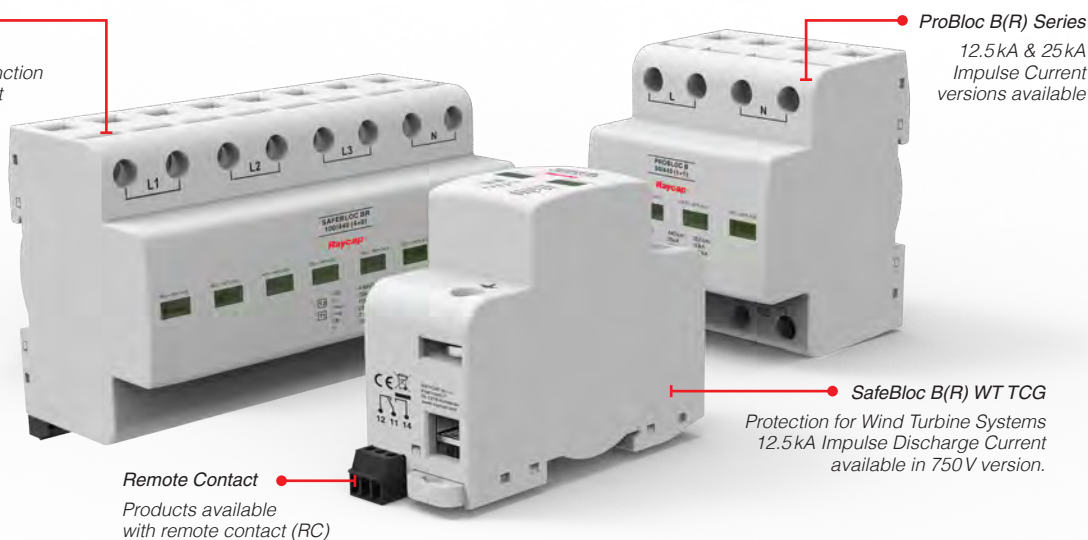
RoHS COMPLIANT

#### Special features:

- High discharge capacity due to unique design impulse discharge current
- High performance paired varistor combination, each with separate disconnect mechanisms
- Short circuit current rating up to 50kA
- All modules including N-PE, with fault indication green-red
- ÖVE-IEC Class I & II / EN Type 1+2 certified



**SafeBloc TCG**  
Combination type SPD  
with thermal control function  
without leakage current



**ProBloc B(R) Series**  
12.5kA & 25kA  
Impulse Current  
versions available

**SafeBloc B(R) WT TCG**  
Protection for Wind Turbine Systems  
12.5kA Impulse Discharge Current  
available in 750V version.

**Remote Contact**  
Products available  
with remote contact (RC)

Product Group	$I_{imp}$	$I_{max}$	$I_n$	Network	Location	Special Features
ProBloc B(R) 25kA Series 12.5kA Series	Up to 25kA	Up to 100kA	Up to 25kA	TNS, TNC, TT	<ul style="list-style-type: none"> <li>• First step of protection</li> <li>• Behind the power meter</li> </ul>	<ul style="list-style-type: none"> <li>• Basic MOV Topology</li> <li>• Vibration/Shock immunity</li> <li>• Cost-optimized solution</li> </ul>
SafeBloc B(R) 25kA Series 12.5kA Series	Up to 25kA	Up to 100kA	Up to 25kA	TNS, TNC, TT	<ul style="list-style-type: none"> <li>• First step of protection</li> <li>• In front of the power meter</li> </ul>	<ul style="list-style-type: none"> <li>• Hybrid Topology.</li> <li>• TOV Immunity</li> <li>• Leakage current free</li> <li>• Vibration/Shock immunity</li> <li>• Cost-optimized solution</li> </ul>

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

### Overvoltage Protection with Integrated Fuse **ProTec T2F**



#### Special features:

- Integrated back-up fuse – no external fuse needed
- Reduces design complexity and optimizes installation
- Better overall voltage protection levels due to less wiring
- High discharge capacity - I<sub>max</sub> up to 40 kA
- Short circuit current rating up to 100 kA
- Type 2 SPD, compliant to IEC 61643-11
- Shock and vibration tested



IEC 61643-11:2011

EN 61643-11:2012 +A11:2018



The pluggable ProTec T2F Type 2 arrester with integrated fuse saves space in the control cabinet and facilitates installation as well as maintenance. The Type 2 ProTec T2F has a protection level of 1,500V, a maximum discharge capacity of 40kA 8/20 $\mu$ s and a rated discharge current of 20kA 8/20 $\mu$ s. Thus, in addition to the proven Raycap ProTec T2 product technology, developed for use in systems with a rated current of up to 315A, without back-up fuse, this product can offer protection that is independent of the installed fuses in equipment in larger factories and industrial plants. By integrating the back-up fuse and eliminating the external fuse holder assembly, the ProTec T2F offers up to 50 percent less space requirement in the control cabinet compared to conventional Type 2 arresters with external back-up fuses. The combined device conforms to standard DIN Rail dimensions, making the overall installation faster and cost-effective.



More Product Information



# Overvoltage Protection with Integrated Fuse

## ProTec T2F 1+0

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S, TN-C, TT (only L-N), IT\*(only 440V)  
 Mode of Protection: L-PE, N-PE (only TN-S), L-PEN, L-N  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-1+0(-R)		300	440
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	3 kA	3 kA
Voltage Protection Level	$U_p$	1500V	2000V
Response Time	$t_A$	< 25ns	< 25ns
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
TOV Withstand 5s	$U_T$	337V	580V
TOV 120min	$U_T$	442V	630V
	mode	Safe Fail	Safe Fail
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
<b>Mechanical &amp; Environmental</b>			
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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*Only applicable to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

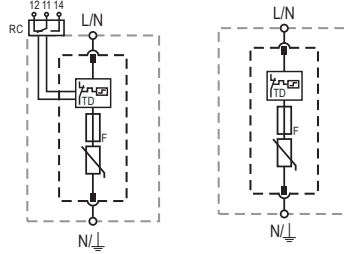
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



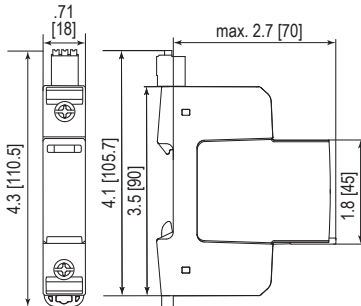
### ProTec T2F-xxx-1+0(-R)

#### Order Information

Order Code	300	440
ProTec T2F-xxx-1+0	59.A250	59.A942
ProTec T2F-xxx-1+0-R (with remote contacts)	59.A251	59.A943
ProTec T2F-xxx-P (plug)	59.A258	59.A950

## Dimensions & Packaging

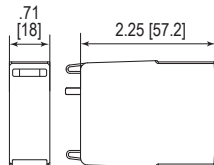
inches [mm]



#### Complete Unit

ProTec T2F-xxx-1+0		300	440
Weight	pounds	.320	.335
	grams	145	152
ProTec T2F-xxx-1+0-R			
Weight	pounds	.342	.357
	grams	155	162
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		

## Spare Plug



#### Single Unit

ProTec T2F-xxx-P		300	440
Weight	pounds	.152	.167
	grams	69	76
DIN 43880 Dimension	1 TE / .71" [18]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

# Overvoltage Protection with Integrated Fuse

## ProTec T2F 2+0

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S, IT\*(only 440V)  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-2+0(-R)		300	440
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	3 kA	3 kA
Voltage Protection Level	$U_p$	1500V	2000V
Response Time	$t_A$	< 25ns	< 25ns
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
TOV Withstand 5s	$U_T$	337V	580V
TOV 120min	$U_T$	442V	630V
	mode	Safe Fail	Safe Fail
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
<b>Mechanical &amp; Environmental</b>			
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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*Only applicable to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

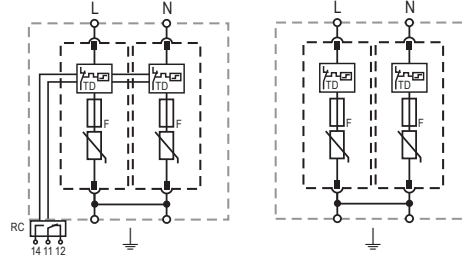
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



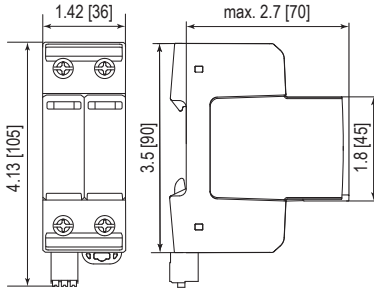
### ProTec T2F-xxx-2+0(-R)

#### Order Information

Order Code	300	440
ProTec T2F-xxx-2+0	59.A252	59.A944
ProTec T2F-xxx-2+0-R (with remote contacts)	59.A253	59.A945
ProTec T2F-xxx-P (plug)	59.A258	59.A950

## Dimensions & Packaging

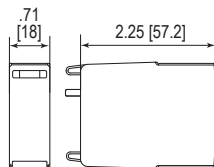
inches [mm]



#### Complete Unit

ProTec T2F-xxx-2+0		300	440
Weight	pounds	.591	.606
	grams	268	275
ProTec T2F-xxx-2+0-R			
Weight	pounds	.613	.628
	grams	278	285
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



#### Single Unit

ProTec T2F-xxx-P		300	440
Weight	pounds	.152	.167
	grams	69	76
DIN 43880 Dimension	1 TE / .71" [18]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

# Overvoltage Protection with Integrated Fuse

## ProTec T2F 3+0

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-C, IT\*(only 440V)  
 Mode of Protection: L-PEN  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-3+0(-R)		300	440
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	3 kA	3 kA
Voltage Protection Level	$U_p$	1500V	2000V
Response Time	$t_A$	< 25ns	< 25ns
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
TOV Withstand 5s	$U_T$	337V	580V
TOV 120min	$U_T$	442V	630V
	mode	Safe Fail	Safe Fail
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
<b>Mechanical &amp; Environmental</b>			
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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*Only applicable to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

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

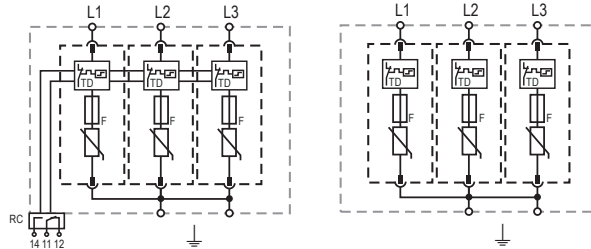




## Internal Configuration

### Legend

- L Line Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse

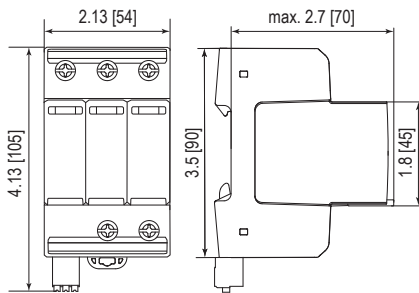


### ProTec T2F-xxx-3+0(-R)

#### Order Information

Order Code	300	440
ProTec T2F-xxx-3+0	59.A254	59.A946
ProTec T2F-xxx-3+0-R (with remote contacts)	59.A255	59.A947
ProTec T2F-xxx-P (plug)	59.A258	59.A950

## Dimensions & Packaging

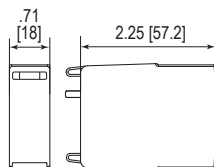


inches [mm]

#### Complete Unit

ProTec T2F-xxx-3+0		300	440
Weight	pounds	.875	.890
	grams	397	404
ProTec T2F-xxx-3+0-R			
Weight	pounds	.897	.912
	grams	407	414
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 Units		

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2F-xxx-P		300	440
Weight	pounds	.152	.167
	grams	69	76
DIN 43880 Dimension	1 TE / .71" [18]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

# Overvoltage Protection with Integrated Fuse

## ProTec T2F 4+0

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S, IT\*(only 440V)  
 Mode of Protection: L-PE, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-4+0(-R)		300	440
<b>IEC Electrical</b>			
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	240V
Maximum Continuous Operating Voltage (AC)	$U_c$	300V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	3 kA	3 kA
Voltage Protection Level	$U_p$	1500V	2000V
Response Time	$t_A$	< 25ns	< 25ns
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
TOV Withstand 5s	$U_T$	337V	580V
TOV 120min	$U_T$	442V	630V
	mode	Safe Fail	Safe Fail
Number of Ports			1
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA	100kA
<b>Mechanical &amp; Environmental</b>			
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 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)	

\*Only applicable to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

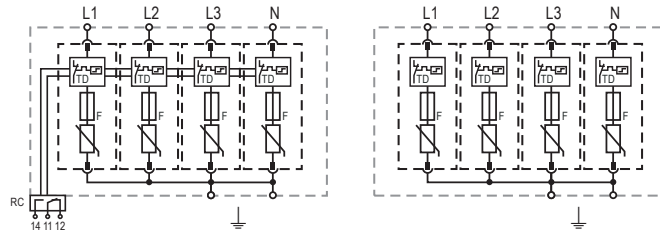
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



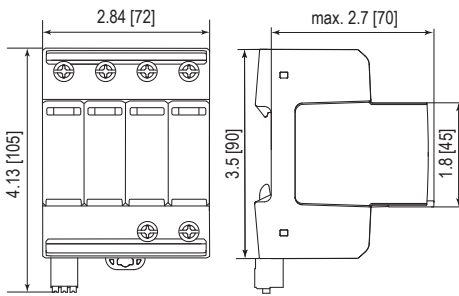
### ProTec T2F-xxx-4+0(-R)

#### Order Information

Order Code	300	440
ProTec T2F-xxx-4+0	59.A256	59.A948
ProTec T2F-xxx-4+0-R (with remote contacts)	59.A257	59.A949
ProTec T2F-xxx-P (plug)	59.A258	59.A950

## Dimensions & Packaging

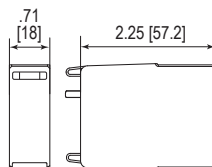
inches [mm]



#### Complete Unit

ProTec T2F-xxx-4+0		300	440
Weight	pounds	1.056	1.071
	grams	479	486
ProTec T2F-xxx-4+0-R			
Weight	pounds	1.078	1.093
	grams	489	496
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		

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2F-xxx-P		300	440
Weight	pounds	.152	.167
	grams	69	76
DIN 43880 Dimension	1 TE / .71" [18]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

# Overvoltage Protection with Integrated Fuse

## ProTec T2F 1+1

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-1+1(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	300 V
	(N-PE) $U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 40 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	40 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1500 V / 1500 V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	(L-N)/(N-PE) $U_{oc}$	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{cw}$	3 kA / 3 kA
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100 A
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns
Overcurrent Protection		Not Required
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	100 kA
TOV Withstand 5s	(L-N) $U_T$	337 V
TOV 120min	(L-N) $U_T$	442 V
	mode	Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V
Overcurrent Protection (min)		Not Required

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
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#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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) / 1.5mm <sup>2</sup> (Solid)

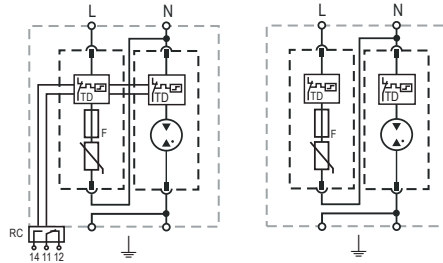
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



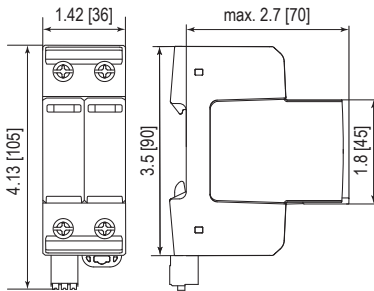
### ProTec T2F-xxx-1+1(-R)

#### Order Information

Order Code	300
ProTec T2F-xxx-1+1	59.A259
ProTec T2F-xxx-1+1-R (with remote contacts)	59.A260
ProTec T2F-xxx-P (plug L-N)	59.A258
ProTube T2F-40-P (plug N-PE)	59.A271

## Dimensions & Packaging

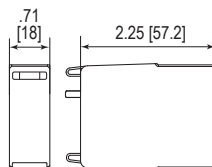
inches [mm]



#### Complete Unit

ProTec T2F-xxx-1+1		300
Weight	pounds	.565
	grams	256
ProTec T2F-xxx-1+1-R		
Weight	pounds	.586
	grams	266
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



#### Single Unit Dimensions & Packaging

ProTec T2F-xxx-P		300
Weight	pounds	.152
	grams	69
ProTube T2F-40-P		40
Weight	pounds	.093
	grams	42
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	

# Overvoltage Protection with Integrated Fuse

## ProTec T2F 3+1

Class II • Class III • Type 2 • Type 3



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

ProTec T2F-xxx-3+1(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	300 V
	(N-PE) $U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 40 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	40 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1500 V / 1500 V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	(L-N)/(N-PE) $U_{oc}$	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{cw}$	3 kA / 3 kA
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100 A
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns
Overcurrent Protection		Not Required
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	100 kA
TOV Withstand 5s	(L-N) $U_T$	337 V
TOV 120min	(L-N) $U_T$	442 V
	mode	Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1150V
Overcurrent Protection (min)		Not Required

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA
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#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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) / 1.5mm <sup>2</sup> (Solid)

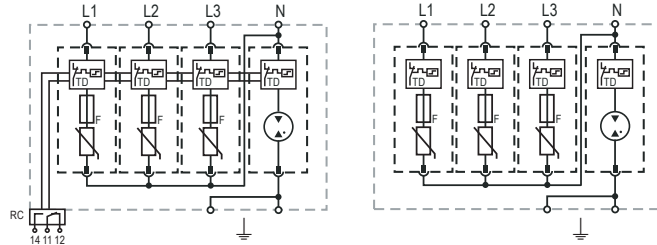
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect
- F Integrated Surge Adapted Backup Fuse



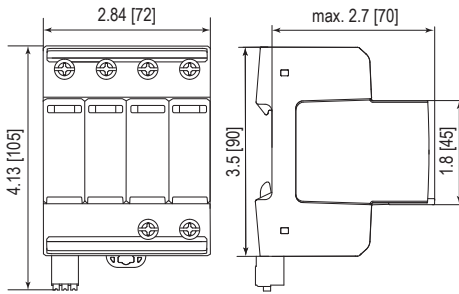
### ProTec T2F-xxx-3+1(-R)

#### Order Information

Order Code	300
ProTec T2F-xxx-3+1	59.A261
ProTec T2F-xxx-3+1-R (with remote contacts)	59.A262
ProTec T2F-xxx-P (plug L-N)	59.A258
ProTube T2F-40-P (plug N-PE)	59.A271

## Dimensions & Packaging

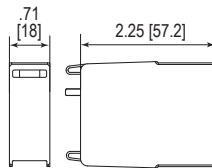
inches [mm]



#### Complete Unit

ProTec T2F-xxx-3+1		300
Weight	pounds	1.032
	grams	468
ProTec T2F-xxx-3+1-R		
Weight	pounds	1.054
	grams	478
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	

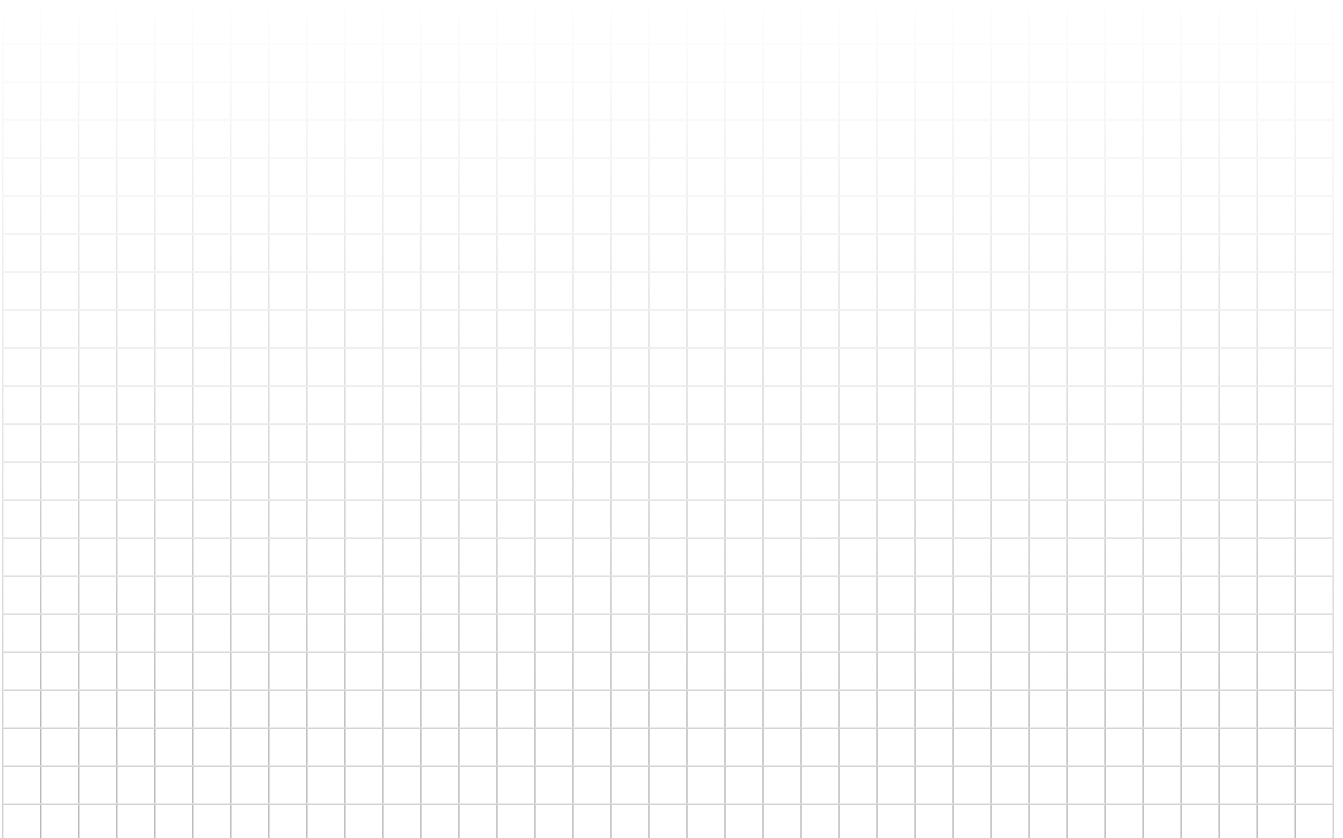
## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2F-xxx-P		300
Weight	pounds	.152
	grams	69
ProTube T2F-40-P		40
Weight	pounds	.093
	grams	42
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	

# Notes





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



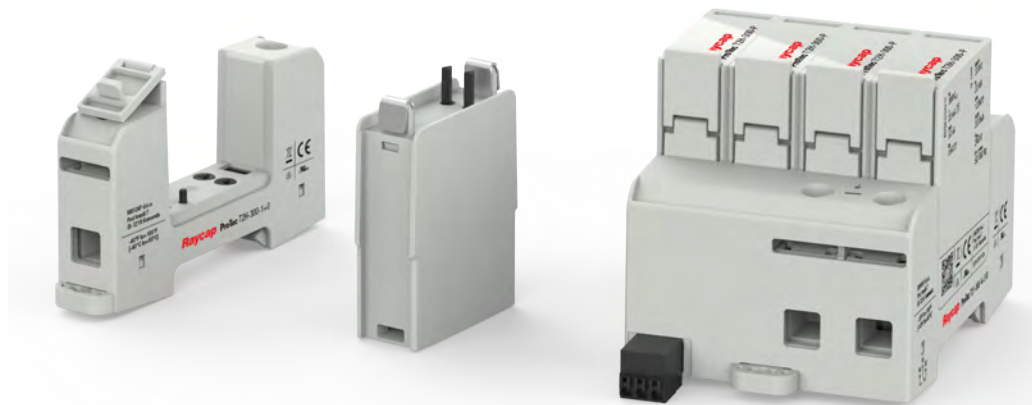
Overvoltage Protection

### ProTec T2H



#### Special features:

- High maximum discharge current capacity ( $I_{max}$ ) of 50 kA
- State-of-the-art thermal disconnecter
- Leakage current-free technology
- Backup fuse up to 315 AgG
- Short-circuit current rating up to 100 kA\*
- Vibration and shock withstand capability
- All modules including N-PE, with operating state green-red
- Optional remote contact signaling (RC)



IEC 61643-11:2011

EN 61643-11:2012 +A11:2018

UL 1449 5th Edition

Open Type 1 SPD Listed



The ProTec T2H surge protection device provides high durability due to its leakage-free performance ensured by a special series connection of varistor and gas discharge tube. The product family is an ideal supplement to the basic ProTec T2 product family, available for single or three-phase TN-S, TT and TN-C systems with a maximum continuous voltage of 300VAC. It is the perfect solution for applications such as railway safety control systems where complete absence of leakage current, is required. With its Type 2 classification, the unit can be installed between boundaries 1 – 2 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 and a nominal current of 315 A. All modules are equipped with a state-of-the-art thermal disconnecter and life-status green-red monitoring indicator. A unique vibration-proof locking mechanism enables secure use in high vibration environments. An optional remote contact (RC) features a three-pole remote signaling terminal, which enables remote monitoring of the operating state of the device.

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



More Product Information



# Overvoltage Protection ProTec T2H 1+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-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 II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2H-xxx-1+0(-R) & ProTec T2H-xxx-1+0-US(-R)

300

### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA
Voltage Protection Level	$U_p$	1500 V
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 120min	$U_T$	442 V
Number of Ports		1

### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Voltage Protection Rating	VPR	1200 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000 V
Overcurrent Protection (min)		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 [4000 m]
Terminal Screw Torque	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



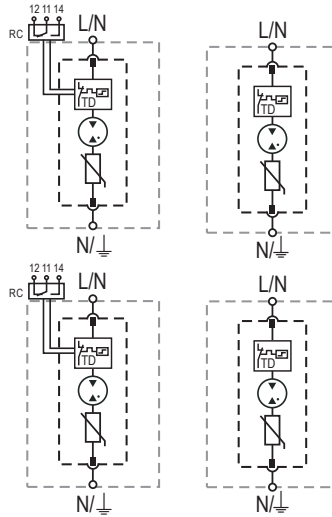
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



### ProTec T2H-xxx-1+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-1+0	59.0324
ProTec T2H-xxx-1+0-R (with remote contacts)	59.0325
ProTec T2H-xxx-P (plug)	59.0322

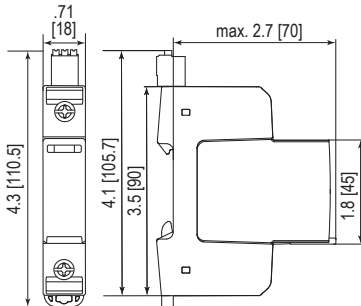
### ProTec T2H-xxx-1+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-1+0-US	59.B057
ProTec T2H-xxx-1+0-US-R (with remote contacts)	59.B058
ProTec T2H-xxx-P (plug L-N)	59.0322

## Dimensions & Packaging

inches [mm]



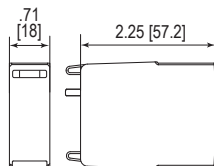
#### Complete Unit UL Recognized Products

ProTec T2H-xxx-1+0	300
Weight	pounds [grams] .264 [120]
ProTec T2H-xxx-1+0-R	
Weight	pounds [grams] .279 [127]

#### Complete Unit UL Listed Products

ProTec T2H-xxx-1+0-US	300
Weight	pounds [grams] .264 [120]
ProTec T2H-xxx-1+0-US(-R)	
Weight	pounds [grams] .279 [127]
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

## Spare Plug



#### Single Unit

ProTec T2H-xxx-P	300
Weight	pounds [grams] .112 [51]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection

## ProTec T2H 2+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2H-xxx-2+0(-R) & ProTec T2H-xxx-2+0-US(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA
Voltage Protection Level	$U_p$	1500 V
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 120min	$U_T$	442 V
Number of Ports		1

#### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Voltage Protection Rating	VPR	1200 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000 V
Overcurrent Protection (min)		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 [4000 m]
Terminal Screw Torque	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

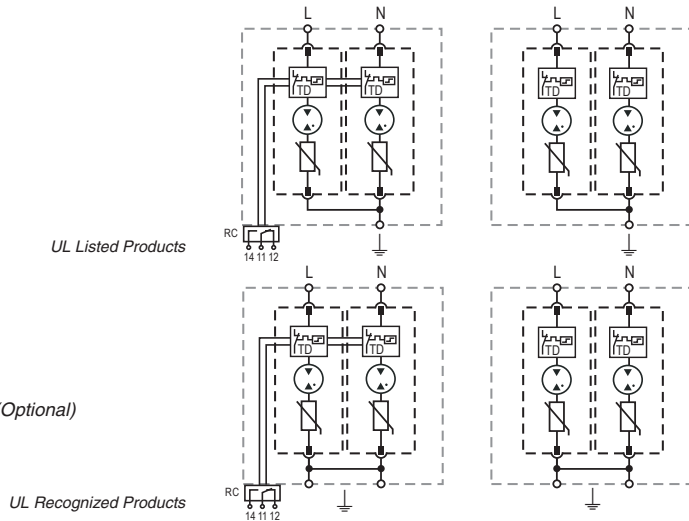
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2H-xxx-2+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-2+0	59.0326
ProTec T2H-xxx-2+0-R (with remote contacts)	59.0327
ProTec T2H-xxx-P (plug)	59.0322

### ProTec T2H-xxx-2+0-US(-R)

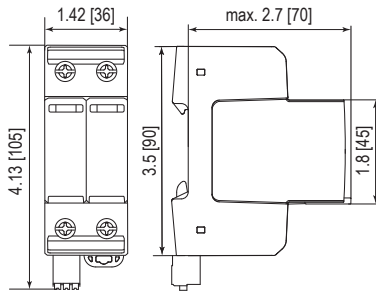
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-2+0-US	59.B059
ProTec T2H-xxx-2+0-US-R (with remote contacts)	59.B060
ProTec T2H-xxx-P (plug L-N)	59.0322

## Dimensions & Packaging

inches [mm]



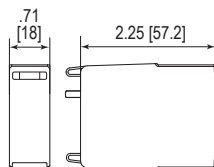
#### Complete Unit UL Recognized Products

ProTec T2H-xxx-2+0	300
Weight	pounds [grams] .514 [233]
ProTec T2H-xxx-2+0-R	
Weight	pounds [grams] .534 [242]

#### Complete Unit UL Listed Products

ProTec T2H-xxx-2+0-US	300
Weight	pounds [grams] .484 [224]
ProTec T2H-xxx-2+0-US(-R)	
Weight	pounds [grams] .514 [233]
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



#### Single Unit

ProTec T2H-xxx-P	300
Weight	pounds [grams] .112 [51]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection

## ProTec T2H 3+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-C  
 Mode of Protection: L-PEN  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2H-xxx-3+0(-R) & ProTec T2H-xxx-3+0-US(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA
Voltage Protection Level	$U_p$	1500 V
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 120min	$U_T$	442 V
Number of Ports		1

#### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Voltage Protection Rating	VPR	1200 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000 V
Overcurrent Protection (min)		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 [4000 m]
Terminal Screw Torque	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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/1A, 125 V/1 A; DC: 48 V/0.5A, 24 V/0.5A, 12 V/0.5A
RC Conductor Cross Section (max)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

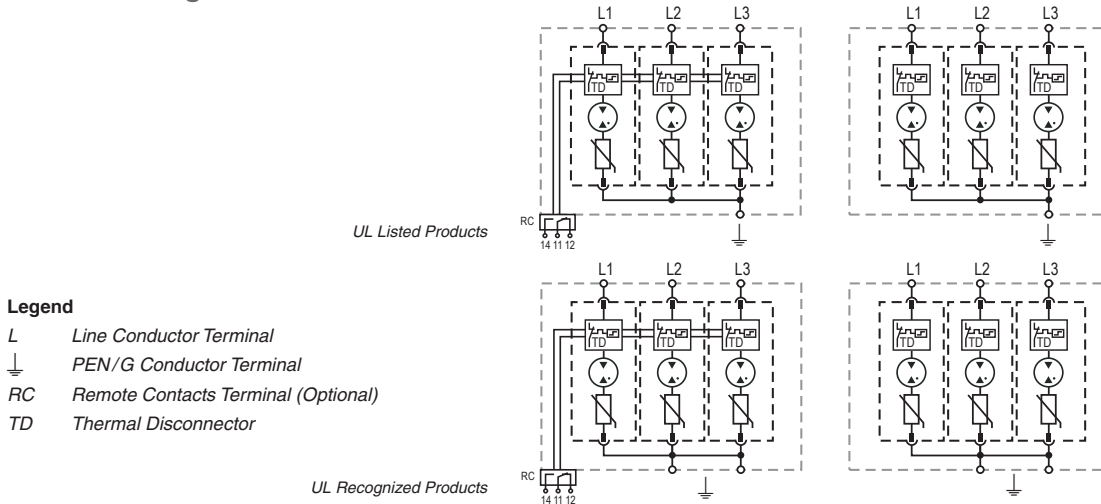
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

### ProTec T2H-xxx-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-3+0	59.0328
ProTec T2H-xxx-3+0-R (with remote contacts)	59.0329
ProTec T2H-xxx-P (plug)	59.0322

### ProTec T2H-xxx-3+0-US(-R)

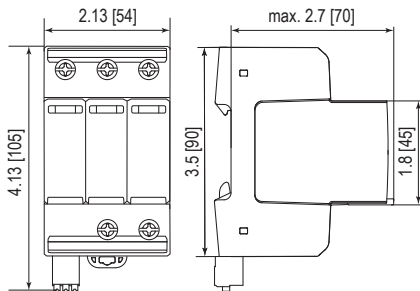
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-3+0-US	59.B061
ProTec T2H-xxx-3+0-US-R (with remote contacts)	59.B062
ProTec T2H-xxx-P (plug L-N)	59.0322

## Dimensions & Packaging

inches [mm]



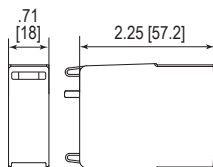
#### Complete Unit UL Recognized Products

ProTec T2H-xxx-3+0	300
Weight	pounds [grams] .747 [339]
ProTec T2H-xxx-3+0-R	
Weight	pounds [grams] .767 [348]

#### Complete Unit UL Listed Products

ProTec T2H-xxx-3+0-US	300
Weight	pounds [grams] .727 [330]
ProTec T2H-xxx-3+0-US(-R)	
Weight	pounds [grams] .747 [339]
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 Units

## Spare Plug



#### Single Unit

ProTec T2H-xxx-P	300
Weight	pounds [grams] .112 [51]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection ProTec T2H 4+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2H-xxx-4+0(-R) & ProTec T2H-xxx-4+0-US(-R)

300

### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240 V
Maximum Continuous Operating Voltage (AC)	$U_c$	300 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA
Voltage Protection Level	$U_p$	1500 V
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 120min	$U_T$	442 V
Number of Ports		1

### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	300 V
Voltage Protection Rating	VPR	1200 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000 V
Overcurrent Protection (min)		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 [4000 m]
Terminal Screw Torque	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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/1A, 125 V/1 A; DC: 48 V/0.5A, 24 V/0.5A, 12 V/0.5A
RC Conductor Cross Section (max)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

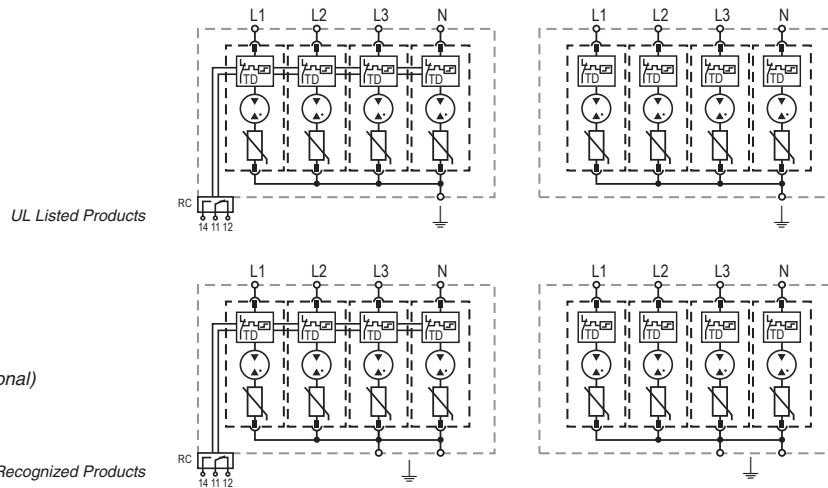
Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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





## Internal Configuration



### Legend

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

### ProTec T2H-xxx-4+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-4+0	59.0330
ProTec T2H-xxx-4+0-R (with remote contacts)	59.0331
ProTec T2H-xxx-P (plug)	59.0322

### ProTec T2H-xxx-4+0-US(-R)

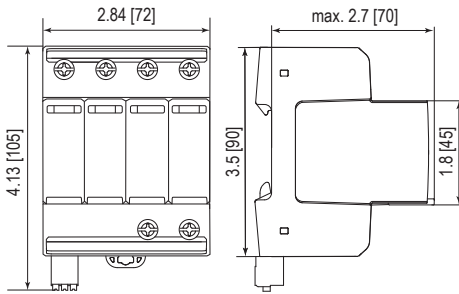
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-4+0-US	59.B063
ProTec T2H-xxx-4+0-US-R (with remote contacts)	59.B064
ProTec T2H-xxx-P (plug L-N)	59.0322

## Dimensions & Packaging

inches [mm]



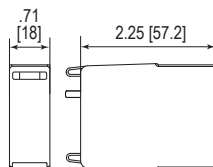
#### Complete Unit UL Recognized Products

ProTec T2H-xxx-4+0	300
Weight	pounds [grams] .944 [428]
ProTec T2H-xxx-4+0-R	
Weight	pounds [grams] .964 [437]

#### Complete Unit UL Listed Products

ProTec T2H-xxx-4+0-US	300
Weight	pounds [grams] .924 [419]
ProTec T2H-xxx-4+0-US(-R)	
Weight	pounds [grams] .944 [428]
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

## Spare Plug



#### Single Unit

ProTec T2H-xxx-P	300
Weight	pounds [grams] .112 [51]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection

## ProTec T2H 1+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2H-xxx-1+1(-R) & ProTec T2H-xxx-1+1-US(-R)

300

#### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	300V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	20kA / 40kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	50kA / 65kA
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500V / 1500V
Response Time	(L-N) / (N-PE) $t_A$	<25 ns / <100 ns
Overcurrent Protection (max)		315A / 250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25kA / 50kA
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100A
TOV Withstand 120min	(L-N) $U_T$	442V
TOV Withstand 200ms	(N-PE) $U_T$	1200V
Number of Ports		1

#### UL Electrical

Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	300V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	1200V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20kA / 20kA
Short-Circuit Current Rating (AC)	(L-N) SCCR	200kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1000V / 305V
Overcurrent Protection (min)		80A gG

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

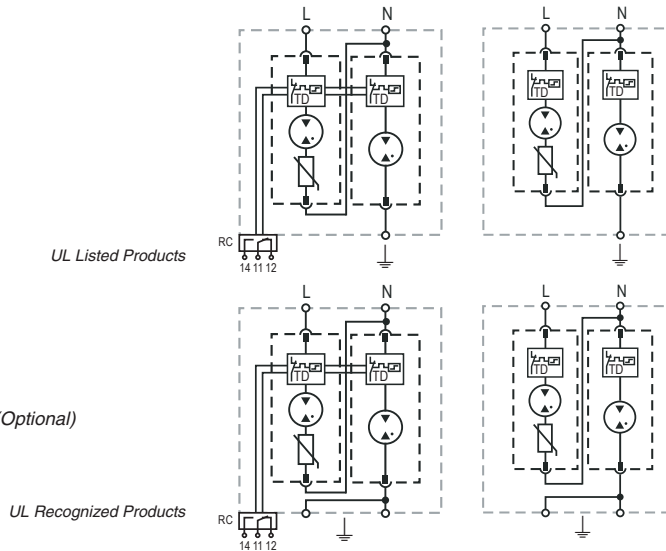
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2H-xxx-1+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-1+1	59.0332
ProTec T2H-xxx-1+1-R (with remote contacts)	59.0333
ProTec T2H-xxx-P (plug L-N)	59.0322
ProTube T2H-40-P (plug N-PE)	59.0323

### ProTec T2H-xxx-1+1-US(-R)

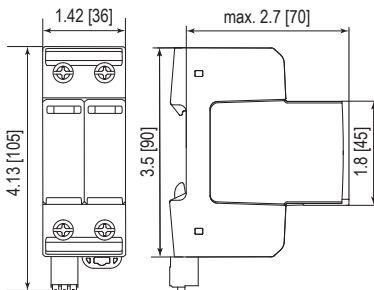
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-1+1-US	59.B065
ProTec T2H-xxx-1+1-US-R (with remote contacts)	59.B066
ProTec T2H-xxx-P (plug L-N)	59.0322
ProTube T2H-40-P (plug N-PE)	59.0323

## Dimensions & Packaging

inches [mm]



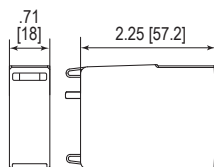
#### Complete Unit UL Recognized Products

ProTec T2H-xxx-1+1	300
Weight	pounds [grams] .516 [234]
ProTec T2H-xxx-1+1-R	
Weight	pounds [grams] .525 [238]

#### Complete Unit UL Listed Products

ProTec T2H-xxx-1+1-US	300
Weight	pounds [grams] .496 [225]
ProTec T2H-xxx-1+1-US(-R)	
Weight	pounds [grams] .505 [229]
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



#### Single Unit

ProTec T2H-xxx-P	300
Weight	pounds [grams] .112 [51]
ProTube T2H-40-P	40
Weight	pounds [grams] .093 [42]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection ProTec T2H 3+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2H-xxx-3+1(-R) & ProTec T2H-xxx-3+1-US(-R)

300

### IEC Electrical

Nominal AC Voltage (50/60Hz)	$U_o / U_n$	240V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE) $U_c$	300V / 305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_n$	20kA / 40kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N) / (N-PE) $I_{max}$	50kA / 65kA
Voltage Protection Level	(L-N) / (N-PE) $U_p$	1500V / 1500V
Response Time	(L-N) / (N-PE) $t_A$	<25 ns / <100 ns
Overcurrent Protection (max)		315A / 250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25kA / 50kA
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100A
TOV Withstand 120min	(L-N) $U_T$	442V
TOV Withstand 200ms	(N-PE) $U_T$	1200V
Number of Ports		1

### UL Electrical

Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	300V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	1200V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20kA / 20kA
Short-Circuit Current Rating (AC)	(L-N) SCCR	200kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1000V / 305V
Overcurrent Protection (min)		80A gG

### Additional Electrical Parameters - Extended (Additionally tested by VDE)

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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

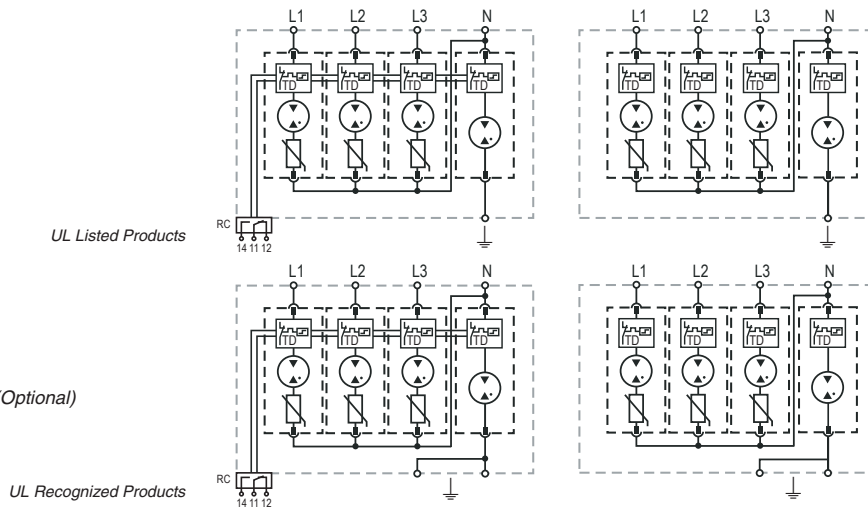
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2H-xxx-3+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300
ProTec T2H-xxx-3+1	59.0334
ProTec T2H-xxx-3+1-R (with remote contacts)	59.0335
ProTec T2H-xxx-P (plug L-N)	59.0322
ProTube T2H-40-P (plug N-PE)	59.0323

### ProTec T2H-xxx-3+1-US(-R)

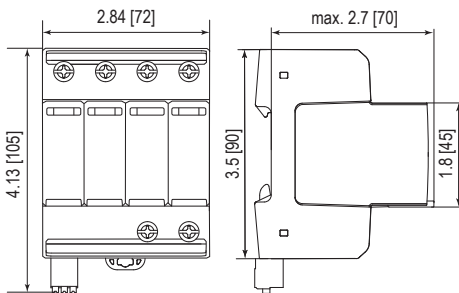
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300
ProTec T2H-xxx-3+1-US	59.B067
ProTec T2H-xxx-3+1-US-R (with remote contacts)	59.B068
ProTec T2H-xxx-P (plug L-N)	59.0322
ProTube T2H-40-P (plug N-PE)	59.0323

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

<b>ProTec T2H-xxx-3+1</b>	<b>300</b>
Weight	pounds [grams] .947 [429]

<b>ProTec T2H-xxx-3+1-R</b>	
Weight	pounds [grams] .958 [434]

#### Complete Unit UL Listed Products

<b>ProTec T2H-xxx-3+1-US</b>	<b>300</b>
Weight	pounds [grams] .927 [420]

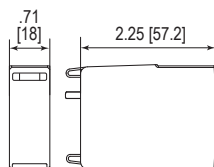
<b>ProTec T2H-xxx-3+1-US-R</b>	
Weight	pounds [grams] .938 [425]

DIN 43880 Dimension	4 TE / 2.84" [72]
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Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
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Standard Order Quantity	4 Units
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## Spare Plug



#### Single Unit

<b>ProTec T2H-xxx-P</b>	<b>300</b>
Weight	pounds [grams] .112 [51]

<b>ProTube T2H-40-P</b>	<b>40</b>
Weight	pounds [grams] .093 [42]

DIN 43880 Dimension	1 TE / .71" [18]
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Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
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Standard Order Quantity	24 Units
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Overvoltage Protection  
**ProTube T2H 40 0+1**  
 Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

**Technical Data**

ProTube T2H-xxx-0+1(-R) & ProTube T2H-xxx-0+1-US(-R)		40
<b>IEC Electrical</b>		
Maximum Continuous Operating Voltage (AC)	$U_c$	305 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	40kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Voltage Protection Level	$U_p$	1500 V
Follow Current Interrupt Rating	$I_{fi}$	100 A
Response Time	$t_A$	< 100 ns
TOV Withstand 120min	$U_T$	1200 V
Number of Ports		1
<b>UL Electrical</b>		
Maximum Continuous Operating Voltage (AC)	MCOV	305 V
Voltage Protection Rating	VPR	1000 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)		
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305 V
Overcurrent Protection (min)		80 A gG
<b>Mechanical &amp; Environmental</b>		
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

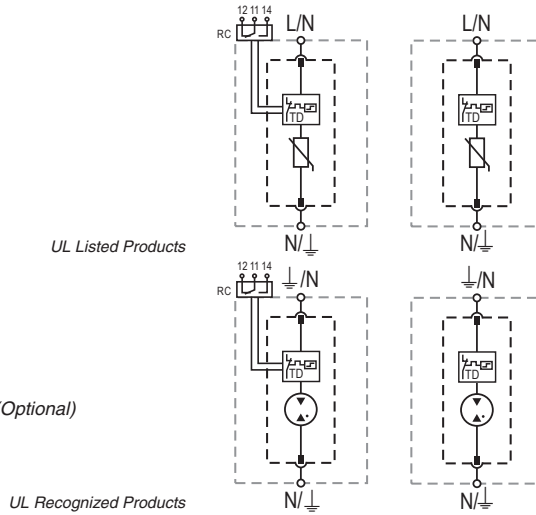
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- N Neutral Conductor Terminal
- ⊥ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



### ProTube T2H-xxx-0+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	40
ProTube T2H-xxx-0+1	59.0341
ProTube T2H-xxx-0+1-R (with remote contacts)	59.0342
ProTube T2H-40-P (plug)	59.0323

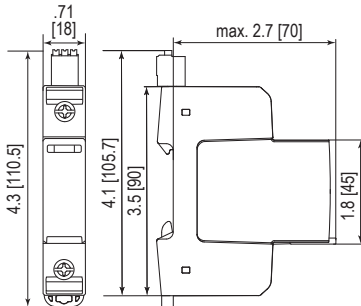
### ProTec T2H-xxx-0+1-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	40
ProTube T2H-xxx-0+1-US	59.B069
ProTube T2H-xxx-0+1-US-R (with remote contacts)	59.B070
ProTube T2H-40-P (plug)	59.0323

## Dimensions & Packaging

inches [mm]



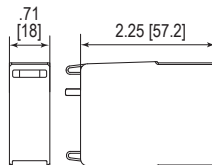
#### Complete Unit UL Recognized Products

ProTube T2H-xxx-0+1	40
Weight	pounds [grams] .244 [111]
ProTube T2H-xxx-0+1-R	40
Weight	pounds [grams] .259 [118]

#### Complete Unit UL Listed Products

ProTube T2H-xxx-0+1-US	40
Weight	pounds [grams] .244 [111]
ProTube T2H-xxx-0+1-US(-R)	40
Weight	pounds [grams] .259 [118]
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

## Spare Plug



#### Single Unit

ProTube T2H-40-P	40
Weight	pounds [grams] .093 [42]
DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

## Notes





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

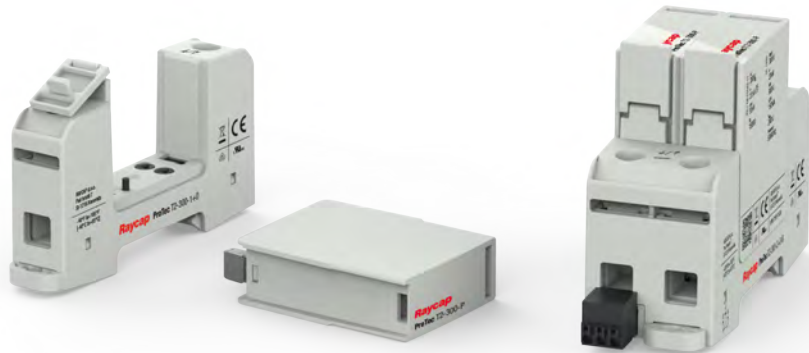


Overvoltage Protection

### ProTec T2

**Special features:**

- Available in a wide variety of operating voltages 75V to 750V
- High Impulse Current capability using a single MOV
- Sensitive state-of-the-art thermal disconnecter
- Backup fuse up to 315AgG
- Short-circuit current rating up to 100kA\*
- Vibration and shock withstand capability
- All modules including N-PE with operating state green-red
- Optional remote contact (RC) signaling



IEC 61643-11:2011	EN 61643-11:2012	UL 1449 5th Edition	Open Type 1 SPD Listed
✓	✓	✓	✓

ProTec T2 offers basic protection as a Type 2 surge protective device (SPD) that comes with an extended maximum continuous operating voltage ( $U_c$ ) range that spans 75V up to 750V. With the Type 2 classification, ProTec T2 can be installed between boundaries  $O_b - 1$  and higher. The varistor-based protection modules feature outstanding short-circuit currents up to 100kA\* without using a back-up to a main fuse nominal current of 315A. All modules are equipped with a state-of-the-art thermal disconnecter and life-status green-red monitoring indicators. A unique vibration-proof locking mechanism enables secure use in high vibration environments. Besides the visual mechanical indicator, optional remote contacts (RC) feature a three-pole remote signaling terminal, which enables remote monitoring of the operating state of the device.

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



More Product Information



# Overtoltage Protection

## ProTec T2 1+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-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 II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxx-1+0 (-R) & ProTec T2-xxx-1+0-US(-R)		75	150	300	350	440**	480	550***	750
<b>IEC Electrical</b>									
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	230V	400V	480V	600V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	440V	480V	550V	750V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	$U_p$	800V	1250V	1500V	1750V	1800V	2300V	2500V	3400V
Response Time	$t_A$	< 25ns							
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	229V	337V	403V	440V	581V	697V	871V
TOV 120min	$U_T$	114V	229V	442V	529V	440V	762V	915V	1143V
Number of Ports	mode	Withstand	Withstand	Safe Fail	Safe Fail	Withstand	Safe Fail	Safe Fail	Safe Fail
						1			
<b>UL Electrical</b>									
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	-	480V	550V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1000V	-	1500V	2000V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	-	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	-	200kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)									
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	750V	1000V	1300V	1400V	1500V	1800V	2500V
Overcurrent Protection (min)		80 A gG							
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)									
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA							
Overcurrent Protection (max)		250 A gG							
<b>Mechanical &amp; Environmental</b>									
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]							
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]							

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



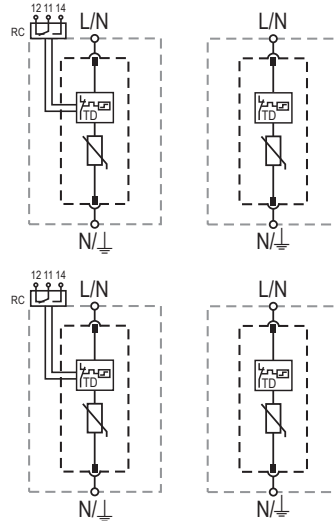
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



### ProTec T2-xxx-1+0 (-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	440**	480	550***	750
ProTec T2-xxx-1+0	59.0069	59.0071	59.0073	59.0075	59.0545	59.0077	59.0677	59.0079
ProTec T2-xxx-1+0-R (with remote contacts)	59.0070	59.0072	59.0074	59.0076	59.0546	59.0078	59.0678	59.0080
ProTec T2-xxx-P (plug)	59.0063	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

### ProTec T2-xxx-1+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

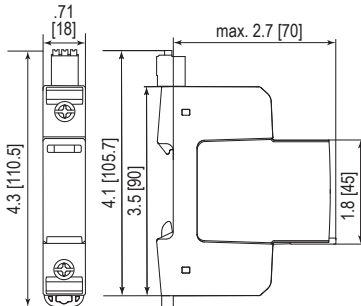
Order Code	75	150	300	350	440**	480	550***	750
ProTec T2-xxx-1+0-US	59.B071	59.B073	59.B075	59.B077	-	59.B079	59.B081	59.B083
ProTec T2-xxx-1+0-US-R (with remote contacts)	59.B072	59.B074	59.B076	59.B078	-	59.B080	59.B082	59.B084
ProTec T2-xxx-P (plug)	59.0063	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-xxx-1+0	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.259	.275	.281	.292	.298	.306	.311
	grams	118	125	128	133	135	139	153

#### ProTec T2-xxx-1+0-R

Weight								
	pounds	.275	.290	.297	.308	.313	.321	.326
	grams	125	132	135	140	142	146	160

#### Complete Unit UL Listed Products

ProTec T2-xxx-1+0-US	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.259	.275	.281	.292	.298	.306	.311
	grams	118	125	128	133	135	139	153

#### ProTec T2-xxx-1+0-US-R

Weight								
	pounds	.275	.290	.297	.308	.313	.321	.326
	grams	125	132	135	140	142	146	160

DIN 43880 Dimension

1 TE / .71" [18 mm]

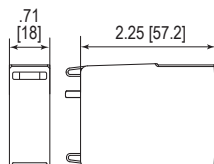
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

12 Units

## Spare Plug



#### Single Unit

ProTec T2-xxx-P	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.108	.123	.130	.141	.146	.154	.163
	grams	49	56	59	64	66	70	84

DIN 43880 Dimension

1 TE / .71" [18 mm]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection

## ProTec T2 2+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxx-2+0(-R) & ProTec T2-xxx-2+0-US(-R)		75	150	300	350	440**	480	550***	750
<b>IEC Electrical</b>									
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	230V	400V	480V	600V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	440V	480V	550V	750V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	$U_p$	800V	1250V	1500V	1750V	1800V	2300V	2500V	3400V
Response Time	$t_A$	< 25ns							
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	229V	337V	403V	440V	581V	697V	871V
TOV 120min	$U_T$	114V	229V	442V	529V	440V	762V	915V	1143V
	mode	Withstand	Withstand	Safe Fail	Safe Fail	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1							
<b>UL Electrical</b>									
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	-	480V	550V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1000V	-	1500V	2000V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	-	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	-	200kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)									
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	750V	1000V	1300V	1400V	1500V	1800V	2500V
Overcurrent Protection (min)		80 A gG							
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)									
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA							
Overcurrent Protection (max)		250 A gG							
<b>Mechanical &amp; Environmental</b>									
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]							
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]							

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

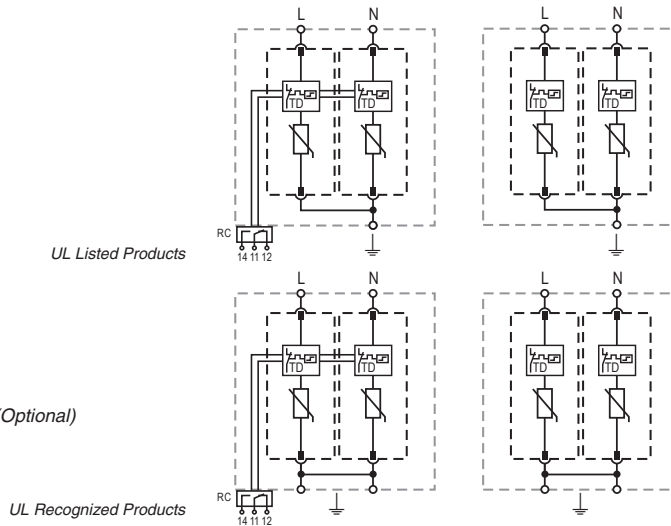
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2-xxx-2+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	440**	480	550***	750
ProTec T2-xxx-2+0	59.0343	59.0081	59.0083	59.0085	59.0548	59.0087	59.0679	59.0089
ProTec T2-xxx-2+0-R (with remote contacts)	59.0344	59.0082	59.0084	59.0086	59.0549	59.0088	59.0680	59.0090
ProTec T2-xxx-P (plug)	59.0063	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

### ProTec T2-xxx-2+0-US(-R)

For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

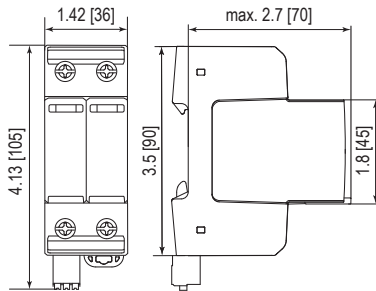
Order Code	75	150	300	350	440**	480	550***	750
ProTec T2-xxx-2+0-US	59.B085	59.B087	59.B089	59.B091	-	59.B093	59.B095	59.B097
ProTec T2-xxx-2+0-US-R (with remote contacts)	59.B086	59.B088	59.B090	59.B092	-	59.B094	59.B096	59.B098
ProTec T2-xxx-P (plug)	59.0063	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-xxx-2+0	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.525	.556	.569	.591	.600	.618	.628
	grams	238	252	258	268	272	280	285

#### ProTec T2-xxx-2+0-R

Weight								
	pounds	.545	.576	.619	.611	.620	.638	.659
	grams	247	261	267	272	281	289	317

#### Complete Unit UL Listed Products

ProTec T2-xxx-2+0-US	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.505	.536	.549	.571	.580	.598	.608
	grams	229	243	249	259	263	271	279

#### ProTec T2-xxx-2+0-US-R

Weight								
	pounds	.525	.556	.569	.591	.600	.618	.639
	grams	238	252	258	268	272	280	290

DIN 43880 Dimension

2 TE / 1.42" [36]

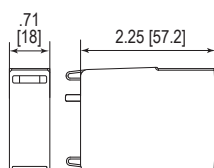
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

7 Units

## Spare Plug



#### Single Unit

ProTec T2-xxx-P	75	150	300	350	440**	480	550***	750
Weight								
	pounds	.108	.123	.130	.141	.146	.154	.185
	grams	49	56	59	64	66	70	84

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection

## ProTec T2 3+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-C  
 Mode of Protection: L-PEN  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxx-3+0(-R) & ProTec T2-xxx-3+0-US(-R)		150	300	350	440**	480	550***	750
<b>IEC Electrical</b>								
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	120V	240V	277V	230V	400V	480V	600V
Maximum Continuous Operating Voltage (AC)	$U_c$	150V	300V	350V	440V	480V	550V	750V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	$U_p$	1250V	1500V	1750V	1800V	2300V	2500V	3400V
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	$U_T$	229V	337V	403V	440V	581V	697V	871V
TOV 120min	$U_T$	229V	442V	529V	440V	762V	915V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1						
<b>UL Electrical</b>								
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	-	480V	550V	750V
Voltage Protection Rating	VPR	600V	900V	1000V	-	1500V	2000V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	-	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	-	200kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)								
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	750V	1000V	1300V	1400V	1500V	1800V	2500V
Overcurrent Protection (min)		80 A gG						
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)								
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA						
Overcurrent Protection (max)		250 A gG						
<b>Mechanical &amp; Environmental</b>								
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]						
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]						

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

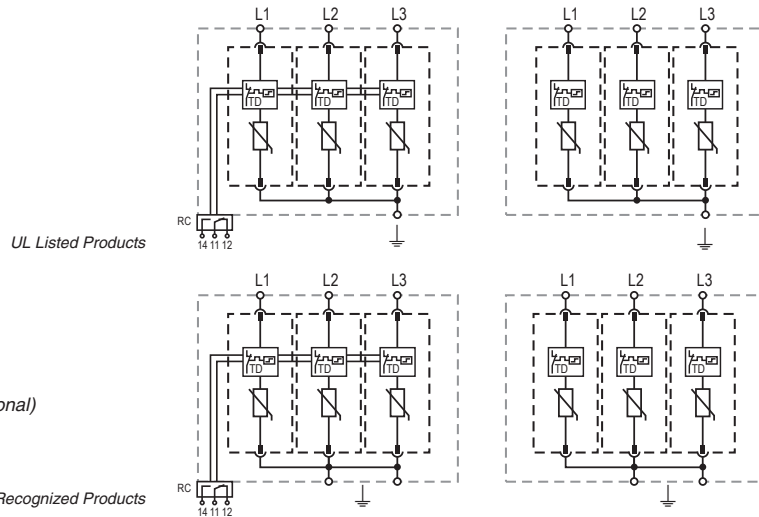
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

### ProTec T2-xxx-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	440**	480	550***	750
ProTec T2-xxx-3+0	59.0091	59.0093	59.0095	59.0550	59.0097	59.0681	59.0099
ProTec T2-xxx-3+0-R (with remote contacts)	59.0092	59.0094	59.0096	59.0551	59.0098	59.0682	59.0100
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

### ProTec T2-xxx-3+0-US(-R)

For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

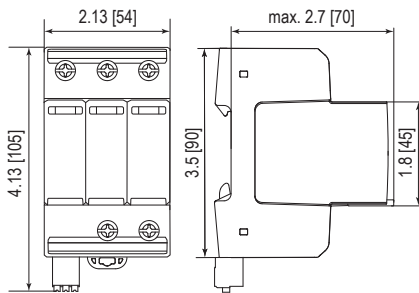
Order Code	150	300	350	440**	480	550***	750
ProTec T2-xxx-3+0-US	59.B099	59.B101	59.B103	-	59.B105	59.B107	59.B109
ProTec T2-xxx-3+0-US-R (with remote contacts)	59.B100	59.B102	59.B104	-	59.B106	59.B108	59.B110
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685	59.0068

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-xxx-3+0	150	300	350	440**	480	550***	750
Weight	pounds	.800	.820	.853	.867	.893	.910
	grams	363	372	387	393	405	413

#### ProTec T2-xxx-3+0-R

Weight	pounds	.820	.840	.873	.886	.912	.933
	grams	372	381	396	402	414	423

#### Complete Unit UL Listed Products

ProTec T2-xxx-3+0-US	150	300	350	440**	480	550***	750
Weight	pounds	.780	.800	.833	.847	.873	.890
	grams	354	363	378	384	396	404

#### ProTec T2-xxx-3+0-US-R

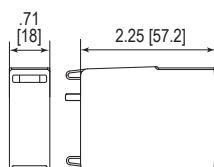
Weight	pounds	.800	.820	.853	.866	.892	.913
	grams	363	372	387	393	405	414

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 Units

## Spare Plug



#### Single Unit

ProTec T2-xxx-P	150	300	350	440**	480	550***	750
Weight	pounds	.123	.130	.141	.146	.154	.163
	grams	56	59	64	66	70	74

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection

## ProTec T2 4+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

#### ProTec T2-xxx-4+0(-R) & ProTec T2-xxx-4+0-US(-R)

		150	300	350	440**	480	550***
<b>IEC Electrical</b>							
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	120V	240V	277V	230V	400V	480V
Maximum Continuous Operating Voltage (AC)	$U_c$	150V	300V	350V	440V	480V	550V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	1250V	1500V	1750V	1800V	2300V	2500V
Response Time	$t_A$	< 25ns					
Overcurrent Protection (max)		315 A / 250 A gG					
Short-Circuit Current Rating (AC)	$I_{SCCR}$	25 kA / 50 kA					
TOV Withstand 5s	$U_T$	229V	337V	403V	440V	581V	697V
TOV 120min	$U_T$	229V	442V	529V	440V	762V	915V
	mode	Withstand	Safe Fail	Safe Fail	Withstand	Safe Fail	Safe Fail
Number of Ports		1					
<b>UL Electrical</b>							
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	-	480V	550V
Voltage Protection Rating	VPR	600V	900V	1000V	-	1500V	2000V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	-	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	-	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)							
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	750V	1000V	1300V	1400V	1500V	1800V
Overcurrent Protection (min)		80 A gG					
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)							
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100 kA					
Overcurrent Protection (max)		250 A gG					
<b>Mechanical &amp; Environmental</b>							
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]					
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]					

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

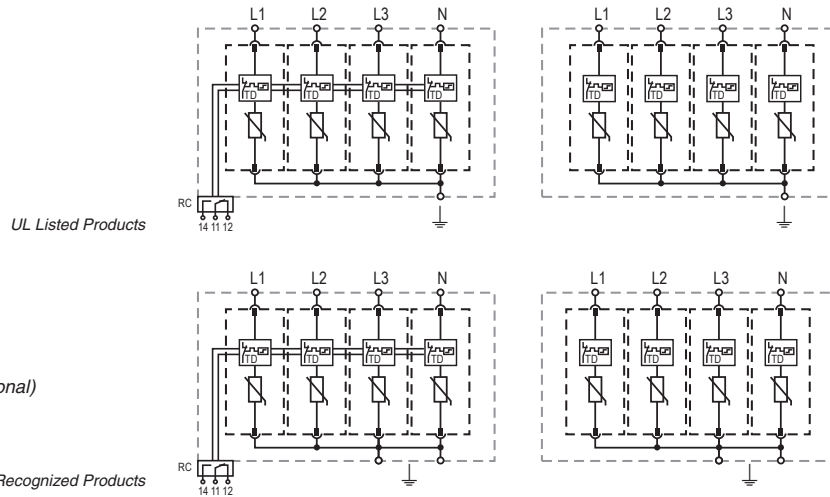
Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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





## Internal Configuration



### Legend

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

### ProTec T2-xxx-4+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	440**	480	550***
ProTec T2-xxx-4+0	59.0101	59.0103	59.0300	59.0552	59.0105	59.0683
ProTec T2-xxx-4+0-R (with remote contacts)	59.0102	59.0104	59.0301	59.0553	59.0106	59.0684
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685

### ProTec T2-xxx-4+0-US(-R)

For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

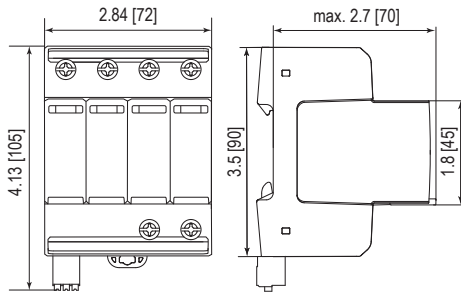
Order Code	150	300	350	440**	480	550***
ProTec T2-xxx-4+0-US	59.B111	59.B113	59.B115	-	59.B117	59.B119
ProTec T2-xxx-4+0-US-R (with remote contacts)	59.B112	59.B114	59.B116	-	59.B118	59.B120
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0547	59.0067	59.0685

\*\*No VDE and UL certification.

\*\*\*No VDE certification.

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-xxx-4+0	150	300	350	440**	480	550***
Weight	pounds	1.009	1.035	1.079	1.098	1.132
	grams	457	469	489	498	513

#### ProTec T2-xxx-4+0-R

Weight	pounds	1.028	1.055	1.099	1.120	1.152
	grams	466	478	498	507	522

#### Complete Unit UL Listed Products

ProTec T2-xxx-4+0-US	150	300	350	440**	480	550***
Weight	pounds	.989	1.015	1.059	1.078	1.112
	grams	448	460	480	489	504

#### ProTec T2-xxx-4+0-US-R

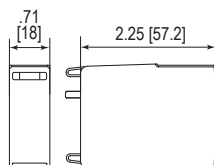
Weight	pounds	1.008	1.035	1.079	1.100	1.132
	grams	457	469	489	498	513

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

## Spare Plug



#### Single Unit

ProTec T2-xxx-P	150	300	350	440**	480	550***
Weight	pounds	.123	.130	.141	.146	.163
	grams	56	59	64	66	74

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection

## ProTec T2 1+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxx-1+1(-R) & ProTec T2-xxx-1+1-US(-R)		75	150	300	350
<b>IEC Electrical</b>					
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	75V	150V	300V	350V
	(N-PE) $U_c$	305V	305V	305V	305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20kA / 40kA	20kA / 40kA	20kA / 40kA	20kA / 40kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50kA / 65kA	50kA / 65kA	50kA / 65kA	50kA / 65kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	800V / 1500V	1250V / 1500V	1500V / 1500V	1750V / 1500V
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100A			
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns			
Overcurrent Protection (max)		315A / 250A gG			
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25kA / 50kA			
TOV Withstand 5s	(L-N) $U_T$	114V	229V	337V	403V
	mode	Withstand	Withstand	Safe Fail	Safe Fail
TOV 120min	(L-N) $U_T$	114V	229V	442V	529V
	(N-PE) $U_T$	1200V			
Number of Ports		1			
<b>UL Electrical</b>					
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	75V / 305V	150V / 305V	300V / 305V	350V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	330V / 1000V	600V / 1000V	900V / 1000V	1000V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20kA / 20kA			
Short-Circuit Current Rating (AC)	(L-N) SCCR	100kA	200kA	150kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V / 305V	750V / 305V	1000V / 305V	1300V / 305V
Overcurrent Protection (min)		80A gG			
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)					
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA			
Overcurrent Protection (max)		250A gG			
<b>Mechanical &amp; Environmental</b>					
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449			
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

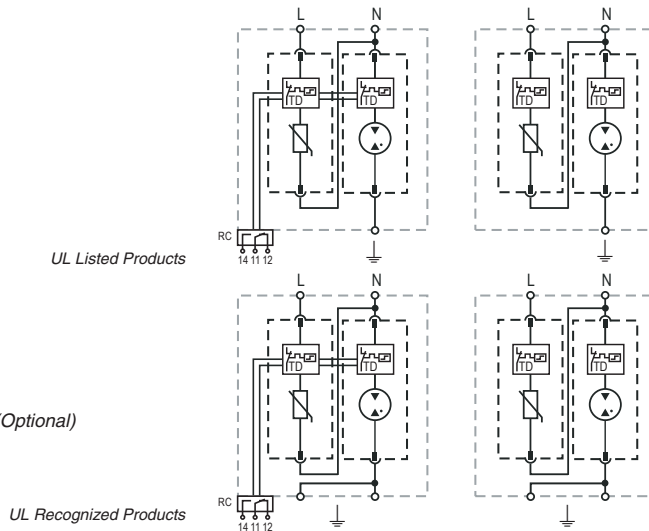
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2-xxx-1+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350
ProTec T2-xxx-1+1	59.0109	59.0111	59.0113	59.0115
ProTec T2-xxx-1+1-R (with remote contacts)	59.0110	59.0112	59.0114	59.0116
ProTec T2-xxx-P (plug L-N)	59.0063	59.0064	59.0065	59.0066
ProTube T2-40-P (plug N-PE)	59.0273	59.0273	59.0273	59.0273

### ProTec T2-xxx-1+1-US(-R)

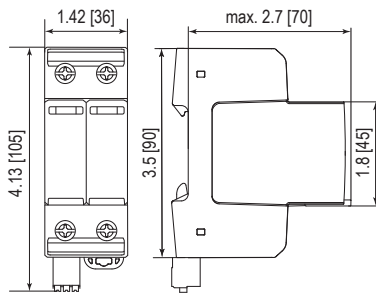
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350
ProTec T2-xxx-1+1-US	59.B121	59.B123	59.B125	59.B127
ProTec T2-xxx-1+1-US-R (with remote contacts)	59.B122	59.B124	59.B126	59.B128
ProTec T2-xxx-P (plug L-N)	59.0063	59.0064	59.0065	59.0066
ProTube T2-40-P (plug N-PE)	59.0273	59.0273	59.0273	59.0273

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

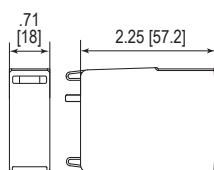
ProTec T2-xxx-1+1	75	150	300	350	
Weight	pounds	.532	.547	.554	.565
	grams	241	248	251	256
<b>ProTec T2-xxx-1+1-R</b>					
Weight	pounds	.541	.556	.563	.574
	grams	245	253	255	260

#### Complete Unit UL Listed Products

ProTec T2-xxx-1+1-US	75	150	300	350	
Weight	pounds	.512	.527	.534	.545
	grams	232	239	242	247
<b>ProTec T2-xxx-1+1-US-R</b>					
Weight	pounds	.521	.536	.543	.554
	grams	236	243	246	251

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



#### Single Unit

ProTec T2-xxx-P	75	150	300	350	
Weight	pounds	.108	.123	.130	.141
	grams	49	56	59	64
<b>ProTube T2-40-P</b>					
Weight	pounds	.093			
	grams	42			

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection

## ProTec T2 3+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxx-3+1(-R) & ProTec T2-xxx-3+1-US(-R)

300

350

#### IEC Electrical

Parameter	Symbol	300	350
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	300V	350V
	(N-PE) $U_c$	305V	305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20kA / 40kA	20kA / 40kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50kA / 65kA	50kA / 65kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1500V / 1500V	1750V / 1500V
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100A	
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns	
Overcurrent Protection (max)		315A / 250A gG	
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$	25kA / 50kA	
TOV Withstand 5s	(L-N) $U_T$	337V	403V
TOV 120min	(L-N) $U_T$	mode	Safe Fail
			Safe Fail
TOV Withstand 200ms	(N-PE) $U_T$	1200V	
Number of Ports		1	

#### UL Electrical

Parameter	Symbol	300	350
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	300V / 305V	350V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	900V / 1000V	1000V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20kA / 20kA	
Short-Circuit Current Rating (AC)	(L-N) SCCR	150kA	200kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V / 305V	1300V / 305V
Overcurrent Protection (min)		80A gG	

#### Additional Electrical Parameters - Extended (Additionally tested by VDE)

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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]	
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]	

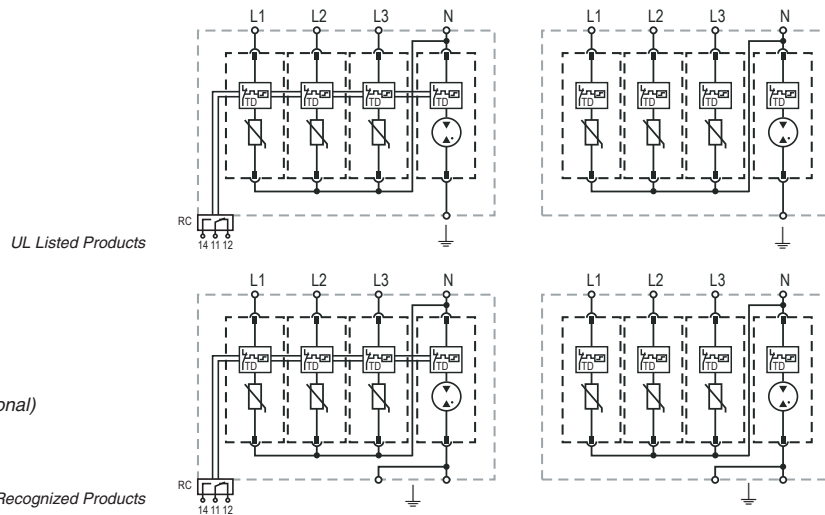
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- ⏚ PE/G Conductor Terminal
- RC Remote Contact Terminal (Optional)
- TD Thermal Disconnect

### ProTec T2-xxx-3+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300	350
ProTec T2-xxx-3+1	59.0121	59.0123
ProTec T2-xxx-3+1-R (with remote contacts)	59.0122	59.0124
ProTec T2-xxx-P (plug L-N)	59.0065	59.0066
ProTube T2-40-P (plug N-PE)	59.0273	59.0273

### ProTec T2-xxx-3+1-US(-R)

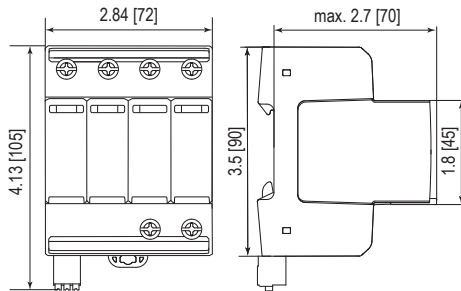
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300	350
ProTec T2-xxx-3+1-US	59.B129	59.B131
ProTec T2-xxx-3+1-US-R (with remote contacts)	59.B130	59.B132
ProTec T2-xxx-P (plug L-N)	59.0065	59.0066
ProTube T2-40-P (plug N-PE)	59.0273	59.0273

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

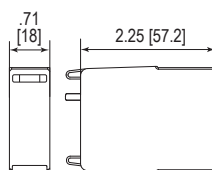
ProTec T2-xxx-3+1		300	350
Weight	pounds	1.020	1.053
	grams	462	477
ProTec T2-xxx-3+1-R			
Weight	pounds	1.031	1.064
	grams	467	482

#### Complete Unit UL Listed Products

ProTec T2-xxx-3+1-US		300	350
Weight	pounds	1.000	1.033
	grams	453	468
ProTec T2-xxx-3+1-US-R			
Weight	pounds	1.011	1.044
	grams	458	473

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

## Spare Plug



#### Single Unit

ProTec T2-xxx-P		300	350
Weight	pounds	.130	.141
	grams	59	64
ProTube T2-40-P		40	
Weight	pounds	.093	
	grams	42	

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection ProTube T2 40 0+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTube T2-xxx-0+1(-R) & ProTube T2-xxx-0+1-US(-R)

40

### IEC Electrical

Maximum Continuous Operating Voltage	$U_c$	305V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Voltage Protection Level	$U_p$	1500V
Follow Current Interrupt Rating	$I_{fi}$	100 A
Response Time	$t_A$	< 100 ns
TOV Withstand 200ms	$U_T$	1200 V
Number of Ports		1

### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	305V
Voltage Protection Rating	VPR	1000V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305V
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### 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



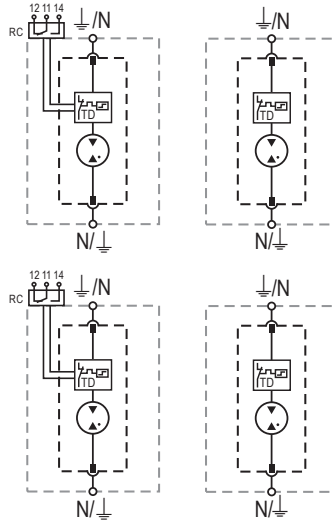
## Internal Configuration

### Legend

- N Neutral Conductor Terminal
- ⊥ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect

UL Recognized Products

UL Listed Products



### ProTube T2-xxx-0+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	40
ProTube T2-xxx-0+1	59.0280
ProTube T2-xxx-0+1-R (with remote contacts)	59.0336
ProTube T2-40-P (plug)	59.0273

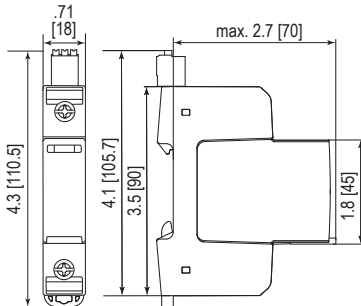
### ProTube T2-xxx-0+1-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	40
ProTube T2-xxx-0+1-US	59.B133
ProTube T2-xxx-0+1-US-R (with remote contacts)	59.B134
ProTube T2-40-P (plug)	59.0273

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

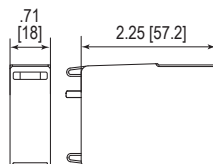
ProTube T2-xxx-0+1		40
Weight	pounds	.244
	grams	111
ProTube T2-xxx-0+1-R		
Weight	pounds	.259
	grams	118

#### Complete Unit UL Listed Products

ProTube T2-xxx-0+1-US		40
Weight	pounds	.244
	grams	111
ProTube T2-xxx-0+1-US-R		
Weight	pounds	.259
	grams	118

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

## Spare Plug



#### Single Unit

ProTube T2-40-P		40
Weight	pounds	.093
	grams	42
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	

## Notes





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



### Overvoltage Protection

#### ProTec T2-ADV

##### Special features:

- Early warning system with clear green-yellow-red indicators
- Available in a wide variety of operating voltages from 75V to 480V
- High maximum discharge current capability of 50kA
- Short circuit current rating up to 100kA\*
- State-of-the-art thermal disconnecter
- Backup fuse up to 315AgG
- Vibration and shock withstand capability
- Optional remote contact (RC) signaling



IEC 61643-11:2011

EN 61643-11:2012

UL 1449 5th Edition

Open Type 1 SPD Listed



ProTec T2-ADV features an advanced three-stage life status indicator showing an intermediate degradation status before the arrester's end-of-life state, thus indicating possible problems or needed maintenance from overvoltage activity before complete failure. During the SPDs end-of-life transition, green-yellow-red, the connected equipment is continually protected against fatal overvoltage effects. The specially treated autonomous varistors provide reliable determination of the first switching disconnecter, and the redundancy of two powerful separate varistors, both of which are functionally connected, provide a unique safety advantage. These safety reserve systems are imperative for the growing need for notifications or alerts when changes in conditions occur, and are ideally suited in a variety of environments that protect critical infrastructure. In addition to the visual mechanical indicator, an optional remote contact (RC) enables users to remotely monitor the operating state of the device.

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



More Product Information



# Overvoltage Protection ProTec T2-ADV 1+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-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 II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-1+0(-R) & ProTec T2-ADV-xxx-1+0(-US)(-R)		75	150	300	350	480
<b>IEC Electrical</b>						
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	480V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	600V	1000V	1300V	1700V	2000V
Response Time	$t_A$	< 25ns				
Overcurrent Protection (max)		160A gG				
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50kA				
TOV Withstand 5s	$U_T$	114V	229V	337V	403V	581V
TOV 120min	$U_T$	114V	229V	442V	528V	762V
	mode	Withstand	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1				
<b>UL Electrical</b>						
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V
Voltage Protection Rating	VPR	400V	600V	900V	1200V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)						
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	700V	1000V	1300V	1600V
Overcurrent Protection (min)		80A gG				
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)						
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA				
Overcurrent Protection (max)		160A gG				
<b>Mechanical &amp; Environmental</b>						
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]				
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]				

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



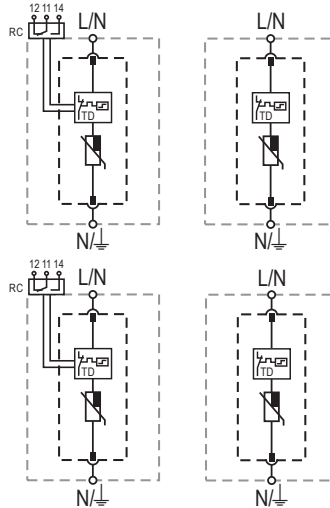
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



### ProTec T2-ADV-xxx-1+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	480
ProTec T2-ADV-xxx-1+0	59.0208	59.0210	59.0212	59.0214	59.0216
ProTec T2-ADV-xxx-1+0-R (with remote contacts)	59.0209	59.0211	59.0213	59.0215	59.0217
ProTec T2-ADV-xxx-P (plug)	59.0202	59.0203	59.0204	59.0205	59.0206

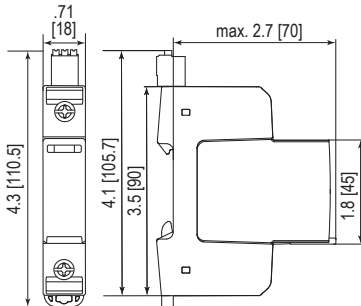
### ProTec T2-ADV-xxx-1+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	480
ProTec T2-ADV-xxx-1+0-US	59.B135	59.B137	59.B139	59.B141	59.B143
ProTec T2-ADV-xxx-1+0-US-R (with remote contacts)	59.B136	59.B138	59.B140	59.B142	59.B144
ProTec T2-ADV-xxx-P (plug)	59.0202	59.0203	59.0204	59.0205	59.0206

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-1+0	75	150	300	350	480	
Weight						
	pounds	.266	.275	.291	.302	.304
	grams	121	125	132	137	144

#### ProTec T2-ADV-xxx-1+0-R

Weight						
	pounds	.283	.291	.306	.317	.328
	grams	128	132	139	144	149

#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-1+0-US	75	150	300	350	480	
Weight						
	pounds	.266	.275	.291	.302	.304
	grams	121	125	132	137	144

#### ProTec T2-ADV-xxx-1+0-US-R

Weight						
	pounds	.283	.291	.306	.317	.328
	grams	128	132	139	144	149

DIN 43880 Dimension

1 TE / .71" [18]

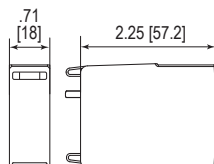
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

12 Units

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P	75	150	300	350	480	
Weight						
	pounds	.120	.127	.143	.154	.165
	grams	54	58	65	70	75

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection ProTec T2-ADV 2+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-2+0(-R) & ProTec T2-ADV-xxx-2+0(-US)(-R)		75	150	300	350	480
<b>IEC Electrical</b>						
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	480V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	600V	1000V	1300V	1700V	2000V
Response Time	$t_A$	< 25ns				
Overcurrent Protection (max)		160A gG				
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50kA				
TOV Withstand 5s	$U_T$	114V	229V	337V	403V	581V
TOV 120min	$U_T$	114V	229V	442V	528V	762V
	mode	Withstand	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1				
<b>UL Electrical</b>						
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V
Voltage Protection Rating	VPR	400V	600V	900V	1200V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)						
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	700V	1000V	1300V	1600V
Overcurrent Protection (min)		80A gG				
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)						
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA				
Overcurrent Protection (max)		160A gG				
<b>Mechanical &amp; Environmental</b>						
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]				
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]				

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

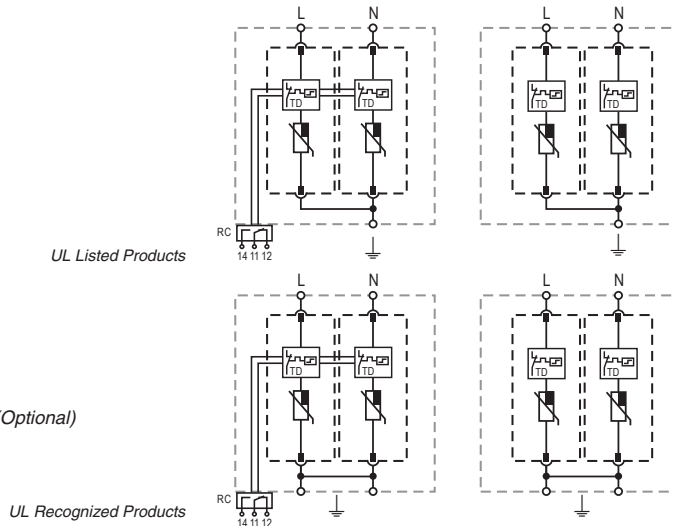
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2-ADV-xxx-2+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	480
ProTec T2-ADV-xxx-2+0	59.0347	59.0220	59.0222	59.0224	59.0226
ProTec T2-ADV-xxx-2+0-R (with remote contacts)	59.0348	59.0221	59.0223	59.0225	59.0227
ProTec T2-ADV-xxx-P (plug)	59.0202	59.0203	59.0204	59.0205	59.0206

### ProTec T2-ADV-xxx-2+0-US(-R)

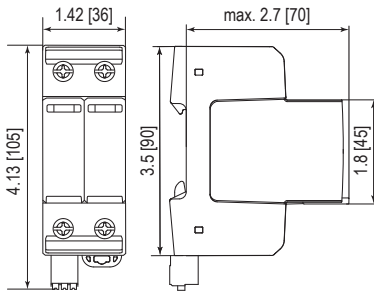
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	480
ProTec T2-ADV-xxx-2+0-US	59.B145	59.B147	59.B149	59.B151	59.B153
ProTec T2-ADV-xxx-2+0-US-R (with remote contacts)	59.B146	59.B148	59.B150	59.B152	59.B154
ProTec T2-ADV-xxx-P (plug)	59.0202	59.0203	59.0204	59.0205	59.0206

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-2+0	75	150	300	350	480	
Weight	pounds	.544	.562	.593	.615	.637
	grams	247	255	269	279	289

#### ProTec T2-ADV-xxx-2+0-R

Weight	pounds	.575	.593	.610	.646	.668
	grams	261	269	277	293	303

#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-2+0-US	75	150	300	350	480	
Weight	pounds	.524	.542	.573	.595	.617
	grams	238	246	260	270	280

#### ProTec T2-ADV-xxx-2+0-US-R

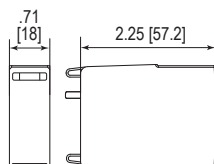
Weight	pounds	.555	.573	.590	.626	.648
	grams	252	260	268	284	294

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



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P	75	150	300	350	480	
Weight	pounds	.120	.127	.143	.154	.165
	grams	54	58	65	70	75

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection ProTec T2-ADV 3+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-C  
 Mode of Protection: L-PEN  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-3+0(-R) & ProTec T2-ADV-xxx-3+0(-US)(-R)

150      300      350      480

### IEC Electrical

		150	300	350	480
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 (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	1000V	1300V	1700V	2000V
Response Time	$t_A$	< 25 ns			
Overcurrent Protection (max)		160A gG			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50kA			
TOV Withstand 5s	$U_T$	229V	337V	403V	581V
TOV 120min	$U_T$	229V	442V	528V	762V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1			

### UL Electrical

		150	300	350	480
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA

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

		150	300	350	480
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V	1000V	1300V	1600V
Overcurrent Protection (min)		80A gG			

### Additional Electrical Parameters - Extended (Additionally tested by VDE)

		150	300	350	480
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA			
Overcurrent Protection (max)		160A gG			

### Mechanical & Environmental

		150	300	350	480
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

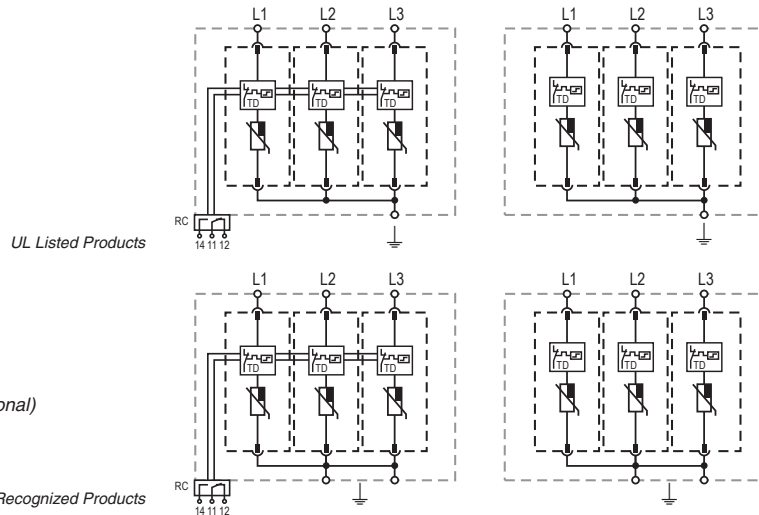
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

### ProTec T2-ADV-xxx-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	480
ProTec T2-ADV-xxx-3+0	59.0228	59.0230	59.0232	59.0234
ProTec T2-ADV-xxx-3+0-R (with remote contacts)	59.0229	59.0231	59.0233	59.0235
ProTec T2-ADV-xxx-P (plug)	59.0203	59.0204	59.0205	59.0206

### ProTec T2-ADV-xxx-3+0-US(-R)

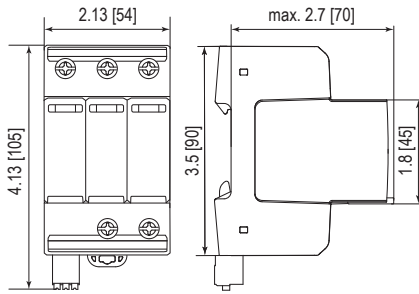
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	480
ProTec T2-ADV-xxx-3+0-US	59.B155	59.B157	59.B159	59.B161
ProTec T2-ADV-xxx-3+0-US-R (with remote contacts)	59.B156	59.B158	59.B160	59.B162
ProTec T2-ADV-xxx-P (plug)	59.0203	59.0204	59.0205	59.0206

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-3+0	150	300	350	480	
Weight	pounds	.807	.853	.886	.919
	grams	366	387	402	417

#### ProTec T2-ADV-xxx-3+0-R

Weight	pounds	.829	.875	.908	.941
	grams	376	397	412	427

#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-3+0-US	150	300	350	480	
Weight	pounds	.787	.833	.866	.899
	grams	357	378	393	408

#### ProTec T2-ADV-xxx-3+0-US-R

Weight	pounds	.809	.855	.888	.921
	grams	367	388	403	418

DIN 43880 Dimension

3 TE / 2.13" [54]

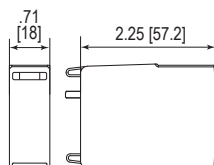
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

5 Units

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P	150	300	350	480	
Weight	pounds	.127	.143	.154	.165
	grams	58	65	70	75

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection ProTec T2-ADV 4+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-4+0(-R) & ProTec T2-ADV-xxx-4+0(-US)(-R)		150	300	350	480
<b>IEC Electrical</b>					
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 (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	1000V	1300V	1700V	2000V
Response Time	$t_A$	< 25 ns			
Overcurrent Protection (max)		160A gG			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50kA			
TOV Withstand 5s	$U_T$	229V	337V	403V	581V
TOV 120min	$U_T$	229V	442V	528V	762V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1			
<b>UL Electrical</b>					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700V	1000V	1300V	1600V
Overcurrent Protection (min)		80A gG			
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)					
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA			
Overcurrent Protection (max)		160A gG			
<b>Mechanical &amp; Environmental</b>					
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

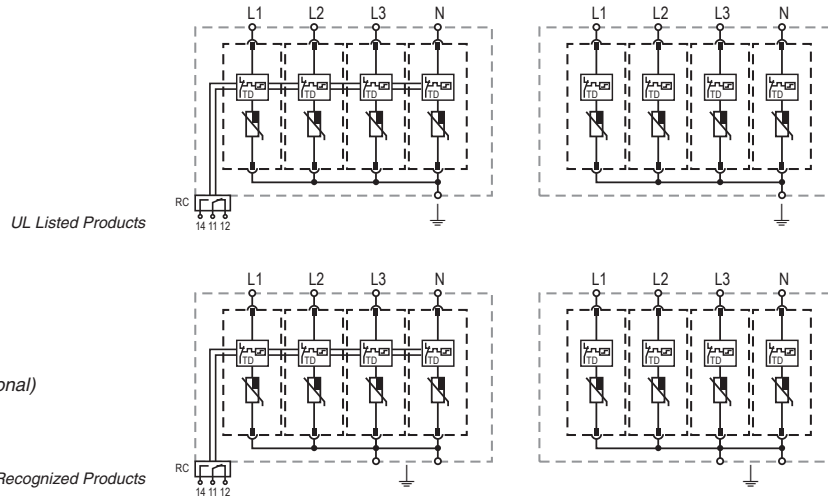
Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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





## Internal Configuration



### Legend

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

### ProTec T2-ADV-xxx-4+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	480
ProTec T2-ADV-xxx-4+0	59.0236	59.0238	59.0240	59.0242
ProTec T2-ADV-xxx-4+0-R (with remote contacts)	59.0237	59.0239	59.0241	59.0243
ProTec T2-ADV-xxx-P (plug)	59.0203	59.0204	59.0205	59.0206

### ProTec T2-ADV-xxx-4+0-US(-R)

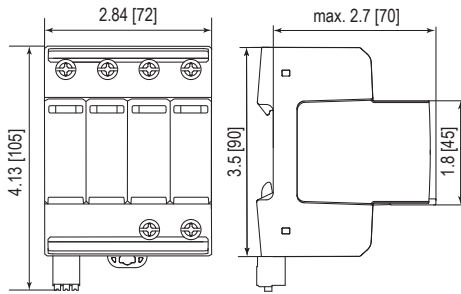
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	480
ProTec T2-ADV-xxx-4+0-US	59.B163	59.B165	59.B167	59.B169
ProTec T2-ADV-xxx-4+0-US-R (with remote contacts)	59.B164	59.B166	59.B168	59.B170
ProTec T2-ADV-xxx-P (plug)	59.0203	59.0204	59.0205	59.0206

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-4+0	150	300	350	480	
Weight	pounds	1.087	1.148	1.192	1.236
	grams	493	521	541	561

#### ProTec T2-ADV-xxx-4+0-R

Weight	pounds	1.106	1.168	1.212	1.256
	grams	502	530	550	570

#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-4+0-US	150	300	350	480	
Weight	pounds	1.067	1.128	1.172	1.216
	grams	484	512	532	552

#### ProTec T2-ADV-xxx-4+0-US-R

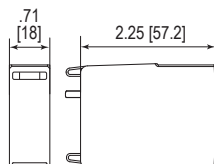
Weight	pounds	1.086	1.148	1.192	1.236
	grams	493	521	541	561

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

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P	150	300	350	480	
Weight	pounds	.127	.143	.154	.165
	grams	58	65	70	75

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection ProTec T2-ADV 1+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-1+1(-R) & ProTec T2-ADV-xxx-1+1(-US)(-R)		75	150	300	350
<b>IEC Electrical</b>					
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	75V	150V	300V	350V
	(N-PE) $U_c$	305V	305V	305V	305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 40 kA	20 kA / 40 kA	20 kA / 40 kA	20 kA / 40 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50 kA / 65 kA	50 kA / 65 kA	50 kA / 65 kA	50 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	600V / 1500V	1000V / 1500V	1300V / 1500V	1700V / 1500V
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100 A			
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns			
Overcurrent Protection (max)		160A gG			
Short-Circuit Current Rating (AC)	$I_{SCCR}$	50 kA			
TOV Withstand 5s	(L-N) $U_T$	114V	229V	337V	403V
	mode	Withstand	Withstand	Safe Fail	Safe Fail
TOV 120min	(L-N) $U_T$	114V	229V	442V	528V
	(N-PE) $U_T$	1200V			
Number of Ports		1			
<b>UL Electrical</b>					
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	75V / 305V	150V / 305V	300V / 305V	350V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	400V / 1000V	600V / 1000V	900V / 1000V	1200V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20 kA / 20 kA			
Short-Circuit Current Rating (AC)	(L-N) SCCR	100 kA	200 kA	150 kA	200 kA
<b>Additional Electrical Parameters - Standard</b> (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	400V / 305V	700V / 305V	1000V / 305V	1300V / 305V
Overcurrent Protection (min)		160A gG			
<b>Additional Electrical Parameters - Extended</b> (Additionally tested by VDE)					
Short-Circuit Current Rating (AC)	$I_{SCCR}$	100kA			
Overcurrent Protection (max)		160A gG			
<b>Mechanical &amp; Environmental</b>					
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449			
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

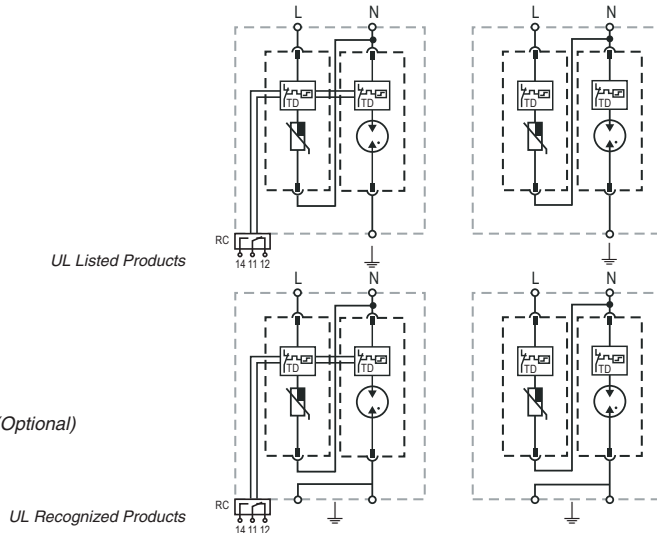
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

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



### ProTec T2-ADV-xxx-1+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350
ProTec T2-ADV-xxx-1+1	59.0244	59.0246	59.0248	59.0250
ProTec T2-ADV-xxx-1+1-R (with remote contacts)	59.0245	59.0247	59.0249	59.0251
ProTec T2-ADV-xxx-P (plug L-N)	59.0202	59.0203	59.0204	59.0205
ProTube T2-ADV-40-P (plug N-PE)	59.0275	59.0275	59.0275	59.0275

### ProTec T2-ADV-xxx-1+1-US(-R)

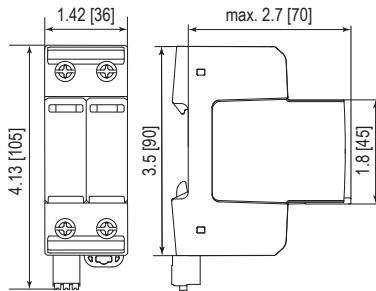
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350
ProTec T2-ADV-xxx-1+1-US	59.B171	59.B173	59.B175	59.B177
ProTec T2-ADV-xxx-1+1-US-R (with remote contacts)	59.B172	59.B174	59.B176	59.B178
ProTec T2-ADV-xxx-P (plug L-N)	59.0202	59.0203	59.0204	59.0205
ProTube T2-ADV-40-P (plug N-PE)	59.0275	59.0275	59.0275	59.0275

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-1+1	75	150	300	350
Weight	pounds .520	.529	.544	.555
	grams 236	240	247	252

#### ProTec T2-ADV-xxx-1+1-R

Weight	pounds .533	.542	.557	.568
	grams 242	246	253	258

#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-1+1-US	75	150	300	350
Weight	pounds .500	.509	.524	.535
	grams 227	231	238	243

#### ProTec T2-ADV-xxx-1+1-US-R

Weight	pounds .513	.522	.537	.548
	grams 233	237	244	249

DIN 43880 Dimension

2 TE / 1.42" [36]

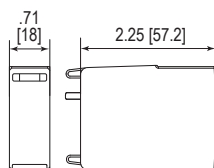
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

7 Units

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P	75	150	300	350
Weight	pounds .120	.127	.143	.154
	grams 54	58	65	70

#### ProTube T2-ADV-40-P

Weight	pounds .093			
	grams 42			

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection ProTec T2-ADV 3+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

ProTec T2-ADV-xxx-3+1(-R) & ProTec T2-ADV-xxx-3+1(-US)(-R)

300

350

### IEC Electrical

Parameter	Symbol	300	350
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	300V	350V
	(N-PE) $U_c$	305V	305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA / 40 kA	20 kA / 40 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50 kA / 65 kA	50 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1300V / 1500V	1700V / 1500V
Follow Current Interrupt Rating	(N-PE) $I_{fi}$		100 A
Response Time	(L-N)/(N-PE) $t_A$		< 25 ns / < 100 ns
Overcurrent Protection (max)			160 A gG
Short-Circuit Current Rating (AC)	$I_{SCCR}$		50 kA
TOV Withstand 5s	(L-N) $U_T$	337V	403V
	(L-N) $U_T$	442V	528V
TOV 120min	mode	Safe Fail	Safe Fail
	(N-PE) $U_T$		1200V
TOV Withstand 200ms	(N-PE) $U_T$		1200V
Number of Ports			1

### UL Electrical

Parameter	Symbol	300	350
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G) MCOV	300V / 305V	350V / 305V
Voltage Protection Rating	(L-N)/(N-G) VPR	900V / 1000V	1200V / 1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$		20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N) SCCR	150 kA	200 kA

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

Parameter	Symbol	300	350
Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N) / (N-PE) $U_{res}$	1000V / 305V	1300V / 305V
Overcurrent Protection (min)			80 A gG

### Additional Electrical Parameters - Extended (Additionally tested by VDE)

Parameter	Symbol	300	350
Short-Circuit Current Rating (AC)	$I_{SCCR}$		100 kA
Overcurrent Protection (max)			160 A gG

### Mechanical & Environmental

Parameter	Symbol	300	350
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]	
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]	

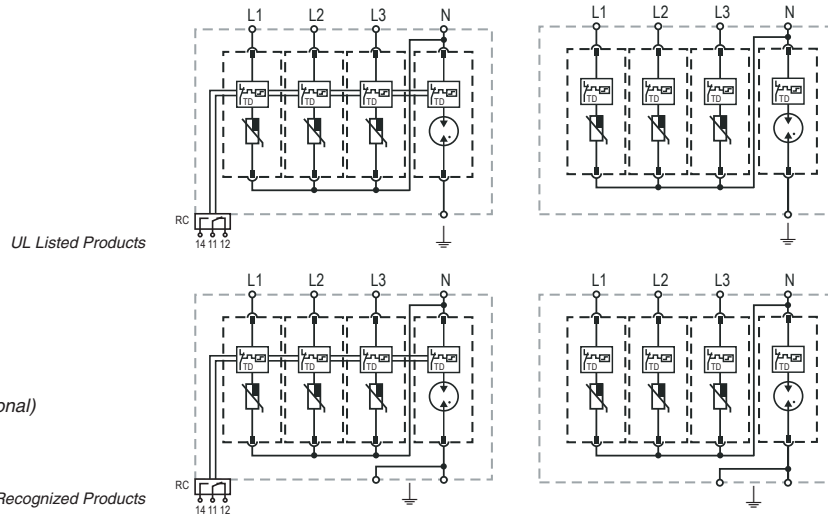
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



## Internal Configuration



### Legend

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

### ProTec T2-ADV-xxx-3+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300	350
ProTec T2-ADV-xxx-3+1	59.0256	59.0258
ProTec T2-ADV-xxx-3+1-R (with remote contacts)	59.0257	59.0259
ProTec T2-ADV-xxx-P (plug L-N)	59.0204	59.0205
ProTube T2-ADV-40-P (plug N-PE)	59.0275	59.0275

### ProTec T2-ADV-xxx-3+1-US(-R)

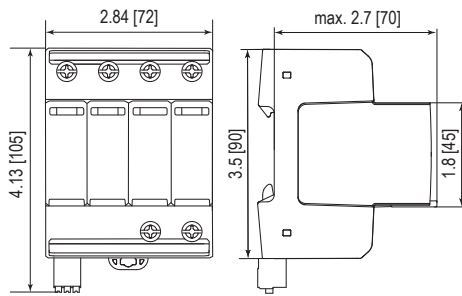
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300	350
ProTec T2-ADV-xxx-3+1-US	59.B179	59.B181
ProTec T2-ADV-xxx-3+1-US-R (with remote contacts)	59.B180	59.B182
ProTec T2-ADV-xxx-P (plug L-N)	59.0204	59.0205
ProTube T2-ADV-40-P (plug N-PE)	59.0275	59.0275

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

ProTec T2-ADV-xxx-3+1		300	350
Weight	pounds	1.080	1.113
	grams	490	505

ProTec T2-ADV-xxx-3+1-R		300	350
Weight	pounds	1.100	1.133
	grams	499	514

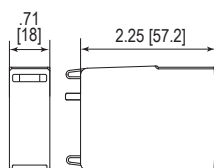
#### Complete Unit UL Listed Products

ProTec T2-ADV-xxx-3+1-US		300	350
Weight	pounds	1.060	1.093
	grams	481	496

ProTec T2-ADV-xxx-3+1-US-R		300	350
Weight	pounds	1.080	1.113
	grams	490	505

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

## Spare Plug



#### Single Unit Dimensions & Packaging

ProTec T2-ADV-xxx-P		300	350
Weight	pounds	.143	.154
	grams	65	70

ProTube T2-ADV-40-P		40
Weight	pounds	.093
	grams	42

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

## Notes



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



### Overvoltage Protection

#### SafeTec T2

##### Special features:

- High temporary overvoltage (TOV) immunity
- High maximum discharge current capacity ( $I_{max}$ ) of 50kA
- State-of-the-art thermal disconnecter
- Continuous power to the equipment at end-of-life (EOL)
- AC current up to 880V
- Back-up fuse up to 315A gG
- Short circuit current rating up to 50kA
- Vibration and shock withstand capability
- All modules, including N-PE with operating state green-red
- Optional remote contact (RC) signaling
- Thermal control (TC) technology



Temporary overvoltages (TOV) are by far the most frequent cause of arrester failure by abnormal overvoltages of the power network (50/60 Hz) with significant duration and amplitude. The SafeTec product family is a reliable solution for all transient overvoltages. This multi-purpose single pole arrester features the industry's widest range and an unprecedented level of integration, enabling power systems to have improved surge protection, simplified designs and lower overall costs. The thermal control (TC) technology function prolongs the lifespan of the SPDs, enables TOV immunity and provides low protection level, all at the same dimensions as conventional protective devices. The universal features of SafeTec make the technology suitable for protection of electrical devices caused switching operations that originate from the internal power system. In addition to the visual mechanical indicator, the optional remote contact (RC) features a three-pole remote signaling terminal enabling remote monitoring of the operating state of the device.



More Product Information



# Overtoltage Protection SafeTec T2 1+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-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 II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

SafeTec T2-xxx-1+0(-R) & SafeTec T2-xxx-1+0-US(-R)		75	150	300	350	480	550	750	880
<b>IEC Electrical</b>									
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	400V	400V	600V	600V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	480V	550V	750V	880V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	35 kA	35 kA
Voltage Protection Level	$U_p$	800V	1250V	1650V	1750V	2300V	2500V	3500V	3600V
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 120min	$U_T$	150V	255V	442V	529V	762V	918V	1200V	1250V
Number of Ports		1							
<b>UL Electrical</b>									
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	550V	750V	880V
Voltage Protection Rating	VPR	600V	700V	1200V	1200V	1500V	1800V	2500V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	85 kA	200 kA	150 kA	200 kA	200 kA	200 kA	200 kA	200 kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)									
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	750V	1000V	1300V	1600V	1900V	2700V	2800V
Overcurrent Protection (min)		80 A gG							
<b>Mechanical &amp; Environmental</b>									
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]							
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]							

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.





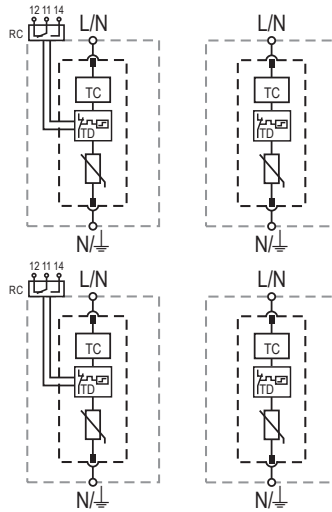
## Internal Configuration

### Legend

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

UL Listed Products

UL Recognized Products



### SafeTec T2-xxx-1+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	480	550	750	880
SafeTec T2-xxx-1+0	59.0132	59.0134	59.0136	59.0138	59.0140	59.0142	59.0144	59.0146
SafeTec T2-xxx-1+0-R (with remote contacts)	59.0133	59.0135	59.0137	59.0139	59.0141	59.0143	59.0145	59.0147
SafeTec T2-xxx-P (plug)	59.0125	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

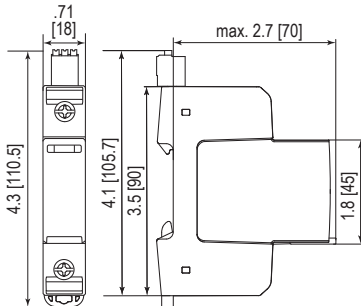
### SafeTec T2-xxx-1+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	480	550	750	880
SafeTec T2-xxx-1+0-US	59.B183	59.B185	59.B187	59.B189	59.B191	59.B193	59.B195	59.B197
SafeTec T2-xxx-1+0-US-R (with remote contacts)	59.B184	59.B186	59.B188	59.B190	59.B192	59.B194	59.B196	59.B198
SafeTec T2-xxx-P (plug)	59.0125	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

SafeTec T2-xxx-1+0	75	150	300	350	480	550	750	880
Weight								
	pounds	.279	.290	.297	.314	.317	.328	.345
	grams	127	132	135	143	144	149	159

#### SafeTec T2-xxx-1+0-R

Weight								
	pounds	.295	.306	.312	.330	.332	.343	.361
	grams	134	139	142	150	151	156	166

#### Complete Unit UL Listed Products

SafeTec T2-xxx-1+0-US	75	150	300	350	480	550	750	880
Weight								
	pounds	.279	.290	.297	.314	.317	.328	.345
	grams	127	132	135	143	144	149	159

#### SafeTec T2-xxx-1+0-US-R

Weight								
	pounds	.295	.306	.312	.330	.332	.343	.361
	grams	134	139	142	150	151	156	166

DIN 43880 Dimension

1 TE / .71" [18]

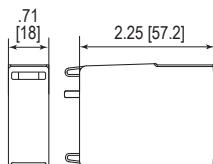
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

12 Units

## Spare Plug



#### Single Unit

SafeTec T2-xxx-P	75	150	300	350	480	550	750	880
Weight								
	pounds	.128	.139	.146	.163	.165	.176	.198
	grams	58	63	66	74	75	80	90

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection SafeTec T2 2+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

SafeTec T2-xxx-2+0(-R) & SafeTec T2-xxx-2+0-US(-R)		75	150	300	350	480	550	750	880
<b>IEC Electrical</b>									
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60V	120V	240V	277V	400V	400V	600V	600V
Maximum Continuous Operating Voltage (AC)	$U_c$	75V	150V	300V	350V	480V	550V	750V	880V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA	35 kA	35 kA
Voltage Protection Level	$U_p$	800V	1250V	1650V	1750V	2300V	2500V	3500V	3600V
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 120min	$U_T$	150V	255V	442V	529V	762V	918V	1200V	1250V
Number of Ports		1							
<b>UL Electrical</b>									
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	550V	750V	880V
Voltage Protection Rating	VPR	600V	700V	1200V	1200V	1500V	1800V	2500V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	85 kA	200 kA	150 kA	200 kA	200 kA	200 kA	200 kA	200 kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)									
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	400V	750V	1000V	1300V	1600V	1900V	2700V	2800V
Overcurrent Protection (min)		80 A gG							
<b>Mechanical &amp; Environmental</b>									
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]							
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]							

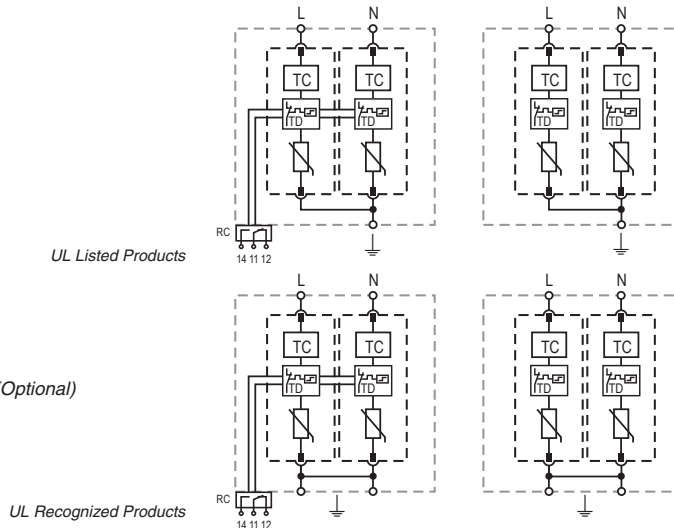
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TC Thermal Control Function
- TD Thermal Disconnect



### SafeTec T2-xxx-2+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350	480	550	750	880
SafeTec T2-xxx-2+0	59.0345	59.0148	59.0150	59.0152	59.0154	59.0156	59.0158	59.0160
SafeTec T2-xxx-2+0-R (with remote contacts)	59.0346	59.0149	59.0151	59.0153	59.0155	59.0157	59.0159	59.0161
SafeTec T2-xxx-P (plug)	59.0125	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

### SafeTec T2-xxx-2+0-US(-R)

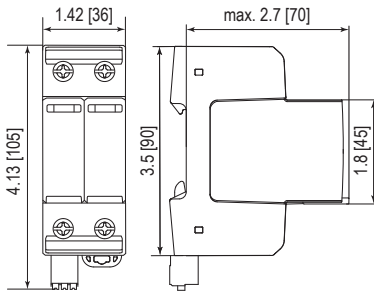
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350	480	550	750	880
SafeTec T2-xxx-2+0-US	59.B199	59.B201	59.B203	59.B205	59.B207	59.B209	59.B211	59.B213
SafeTec T2-xxx-2+0-US-R (with remote contacts)	59.B200	59.B202	59.B204	59.B206	59.B208	59.B210	59.B212	59.B214
SafeTec T2-xxx-P (plug)	59.0125	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

SafeTec T2-xxx-2+0	75	150	300	350	480	550	750	880	
Weight	pounds	.565	.587	.600	.636	.640	.662	.697	.706
	grams	256	266	272	288	290	300	316	320

#### SafeTecT2-xxx-2+0-R

Weight	pounds	.585	.607	.620	.655	.660	.682	.717	.726
	grams	265	275	281	297	299	309	325	329

#### Complete Unit UL Listed Products

SafeTec T2-xxx-2+0-US	75	150	300	350	480	550	750	880	
Weight	pounds	.545	.567	.580	.616	.620	.642	.677	.686
	grams	247	257	263	279	281	291	307	311

#### SafeTecT2-xxx-2+0-US-R

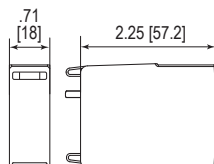
Weight	pounds	.565	.587	.600	.635	.640	.662	.697	.706
	grams	256	266	272	288	290	300	316	320

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



#### Single Unit

SafeTec T2-xxx-P	75	150	300	350	480	550	750	880	
Weight	pounds	.128	.139	.146	.163	.165	.176	.194	.198
	grams	58	63	66	74	75	80	88	90

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection SafeTec T2 3+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-distribution Boards  
 Network Systems: TN-C  
 Mode of Protection: L-PEN  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

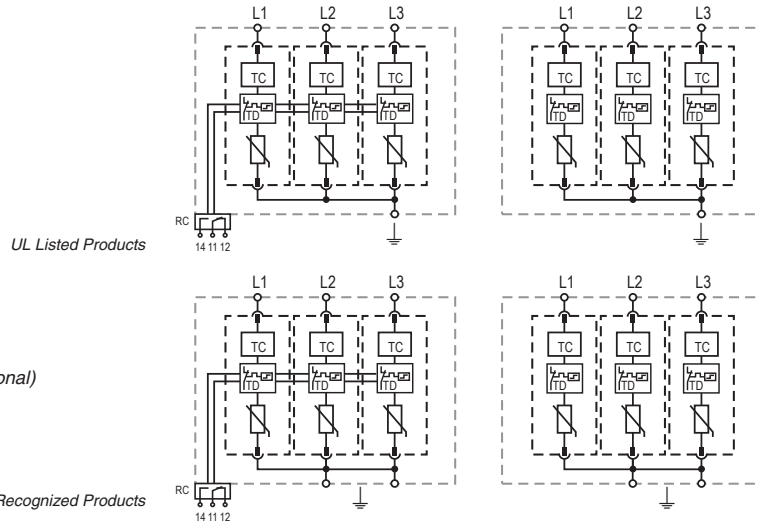
## Technical Data

SafeTec T2-xxx-3+0(-R) & SafeTec T2-xxx-3+0-US(-R)		150	300	350	480	550	750	880
<b>IEC Electrical</b>								
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	120 V	240 V	277 V	400 V	400 V	600 V	600 V
Maximum Continuous Operating Voltage (AC)	$U_c$	150 V	300 V	350 V	480 V	550 V	750 V	880 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	50 kA	50 kA	35 kA	35 kA
Voltage Protection Level	$U_p$	1250 V	1650 V	1750 V	2300 V	2500 V	3500 V	3600 V
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 120min	$U_T$	255 V	442 V	529 V	762 V	918 V	1200 V	1250 V
Number of Ports		1						
<b>UL Electrical</b>								
Maximum Continuous Operating Voltage (AC)	MCOV	150 V	300 V	350 V	480 V	550 V	750 V	880 V
Voltage Protection Rating	VPR	700 V	1200 V	1200 V	1500 V	1800 V	2500 V	2500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
Short-Circuit Current Rating (AC)	SCCR	200 kA	150 kA	200 kA	200 kA	200 kA	200 kA	200 kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)								
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	750 V	1000 V	1300 V	1600 V	1900 V	2700 V	2800 V
Overcurrent Protection (min)		80 A gG						
<b>Mechanical &amp; Environmental</b>								
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]						
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]						

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration



### Legend

- L Line Conductor Terminal
- ⏏ PEN/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TC Thermal Control Function
- TD Thermal Disconnecter

### SafeTec T2-xxx-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	480	550	750	880
SafeTec T2-xxx-3+0	59.0162	59.0164	59.0166	59.0168	59.0170	59.0172	59.0174
SafeTec T2-xxx-3+0-R (with remote contacts)	59.0163	59.0165	59.0167	59.0169	59.0171	59.0173	59.0175
SafeTec T2-xxx-P (plug)	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

### SafeTec T2-xxx-3+0-US(-R)

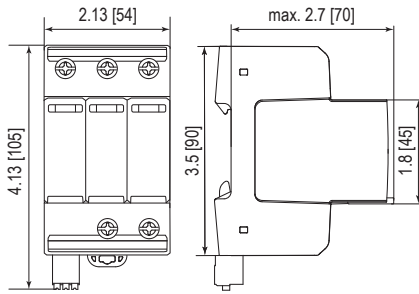
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	480	550	750	880
SafeTec T2-xxx-3+0-US	59.B215	59.B217	59.B219	59.B221	59.B223	59.B225	59.B227
SafeTec T2-xxx-3+0-US-R (with remote contacts)	59.B216	59.B218	59.B220	59.B222	59.B224	59.B226	59.B228
SafeTec T2-xxx-P (plug)	59.0126	59.0127	59.0128	59.0129	59.0299	59.0130	59.0131

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

SafeTec T2-xxx-3+0	150	300	350	480	550	750	880	
Weight	pounds	.846	.866	.919	.926	.959	1.012	1.025
	grams	384	393	417	420	435	459	465

#### SafeTecT2-xxx-3+0-R

Weight	pounds	.866	.886	.939	.946	.979	1.031	1.045
	grams	393	402	426	429	444	468	474

#### Complete Unit UL Listed Products

SafeTec T2-xxx-3+0-US	150	300	350	480	550	750	880	
Weight	pounds	.826	.846	.899	.906	.939	.992	1.005
	grams	375	384	408	411	426	450	456

#### SafeTecT2-xxx-3+0-US-R

Weight	pounds	.846	.866	.919	.926	.959	1.011	1.025
	grams	384	393	417	420	435	459	465

DIN 43880 Dimension

3 TE / 2.13" [54]

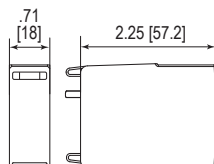
Packaging Dimensions (HxWxL)

4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]

Standard Order Quantity

5 Units

## Spare Plug



#### Single Unit

SafeTec T2-xxx-P	150	300	350	480	550	750	880	
Weight	pounds	.139	.146	.163	.165	.176	.194	.198
	grams	63	66	74	75	80	88	90

DIN 43880 Dimension

1 TE / .71" [18]

Packaging Dimensions (HxWxL)

3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity

24 Units

# Overvoltage Protection SafeTec T2 4+0

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

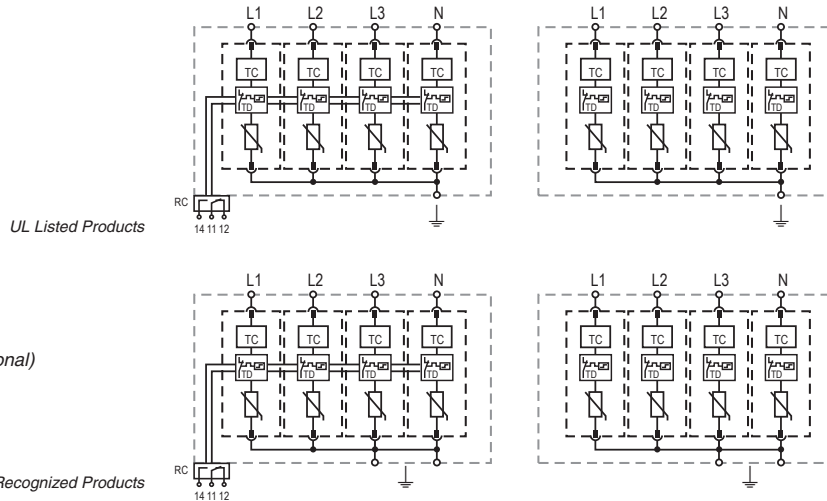
## Technical Data

SafeTec T2-xxx-4+0(-R) & SafeTec T2-xxx-4+0-US(-R)		150	300	350	480	550
<b>IEC Electrical</b>						
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	120V	240V	277V	400V	400V
Maximum Continuous Operating Voltage (AC)	$U_c$	150V	300V	350V	480V	550V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	$U_p$	1250V	1650V	1750V	2300V	2500V
Response Time	$t_A$			< 25 ns		
Overcurrent Protection (max)				315 A/250 A gG		
Short-Circuit Current Rating (AC)	$I_{SCCR}$			25kA/50kA		
TOV Withstand 120min	$U_T$	255V	442V	529V	762V	918V
Number of Ports				1		
<b>UL Electrical</b>						
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V	550V
Voltage Protection Rating	VPR	700V	1200V	1200V	1500V	1800V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA	200kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)						
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	750V	1000V	1300V	1600V	1900V
Overcurrent Protection (min)				80 A gG		
<b>Mechanical &amp; Environmental</b>						
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]				
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]				

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration



### Legend

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

### SafeTec T2-xxx-4+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	150	300	350	480	550
SafeTec T2-xxx-4+0	59.0176	59.0178	59.0180	59.0182	59.0184
SafeTec T2-xxx-4+0-R (with remote contacts)	59.0177	59.0179	59.0181	59.0183	59.0185
SafeTec T2-xxx-P (plug)	59.0126	59.0127	59.0128	59.0129	59.0299

### SafeTec T2-xxx-4+0-US(-R)

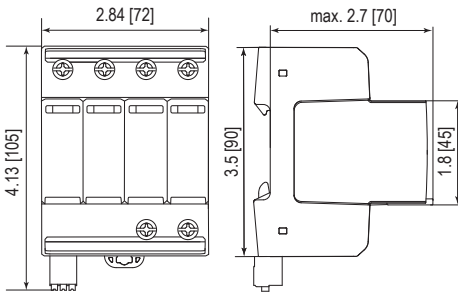
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	150	300	350	480	550
SafeTec T2-xxx-4+0-US	59.B229	59.B231	59.B233	59.B235	59.B237
SafeTec T2-xxx-4+0-US-R (with remote contacts)	59.B230	59.B232	59.B234	59.B236	59.B238
SafeTec T2-xxx-P (plug)	59.0126	59.0127	59.0128	59.0129	59.0299

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

SafeTec T2-xxx-4+0	150	300	350	480	550	
Weight	pounds	1.070	1.097	1.167	1.1756	1.220
	grams	485	497	529	533	553

#### SafeTec T2-xxx-4+0-R

Weight	pounds	1.090	1.117	1.187	1.196	1.240
	grams	494	506	538	542	562

#### Complete Unit UL Listed Products

SafeTec T2-xxx-4+0-US	150	300	350	480	550	
Weight	pounds	1.050	1.077	1.147	1.156	1.200
	grams	476	488	520	524	544

#### SafeTec T2-xxx-4+0-US-R

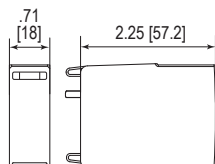
Weight	pounds	1.070	1.097	1.167	1.176	1.220
	grams	485	497	529	533	553

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

## Spare Plug



#### Single Unit

SafeTec T2-xxx-P	150	300	350	480	550	
Weight	pounds	.139	.146	.163	.165	.176
	grams	63	66	74	75	80

DIN 43880 Dimension 1 TE / .71" [18]

Packaging Dimensions (HxWxL) 3.2 x 4.5 x 12" [83 x 116 x 305 mm]

Standard Order Quantity 24 Units

# Overvoltage Protection SafeTec T2 1+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

SafeTec T2-xxx-1+1(-R) & SafeTec T2-xxx-1+1-US(-R)		75	150	300	350
<b>IEC Electrical</b>					
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	60 V	120 V	240 V	277 V
Maximum Continuous Operating Voltage (AC)	(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 $\mu$ s)	(L-N)/(N-PE) $I_n$	20 kA/40 kA	20 kA/40 kA	20 kA/40 kA	20 kA/40 kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50 kA/65 kA	50 kA/65 kA	50 kA/65 kA	50 kA/65 kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	800 V/1500 V	1250 V/1500 V	1650 V/1500 V	1750 V/1500 V
Follow Current Interrupt Rating	(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 120min	(L-N) $U_T$	150 V	255 V	442 V	529 V
TOV Withstand 200ms	(N-PE) $U_T$	1200 V			
Number of Ports		1			
<b>UL Electrical</b>					
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	600 V/1000 V	700 V/1000 V	1200 V/1000 V	1200 V/1000 V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-G) $I_n$	20 kA/20 kA			
Short-Circuit Current Rating (AC)	(L-N) SCCR	85 kA	200 kA	150 kA	200 kA
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)					
Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N)/(N-PE) $U_{res}$	400 V/305 V	750 V/305 V	1000 V/305 V	1300 V/305 V
Overcurrent Protection (min)		80 A gG			
<b>Mechanical &amp; Environmental</b>					
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449			
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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

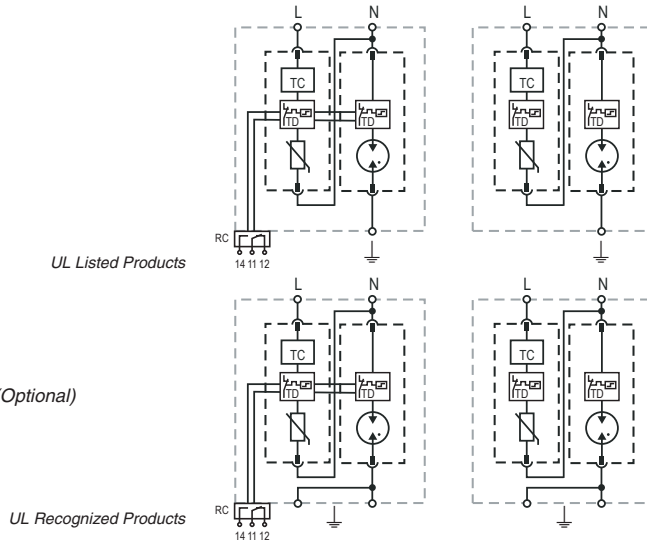




## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TC Thermal Control Function
- TD Thermal Disconnect



### SafeTec T2-xxx-1+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	75	150	300	350
SafeTec T2-xxx-1+1	59.0186	59.0188	59.0190	59.0192
SafeTec T2-xxx-1+1-R (with remote contacts)	59.0187	59.0189	59.0191	59.0193
SafeTec T2-xxx-P (plug L-N)	59.0125	59.0126	59.0127	59.0128
SafeTube T2-40-P (plug N-PE)	59.0274	59.0274	59.0274	59.0274

### SafeTec T2-xxx-1+1-US(-R)

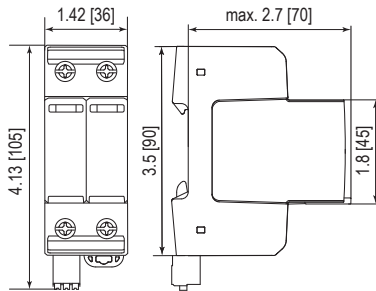
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	75	150	300	350
SafeTec T2-xxx-1+1-US	59.B239	59.B241	59.B243	59.B245
SafeTec T2-xxx-1+1-US-R (with remote contacts)	59.B240	59.B242	59.B244	59.B246
SafeTec T2-xxx-P (plug L-N)	59.0125	59.0126	59.0127	59.0128
SafeTube T2-40-P (plug N-PE)	59.0274	59.0274	59.0274	59.0274

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

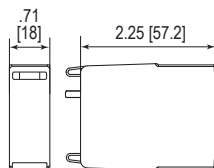
SafeTec T2-xxx-1+1	75	150	300	350
Weight				
	pounds	.552	.563	.569
	grams	250	255	258
SafeTec T2-xxx-1+1-R				
Weight				
	pounds	.561	.572	.578
	grams	254	259	262

#### Complete Unit UL Listed Products

SafeTec T2-xxx-1+1-US	75	150	300	350
Weight				
	pounds	.532	.543	.549
	grams	241	246	249
SafeTec T2-xxx-1+1-US-R				
Weight				
	pounds	.541	.552	.558
	grams	245	250	253

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



#### Single Unit

SafeTec T2-xxx-P	75	150	300	350
Weight				
	pounds	.128	.139	.146
	grams	58	63	66
SafeTube T2-40-P			40	
Weight				
	pounds		.093	
	grams		42	

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection SafeTec T2 3+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Safety: Current Limiting Technology  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

SafeTec T2-xxx-3+1(-R) & SafeTec T2-xxx-3+1-US(-R)

300

350

### IEC Electrical

Parameter	Symbol	300	350
Nominal AC Voltage (50/60Hz)	$U_o/U_n$	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	300V	350V
	(N-PE) $U_c$	305V	305V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	20kA/40kA	20kA/40kA
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	50kA/65kA	50kA/65kA
Voltage Protection Level	(L-N)/(N-PE) $U_p$	1650V/1500V	1750V/1500V
Follow Current Interrupt Rating	(N-PE) $I_{fi}$		100A
Response Time	(L-N)/(N-PE) $t_A$		< 25 ns / < 100 ns
Overcurrent Protection (max)			315A/250A gG
Short-Circuit Current Rating (AC)	(L-N) $I_{SCCR}$		25kA/50kA
TOV Withstand 120min	(L-N) $U_T$	442V	529V
TOV Withstand 200ms	(N-PE) $U_T$		1200V
Number of Ports			1

### UL Electrical

Parameter	Symbol	300	350
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE) MCOV	300V/305V	350V/305V
Voltage Protection Rating	(L-N)/(N-PE) VPR	1200V/1000V	1200V/1000V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$		20kA/20kA
Short-Circuit Current Rating (AC)	(L-N) SCCR	150kA	200kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(L-N)/(N-PE) $U_{res}$	1000V/305V	1300V/305V
Overcurrent Protection (min)			80A 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]	
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]	

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

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



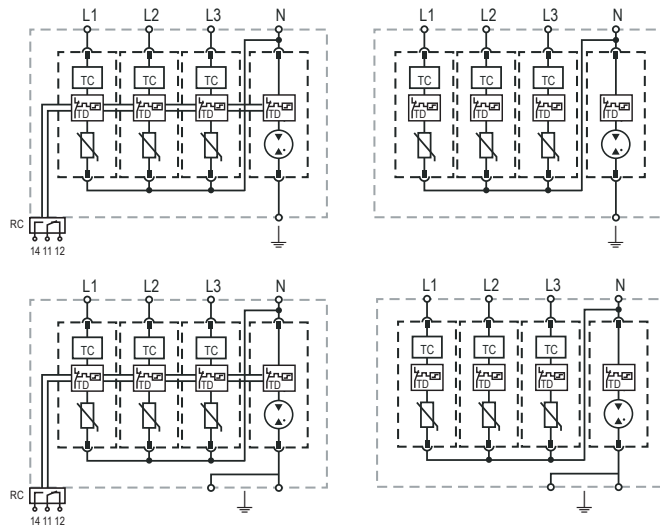
## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TC Thermal Control Function
- TD Thermal Disconnect

UL Listed Products

UL Recognized Products



### SafeTec T2-xxx-3+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	300	350
SafeTec T2-xxx-3+1	59.0198	59.0200
SafeTec T2-xxx-3+1-R (with remote contacts)	59.0199	59.0201
SafeTec T2-xxx-P (plug L-N)	59.0127	59.0128
SafeTube T2-40-P (plug N-PE)	59.0274	59.0274

### SafeTec T2-xxx-3+1-US(-R)

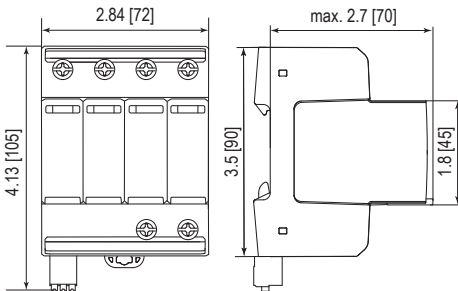
For UL Listed products one PE/G Conductor Terminal is covered/closed.

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	300	350
SafeTec T2-xxx-3+1-US	59.B247	59.B249
SafeTec T2-xxx-3+1-US-R (with remote contacts)	59.B248	59.B250
SafeTec T2-xxx-P (plug L-N)	59.0127	59.0128
SafeTube T2-40-P (plug N-PE)	59.0274	59.0274

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

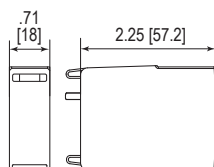
SafeTec T2-xxx-3+1		300	350
Weight	pounds	1.066	1.119
	grams	483	507
SafeTec T2-xxx-3+1-R			
Weight	pounds	1.077	1.130
	grams	488	512

#### Complete Unit UL Listed Products

SafeTec T2-xxx-3+1-US		300	350
Weight	pounds	1.046	1.099
	grams	474	498
SafeTec T2-xxx-3+1-US-R			
Weight	pounds	1.057	1.110
	grams	479	503

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

## Spare Plug



#### Single Unit

SafeTec T2-xxx-P		300	350
Weight	pounds	.146	.163
	grams	66	74
SafeTube T2-40-P		40	
Weight	pounds	.093	
	grams	42	

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Overvoltage Protection SafeTube T2 40 0+1

Class II • Type 2 • Type 1CA • Open Type 1 SPD Listed



Location of Use: Sub-Distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: N-PE  
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA,  
 Open Type 1 SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

SafeTube T2-xx 0+1(-R) & SafeTube T2-xx 0+1-US(-R)

40

### IEC Electrical

Maximum Continuous Operating Voltage	$U_c$	305V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	65 kA
Voltage Protection Level	$U_p$	1500V
Follow Current Interrupt Rating	$I_{fi}$	100 A
Response Time	$t_A$	< 100 ns
TOV Withstand 200ms	$U_T$	1200 V
Number of Ports		1

### UL Electrical

Maximum Continuous Operating Voltage (AC)	MCOV	305V
Voltage Protection Rating(N)	VPR	1000V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	305V
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### 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



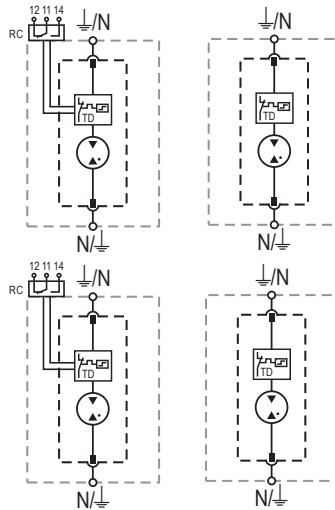
## Internal Configuration

### Legend

- N Neutral Conductor Terminal
- PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TC Thermal Control Function
- TD Thermal Disconnect

UL Listed Products

UL Recognized Products



### SafeTube T2-xx 0+1(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	40
SafeTube T2-xxx-0+1	59.0281
SafeTube T2-xxx-0+1-R (with remote contacts)	59.0337
SafeTube T2-40-P (plug)	59.0274

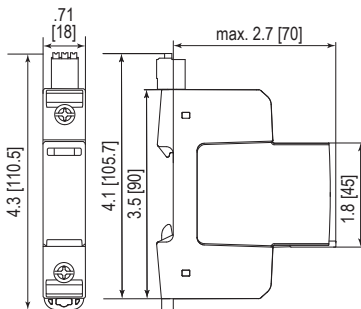
### SafeTube T2-xx 0+1-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	40
SafeTube T2-xxx-0+1-US	59.B251
SafeTube T2-xxx-0+1-US-R (with remote contacts)	59.B252
SafeTube T2-40-P (plug)	59.0274

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

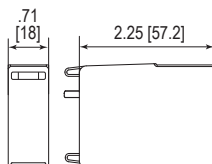
SafeTube T2-xxx-0+1		40
Weight	pounds	.244
	grams	111
SafeTube T2-xxx-0+1-R		
Weight	pounds	.259
	grams	118

#### Complete Unit UL Listed Products

SafeTube T2-xxx-0+1-US		40
Weight	pounds	.244
	grams	111
SafeTube T2-xxx-0+1-US-R		
Weight	pounds	.259
	grams	118

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

## Spare Plug



#### Single Unit

SafeTube T2-40-P		40
Weight	pounds	.093
	grams	42
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	

# Notes



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

Overvoltage Protection

### ProTec T2-CM-L-E

#### Special features:

- Pluggable design with 9mm size per pole
- Type 2 and high rated Type 3 SPD
- Available in operating voltages 275V and 440V
- Short-circuit current rating up to 25kA
- Discharge capacity I<sub>max</sub> up to 10kA (L-N) and 20kA (N-PE)
- All modules including N-PE with operating state green-red
- Optional remote contact (RC) signaling



IEC 61643-11:2011



EN 61643-11:2012+A11:2018



ProTec T2-CM-E offers basic protection as a Type 2 and high rated Type 3 surge protective device (SPD) for operating voltages ( $U_c$ ) 275V and 440V. The varistor-based protection modules feature outstanding short-circuit current up to 25kA which is one of the highest among the products of this range, and therefore, gives more installation flexibility. All modules are equipped with a state-of-the-art thermal disconnecter and life-status green-red monitoring indicators for each mode of protection – in this case, two indicators per plug. Beside the visual mechanical indicator, optional remote contacts (RC) feature a three-pole remote signalling terminal, which enables remote monitoring of the operating state of the device. This space saving solution can be used in all sub-distribution boards, AC EV charger applications, and many others.



More Product Information

RoHS  
COMPLIANT  CE

Pluggable Multi-pole SPD  
**ProTec T2-CM-2+0-L-E(-R)**  
 Class II • Class III • Type 2 • Type 3



Location of Use: Sub-distribution Boards  
 Network Systems: TN-S, TN-C, IT\* (only 440)  
 Mode of Protection: L-PE, L-PEN, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

ProTec T2-CM-xxx-2+0-L-E(-R)		275	440
<b>Electrical</b>			
Nominal AC Voltage (50/60 Hz)	$U_o$	230V	230V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$		10 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$		20 kA
Voltage Protection Level for Type 2+3	$U_p$	1200V	1700V
Voltage Protection Level for Type 3 only	$U_p$	1000V	1400V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$		6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$		3 kA
Response Time	$t_A$		< 25 ns
Overcurrent Protection (max)			100 A gG
Short-Circuit Current Rating	$I_{SCCR}$		25 kA
TOV Withstand 5 s	$U_T$	335V	440V
TOV 120 min	$U_T / mode$	440V / Safe Fail	440V / Withstand
Number of Ports			1
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V	1500V
Overcurrent Protection (min)			40 A gG
<b>Mechanical &amp; Environmental</b>			
Temperature Range	$T_a$		-40 °C to +85 °C
Permissible Humidity	RH		5%...95%
Altitude (max)			6562 ft [2000 m]
Terminal Screw Torque	(L, N) $M_{max}$		10 lbf-in [1.2 Nm]
	(PE) $M_{max}$		17 lbf-in [2.0 Nm]
Conductor Cross Section (max)	(L, N)		8 AWG (Solid, Stranded) / 10 AWG (Flexible) 10 mm <sup>2</sup> (Solid, Stranded) / 6 mm <sup>2</sup> (Flexible)
	(PE)		2 AWG (Solid, Stranded) / 4 AWG (Flexible) 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Thermal Protection			Yes
Fault Indication			Red Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250/0.5A; DC: 60V/0.1A
RC Terminal Cross Section (max)			13 AWG [1.5 mm <sup>2</sup> ]
RC Terminal Screw Torque	$M_{max}$		3.5 lbf-in [0.4 Nm]

\*Only applicable for SPD with  $U_c$  440V to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

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

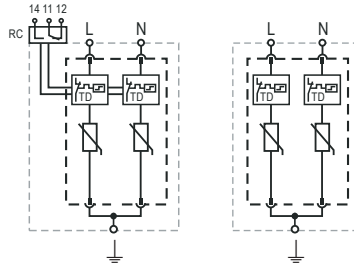




## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- PE PE Conductor Terminal
- RC Remote Contacts Terminal
- TD Thermal Disconnect

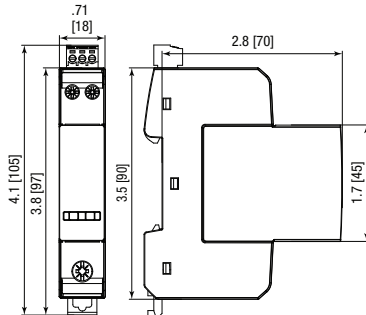


### ProTec T2-CM-xxx-2+0-L-E(-R)

#### Order Information

Order Code	275	440
ProTec T2-CM-xxx-2+0-L-E	515 599	515 601
ProTec T2-CM-xxx-2+0-L-E-R (with remote contact)	515 600	515 602
ProTec T2-CM-xxx-L-E-P (plug)	515 667	515 668

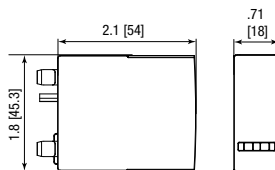
## Dimensions & Packaging



#### Complete Unit

ProTec T2-CM-xxx-2+0-L-E		275	440
Weight	pounds [grams]	.334 [152]	.352 [160]
ProTec T2-CM-xxx-2+0-L-E-R			
Weight	pounds [grams]	.345 [157]	.363 [165]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H x W x L)		3.2 x 1.7 x 4.6" [83.5 x 44 x 117 mm]	
Standard Order Quantity		15 Units	

## Spare plug



#### Single Unit

ProTec T2-CM-xxx-L-E-P		275	440
Weight	pounds [grams]	.173 [78.5]	.190 [86.5]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H x W x L)		2.5 x 1.8 x 8.7" [64 x 45 x 220 mm]	
Standard Order Quantity		24 Units	

Pluggable Multi-pole SPD  
**ProTec T2-CM-3+0-L-E(-R)**  
 Class II • Class III • Type 2 • Type 3



Location of Use: Sub-distribution Boards  
 Network Systems: TN-C, IT\* (only 440)  
 Mode of Protection: L-PEN  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

**ProTec T2-CM-xxx-3+0-L-E(-R)**

**275**

**440**

**Electrical**

Nominal AC Voltage (50/60 Hz)	$U_o$	230V	230V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$		10 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$		20 kA
Voltage Protection Level for Type 2+3	$U_p$	1200V	1700V
Voltage Protection Level for Type 3 only	$U_p$	1000V	1400V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$		6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$		3 kA
Response Time	$t_A$		< 25 ns
Overcurrent Protection (max)			100 A gG
Short-Circuit Current Rating	$I_{SCCR}$		25 kA
TOV Withstand 5 s	$U_T$	335V	440V
TOV 120 min	$U_T / mode$	440V / Safe Fail	440V / Withstand
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V	1500V
Overcurrent Protection (min)			40 A gG

**Mechanical & Environmental**

Temperature Range	$T_a$	-40 °C to +85 °C	
Permissible Humidity	RH	5%...95%	
Altitude (max)		6562 ft [2000 m]	
Terminal Screw Torque	(L) $M_{max}$	10 lbf-in [1.2 Nm]	
	(PEN) $M_{max}$	17 lbf-in [2.0 Nm]	
Conductor Cross Section (max)	(L)	8 AWG (Solid, Stranded) / 10 AWG (Flexible)	
		10 mm <sup>2</sup> (Solid, Stranded) / 6 mm <sup>2</sup> (Flexible)	
	(PEN)	2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Thermal Protection		Yes	
Fault Indication		Red Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250/0.5A; DC: 60V/0.1A	
RC Terminal Cross Section (max)		13 AWG [1.5 mm <sup>2</sup> ]	
RC Terminal Screw Torque	$M_{max}$	3.5 lbf-in [0.4 Nm]	

\*Only applicable for SPD with  $U_c$  440V to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

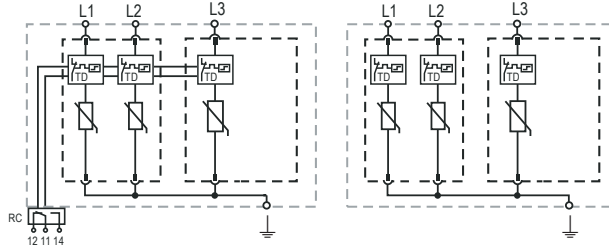
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

L	Line Conductor Terminal
N	Neutral Conductor Terminal
	PEN Conductor Terminal
RC	Remote Contacts Terminal
TD	Thermal Disconnect

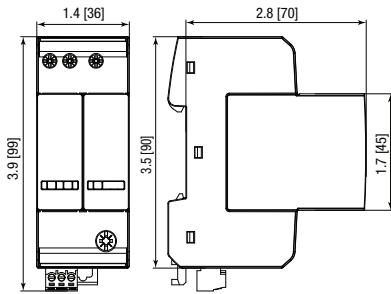


### ProTec T2-CM-xxx-3+0-L-E(-R)

#### Order Information

Order Code	275	440
ProTec T2-CM-xxx-3+0-L-E	515 700	515 703
ProTec T2-CM-xxx-3+0-L-E-R (with remote contact)	515 701	515 704
ProTec T2-CM-xxx-L-E-P (plug)	515 667	515 668
ProTec T2-CM-xxx-L-E-01-P (L3-PEN plug)	515 702	515 705

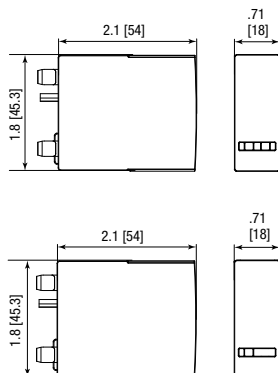
## Dimensions & Packaging



#### Complete Unit

ProTec T2-CM-xxx-3+0-L-E		275
Weight	pounds [grams]	.535 [242]
ProTec T2-CM-xxx-3+0-L-E-R		275
Weight	pounds [grams]	.549 [249]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		3.2 x 1.7 x 4.6" [83.5 x 44 x 117 mm]
Standard Order Quantity		8 Units

## Spare plug



#### Single Unit

ProTec T2-CM-xxx-L-E-P		275
Weight	pounds [grams]	.173 [78.5]
ProTec T2-CM-xxx-L-E-01-P		275
Weight	pounds [grams]	.095 [43]
DIN 43880 Dimension		1 TE / .70" [18 mm]
Packaging Dimensions (H x W x L)		2.5 x 1.8 x 8.7" [64 x 45 x 220 mm]
Standard Order Quantity		24 Units

Pluggable Multi-pole SPD  
**ProTec T2-CM-4+0-L-E(-R)**  
 Class II • Class III • Type 2 • Type 3



Location of Use: Sub-distribution Boards  
 Network Systems: TN-S, TN-C, IT\* (only 440)  
 Mode of Protection: L-PE, L-PEN, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

**ProTec T2-CM-xxx-4+0-L-E(-R)**

**275**

**440**

**Electrical**

		275	440
Nominal AC Voltage (50/60 Hz)	$U_o$	230V	230V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V	440V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$		10 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$		20 kA
Voltage Protection Level for Type 2+3	$U_p$	1200V	1700V
Voltage Protection Level for Type 3 only	$U_p$	1000V	1400V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$		6 kV
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$		3 kA
Response Time	$t_A$		< 25 ns
Overcurrent Protection (max)			100 A gG
Short-Circuit Current Rating	$I_{SCCR}$		25 kA
TOV Withstand 5s	$U_T$	335V	440V
TOV 120min	$U_T / mode$	440V / Safe Fail	440V / Withstand
Number of Ports			1

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V	1500V
Overcurrent Protection (min)			40 A gG

**Mechanical & Environmental**

Temperature Range	$T_a$	-40 °C to +85 °C	
Permissible Humidity	RH	5%...95%	
Altitude (max)		6562 ft [2000 m]	
Terminal Screw Torque	(L, N) $M_{max}$	10 lbf-in [1.2 Nm]	
	(PE) $M_{max}$	17 lbf-in [2.0 Nm]	
Conductor Cross Section (max)	(L, N)	8 AWG (Solid, Stranded) / 10 AWG (Flexible)	
	(PE)	10 mm <sup>2</sup> (Solid, Stranded) / 6 mm <sup>2</sup> (Flexible)	
	(L, N)	2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
	(PE)	35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Thermal Protection		Yes	
Fault Indication		Red Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250/0.5A; DC: 60V/0.1A	
RC Terminal Cross Section (max)		13 AWG [1.5 mm <sup>2</sup> ]	
RC Terminal Screw Torque	$M_{max}$	3.5 lbf-in [0.4 Nm]	


\*Only applicable for SPD with  $U_c$  440V to IT power systems where the earth on the distribution transformer is interconnected with the earth on the consumer side (RE=RA in Figure 44.A1 of IEC 60364-4-44:2018).

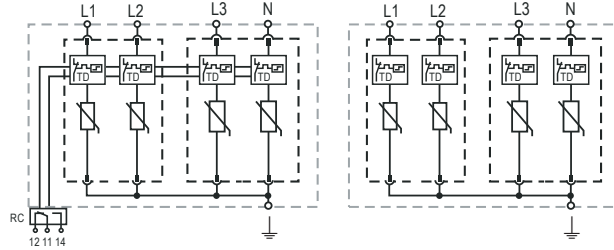
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
-  PE Conductor Terminal
- RC* Remote Contacts Terminal
- TD* Thermal Disconnect

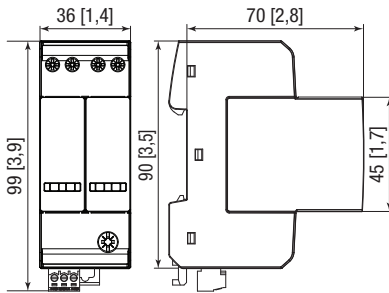


### ProTec T2-CM-xxx-4+0-L-E(-R)

#### Order Information

Order Code	275	440
ProTec T2-CM-xxx-4+0-L-E	515 603	515 605
ProTec T2-CM-xxx-4+0-L-E-R (with remote contact)	515 604	515 606
ProTec T2-CM-xxx-L-E-P (plug)	515 667	515 668

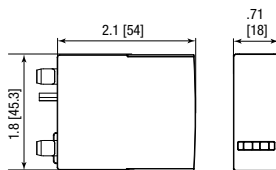
## Dimensions & Packaging



#### Complete Unit

ProTec T2-CM-xxx-4+0-L-E	275	440	
Weight	pounds [grams]	.618 [281]	.654 [297]
<b>ProTec T2-CM-xxx-4+0-L-E-R</b>			
Weight	pounds [grams]	.632 [287]	.667 [303]
DIN 43880 Dimension	2 TE / 1.42" [36 mm]		
Packaging Dimensions (H x W x L)	3.2 x 1.7 x 4.6" [83.5 x 44 x 117 mm]		
Standard Order Quantity	8 Units		

## Spare plug



#### Single Unit

ProTec T2-CM-xxx-L-E-P	275	440	
Weight	pounds [grams]	.173 [78.5]	.190 [86.5]
DIN 43880 Dimension	1 TE / .70" [18 mm]		
Packaging Dimensions (H x W x L)	2.5 x 1.8 x 8.7" [64 x 45 x 220 mm]		
Standard Order Quantity	24 Units		

Pluggable Multi-pole SPD  
**ProTec T2-CM-1+1-L-E(-R)**  
 Class II • Class III • Type 2 • Type 3



Location of Use: Sub-distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

ProTec T2-CM-xxx-1+1-L-E(-R)		275	440
<b>Electrical</b>			
Nominal AC Voltage (50/60 Hz)	$U_o$	230V	230V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	275V	440V
	(N-PE) $U_c$	255V	255V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	10kA/20kA	
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	20kA/40kA	
Voltage Protection Level for Type 2+3	(L-N) $U_p$	1200V	1700V
	(N-PE) $U_p$	1500V	1500V
Voltage Protection Level for Type 3 only	(L-N) $U_p$	1000V	1400V
	(N-PE) $U_p$	1000V	1000V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	(L-N)/(N-PE) $U_{oc}$	6kV/6kV	
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{cw}$	3kA/3kA	
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100A	
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns	
Overcurrent Protection (max)		100 A gG	
Short-Circuit Current Rating	$I_{SCCR}$	25 kA	
TOV Withstand 5s	(L-N) $U_T$	335V	440V
TOV 120min	(L-N) $U_T / mode$	440V / Safe Fail	440V / Withstand
TOV Withstand 200ms	(N-PE) $U_T$	1200V / 300A	
Number of Ports		1	
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)			
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V / 255V	1500V / 255V
Overcurrent Protection (min)		40 A gG	
<b>Mechanical &amp; Environmental</b>			
Temperature Range	$T_a$	-40 °C to +85 °C	
Permissible Humidity	RH	5%...95%	
Altitude (max)		6562 ft [2000m]	
Terminal Screw Torque	(L, N) $M_{max}$	10 lbf-in [1.2 Nm]	
	(PE) $M_{max}$	17 lbf-in [2.0 Nm]	
Conductor Cross Section (max)	(L, N)	8 AWG (Solid, Stranded) / 10 AWG (Flexible)	
		10 mm <sup>2</sup> (Solid, Stranded) / 6 mm <sup>2</sup> (Flexible)	
	(PE)	2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Thermal Protection		Yes	
Fault Indication		Red Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250/0.5A; DC: 60V/0.1A	
RC Terminal Cross Section (max)		13 AWG [1.5 mm <sup>2</sup> ]	
RC Terminal Screw Torque	$M_{max}$	3.5 lbf-in [0.4 Nm]	

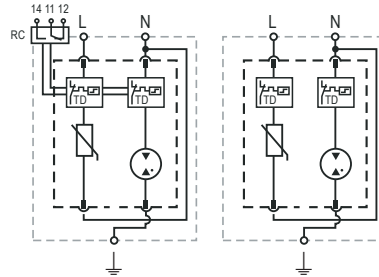
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor Terminal
- N Neutral Conductor Terminal
- PE Conductor Terminal
- RC Remote Contacts Terminal
- TD Thermal Disconnect

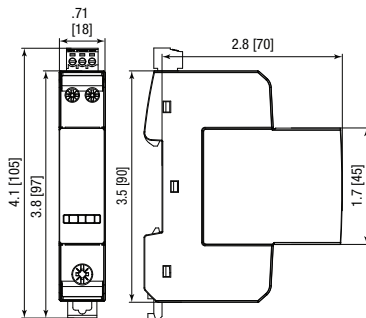


### ProTec T2-CM-xxx-1+1-L-E(-R)

#### Order Information

Order Code	275	440
ProTec T2-CM-xxx-1+1-L-E	515 596	515 661
ProTec T2-CM-xxx-1+1-L-E-R (with remote contact)	515 597	515 662
ProTec T2-CM-xxx-L-G-E-P (plug)	515 598	515 607

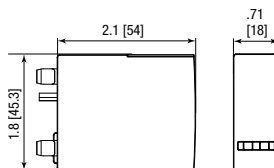
## Dimensions & Packaging



#### Complete Unit

ProTec T2-CM-xxx-1+1-L-E		275	440
Weight	pounds [grams]	.304 [138]	.131 [142]
ProTec T2-CM-xxx-1+1-L-E-R			
Weight	pounds [grams]	.313 [142]	.321 [146]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H x W x L)		3.2 x 1.7 x 4.6" [83.5 x 44 x 117 mm]	
Standard Order Quantity		15 Units	

## Spare plug



#### Single Unit

ProTec T2-CM-xxx-L-G-E-P		275	440
Weight	pounds [grams]	.144 [65.5]	.151 [68.5]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H x W x L)		2.5 x 1.8 x 8.7" [64 x 45 x 220 mm]	
Standard Order Quantity		24 Units	

Pluggable Multi-pole SPD  
**ProTec T2-CM-3+1-L-E(-R)**  
 Class II • Class III • Type 2 • Type 3



Location of Use: Sub-distribution Boards  
 Network Systems: TT, TN-S  
 Mode of Protection: L-N, N-PE  
 IEC/EN Category: Class II+III / Type 2+3  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

**Technical Data**

**ProTec T2-CM-xxx-3+1-L-E(-R)**

**275**

**440**

**Electrical**

Nominal AC Voltage (50/60Hz)	$U_o$	230V	230V
Maximum Continuous Operating Voltage (AC)	(L-N) $U_c$	275V	440V
	(N-PE) $U_c$	255V	255V
Nominal Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_n$	10kA/20kA	
Maximum Discharge Current (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{max}$	20kA/40kA	
Voltage Protection Level for Type 2+3	(L-N) $U_p$	1200V	1700V
	(N-PE) $U_p$	1500V	1500V
Voltage Protection Level for Type 3 only	(L-N) $U_p$	1000V	1400V
	(N-PE) $U_p$	1000V	1000V
Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s)	(L-N)/(N-PE) $U_{oc}$	6kV/6kV	
Short Circuit Current of Combination Wave Generator (8/20 $\mu$ s)	(L-N)/(N-PE) $I_{ow}$	3kA/3kA	
Follow Current Interrupt Rating	(N-PE) $I_{fi}$	100 A	
Response Time	(L-N)/(N-PE) $t_A$	< 25 ns / < 100 ns	
Overcurrent Protection (max)		100 A gG	
Short-Circuit Current Rating	$I_{SCCR}$	25 kA	
TOV Withstand 5 s	(L-N) $U_T$	335V	440V
TOV 120 min	(L-N) $U_T / mode$	440V / Safe Fail	440V / Withstand
TOV Withstand 200ms	(N-PE) $U_T$	1200V / 300A	
Number of Ports		1	

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	1000V / 255V	1500V / 255V
Overcurrent Protection (min)		40 A gG	

**Mechanical & Environmental**

Temperature Range	$T_a$	-40 °C to +85 °C	
Permissible Humidity	RH	5%...95%	
Altitude (max)		6562 ft [2000m]	
Terminal Screw Torque	(L, N) $M_{max}$	10 lbf-in [1.2Nm]	
	(PE) $M_{max}$	17 lbf-in [2.0Nm]	
Conductor Cross Section (max)	(L, N)	8 AWG (Solid, Stranded) / 10 AWG (Flexible)	
		10 mm <sup>2</sup> (Solid, Stranded) / 6 mm <sup>2</sup> (Flexible)	
	(PE)	2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Thermal Protection		Yes	
Fault Indication		Red Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250/0.5A; DC: 60V/0.1A	
RC Terminal Cross Section (max)		13 AWG [1.5mm <sup>2</sup> ]	
RC Terminal Screw Torque	$M_{max}$	3.5 lbf-in [0.4Nm]	


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

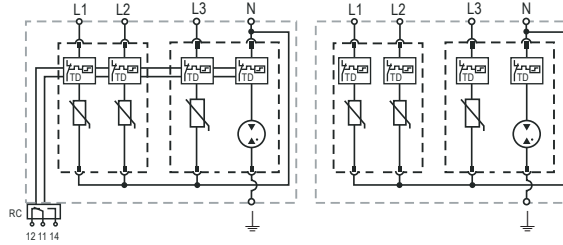




## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
-  PE Conductor Terminal
- RC* Remote Contacts Terminal
- TD* Thermal Disconnect

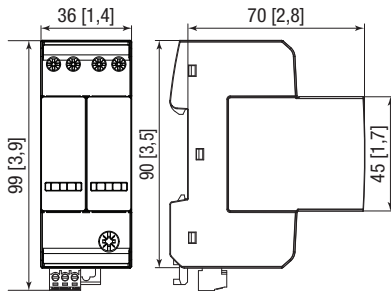


### ProTec T2-CM-xxx-3+1-L-E(-R)

#### Order Information

Order Code	275	440
ProTec T2-CM-xxx-3+1-L-E	515 663	515 665
ProTec T2-CM-xxx-3+1-L-E-R (with remote contact)	515 664	515 666
ProTec T2-CM-xxx-L-E-P (plug L-N)	515 667	515 668
ProTec T2-CM-xxx-L-G-E-P (plug N-PE)	515 598	515 607

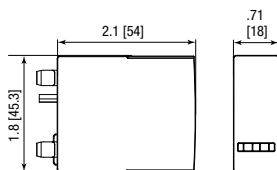
## Dimensions & Packaging



#### Complete Unit

ProTec T2-CM-xxx-3+1-L-E		275	440
Weight	pounds [grams]	.577 [262]	.604 [274]
ProTec T2-CM-xxx-3+1-L-E-R			
Weight	pounds [grams]	.590 [268]	.617 [280]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H x W x L)		3.2 x 1.7 x 4.6" [83.5 x 44 x 117 mm]	
Standard Order Quantity		8 Units	

## Spare plug



#### Single Unit

ProTec T2-CM-xxx-L-E-P		275	440
Weight	pounds [grams]	.173 [78.5]	.190 [86.5]
ProTec T2-CM-xxx-L-G-E-P			
Weight	pounds [grams]	.144 [65.5]	.151 [68.5]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H x W x L)		2.5 x 1.8 x 8.7" [64 x 45 x 220 mm]	
Standard Order Quantity		24 Units	

# Notes



## PCB Mount SPD Socket for AC & PV Systems



### Lightning and Overvoltage Protection

#### **PCB Socket T1 & PCB Socket T2 PCB Socket T1 PV & PCB Socket T2 PV**

##### **Special features:**

- For use with maximum continuous operating AC voltage ( $U_C$ ) up to 880V modules and PV voltage ( $U_{CPV}$ ) up to 750V modules
- Dual sets of two soldering pads for mechanical soldering
- Two additional mechanical fixation holes
- Voltage indicator socket
- Module locking mechanism
- Vibration and shock withstand capability
- Sensitive and reliable remote signaling contacts
- Fault indicator, green-no green
- Compact profile for printed circuit board (PCB) mounting

Raycap has developed the series of socket bases as an on-board printed circuit board (PCB) solution to optimally protect electronic equipment with efficient surge protection while keeping cost for installation down. With the constant demand for increased reliability of power systems, electronics manufacturers expect comprehensive turnkey solutions that are ready to be installed, but effectively designed with optimum functionality. The key benefits of the PCB Socket Series are cost and space efficiency, elimination of manufacturing lead times, and maximum equipment protection.

PCB T1 AC Series



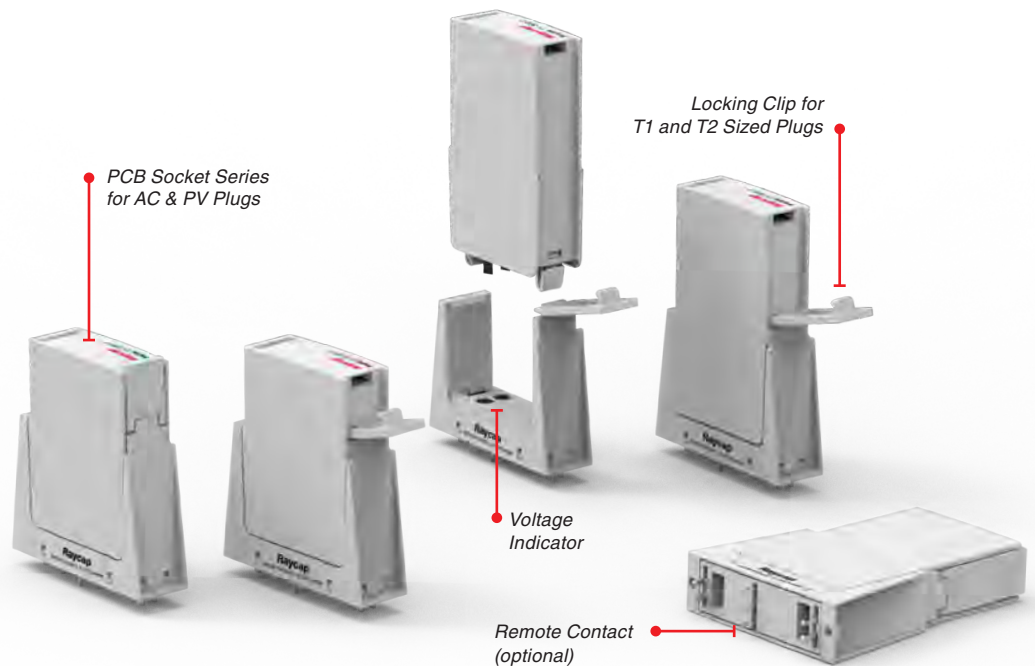
PCB T2 AC Series



PCB T1 PV Series



PCB T2 PV Series



To see the complete line of Raycap product solutions visit [raycap.com](http://raycap.com) or ask for dedicated case applications. Contact us: [info@raycap.com](mailto:info@raycap.com).

More Product Information



# Notes



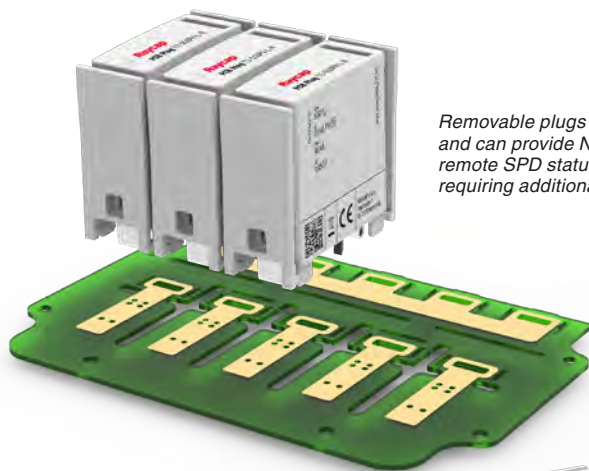
## A Versatile Protection Solution for PV Systems: Direct-mounted SPDs

### Advanced and Dedicated Direct Mount SPD

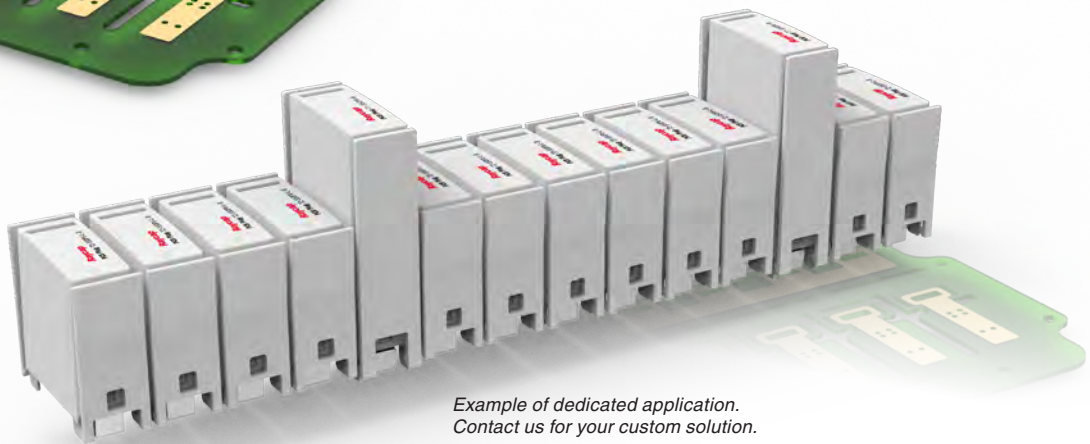
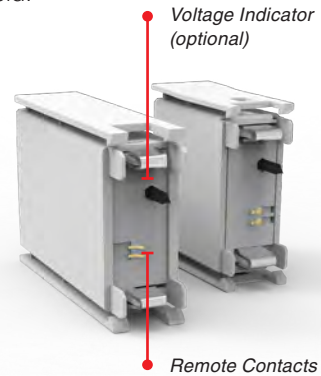
#### Special features:

- Enables high customization
- Space saving
- Optimum surge protection
- Compliant to IEC/EN 61643-31 PV surge protection device standard
- Available for 1100V and 1500V
- $I_{Total}$  (10/350) up to 12.5kA
- Fault indicator, green-no green
- Optional remote signalization
- Removable and non-removable options available

Raycap SPDs mounted directly on a PCB enable high integration levels and custom PCB designs. These solutions are low in overall height, ensuring a most efficient utilization of space. Installation requires no soldering and can be easily implemented at any stage of production, or in the field.



*Removable plugs are easily replaced and can provide NC floating contact for remote SPD status monitoring without requiring additional components.*



*Example of dedicated application.  
Contact us for your custom solution.*

To see the complete line of Raycap product solutions visit [raycap.com](http://raycap.com) or ask for dedicated case applications. Contact us: [info@raycap.com](mailto:info@raycap.com).



# Notes



## Pluggable Multi-pole Surge Protective Devices (SPDs) for Photovoltaic Systems (DC)



Lightning and Overvoltage Protection

### ProTec T1-PV & ProTec T2-PV

#### Special features:

- Vibration and shock withstand capability
- Sensitive and reliable state-of-the-art disconnecter
- Short circuit current rating up to 30kA
- Sensitive and reliable remote contact



ProTec T1 5Y PV Series



ProTec T2 5Y PV Series



ProTec T1 PV Series



ProTec T2 PV Series



More Product Information

IEC 61643-31:2018	EN 61643-31:2019	UL 1449 5th Edition	Open Type 1 SPD Listed
✓	✓	✓	✓

ProTec T1 PV and ProTec T2 PV solutions are high-performance, Type 1 and Type 2 pluggable surge protective devices designed to protect the DC power in photovoltaic systems. The products are ideal solutions for protecting String Combiner boxes and PV Inverters and are intended for use in both 1100VDC and 1500VDC systems.

All ProTec PV devices have low-height modules and a short circuit rating of 11 kA, except the ProTec T1-PV-S, which has an excellent short circuit rating of up to 30kA.



## Multi-Pole Base for Photovoltaic Systems

### ProTec T1-PV-5Y-00(-R)

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



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class I+II/Type 1+2 / PV SPD Type 1CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

#### Technical Data

ProTec T1-xxxxPV-5Y-00(-R)

1100

##### EN Electrical

Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	1100 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	5 kA
Specific Energy	W/R	6.25 kJ/ $\Omega$
Charge	Q	2.5 As
Total Discharge Current (10/350 $\mu$ s)	$I_{Total}$	10 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Voltage Protection Level	(+/-)-PE $U_p$	3800 V
	(+)-(-) $U_p$	3800 V
Short-Circuit Current Rating	$I_{SCPV}$	11 kA
Number of Ports		1

##### UL Electrical

Maximum Permitted DC Voltage	$V_{pVdc}$	1100 V
Voltage Protection Level	(+/-)-PE VPR	2500 V
	(+)-(-) VPR	2500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating	SCCR	50 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	3000 V
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##### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

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

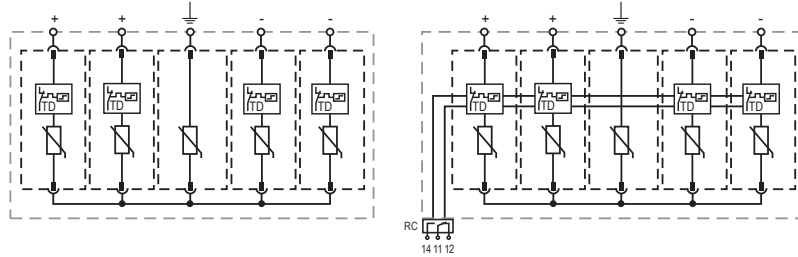




## Internal Configuration

### Legend

- +,- + or - Conductor Terminal
- ⏏ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



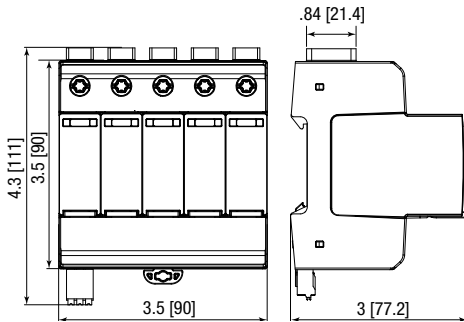
### ProTec T1-xxxxPV-5Y-00(-R)

#### Order Information

Order Code	1100
ProTec T1-xxxxPV-5Y-00	59.A444
ProTec T1-xxxxPV-5Y-00-R (with remote contacts)	59.A445
ProTec T1-550PV-00-P (ground plug)	59.A446
ProTec T1-550PV-00M-P (side plugs)	59.A447

## Dimensions & Packaging

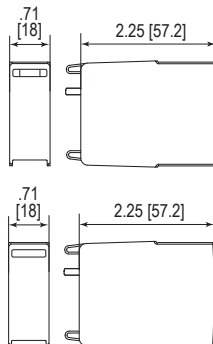
inches [mm]



#### Complete Unit

ProTec T1-xxxxPV-5Y-00		1100
Weight	pounds	1.536
	grams	697
ProTec T1-xxxxPV-5Y-00-R		1100
Weight	pounds	1.552
	grams	704
DIN 43880 Dimension	5 TE / 3.5" [90]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352mm]	
Standard Order Quantity	3 Units	

## Spare Plug



#### Single Unit

ProTec T1-550PV-00M-P		550
Single Unit Weight	pounds	.202
	grams	92
ProTec T1-550PV-00-P		550
Single Unit Weight	pounds	.182
	grams	83
Single Unit DIN 43880 Dimension	1 TE / .71 [18]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 116 x 352mm]	
Standard Order Quantity	24 Units	

## Multi-Pole Base for Photovoltaic Systems

# ProTec T1-PV-5Y-01(-R)

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



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class I+II/Type 1+2 / PV SPD Type 1CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

### Technical Data

ProTec T1-xxxxPV-5Y-01(-R)

1100

#### EN Electrical

Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	1100 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	5 kA
Specific Energy	W/R	6.25 kJ/ $\Omega$
Charge	Q	2.5 As
Total Discharge Current (10/350 $\mu$ s)	$I_{Total}$	10 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Voltage Protection Level	(+/-)-PE $U_p$	3800 V
	(+)-(-) $U_p$	3800 V
Short-Circuit Current Rating	$I_{SCPV}$	11 kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{pVdc}$	1100 V
Voltage Protection Level	(+/-)-PE VPR	2500 V
	(+)-(-) VPR	2500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating	SCCR	50 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	2900 V
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#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

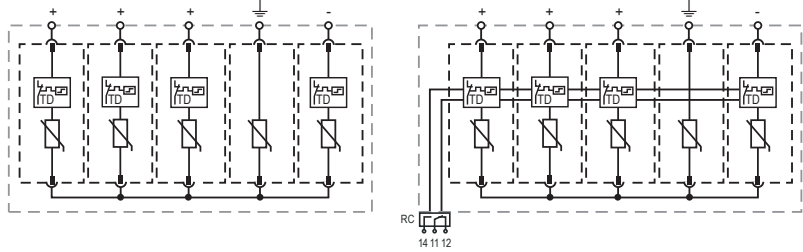
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- +,-    + or - Conductor Terminal
- ⏚    PE/G Conductor Terminal
- RC    Remote Contacts Terminal (Optional)
- TD    Thermal Disconnect



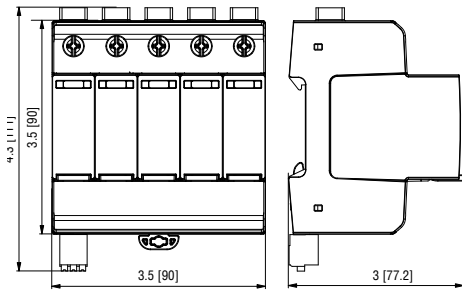
### ProTec T1-xxxxPV-5Y-01(-R)

#### Order Information

Order Code	1100
ProTec T1-xxxxPV-5Y-01	59.A466
ProTec T1-xxxxPV-5Y-01-R (with remote contacts)	59.A467
ProTec T1-550PV-01-P (ground plug)	59.A468
ProTec T1-550PV-01M-P (side plugs)	59.A469

## Dimensions & Packaging

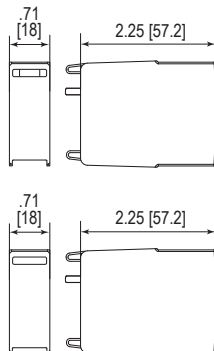
inches [mm]



#### Complete Unit

ProTec T1-xxxxPV-5Y-01		1100
Weight	pounds	1.536
	grams	697
ProTec T1-xxxxPV-5Y-01-R		1100
Weight	pounds	1.552
	grams	704
DIN 43880 Dimension	5 TE / 3.5" [90]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity	3 Units	

## Spare Plug



#### Single Unit

ProTec T1-550PV-01M-P		550
Single Unit Weight	pounds	.202
	grams	92
ProTec T1-550PV-01-P		550
Single Unit Weight	pounds	.182
	grams	83
Single Unit DIN 43880 Dimension	1 TE / .71 [18]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 116 x 352 mm]	
Standard Order Quantity	24 Units	

# Multi-Pole Base for Photovoltaic Systems

## ProTec T2-PV-5Y-00(-R)

### Class II • Type 2 • PV SPD Type 1CA



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class II / Type 2 / PV SPD Type 1CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

#### Technical Data

ProTec T2-xxxxPV-5Y-00(-R)

1100

#### EN Electrical

Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	1100 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Voltage Protection Level	(+/-)-PE $U_p$	3800 V
	(+)-(-) $U_p$	3800 V
Short-Circuit Current Rating	$I_{SCP}$	11 kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{pVdc}$	1100 V
Voltage Protection Level	(+/-)-PE VPR	2500 V
	(+)-(-) VPR	2500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating	SCCR	50 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	3000 V
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#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

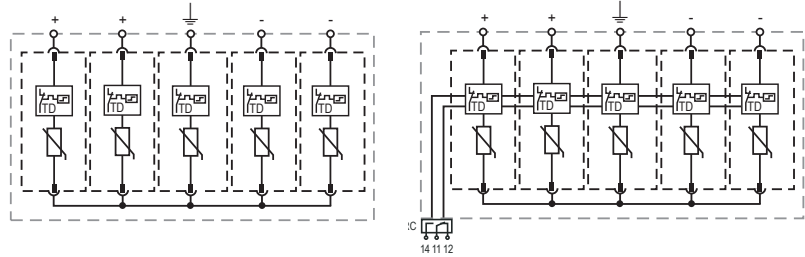
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

+,-	+ or - Conductor Terminal
⏏	PE/G Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnect



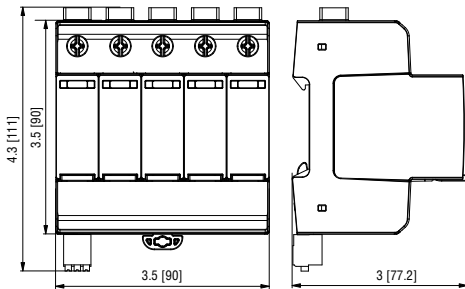
### ProTec T2-xxxxPV-5Y-00(-R)

#### Order Information

Order Code	1100
ProTec T2-xxxxPV-5Y-00	59.A452
ProTec T2-xxxxPV-5Y-00-R (with remote contacts)	59.A453
ProTec T2-550PV-00-P (plug)	59.A454

## Dimensions & Packaging

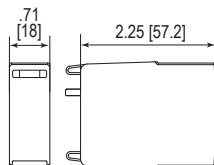
inches [mm]



#### Complete Unit

<b>ProTec T2-xxxxPV-5Y-00</b>	<b>1100</b>
Weight	pounds 1.313
	grams 596
<b>ProTec T2-xxxxPV-5Y-00-R</b>	<b>1100</b>
Weight	pounds 1.329
	grams 603
DIN 43880 Dimension	5 TE / 3.5" [90]
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	3 Units

## Spare Plug



#### Single Unit

<b>ProTec T2-xxxPV-00-P</b>	<b>550</b>
Single Unit Weight	pounds .145
	grams 66
Single Unit DIN 43880 Dimension	1 TE / .71 [18]
Packaging Dimensions (H x W x L)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Multi-Pole Base for Photovoltaic Systems

## ProTec T2-PV-5Y-01(-R)

### Class II • Type 2 • PV SPD Type 1CA



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class II / Type 2 / PV SPD Type 1CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

#### Technical Data

ProTec T2-xxxxPV-5Y-01(-R)

1100

#### EN Electrical

Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	1100 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA
Voltage Protection Level	(+/-)-PE $U_p$	3800 V
	(+)-(-) $U_p$	3800 V
Short-Circuit Current Rating	$I_{SCP}$	11 kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{pVdc}$	1100 V
Voltage Protection Level	(+/-)-PE VPR	2500 V
	(+)-(-) VPR	2500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating	SCCR	50 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	2900 V
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#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (Solid)

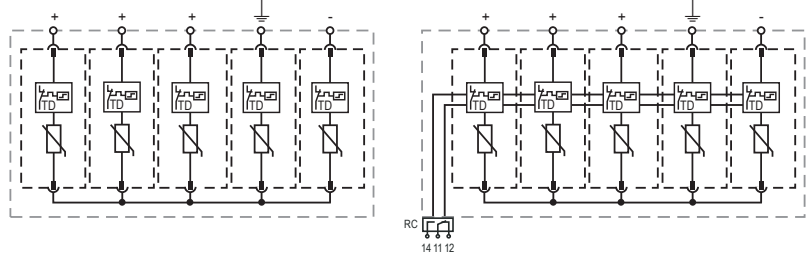
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

+,-	+ or - Conductor Terminal
⏚	PE/G Conductor Terminal
RC	Remote Contacts Terminal (Optional)
TD	Thermal Disconnect



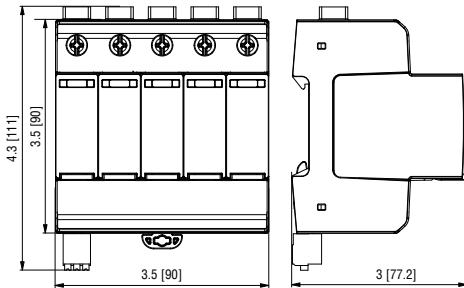
### ProTec T2-xxxxPV-5Y-01(-R)

#### Order Information

Order Code	<b>1100</b>
ProTec T2-xxxxPV-5Y-01	59.A474
ProTec T2-xxxxPV-5Y-01-R (with remote contacts)	59.A475
ProTec T2-550PV-01-P (plug)	59.A477

## Dimensions & Packaging

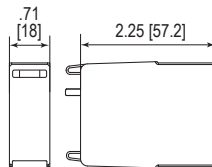
inches [mm]



#### Complete Unit

<b>ProTec T2-xxxxPV-5Y-01</b>	<b>1100</b>
Weight	pounds 1.313
	grams 596
<b>ProTec T2-xxxxPV-5Y-01-R</b>	<b>1100</b>
Weight	pounds 1.329
	grams 603
DIN 43880 Dimension	5 TE / 3.5" [90]
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	3 Units

## Spare Plug



#### Single Unit

<b>ProTec T2-xxxPV-01-P</b>	<b>550</b>
Single Unit Weight	pounds .145
	grams 66
Single Unit DIN 43880 Dimension	1 TE / .71 [18]
Packaging Dimensions (H x W x L)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

# Pluggable Multi-Pole SPD for Photovoltaic Systems

## ProTec T1-1500PV-3+0-S(-R)

Type 1 • Type 2 • Open Type 1 PV SPD Listed



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 EN/UL Category: Type 1, Type 2 /  
 Open Type 1 PV SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T1-xxxxPV-3+0-S(-R)

1500

#### EN Electrical

Maximum Continuous Operating DC Voltage	$U_{CPV}$	1500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$
Charge	Q	3.125As
Total Discharge Current (10/350 $\mu$ s)	$I_{Total}$	12.5 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	60 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	60 kA
Voltage Protection Level	(+)-PE, (-)-PE $U_p$	4500 V
	(+)-(-) $U_p$	4500 V
Response Time	$t_A$	< 25 ns
Short-Circuit Current Rating	$I_{SCP}$	30 kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{pvdc}$	1500V
Voltage Protection Rating	(+)-G, (-)-G VPR	3000V
	(+)-(-) VPR	3000V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA
Short-Circuit Current Rating	SCCR	100kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	3400 V
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#### Mechanical & Environmental

Operating Temperature Range	$T_a$	-40 °F to +158 °F [185 °F per UL 1449]
		-40 °C to +70 °C [85 °C per UL 1449]
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

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

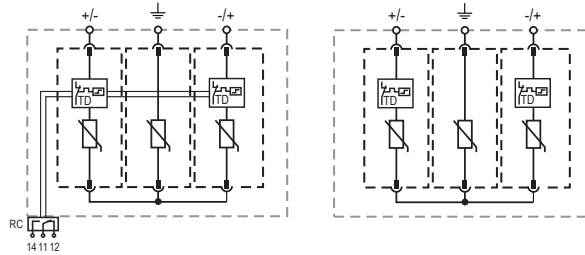




## Internal Configuration

### Legend

- +/-, -/+ Terminal for +/-, -/+ Conductor
- ⏏ Terminal for PE/G Conductor
- RC Remote Contacts Optional
- TD Thermal Disconnect



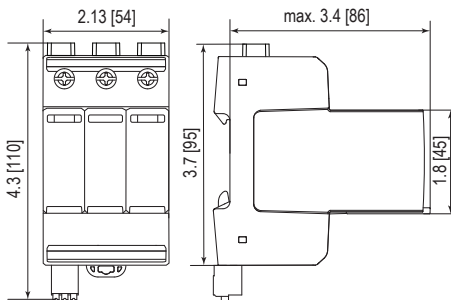
### ProTec T1-xxxxPV-3+0-S(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	1500
ProTec T1-xxxxPV-3+0-S	59.0917
ProTec T1-xxxxPV-3+0-S-R (with remote contacts)	59.0916
ProTec T1-750PV-S-P (middle plug)	59.0919
ProTec T1-750PV-S-M-P (side plug)	59.0918

## Dimensions & Packaging

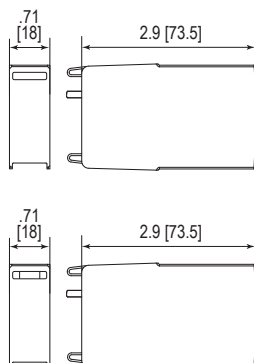
inches [mm]



### Complete Unit

ProTec T1-xxxxPV-3+0-S		1500
Single Unit Weight	pounds	1.034
	grams	469
ProTec T1-xxxxPV-3+0-S-R		1500
Single Unit Weight	pounds	1.045
	grams	474
Single Unit DIN 43880 Dimension	3 TE / 2.13 [54]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352mm]	
Standard Order Quantity	5 Units	

## Spare Plug



### Single Unit

ProTec T1-xxxPV-S-P		750
Single Unit Weight	pounds	.282
	grams	128
ProTec T1-xxxPV-S-M-P		750
Single Unit Weight	pounds	.196
	grams	89
Single Unit DIN 43880 Dimension	1 TE / .71 [18]	
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352mm]	
Standard Order Quantity	28 Units	

# Pluggable Multi-Pole SPD for Photovoltaic Systems

## ProTec T1-PV 3+0

Type 1 • Type 2 • PV SPD Type 1CA • Open Type 1 PV SPD Listed



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class I+II / Type 1+2 / PV SPD Type 1CA / Open Type 1 PV SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

### Technical Data

ProTec T1-xxxxPV-3+0(-R) & ProTec T1-xxxxPV-3+0-US(-R)

600\*

1100

#### EN Electrical

Parameter	Symbol	600*	1100
Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	600V	1100V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25kA	6.25kA
Specific Energy	W/R	9.77 kJ/ $\Omega$	9.77 kJ/ $\Omega$
Charge	Q	3.125As	3.125As
Total Discharge Current (10/350 $\mu$ s)	$I_{Total}$	12.5kA	12.5kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	50kA	50kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40kA	40kA
Voltage Protection Level	(+)-PE, (-)-PE $U_p$	2800V	3800V
	(+)-(-) $U_p$	2800V	3800V
Response Time	$t_A$		< 25ns
Short-Circuit Current Rating	$I_{SCPV}$		11kA
Number of Ports			1

#### UL Electrical

Parameter	Symbol	600*	1100
Maximum Permitted DC Voltage	$V_{pVdc}$	600V	1100V
Voltage Protection Rating	(+)-G, (-)-G VPR	2000V	2500V
	(+)-(-) VPR	2000V	2500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA	20kA
Short-Circuit Current Rating	SCCR	50kA	50kA

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

Parameter	Symbol	600*	1100
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	2200V	3200V

#### Mechanical & Environmental

Parameter	Symbol	Value
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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]

\*No VDE and UL certification.

Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.

Mechanical Data includes only technical values for Open Type 1 UL Listed products.

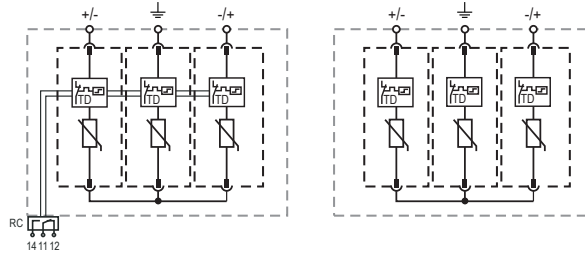
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- +/-, -/+ + or - Conductor Terminal
- ⊥ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



### ProTec T1-xxxxPV-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	600*	1100
ProTec T1-xxxxPV-3+0	59.A574	59.0285
ProTec T1-xxxxPV-3+0-R (with remote contacts)	59.A575	59.0286
ProTec T1-300PV-P (middle plug)	59.A576	
ProTec T1-300PV-M-P (side plug)	59.A577	
ProTec T1-550PV-P (middle plug)	-	59.0283
ProTec T1-550PV-M-P (side plug)	-	59.0284

\*No VDE and UL certification.

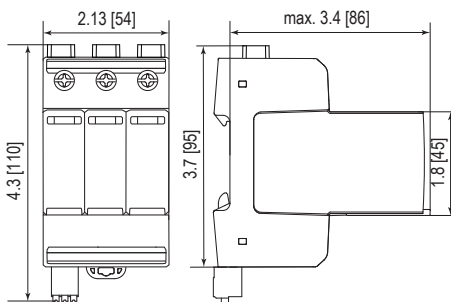
### ProTec T1-xxxxPV-3+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	1100
ProTec T1-xxxxPV-3+0-US	59.B253
ProTec T1-xxxxPV-3+0-US-R (with remote contacts)	59.B254
ProTec T1-550PV-P (middle plug)	59.0283
ProTec T1-550PV-M-P (side plug)	59.0284

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

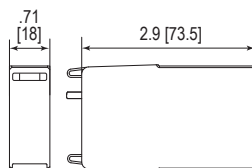
ProTec T1-xxxxPV-3+0(-US)	600	1100
Weight	pounds	.928
	grams	421

#### Complete Unit UL Listed Products

ProTec T1-xxxxPV-3+0(-US)-R	600	1100
Weight	pounds	.943
	grams	428

DIN 43880 Dimension	3 TE / 2.13" [54]
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	5 Units

## Spare Plug



#### Single Unit

ProTec T1-xxxPV-P	300	550
Weight	pounds	.231
	grams	105

ProTec T1-xxxPV-M-P	300	550
Weight	pounds	.165
	grams	75

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (H x W x L)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	28 Units

# Pluggable Multi-Pole SPD for Photovoltaic Systems

## ProTec T2-PV 3+0

Type 2 • PV SPD Type 1CA • Open Type 1 PV SPD Listed



Location of Use: String box, Inverter  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 EN/UL Category: Type 2 / PV SPD Type 1CA /  
 Open Type 1 PV SPD Listed  
 Housing: Pluggable Design  
 Compliance: IEC 61643-31:2018  
 UL 1449 5th Edition

### Technical Data

ProTec T2-xxxxPV-3+0(-R) & ProTec T2-xxxxPV-3+0-US(-R)

250\*      600\*      1100      1500

#### EN Electrical

Parameter	Symbol	250*	600*	1100	1500
Maximum Continuous Operating Voltage (PV)	$U_{CPV}$	250 V	600 V	1100 V	1500 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	40 kA	30 kA
Total Discharge Current	$I_{Total}$	50 kA	50 kA	50 kA	40 kA
Voltage Protection Level	$U_p$	1000 V	2000 V	3800 V	5000 V
Response Time	$t_A$	< 25 ns			
Short-Circuit Current Rating	$I_{SCP}$	11 kA			
Number of Ports		1			

#### UL Electrical

Parameter	Symbol	250*	600*	1100	1500
Maximum Permitted DC Voltage	$V_{pVDC}$	-	-	1100 V	1500 V
Voltage Protection Rating	VPR	-	-	2500 V	4000 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	-	-	20 kA	20 kA
Short-Circuit Current Rating	SCCR	-	-	50 kA	65 kA

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

Parameter	Symbol	250*	600*	1100	1500
Residual Voltage at 5 kA (8/20 $\mu$ s)	$U_{res}$	700 V	1500 V	3100 V	4000 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	$M_{max}$	35 lbf-in per UL 1499 [4.5 Nm]			
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449 35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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)		10 AWG (Solid, Stranded) per UL 1449 [1.5 mm <sup>2</sup> (Solid)]			

\*No VDE and UL certification.

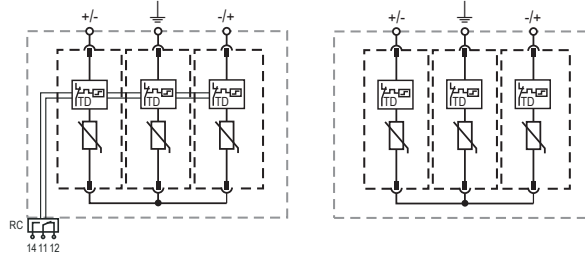
Technical Data includes technical values for both UL Recognized and Open Type 1 UL Listed products.  
 Mechanical Data includes only technical values for Open Type 1 UL Listed products.  
 Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- +/-, -/+ + or - Conductor Terminal
- ⊥ PE/G Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnect



### ProTec T2-xxxxPV-3+0(-R)

#### Order Information VDE Certified and UL Recognized Products

Order Code	250*	600*	1100	1500
ProTec T2-xxxxPV-3+0	59.0985	59.0986	59.0292	59.0295
ProTec T2-xxxxPV-3+0-R (with remote contacts)	59.0979	59.0980	59.0293	59.0296
ProTec T2-125PV-P (plug)	59.A300	-		
ProTec T2-300PV-P (plug)	-	59.0992		
ProTec T2-550PV-P (plug)			59.0291	-
ProTec T2-750PV-P (plug)			-	59.0294

\*No VDE and UL certification.

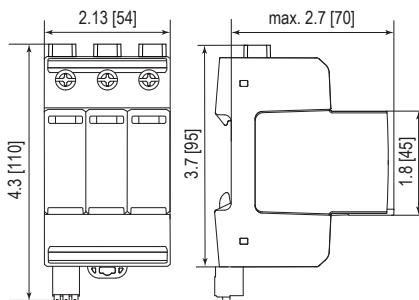
### ProTec T2-xxxxPV-3+0-US(-R)

#### Order Information VDE Certified and Open Type 1 UL Listed Products

Order Code	1100	1500
ProTec T2-xxxxPV-3+0-US	59.B257	59.B259
ProTec T2-xxxxPV-3+0-US-R (with remote contacts)	59.B258	59.B260
ProTec T2-550PV-P (plug)	59.0291	-
ProTec T2-750PV-P (plug)	-	59.0294

## Dimensions & Packaging

inches [mm]



#### Complete Unit UL Recognized Products

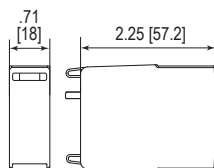
ProTec T2-xxxxPV-3+0(-US)	250*	600*	1100	1500	
Weight	pounds	.696	.745	.806	.879
	grams	316	338	366	399

#### Complete Unit UL Listed Products

ProTec T2-xxxxPV-3+0(-US)-R	1100	1500			
Weight	pounds	.509	.753	.817	.890
	grams	321	342	371	404

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 Units

## Spare Plug



#### Single Unit

ProTec T2-xxxPV-P	125*	300*	550	750	
Weight	pounds	.110	.121	.150	.174
	grams	50	55	68	79

DIN 43880 Dimension	1 TE / .71" [18]
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]
Standard Order Quantity	24 Units

## Complete Range of Protection Solutions for PV Systems:

Lower Voltage SPDs for PV System  
**ProTec T2 PV (1+0) & (2+0)**



*ProTec T2-300PV-2+0-R  
& ProTec T2-150PV-1+0-R*

### Technical Data

ProTec T2-xxxPV-1+0(-R)		125	250
EN Electrical			
Maximum Continuous Operating DC Voltage	$U_{CPV}$	125 V	250 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA
Voltage Protection Level (8/20 $\mu$ s)	$U_p$	500 V	900 V
Response Time	$t_A$		< 25 ns
Short-Circuit Current Rating	$I_{SCPV}$	6 kA	11 kA
Number of Ports			1

ProTec T2-xxxPV-2+0(-R)		125	250
EN Electrical			
Maximum Continuous Operating DC Voltage	(+/-)-PE $U_{CPV}$	125 V	250 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA
Total Discharge Current	$I_{Total}$	50 kA	50 kA
Voltage Protection Level (8/20 $\mu$ s)	(+/-)-PE $U_p$	500 V	900 V
Response Time	$t_A$		< 25 ns
Short-Circuit Current Rating	$I_{SCPV}$	6 kA	11 kA
Number of Ports			1

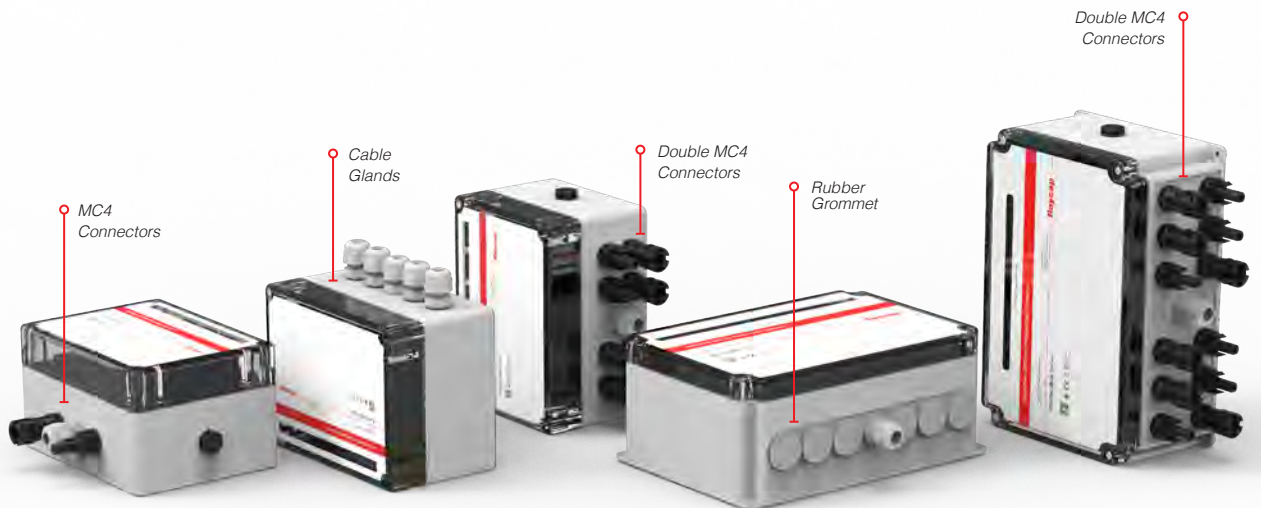
Enclosure with Multi-Pole SPD  
for Photovoltaic Systems



Lightning and Overvoltage Protection  
**ProTec T1 PV 3Y, 5Y & 7Y Box  
& ProTec T2 PV 3Y, 5Y & 7Y Box**

**Special features:**

- Available for 1100 V and 1500 V PV systems
- 3Y, 5Y, 7Y configuration for 1, 2 and 3 string systems
- Compact UV-stable housing with protection class up to IP 67
- Transparent cover with failure status indicator on plugs
- Compliant with IEC 61643-31 PV surge protection device standard
- Quick on-wall installation of the DC side protection next to the inverter
- Multiple connection options available



EN 61643-31:2019

IEC 61643-31:2018



These space-saving surge protection and connection solutions were developed for the protection of Photovoltaic (PV) inverters. The pre-assembled enclosures feature Class I & II / EN Type 1 & 2 arresters for 1100V and 1500V DC. Designed for quick on-wall installation at the DC side of the inverter, the compact UV-stable housing is suitable for indoor and outdoor installations. A transparent cover enables the viewing of module failure status indicators.

PV Box T1



PV Box T2



More Product Information



# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T1 PV-3Y(-S)(-RG)-Box

Class I • Class II • Type 1 • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class I+II, Type 1+2  
 Housing: Up to IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



### Technical Data

#### ProTec T1-xxxxPV-3Y(-S)(-RG)-Box

1100

1500

#### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	50 kA	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA
Total Discharge Current (10/350 $\mu$ s)	$I_{total}$	12.5 kA	12.5 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$	9.77 kJ/ $\Omega$
Charge	Q	3.125 As	3.125 As
Voltage Protection Level	$U_p$	< 4.4 kV	< 5.2 kV
Rated Load Current [Rubber Grommet]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	< 25 ns
Short Circuit Current Rating	$I_{SCPV}$	11 kA	30 kA
Number of Strings per MPPT			1

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)	20 AWG [0.5 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	9 AWG [6 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection [Cable Gland / Rubber Grommet]		IP 67/IP 65	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

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

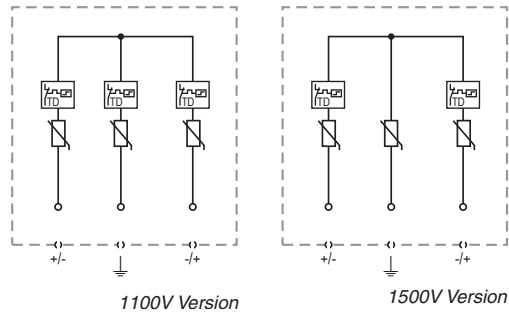




## Internal Configuration

### Legend

- +/-, -/+ Terminal for +/-, -/+ Conductor
- ⏚ Terminal for PE/G Conductor
- TD Thermal Disconnect



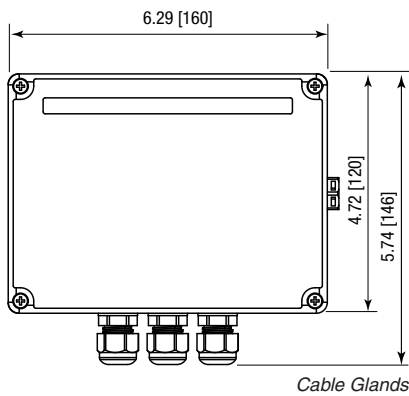
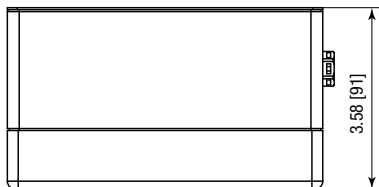
### ProTec T1-xxxxPV-3Y(-S)(-RG)-Box

#### Order Information

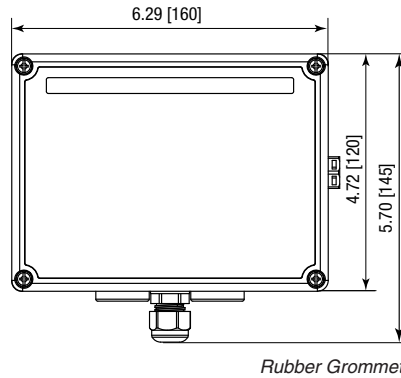
Order Code	1100	1500
ProTec T1-xxxxPV-3Y-Box (Cable Gland)	515 608	-
ProTec T1-xxxxPV-3Y-S-Box (Cable Gland)	-	515 612
ProTec T1-xxxxPV-3Y-RG-Box (Rubber Grommet)	515 649	-
ProTec T1-xxxxPV-3Y-S-RG-Box (Rubber Grommet)	-	515 651

## Dimensions & Packaging

inches [mm]



Cable Glands



Rubber Grommet

#### Complete Unit

ProTec T1-xxxxPV-3Y(-S)-Box		1100	1500
Single Unit Weight	pounds [grams]	1.54 [701]	1.77 [806]
ProTec T1-xxxxPV-3Y(-S)-RG-Box			
Single Unit Weight	pounds [grams]	1.94 [881]	2.17 [986]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T1 PV-5Y(-S)(-RG)-Box

Class I • Class II • Type 1 • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class I+II, Type 1+2  
 Housing: Up to IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



### Technical Data

#### ProTec T1-xxxxPV-5Y(-S)(-RG)-Box

1100

1500

#### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	50 kA	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA
Total Discharge Current (10/350 $\mu$ s)	$I_{total}$	12.5 kA	12.5 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$	9.77 kJ/ $\Omega$
Charge	Q	3.125 As	3.125 As
Voltage Protection Level	$U_p$	< 4.4 kV	< 5.2 kV
Rated Load Current [Rubber Grommet]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	< 25 ns
Short Circuit Current Rating	$I_{SCPV}$	11 kA	30 kA
Number of Strings per MPPT			2

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)	20 AWG [0.5 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	9 AWG [6 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection [Cable Gland / Rubber Grommet]		IP 67/IP 65	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

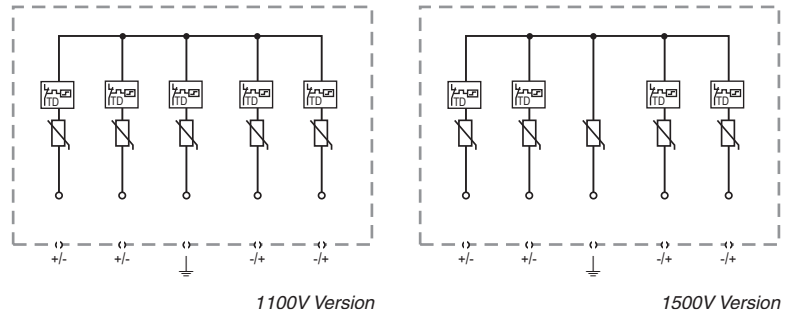
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏚ Terminal for PE/G Conductor
- TD Thermal Disconnect



1100V Version

1500V Version

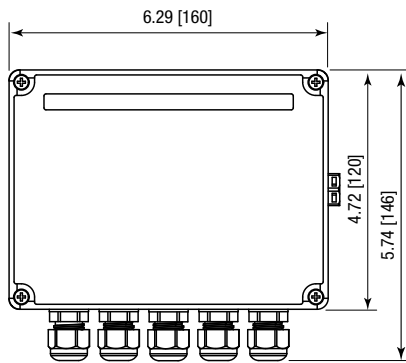
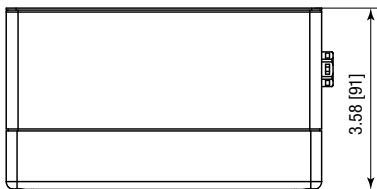
### ProTec T1-xxxxPV-5Y(-S)(-RG)-Box

#### Order Information

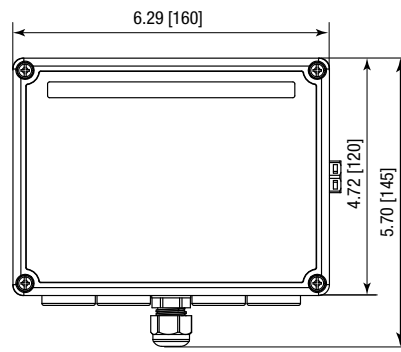
Order Code	1100	1500
ProTec T1-xxxxPV-5Y-Box (Cable Gland)	515 609	-
ProTec T1-xxxxPV-5Y-S-Box (Cable Gland)	-	515 613
ProTec T1-xxxxPV-5Y-RG-Box (Rubber Grommet)	515 650	-
ProTec T1-xxxxPV-5Y-S-RG-Box (Rubber Grommet)	-	515 652

## Dimensions & Packaging

inches [mm]



Cable Glands



Rubber Grommet

#### Complete Unit

ProTec T1-xxxxPV-5Y(-S)-Box		1100	1500
Single Unit Weight	pounds [grams]	2.01 [915]	2.41 [1096]
ProTec T1-xxxxPV-5Y(-S)-RG-Box			
Single Unit Weight	pounds [grams]	2.46 [1117]	2.86 [1298]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T2 PV-3Y-L(-RG)-Box

### Class II • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class II, Type 2  
 Housing: Up to IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



#### Technical Data

##### ProTec T2-xxxxPV-3Y-L(-RG)-Box

1100

1500

##### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	40 kA	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	40 kA
Voltage Protection Level	$U_p$	< 4.2 kV	< 4.8 kV
Rated Load Current [Rubber Grommet]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	
Short Circuit Current Rating	$I_{SCPV}$	9 kA	
Number of Strings per MPPT		1	

##### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)	20 AWG [0.5 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	9 AWG [6 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection [Cable Gland / Rubber Grommet]		IP 67 / IP 65	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

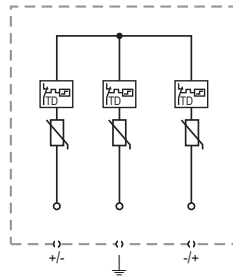
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏚ Terminal for PE/G Conductor
- TD Thermal Disconnect



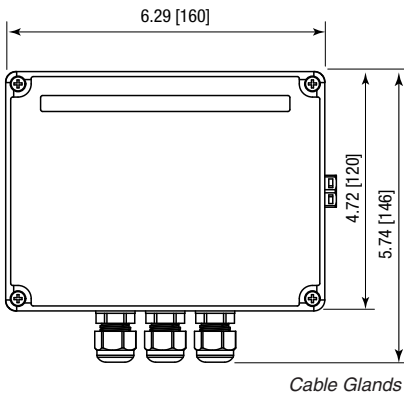
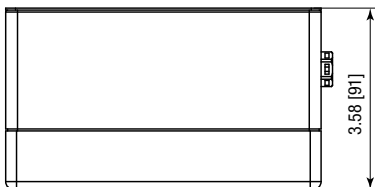
### ProTec T2-xxxxPV-3Y-L(-RG)-Box

#### Order Information

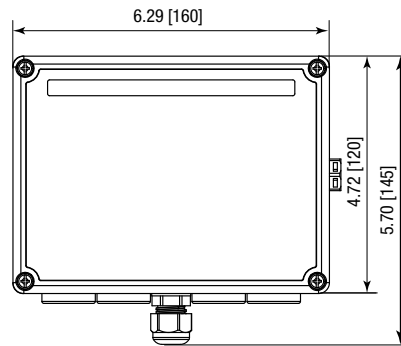
Order Code	1100	1500
ProTec T2-xxxxPV-3Y-L-Box (Cable Gland)	515 546	515 548
ProTec T2-xxxxPV-3Y-L-RG-Box (Rubber Grommet)	515 646	515 648

## Dimensions & Packaging

inches [mm]



Cable Glands



Rubber Grommet

#### Complete Unit

ProTec T2-xxxxPV-3Y-L-Box	1100	1500	
Single Unit Weight	pounds [grams]	1.55 [705]	1.53 [694]
ProTec T2-xxxxPV-3Y-L-RG-Box			
Single Unit Weight	pounds [grams]	1.73 [787]	1.79 [814]
Packaging Dimensions (H x W x L)	4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]		
Minimum Package Quantity	1 Unit		

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T2 PV-5Y-L(-RG)-Box

### Class II • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class II, Type 2  
 Housing: Up to IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



#### Technical Data

##### ProTec T2-xxxxPV-5Y-L(-RG)-Box

1100

1500

##### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	40 kA	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	40 kA
Voltage Protection Level	$U_p$	< 4.2 kV	< 4.8 kV
Rated Load Current [Rubber Grommet]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	
Short Circuit Current Rating	$I_{SCPV}$	9 kA	
Number of Strings per MPPT		2	

##### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)	20 AWG [0.5 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	9 AWG [6 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection [Cable Gland / Rubber Grommet]		IP 67 / IP 65	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

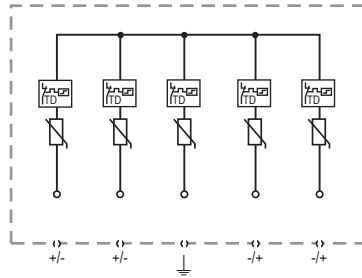
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏏ Terminal for PE/G Conductor
- TD Thermal Disconnect



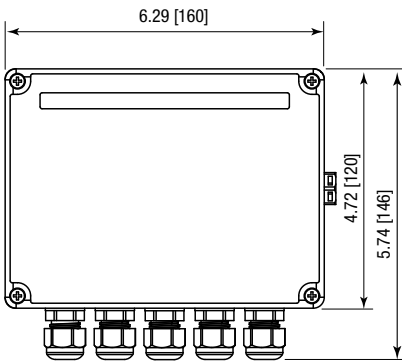
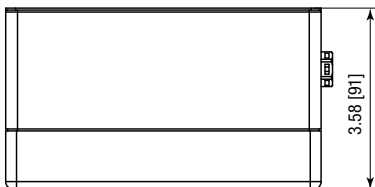
## ProTec T2-xxxxPV-5Y-L(-RG)-Box

### Order Information

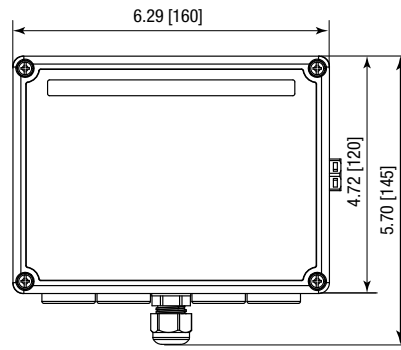
Order Code	1100	1500
ProTec T2-xxxxPV-5Y-L-Box (Cable Gland)	515 545	515 547
ProTec T2-xxxxPV-5Y-L-RG-Box (Rubber Grommet)	515 645	515 647

## Dimensions & Packaging

inches [mm]



Cable Glands



Rubber Grommet

### Complete Unit

ProTec T2-xxxxPV-5Y-L-Box		1100	1500
Single Unit Weight	pounds [grams]	1.96 [890]	1.91 [869]
ProTec T2-xxxxPV-5Y-L-RG-Box			
Single Unit Weight	pounds [grams]	2.13 [969]	2.19 [995]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T1 PV-3Y(-S)-(x)MC-Box

Class I • Class II • Type 1 • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class I+II, Type 1+2  
 Housing: IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



### Technical Data

#### ProTec T1-xxxxPV-3Y(-S)-(x)MC-Box

1100

1500

#### Electrical

Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	50 kA	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA
Total Discharge Current (10/350 $\mu$ s)	$I_{total}$	12.5 kA	12.5 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$	9.77 kJ/ $\Omega$
Charge	Q	3.125 As	3.125 As
Voltage Protection Level	$U_p$	< 4.4 kV	< 5.2 kV
Rated Load Current [2MC]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	< 25 ns
Short Circuit Current Rating	$I_{SCPV}$	11 kA	30 kA
Number of Strings per MPPT			1

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / MC4 Connectors	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section Grounding [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection		IP 67	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

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

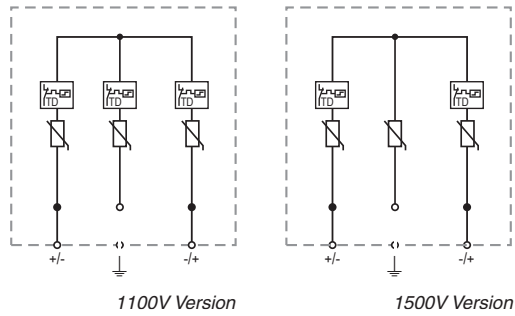




## Internal Configuration

### Legend

- +/-, -/+ Terminal for +/-, -/+ Conductor
- ⏏ Terminal for PE/G Conductor
- TD Thermal Disconnect



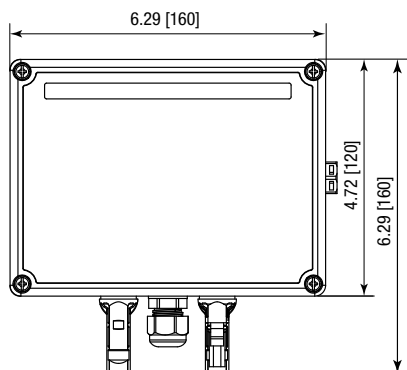
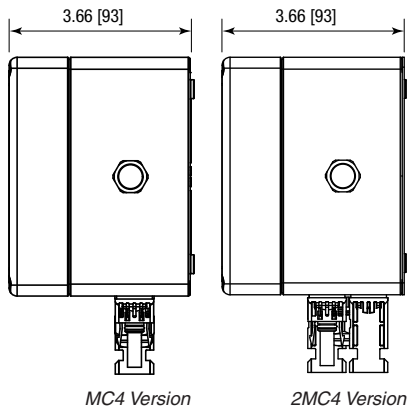
### ProTec T1-xxxxPV-3Y(-S)(x)MC-Box

#### Order Information

Order Code	1100	1500
ProTec T1-xxxxPV-3Y-MC-Box	515 615	-
ProTec T1-xxxxPV-3Y-S-MC-Box	-	515 617
ProTec T1-xxxxPV-3Y-2MC-Box	515 657	-
ProTec T1-xxxxPV-3Y-S-2MC-Box	-	515 659

## Dimensions & Packaging

inches [mm]



#### Complete Unit

		1100	1500
<b>ProTec T1-xxxxPV-3Y(-S)-MC-Box</b>			
Single Unit Weight	pounds [grams]	1.54 [701]	1.77 [806]
<b>ProTec T1-xxxxPV-3Y(-S)-2MC-Box</b>			
Single Unit Weight	pounds [grams]	2.01 [915]	2.24 [1020]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T1 PV-5Y(-S)-(x)MC-Box

Class I • Class II • Type 1 • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class I+II, Type 1+2  
 Housing: IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



### Technical Data

#### ProTec T1-xxxxPV-5Y(-S)-(x)MC-Box

1100

1500

#### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	20 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	50 kA	50 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	50 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA
Total Discharge Current (10/350 $\mu$ s)	$I_{total}$	12.5 kA	12.5 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$	9.77 kJ/ $\Omega$
Charge	Q	3.125 As	3.125 As
Voltage Protection Level	$U_p$	< 4.4 kV	< 5.2 kV
Rated Load Current [2MC]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	< 25 ns
Short Circuit Current Rating	$I_{SCPV}$	11 kA	30 kA
Number of Strings per MPPT			2

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / MC4 Connectors	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section Grounding [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection		IP 67	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

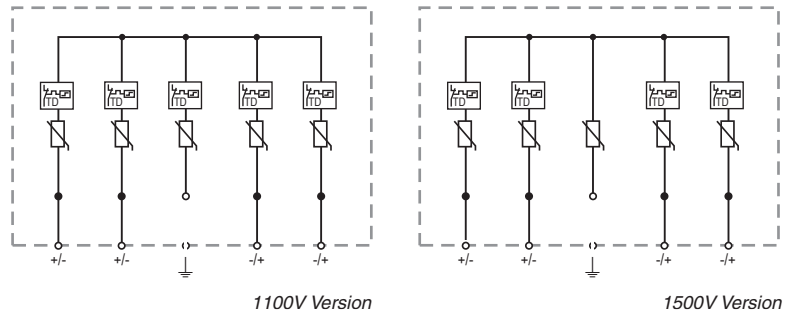
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏚ Terminal for PE/G Conductor
- TD Thermal Disconnect



1100V Version

1500V Version

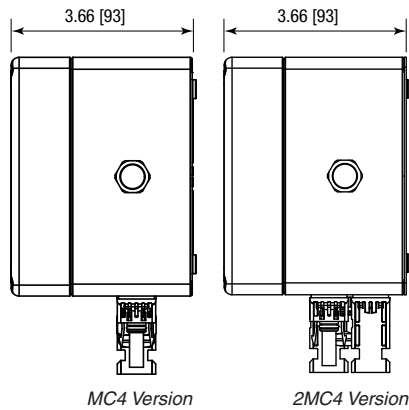
### ProTec T1-xxxxPV-5Y(-S)(x)MC-Box

#### Order Information

Order Code	1100	1500
ProTec T1-xxxxPV-5Y-MC-Box	515 616	-
ProTec T1-xxxxPV-5Y-S-MC-Box	-	515 618
ProTec T1-xxxxPV-5Y-2MC-Box	515 658	-
ProTec T1-xxxxPV-5Y-S-2MC-Box	-	515 660

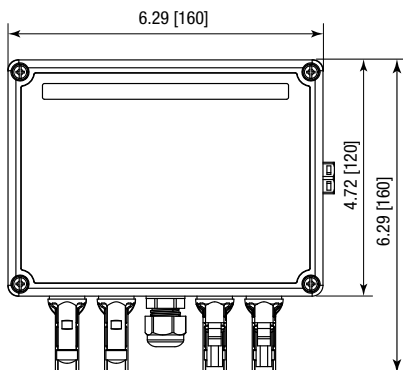
## Dimensions & Packaging

inches [mm]



MC4 Version

2MC4 Version



#### Complete Unit

ProTec T1-xxxxPV-5Y(-S)-MC-Box		1100	1500
Single Unit Weight	pounds [grams]	2.01 [915]	2.41 [1096]
ProTec T1-xxxxPV-5Y(-S)-2MC-Box			
Single Unit Weight	pounds [grams]	2.53 [1151]	2.93 [1332]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T2 PV-3Y-L(-x)MC-Box

### Class II • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class II, Type 2  
 Housing: IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



#### Technical Data

ProTec T2-xxxxPV-3Y-L(-x)MC-Box

1100

1500

#### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	40 kA	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	40 kA
Voltage Protection Level	$U_p$	< 4.2 kV	< 4.8 kV
Rated Load Current [2MC]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	
Short Circuit Current Rating	$I_{SCPV}$	9 kA	
Number of Strings per MPPT		1	

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / MC4 Connectors	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section Grounding [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection		IP 67	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

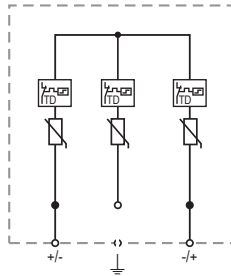
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏚ Terminal for PE/G Conductor
- TD Thermal Disconnect



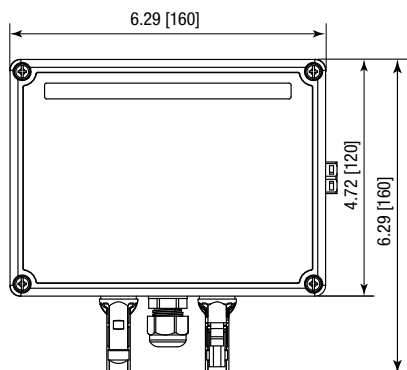
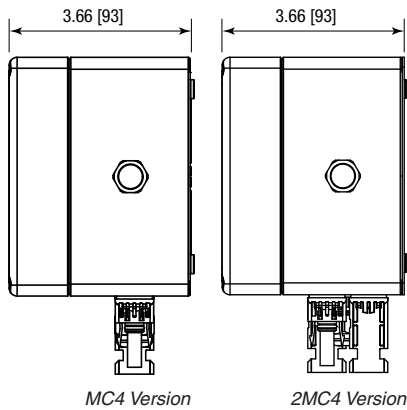
### ProTec T2-xxxxPV-3Y-L(-x)MC-Box

#### Order Information

Order Code	1100	1500
ProTec T2-xxxxPV-3Y-L-MC-Box	515 550	515 552
ProTec T2-xxxxPV-3Y-L-2MC-Box	515 654	515 656

## Dimensions & Packaging

inches [mm]



#### Complete Unit

ProTec T2-xxxxPV-3Y-L-MC-Box		1100	1500
Single Unit Weight	pounds [grams]	1.55 [705]	1.53 [694]
ProTec T2-xxxxPV-3Y-L-2MC-Box			
Single Unit Weight	pounds [grams]	1.80 [821]	1.86 [848]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

# Box with Multi-Pole SPD for Photovoltaic Systems

## ProTec T2 PV-5Y-L(-x)MC-Box

### Class II • Type 2

Location of Use: Photovoltaic Systems  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN Category: Class II, Type 2  
 Housing: IP 67 Enclosure  
 Compliance: EN 61643-31:2019  
 IEC 61643-31:2018



#### Technical Data

ProTec T2-xxxxPV-5Y-L(-x)MC-Box

1100

1500

#### Electrical

		1100	1500
Maximum Continuous Operating Voltage (DC)	$U_{OPV}$	1100V	1500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA	15 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{total}$	40 kA	40 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	40 kA	40 kA
Voltage Protection Level	$U_p$	< 4.2 kV	< 4.8 kV
Rated Load Current [2MC]	$I_L$	35 A	35 A
Response Time	$t_A$	< 25 ns	
Short Circuit Current Rating	$I_{SCPV}$	9 kA	
Number of Strings per MPPT		2	

#### Mechanical & Environmental

Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity	RH	5%...95%	
Altitude		13123 ft [4000 m]	
Type of Cable Entry		Cable Gland / MC4 Connectors	
Wire Insulation Outer Diameter	(min)	.15" [4 mm] (stranded, flexible)	
	(max)	.31" [8 mm] (stranded, flexible)	
Conductor Cross Section Grounding [Cable Gland]	(min)	24 AWG [0.2 mm <sup>2</sup> ] (stranded, flexible)	
	(max)	5 AWG [16 mm <sup>2</sup> ] (stranded, flexible)	
Degree of Protection		IP 67	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Housing Material		Polycarbonate with Semi-transparent	
Mounting		Wall - Indoor/Outdoor	

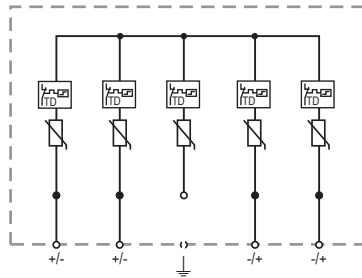
Connection Configurations can be found in QR code link on intro page.



## Internal Configuration

### Legend

- +/, -/+ Terminal for +/, -/+ Conductor
- ⏏ Terminal for PE/G Conductor
- TD Thermal Disconnect



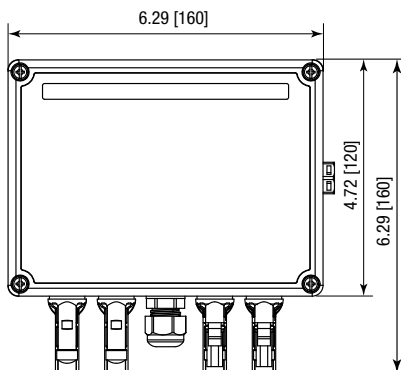
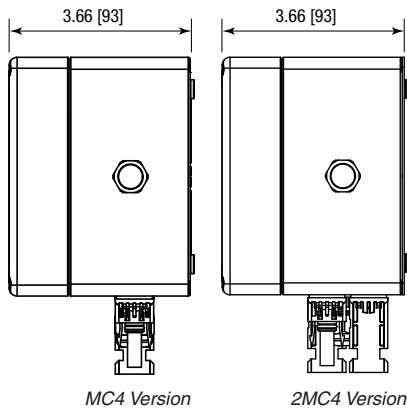
### ProTec T2-xxxxPV-5Y-L(-x)MC-Box

#### Order Information

Order Code	1100	1500
ProTec T2-xxxxPV-5Y-L-MC-Box	515 549	515 551
ProTec T2-xxxxPV-5Y-L-2MC-Box	515 653	515 655

## Dimensions & Packaging

inches [mm]



#### Complete Unit

		1100	1500
<b>ProTec T2-xxxxPV-5Y-L-MC-Box</b>			
Single Unit Weight	pounds [grams]	1.96 [890]	1.91 [869]
<b>ProTec T2-xxxxPV-5Y-L-2MC-Box</b>			
Single Unit Weight	pounds [grams]	2.21 [1003]	2.26 [1029]
Packaging Dimensions (H x W x L)		4.06 x 6.29 x 7.87" [103 x 160 x 200 mm]	
Minimum Package Quantity		1 Unit	

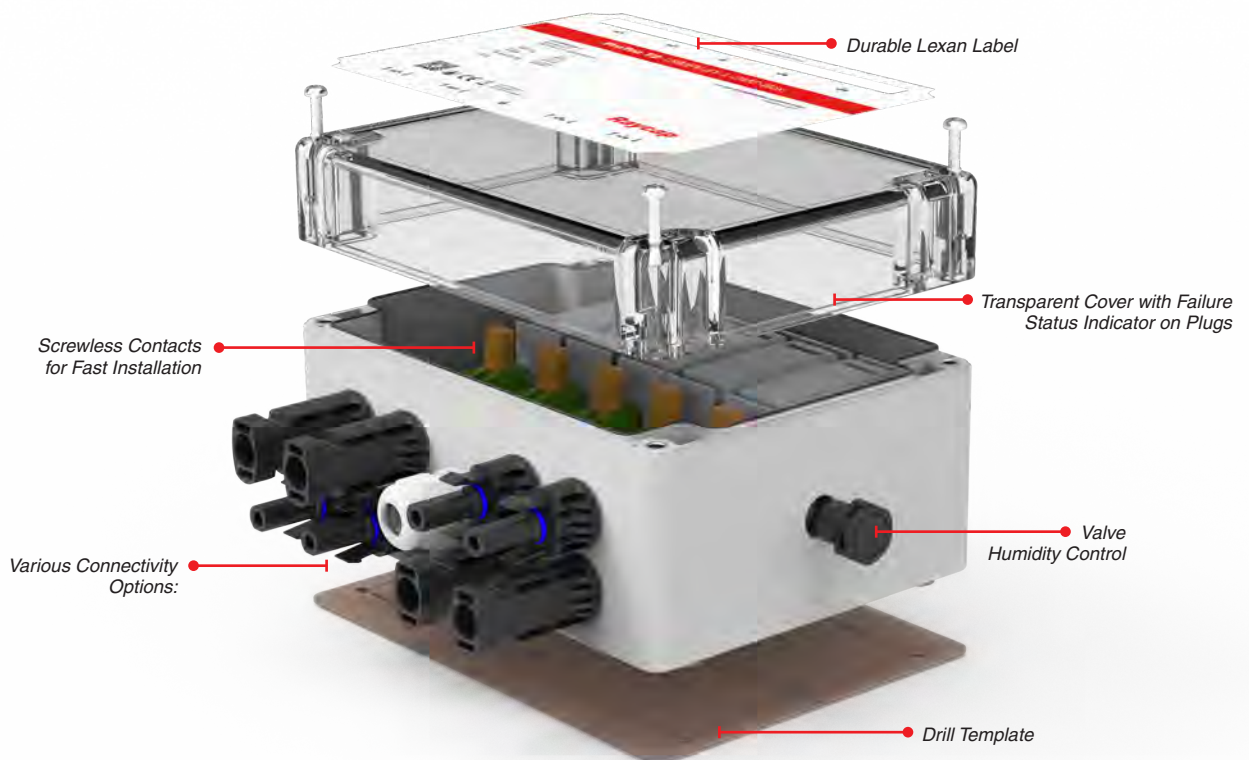
## Designed for quick on-wall installation **PV Box Enclosure**

### **Key advantages:**

- Easily installed inside the string box using the cable gland or a rubber grommet
- Fast connection of the strings using push-in or MC4 connectors
- Wide range of uses - suitable for indoor and outdoor installations

### **Main use:**

- Residential PV systems
- Installation on DC side - next to solar inverter and combiner box
- Versions for different lightning protection systems:
  - No LPS – ProTec T2 PV Box
  - External LPS with separation distance – ProTec T2 PV Box
  - External LPS with no separation distance – ProTec T1 PV Box





## Compact & Pluggable Multi-pole Surge Protective Devices (SPDs) for DC Systems



Lightning and Overvoltage Protection for DC Systems

### ProBloc B DC & SafeTec T2 DC



#### Special features:

##### ProBloc B DC

- Maximum Continuous Operating DC voltage 1000V
- High Surge Discharge Current ( $I_{Total}$ ) 12.5kA (10/350)
- Short circuit current rating up to 50kA
- Leakage Free hybrid topology
- High Energy MOV and GDT technology
- Compact design
- Vibration and shock resistant
- UL Type 1CA certified
- Optional remote contact (RC) signaling

##### SafeTec T2 DC

- Maximum Continuous Operating DC voltage 1000V
- High Surge Discharge Current ( $I_{Total}$ ) 65kA (8/20)
- High TOV immunity
- Vibration and shock resistant
- UL Type 4CA certified
- Optional remote contact (RC) signaling



IEC 61643-31:2018

EN 61643-31:2019

UL 1449 5th Edition



ProBloc B 1000 DC is a UL Type 1CA DC/PV SPD certified product designed for use to protect a large number of DC sources. Its main features include a compact design and an innovative disconnecting device with a rotating mechanism that can be used to safely extinguish a switching arc. Due to the high self-extinguishing capacity, a prospective short-circuit current of 50kA can be separated, for example as caused by battery storage in e-mobility applications. With this solution, numerous systems in the growing electro mobility market (e-mobility) can be protected.

The SafeTec T2 1000 DC is a UL Type 4CA DC/PV SPD device specially developed for protecting DC systems with the worldwide SafeTec TC technology. The thermal control function prolongs lifespan of SPDs, enables TOV immunity and provides low protection level at the same dimensions as other conventional protective devices. The universal features make it suitable to protect electrical devices not only against overvoltages caused by lightning strikes but voltages that originate from the internal system as well. In addition to the mechanical indicator, an optional remote contact (RC) feature offers a three-pole remote signaling terminal to remotely monitor the operating state of the device.

ProBloc B DC



SafeTec T2 DC



More Product Information



# Compact Multi-Pole SPD for DC Systems

## ProBloc B(R) 1000 DC

Class I • Class II • Type 1 • Type 2 • DC PV SPD Type 1CA



Location of Use: DC Systems, EV Chargers  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class I+II / Type 1+2  
 DC PV SPD Type 1CA  
 Housing: Compact Design  
 Safety: Rotary Disconnecter  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

### Technical Data

#### ProBloc B(R) 1000 DC

1000

#### EN Electrical

Nominal DC Voltage	$U_n$	900 V
Maximum Continuous Operating Voltage (DC)	(+)-(-) $U_{CDC}/U_{CPV}$	1000 V
	(+/-)-PE $U_{CDC}/U_{CPV}$	750 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Impulse Discharge Current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA
Specific Energy	W/R	9.77 kJ/ $\Omega$
Charge	Q	3.125 As
Total Discharge Current (10/350 $\mu$ s)	$I_{Total}$	12.5 kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	65 kA
Voltage Protection Level	(+)-(-) $U_p$	4400 V
	(+/-)-PE $U_p$	2300 V
Response Time	(+)-(-) $t_A$	< 25 ns
	(+/-)-PE $t_A$	< 100 ns
Short-Circuit Current Rating	$I_{SCPV}$	10 kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{dcmcov}$	1000 V
Voltage Protection Rating	(+)-(-) VPR	3000 V
	(+/-)-G VPR	1800 V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20 kA
Short-Circuit Current Rating	SCCR	50 kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(+)-(-) $U_{res}$	3500 V
	(+/-)-PE $U_{res}$	1800 V
Use in DC battery storage systems up to $I_{SCCR}$		30 kA (L/R < 3 ms)
Overcurrent protection fuse link for DC battery storage systems up to $I_{SCCR}$		ETI M1XL BAT 160A/1500V (004110655)

#### 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	$M_{max}$	25 lbf-in [3.0 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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/0.5A; 125V/3A
RC Terminal Cross Section (max)		16 AWG (Solid) / 1.5mm <sup>2</sup> (Solid)
RC Terminal Screw Torque	$M_{max}$	2 lbf-in [0.25 Nm]

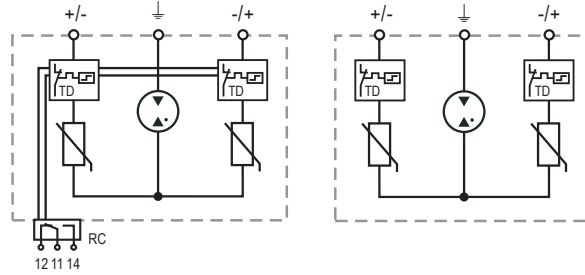
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

-  PE Conductor Terminal
-  TD Thermal Disconnect
-  RC Remote Contacts Terminal (Optional)



### ProBloc B(R) 1000 DC

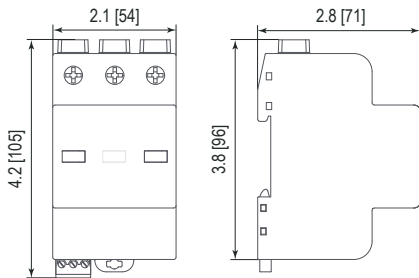
#### Order Information

Order Code	1000
ProBloc B 1000 DC	56.0670
ProBloc BR 1000 DC*	56.0671

\*No UL certification.

## Dimensions & Packaging

inches [mm]



#### Single Unit

ProBloc B(R) 1000 DC		1000
Weight	pounds [grams]	.934 [424]
DIN 43880 Dimension		3 TE / 2.13" [54]
Packaging Dimensions (H x W x L)		3.1 x 4.4 x 11.7" [79 x 112 x 298mm]
Standard Order Quantity		5 Units

# Pluggable Multi-Pole SPD for DC Systems

## SafeTec T2-1000DC-3+0(-R)

Class II • Type 2 • DC PV SPD Type 4CA



Location of Use: DC Systems, EV Chargers  
 Mode of Protection: (+)-PE, (-)-PE, (+)-(-)  
 IEC/EN/UL Category: Class II /Type 2 / DC PV SPD Type 4CA  
 Housing: Pluggable Design  
 Safety: Current Limiting  
 Compliance: IEC 61643-31:2018  
 EN 61643-31:2019  
 UL 1449 5th Edition

### Technical Data

SafeTec T2-1000DC-3+0(-R)

1000

#### EN Electrical

Nominal DC Voltage	$U_n$	900V
Maximum Continuous Operating Voltage (DC)	(+)-(-) $U_{CDC}/U_{CPV}$	1000V
	(+/-)-PE $U_{CDC}/U_{CPV}$	500V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA
Total Discharge Current (8/20 $\mu$ s)	$I_{Total}$	65kA
Voltage Protection Level	(+)-(-) $U_p$	4800V
	(+/-)-PE $U_p$	2500V
Response Time	(+)-(-) $t_A$	< 25ns
	(+/-)-PE $t_A$	< 100ns
Short-Circuit Current Rating	$I_{SCP}$	11kA
Number of Ports		1

#### UL Electrical

Maximum Permitted DC Voltage	$V_{dcmcov}$	1000V
Measured Limiting Voltage	(+)-(-) MLV	4590V
	(+/-)-G MLV	2470V
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	20kA

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

Residual Voltage at 5 kA (8/20 $\mu$ s)	(+)-(-) $U_{res}$	3100V
	(+/-)-PE $U_{res}$	1700V
Use in DC battery storage systems up to $I_{SCCR}$		30kA (L/R < 3ms)
Overcurrent protection fuse link for DC battery storage systems up to $I_{SCCR}$		ETI M1XL BAT 125A/1500V (004110654)

#### 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 <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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) / 1.5mm <sup>2</sup> (Solid)

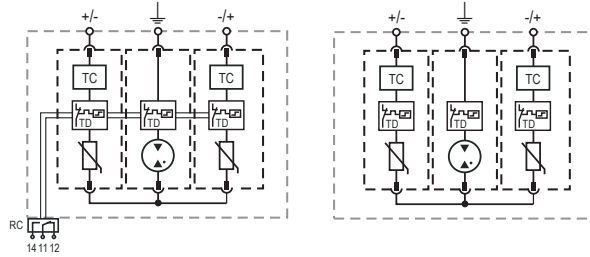
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

-  PE Conductor Terminal
-  RC Remote Contacts Terminal (Optional)
-  TC Thermal Control Function
-  TD Thermal Disconnecter



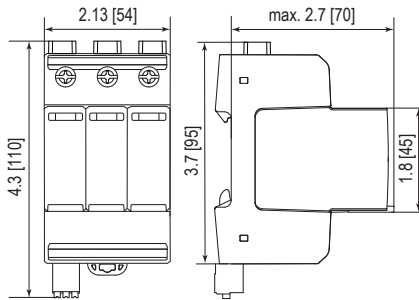
### SafeTec T2-1000DC-3+0(-R)

#### Order Information

Order Code	1000
SafeTec T2-1000DC-3+0	59.0373
SafeTec T2-1000DC-3+0-R (with remote contacts)	59.0374
SafeTec T2-500DC-P (side plug)	59.0387
SafeTube T2-DC-P (middle plug)	59.0388

## Dimensions & Packaging

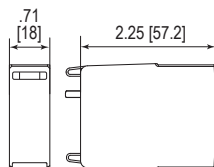
inches [mm]



#### Complete Unit

<b>SafeTec T2-1000DC-3+0</b>		<b>1000</b>
Weight	pounds	.853
	grams	387
<b>SafeTec T2-1000DC-3+0-R</b>		
Weight	pounds	.870
	grams	395
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 Units	

## Spare Plug



#### Single Unit

<b>SafeTec T2-xxxDC-P</b>		<b>500</b>
Weight	pounds	.176
	grams	80
<b>SafeTube T2-DC-P</b>		<b>40</b>
Weight	pounds	.093
	grams	42
DIN 43880 Dimension	1 TE / .71" [18]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	

# Notes

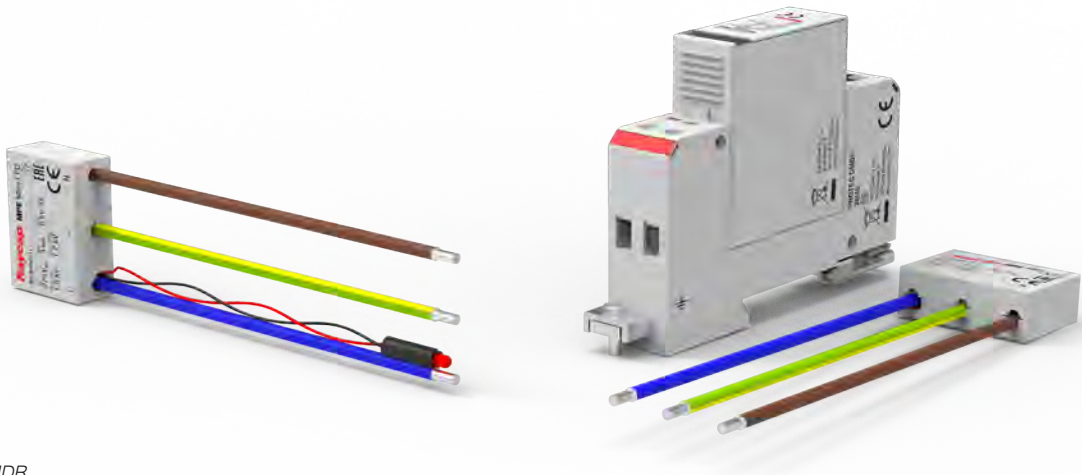


## Compact & Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

 ProTec DMDR,  
MPE Mini & MPE Mini LED

Class I and Class II SPDs are not enough to protect sensitive electronic elements. Overvoltage waves are slowly increasing at greater frequency, reoccurring and threatening smart devices. Incidence of low value surges are still too high for electronic elements and are often caused by activation switching of major appliances, inductive devices and motors, or industrial system operation failures. SPDs in this classification are intended to protect sensitive electronic installations in Zones 2-3 per IEC 62305.

The MPE Mini series is designed for installation into electrical installation systems, cable ducts and wiring sockets.



ProTec DMDR



MPE Mini & MPE Mini LED



More Product Information



# Pluggable Multi-pole SPD

## ProTec DMDR 20 Series

### Class III • Type 3 • DC SPD Type 4CA



Location of Use: Sub-distribution Boards  
 Network Systems: TN-S  
 Mode of Protection: L-PE, N-PE, L-N  
 IEC/EN/UL Category: Class III/Type 3/DC SPD Type 4CA  
 Housing: Pluggable Design  
 Compliance: IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018  
 UL 1449 5th Edition

## Technical Data

### ProTec DMDR 20 Series

		24*	48	60	120
<b>IEC Electrical</b>					
Nominal AC/DC Voltage	$U_o$	17V/17V	34V/48V	43V/60V	85V/120V
Maximum Continuous Operating Voltage (AC/DC)	$U_c$	24V/34V	48V/60V	60V/75V	120V/150V
Open Circuit Voltage of the Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	2.4 kV	2.4 kV	6 kV	6 kV
Short Circuit Current of the Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	1.2 kA	1.2 kA	3 kA	3 kA
Maximum Discharge Current (8/20 $\mu$ s)	$I_{max}$	2 kA	2 kA	4 kA	4 kA
Voltage Protection Level	(L-N) $U_p$	< 250V	< 500V	< 600V	< 1100V
	(L-PE)/(N-PE)	< 700V	< 800V	< 850V	< 1200V
Response Time of Overvoltage Protection	(L-N) $t_A$		< 25 ns		
	(L-PE)/(N-PE)		< 100 ns		
Overcurrent Protection (max)			32 A gG		
Short-Circuit Current Rating (AC)	$I_{SCCR}$		2 kA		
TOV Withstand 5s (AC)	$U_T$	115V	148V	163V	225V
Number of Ports			1		
<b>UL Electrical</b>					
Maximum Continuous Operating Voltage (AC)	MCOV	24V	-	-	-
Maximum Continuous Operating Voltage (DC)	(+)-(-) $V_{dcmcov}$	34V			
	(+)-(-)(G)	17V			
Measured Limiting Voltage	(L-N)/(+)-(-) MLV	190V/230V	-	-	-
	(L/N-G)/(+)-(-)(G)	580V/540V	-	-	-
Nominal Discharge Current (8/20 $\mu$ s)	$I_n$	1 kA	-	-	-
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)					
Overcurrent Protection (min)		8 A gG	8 A gG	16 A gG	16 A gG
<b>Mechanical</b>					
Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Humidity	RH	5%...95%			
Terminal Screw Torque	$M_{max}$	4.5 lbf-in [0.5 Nm]			
Conductor Cross Section (max.)		10 AWG (Solid, Stranded) / 12 AWG (Flexible)			
		6 mm <sup>2</sup> (Solid, Stranded) / 4 mm <sup>2</sup> (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 Status Indication		Green LED			

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

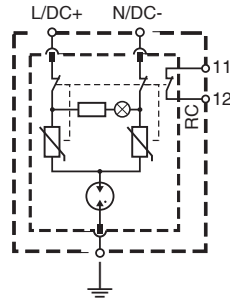




## Internal Configuration

### Legend

- L* Line Conductor Terminal
- N* Neutral Conductor Terminal
- PE/G Conductor Terminal
- RC* Remote Contacts Terminal



### ProTec DMDR 20 Series

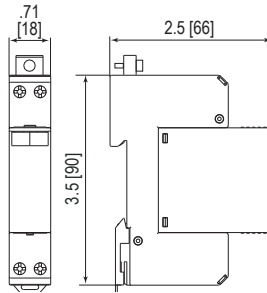
#### Order Information

Order Code	24*	48	60	120
ProTec DMDR 20/xxx	510 783	510 833	510 834	510 835
ProTec DMDR 20/xxxM (module)	510 784	510 836	510 837	510 838

\*UL Certification.

## Dimensions & Packaging

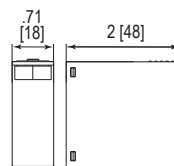
inches [mm]



#### Complete Unit

ProTec DMDR 20/xxx	24	48	60	120
Weight	pounds [grams]		.211 [96]	
DIN 43880 Dimension	1 TE / .71" [18]			
Packaging Dimensions (H x W x L)	3.1 x 4.4 x 11.7" [79 x 112 x 298mm]			
Standard Order Quantity	12 Units			

## Spare Plug

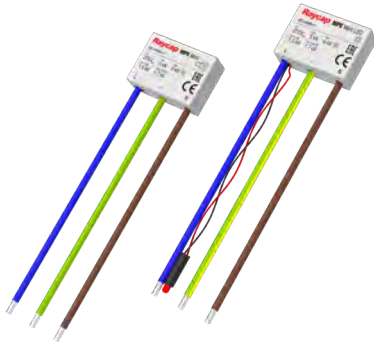


#### Single Unit

Plug ProTec DMDR 20/xxx	24	48	60	120
Weight	pounds [grams]		.070 [32]	
DIN 43880 Dimension	1 TE / .71" [18]			
Packaging Dimensions (H x W x L)	3.8 x 3 x 4.3" [98 x 77 x 110mm]			
Standard Order Quantity	12 Units			

# Compact Multi-pole SPD MPE Mini & MPE Mini LED

## Class III • Type 3



**Location of Use:** Cable Ducts & Wiring Outlets  
**Network Systems:** TN-S  
**Mode of Protection:** L-PE, L-N, N-PE  
**IEC/EN Category:** Class III / Type 3  
**Safety:** Buzzer, LED  
**Housing:** Compact Design  
**Compliance:** IEC 61643-11:2011  
 EN 61643-11:2012+A11:2018

### Technical Data

	MPE-Mini	MPE-Mini LED
<b>IEC Electrical</b>		
Nominal AC Voltage (50/60 Hz)	$U_o$	230V
Maximum Continuous Operating Voltage (AC)	$U_c$	275V
Open Circuit Voltage of the Combination Wave Generator (1.2/50 $\mu$ s)	$U_{oc}$	6kV
	(L+N-PE) $U_{oc\ total}$	10kV
Short-Circuit Current of the Combination Wave Generator (8/20 $\mu$ s)	$I_{cw}$	3kA
Voltage Protection Level	(L-N) $U_p$	1.5kV
	(L-PE)/(N-PE) $U_p$	1.7kV
Response Time	$t_A$	< 100 ns
Overcurrent Protection (max)		MCB/B 16 A
Short-Circuit Current Rating	$I_{scCR}$	1 kA
TOV Withstand 5s	$U_T$	337 V
Number of Ports		1
<b>Additional Electrical Parameters</b> (Tests performed within Raycap testing laboratory only)		
Overcurrent Protection (min)		MCB/B 16 A
<b>Mechanical &amp; Environmental</b>		
Temperature Range	$T_a$	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Humidity	RH	5%...95%
Conductor Cross Section		17 AWG (Stranded) / 1.0 mm <sup>2</sup> (Stranded)
Mounting		Cable Ducts
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Fault Indication	Buzzer	LED

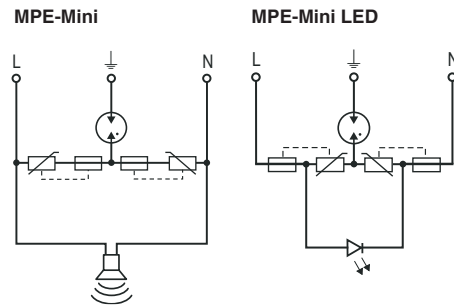
Connection Configurations can be found in QR Code link on intro page.



## Internal Configuration

### Legend

- L Line Conductor
- N Neutral Conductor
- ⊥ PE/G Conductor

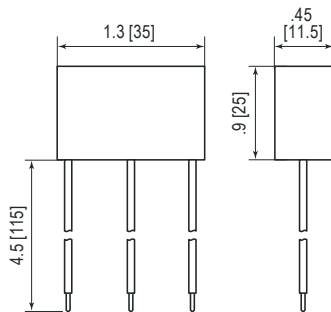


### Order Information

Order Code	MPE-Mini	MPE-Mini LED
MPE-Mini	121 280	
MPE-Mini LED		121 282

## Dimensions & Packaging

inches [mm]



### Complete Unit

#### MPE-Mini & MPE-Mini LED

Weight	pounds [grams]	0.114 [52]
Packaging Dimensions (H x W x L)		12 x 4.5 x 3.2" [305 x 116 x 83 mm]
Standard Order Quantity		30 Units

# Notes



## Isolating Spark Gap (ISG)

### Isolating Spark Gap (ISG) **EPZ 100/350 Ex**

The EPZ 100/350 Ex isolating spark gap solution prevents unsafe potential gradients from establishing between adjacent metallic structures or surfaces during a lightning discharge event. The product features an internal voltage switching component which establishes equipotential equalization when its predetermined spark-over voltage is reached, thereby preventing damage to equipment or eliminating unsafe conditions.

The EPZ 100/350 Ex is recommended for use in applications such as lightning protection grounding, where circumstances may dictate that a "clean" signal ground cannot be directly connected to a "dirty" power system ground. It has wide application in the petrochemical industry for the protection of oil and gas pipelines, insulating flanges from flash-overs during direct or nearby lightning discharges, or when ground faults of nearby power transmission lines can cause large potential gradients across these flanges.

The EPZ 100/350 Ex is available in a hermetically sealed enclosure for direct burial applications.

It has been developed to comply with the EN 62561-3:2017, Edition 2.0 – Lightning Protection System Components (LPSC) – Part 3: Requirement for Isolating Spark Gaps (ISG), and complies with the EN 60079-0:2012+A11:2013, EN 60079-15:2010, both standards for explosive atmospheres.

### Overhead Power Lines SPDs **ProTec AQS**

The ProTec AQS series of overvoltage surge protective devices has been developed to protect against indirect lightning discharges on overhead power lines. The Class II SPD consists of a high-performance varistor with a disconnection device that protects against short circuit conditions. The ProTec AQS series complies with IEC/EN 61643-11 standards and features a silicon jacket for greater hermetic sealing properties.

EPZ 100/350 Ex



ProTec AQS



More Product Information

RoHS  
COMPLIANT  CE

# Notes



## Surge & Lightning Counters Surge Protection Device Monitoring



### ProGRID Series

Electrical surges can occur at almost any time, and the most common causes are lightning strikes, the switching of inductive loads, power grid disturbances, general fault or arcing conditions. In the case of a direct lightning strike the damage caused by surge current is clearly felt and often visible, however many other electrical surge events can go unnoticed. The consequences of such 'quiet' disturbances can be just as detrimental to the operation.

Raycap's ProGRID surge and lightning counter solutions have different capabilities that can sense, record and transmit the occurrence of otherwise undetectable surge currents, enabling users to take preventative measures and plan appropriate maintenance.

The ProSEC II+ is a surge counter with additional functionality. Besides counting the number of surges, it also logs the hour and date of each surge counted. This additional time and date logging function makes it possible to pinpoint the exact time of every surge and correlate it with equipment and power supply problems inside of a facility or structure.

ProSLS is a device that continuously monitors the leakage current of an SPD, which is the most accurate predictor of a SPD's life status. Using measured current, ProSLS is able to predict the advanced degradation of a SPD and convey this information to the user.

ProALARM is a failure indication device that indicates the need to replace a failed SPD. It can be easily installed next to the SPD on the same rail by making a connection between the RC contacts of the SPD and the unit. If the SPD fails, a loud audible beeping sound and the red LED illuminates. Pressing the button will silence the audible sound, but leaves the LED illuminated until the SPD has been replaced.

The ProSCT SPD Component Tester tests the components commonly used in surge protective devices. It is a portable, battery operated instrument with an integrated battery charger housed in a robust enclosure. The instrument features a 320 x 240 pixel TFT color display with touch screen interface.



More Product Information



# Counting & Monitoring Solutions

## ProSEC II+



Location of Use: Main & Sub-Distribution Boards  
 Housing: Compact Design  
 Compliance: IEC 62561-6:2011

### Technical Data

#### ProSEC II+

##### IEC Electrical

Threshold Current (8/20 $\mu$ s)	$I_{tc}$	50 A
Maximum Counting Discharge Current (8/20 $\mu$ s)	$I_{mcw}$	50 kA
Power Supply		Replaceable: CR17335 lithium battery Lifetime: up to two years
Maximum Events Logged		999
Number of Ports		1

##### Mechanical & Environmental

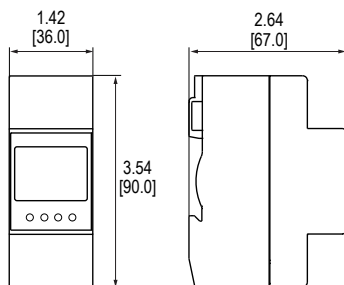
Operating Temperature Range	$T_a$	-4 °F to +158 °F [-20 °C to +70 °C]
Wired Diameter through Current Sensor (max)		0.55" [14 mm]
Sensor Cable		19.7" [0.5 m]
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State/Display		LCD Screen Number of Surges, Hour, Minute, Date of Event
Surge Sensor		Snap-on

##### Order Information

Order Code		
ProSEC II+		130 100

### Dimensions & Packaging

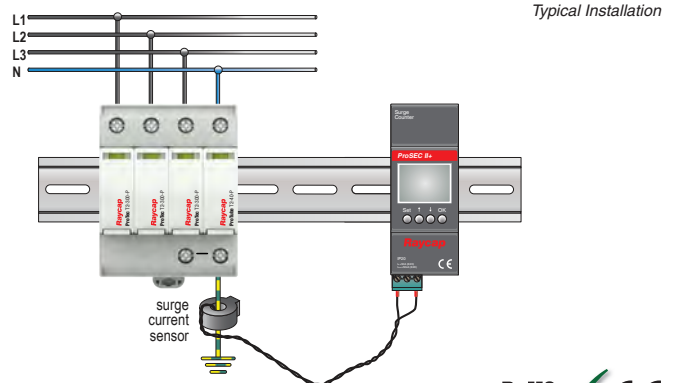
inches [mm]



#### Complete Unit

##### ProSEC II+

Weight	pounds [grams]	.33 [150]
DIN 43880 Dimension		2 TE / 1.42" [36]
Packaging Dimensions (H x W x L)		3.3 x 1.7 x 4.3" [83 x 42 x 110 mm]
Standard Order Quantity		1 Unit



RoHS COMPLIANT



# Counting & Monitoring Solutions

## ProSLS



Location of Use: Main & Sub-Distribution Boards  
 Housing: Compact Design  
 Compliance: EN 61326-1:2021

### Technical Data

#### ProSLS

##### IEC Electrical

Lowest Measurable Current (SPD Leakage)	100µA
Power Supply	Replaceable: 3.6V(ER AA) battery
	Lifetime: up to two years
Number of Ports	1

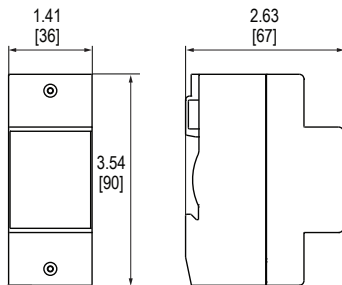
##### Mechanical & Environmental

Operating Temperature Range	T <sub>a</sub>	-22 °F to +158 °F [-30 °C to +70 °C]
Wired Diameter through Current Sensor (max)		0.47" [12mm]
Sensor Cable		39.4" [1 m]
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Surge Sensor		Snap-on
Remote Contacts		AC: 45V/1A DC: 30V/1A

##### Order Information

Order Code	
ProSLS	133 005

### Dimensions & Packaging

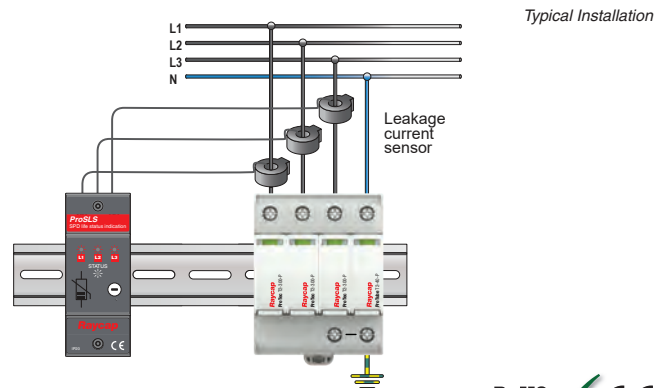


inches [mm]

##### Complete Unit

#### ProSLS

Weight	pounds [grams]	.88 [440]
DIN 43880 Dimension		2 TE / 1.42" [36]
Packaging Dimensions (H×W×L)		2.9 × 2.3 × 4.2" [73.5 × 58 × 106 mm]
Standard Order Quantity		1 Unit



RoHS COMPLIANT

# SPD Monitoring Solutions ProALARM



Location of Use: Main & Sub-Distribution Boards  
Housing: Compact Design  
Compliance: IEC 61010-1:2010+A1:2019

## Technical Data

### ProALARM

#### IEC Electrical

Rated Voltage (AC)	110V - 230V
Rated Frequency	50 Hz - 60Hz
Rated Current (Beeping)	5 mA (110V); 10 mA (230V)
Overcurrent Protection (max)	16A
RC Rated Current	5 mA (110V); 10 mA (230V)

#### Mechanical & Environmental

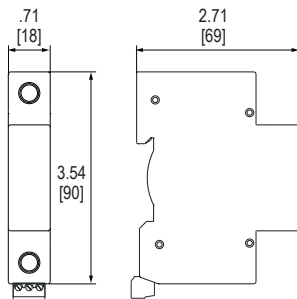
Operating Temperature Range	T <sub>a</sub>	-20 °C to +70 °C (-4 °F to + 158 °F)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State/Display		LED Red / Audible Alarm

#### Order Information

Order Code	
ProALARM	130 511

## Dimensions & Packaging

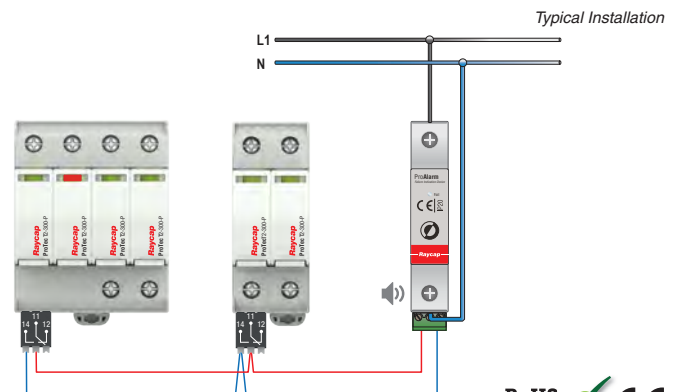
inches [mm]



#### Complete Unit

### ProALARM

Weight	pounds [grams]	.19 [87]
DIN 43880 Dimension		1 TE / .71" [18]
Packaging Dimensions (H x W x L)		3 x 0.9 x 4.3" [78 x 24 x 110 mm]
Standard Order Quantity		1 Unit



RoHS COMPLIANT

# SPD Component Tester ProSCT



Location of Use: Portable SPD Component Tester  
 Housing: Portable Design with or without suitcase  
 Compliance: EN 61326-1:2021  
 IEC 61010-1:2010+A1:2019

## Technical Data

### ProSCT

#### IEC Electrical

Test Current (MOV, TVS)	$I_{tc}$	0.1 mA; 0.5 mA; 1 mA
Test Voltage DC (max)		1500V
Voltage Ramp (GDT)	$t_A$	100V/s; 1000V/s
Power Supply		Integrated rechargeable battery
		Lifetime: up to two years
MOV Measurement Error		1.5% +/- 2 digit counts
GDT Measurement Error		3.5% +/- 2 digit counts (1 kV/s)
		1.6% +/- 2 digit counts (100V/s)
Component Connection		Auto-detect
Number of Ports		1

#### Mechanical & Environmental

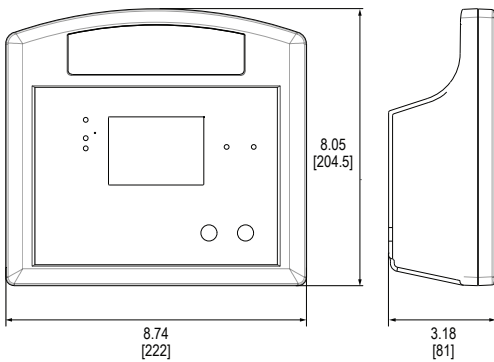
Operating Temperature Range	$T_a$	+14 °F to +122 °F [-10 °C to +50 °C]
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL-94-HB ABS
Operating State/Display		320 x 240 pixel TFT Color with Touch Screen Interface
		MOV, GDT, TVS Measurement, LOG Mode, Auto Detect, Date of Event

#### Order Information

Order Code	
ProSCT	130 571
ProSCT (with Suitcase and Adapter)	130 572

## Dimensions & Packaging

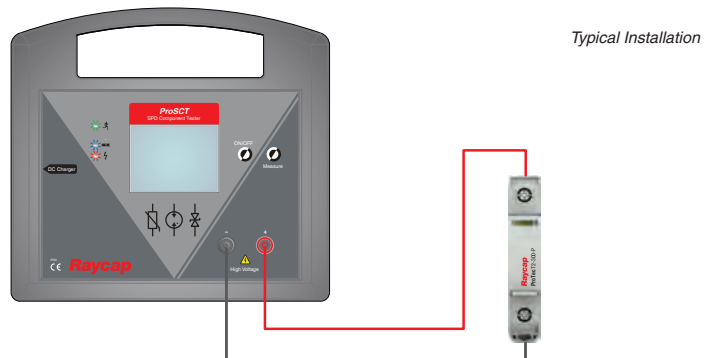
inches [mm]



#### Complete Unit

### ProSCT

Weight	pounds [grams]	2.43 [1100]
Packaging Dimensions (H x W x L)	Suitcase: 4.5 x 10.1 x 14.3"	[115 x 256 x 363 mm]
Standard Order Quantity		1 Unit



RoHS COMPLIANT  

# Accessories

## SPD Adapter for ProSCT Tester



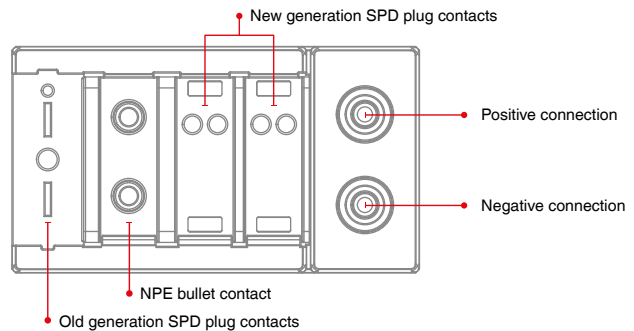
### Technical Data

#### SPD Adapter

Connections towards SPD Tester	Banana Jack
Connections towards SPD Modules	Old SPD flat contacts, NPE bullet contact, 2 New SPD spring contacts (for 1TE and 2TE modules)
Operating Temperatures	+14 °F to +122 °F [-10 °C to +50 °C]
Enclosure Dimension (L x W x D)	2.3 x 4.3 x 2" [60 x 108 x 52 mm]
Weight	pounds [grams] .38 [175]

#### Order Information

Order Code	
SPD adapter	130 573



## References

### Product Indexes



The electrical environment in which today's sensitive electronic systems are required to operate has become increasingly polluted by electrical disturbances, such as voltage surges and transients. At the same time, the susceptibility of these systems to catastrophic failure due to lightning events continues to exist and increase steadily as the use of micro-controlled electronics has proliferated into many industrial and commercial environments and appliances. Raycap's products and solutions help protect mission-critical applications worldwide.

The following pages highlight current Regulatory Standards, SPD Technologies in use today, Industry Terminology and the basic types of Low Voltage Distribution Systems that Raycap products protect.

Product Indexes are arranged alphabetically by Product Name with a separate Index for the Open Type 1 UL Listed products.

## Regulatory Standards

Regulations	Description
1 CLC/TS 51643-32: 2013	Low-voltage surge protective devices – Part 32: Surge protective devices connected to the DC side of photovoltaic installations - Selection and application principles.
<b>European Standards (EN)</b>	
2 EN 50122-1: 2011+ A4: 2017	Railway applications – Fixed installations – Part 1: Protective provisions relating to electrical safety and earthing
3 EN 50123-5: 2003	Railway applications – Fixed installations – DC switchgear – Part 5: Surge arresters and low-voltage limiters for specific use in DC systems
4 EN 50526-1: 2012	Railway applications – Fixed installations – DC surge arresters and voltage limiting devices – Part 1: Surge arresters
5 EN 50539-11: 2013+ A1: 2014	Low-voltage surge protective devices - Surge protective devices for specific application including DC – Part 11: Requirements and tests for SPDs in photovoltaic applications
6 EN 61643-11: 2012+ A11: 2018	Surge protective devices connected to low-voltage power distribution systems – requirements and test methods.
7 EN 61173: 2001	Overvoltage protection for photovoltaic (PV) power generating systems – Guide
8 EN 62561-3: 2017	Lightning protection system components (LPSC) – Part 3: Requirements for isolating spark gaps (ISG)
<b>International Electrotechnical Commission (IEC)</b>	
9 IEC/EN 61326-1: 2020	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
10 IEC 60038: 2009+ AMD1: 2021	IEC standard voltages
11 IEC 60099-4: 2014	Surge arresters – Part 4: Metal-oxide surge arresters without gaps for AC systems
12 IEC 60099-5: 2018	Surge arresters – Part 5: Selection and application recommendations
13 IEC 60364-5-53: 2019+ AMD1: 2020	Electrical installation of buildings – Part 5-53: Selection and erection of electrical equipment-isolation, switching and control
14 IEC 60364-7-712: 2017	Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems
15 IEC 61000-4-5: 2014+ ADD1: 2017	Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
16 IEC 61400-24: 2019	Wind turbine generator systems – Part 24: Lightning protection
17 IEC 61643-11: 2011	Surge protective devices connected to low voltage power distribution systems – Requirements and test methods
18 IEC 61643-12: 2020	Surge protective devices connected to low voltage power distribution systems – Selection and application principles

Regulations		Description
19	IEC 61643-21: 2000+ AMD1: 2008+ AMD2: 2012	Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signaling networks – Performance requirements and testing methods
20	IEC 61643-22: 2015	Low voltage surge protective devices – Part 22: Surge protection devices connected to telecommunications and signaling networks – Selection and application principles
21	IEC 61643-31: 2018	Low voltage surge protective devices – Part 31: Requirements and test methods of SPDs for photovoltaic installations
22	IEC 61643-311: 2013	Components for low-voltage surge protective devices – Part 311: Performance requirements and test circuits for gas discharge tubes (GDT), Edition 2.0, 2013-04
23	IEC 62305-1: 2010	Protection against lightning – Part 1: General principles
24	IEC 62305-2: 2010	Protection against lightning – Part 2: Risk management
25	IEC 62305-3: 2010	Protection against lightning – Part 3: Physical damage to structures and life hazard
26	IEC 62305-4: 2010	Protection against lightning – Part 4: Electrical and electronic systems within structures
27	IEC 62497-2: 2010	Railway applications – Insulation coordination – Part 2: Overvoltages and related protection
28	IEC 62561-6: 2018	Lightning protection system components (LPSC) – Part 6: Requirements for lightning strike counters (LSC)
International Telecommunication Union Standards (ITU-T)		
29	ITU-T K.20: 2021	Protection against interferences: Resistibility of telecommunication equipment installed in a telecommunications center to overvoltages and overcurrents
30	ITU-T K.21: 2022	Protection against interferences: Resistibility of telecommunication equipment installed in customer premises to overvoltages and overcurrents
31	ITU-T K.44: 2019	Protection against interferences: Resistibility test for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation
Harmonization Document (HD)		
32	HD 60364-4-443: 2016	Low voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances – Clause 443: Protection against overvoltages of atmospheric origin or due to switching.
33	HD 60364-7-712: 2016	Low voltage electrical installations – Part 7-712: Requirements for special installations or locations – Photovoltaic (PV) systems
Underwriters Laboratory (UL)		
34	UL 1449 5th Edition	Standard for Surge Protective Devices



## Common Terminology

### 1.2/50 $\mu$ s Voltage Impulse

Voltage impulse with a nominal virtual front time of 1.2 $\mu$ s and a nominal time to half-value of 50 $\mu$ s.

### 8/20 $\mu$ s Current Impulse

Current impulse with a nominal virtual front time of 8 $\mu$ s and a nominal time to half-value of 20 $\mu$ s.

### American Wire Gauge (AWG)

American Wire Gauge (AWG) is a standardized wire gauge system for the diameters of round, solid, nonferrous, electrically conducting wire. The larger the AWG number or wire gauge, the smaller the physical size of the wire. The smallest AWG size is 40 and the largest is 000 (4/0).

### Combination Wave

The combination wave is delivered by a generator that applies a 1.2/50 $\mu$ s voltage impulse across an open circuit and an 8/20 $\mu$ s current impulse into a short circuit. The voltage, current amplitude and waveforms that are delivered to the SPD are determined by the generator impedance and the impedance of the SPD to which the surge is applied. The short-circuit current is symbolized by  $I_{sc}$ . The open-circuit voltage is symbolized by  $U_{oc}$ .

### Environmental Protection Provided by Enclosure – Ingress Protection Rating (IP)

The extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and/or against ingress of water per IEC 60529.

### Follow Current Interrupt Rating $I_{fi}$

Prospective short-circuit current that an SPD is able to interrupt without operation of a disconnecter.

### Impulse Discharge Current $I_{imp}$ (10/350 $\mu$ s Current Impulse)

The crest value of a discharge current through SPD with specified charge transfer Q and specified energy W/R in a specified time.

### Maximum Continuous Operating Voltages ( $U_c$ or MCOV)

The maximum root-mean square (RMS) or DC voltage, which may be continuously applied to the SPD's mode of protection.

### Maximum Discharge Current $I_{max}$

Crest value of a current through the SPD having an 8/20 $\mu$ s waveshape and magnitude according to the manufacturers specifications:  $I_{max}$  is greater than  $I_n$ .

### Metal Oxide Varistor (MOV)

A varistor is a bipolar, non-linear resistor with a symmetrical voltage current characteristic, where the resistance decreases with an increasing characteristic curve.

### Multi-pole Surge Protective Device (SPD)

Type of SPD with more than one mode of protection, or a combination of electrically interconnected SPDs offered as a unit.



**Nominal AC Voltage  $U_o/U_n$** 

In TN and TT Systems: Nominal RMS AC line voltage to earth; in IT Systems: Nominal AC voltage between line conductor and neutral conductor or midpoint conductor.

**Nominal Discharge Current  $I_n$** 

The crest value of the current through the SPD having a current waveshape of 8/20 $\mu$ s.

**Overcurrent Protection**

Overcurrent device such as a circuit-breaker or fuse, which could be part of the electrical installation located externally upstream of the SPD.

**Residual Voltage  $U_{res}$** 

The crest value of voltage that appears between the terminals of an SPD due to the passage of discharge current.

**SPD Disconnecter**

Internal build-in external device required for disconnecting an SPD or part of an SPD from the power system.

**SPD Mode of Protection**

An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral and neutral-to-earth.

**Short-Circuit Current  $I_{SCCR}$  per IEC 61643-11/EN 61643-11**

Maximum prospective short-circuit current from the power system for which the SPD, in conjunction with the disconnecter specified, is rated.

**Short Circuit Current Rating (SCCR) per UL 1449**

The suitability of an SPD for use on an AC power circuit that is capable of delivery not more than a declared RMS symmetrical current at a declared voltage during a short-circuit condition.

**Surge Protective Device (SPD)**

A device that is intended to limit surge overvoltages and divert surge currents. It contains at least one nonlinear component.

**Temporary Overvoltage Characteristics TOV**

Is a behavior of a surge device which is exposed to a temporary overvoltage for certain time duration. The time can be between 5 seconds and 120 minutes.

**Total Discharge Current  $I_{Total}$** 

Current which flows through earth conductor of a multi-pole SPD during the total discharge current test.

**Voltage Protection Level  $U_p$** 

Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and impulse stress with a discharge current, given amplitude and waveshape.

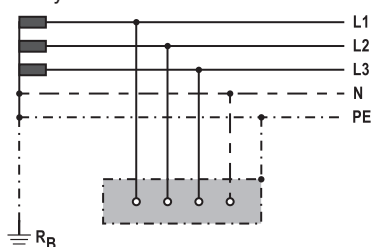
# Low Voltage Power Distribution System Types



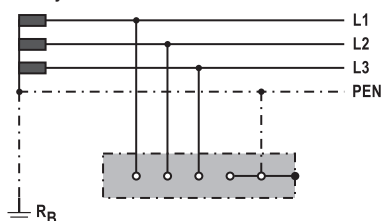
## Earthing Systems

### System Configuration

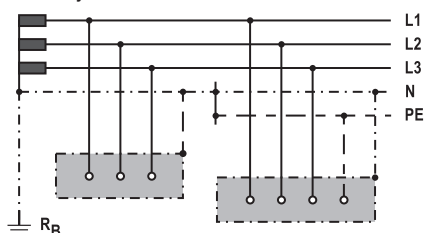
#### TN-S System



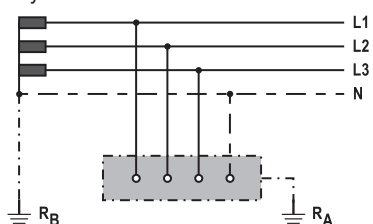
#### TN-C System



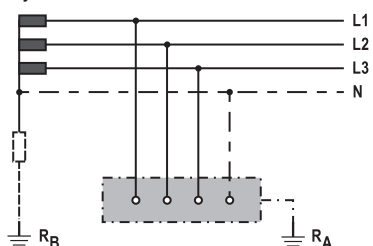
#### TN-C-S System



#### TT System



#### IT System



Low voltage distribution network systems are designated using two letters according to IEC 60364-4-41: 2015. The first letter describes the grounding method used at the source, the secondary side of the power distribution transformer. The second letter describes the grounding method used at the consumer's electrical installation for any conductive metal parts.

The method is used to define three basic systems:

- TN System**
- TT System**
- IT System**

The abbreviations have the following meaning:

**First Letter**—relationship of power system to earth

- T** Direct connection to ground of the power supply source
- I** All live parts isolated from earth, one point connected to earth through an impedance

**Second Letter**—grounding method used at exposed conductive parts in the electrical installation:

- T** Exposed conductive parts are directly grounded independent of the earthing of any point of the power system
- N** Exposed conductive parts are directly connected to the earthed point of the power system

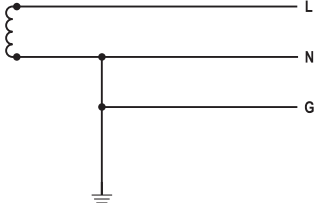
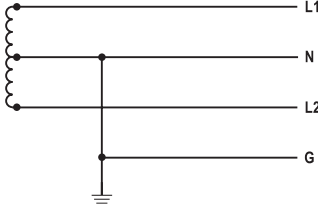
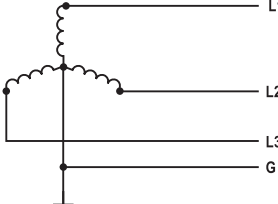
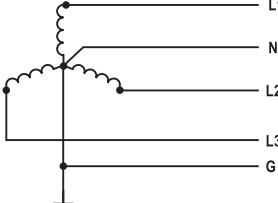
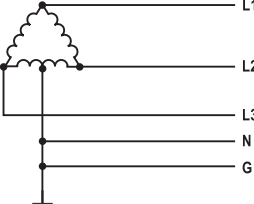
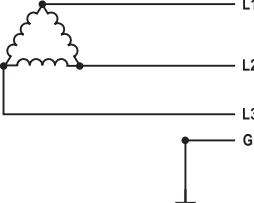
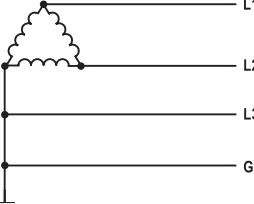
Subsequent prefixes may be used to describe the arrangement of neutral and protective conductors:

- S** Neutral and protective conductor are separated
- C** Neutral and protective conductor are combined in a single conductor (PEN conductor)

Therefore, there are three possible TN sub-systems: TN-S, TN-C and TN-C-S



## Live Conductor Systems

Source Configuration	Description
	<b>Single Phase</b> System Voltage: 110 V • 120 V • 220 V • 240 V • 277 V Circuit Type: 1 $\phi$ , 2W + G Protection Modes: Line-Neutral
	<b>Single Phase (Split Phase)</b> System Voltage: 120 V/240 V • 240 V/480 V Circuit Type: 1 $\phi$ , 3W + G Protection Modes: Line-Neutral/Line-Line
	<b>Three Phase WYE without Neutral</b> System Voltage: 480 V Circuit Type: 3 $\phi$ WYE, 3W + G Protection Modes: Line-Line
	<b>Three Phase WYE with Neutral</b> System Voltage: 120 V/208 V • 220 V/380 V • 230 V/400 V • 240 V/415 V • 277 V/480 V • 347 V/600 V Circuit Type: 3 $\phi$ WYE, 4W + G Protection Modes: Line-Neutral/Line-Line
	<b>Delta High Leg</b> System Voltage: 120 V/240 V Circuit Type: 3 $\phi$ $\Delta$ , 4W + G Protection Modes: Line-Neutral/Line-Line
	<b>Delta Ungrounded</b> System Voltage: 120 V • 240 V • 480 V Circuit Type: 3 $\phi$ $\Delta$ , 3W + G Protection Modes: Line-Line
	<b>Delta Grounded Corner</b> System Voltage: 120 V • 240 V • 480 V • 600 V Circuit Type: 3 $\phi$ $\Delta$ , 3W + G Protection Modes: Line-Line

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MPE-Mini	121 280		240	ProTec T1-350-1+1	59.0053	2 TE	82
MPE-Mini LED	121 282		240	ProTec T1-350-1+1-R	59.0054	2 TE	82
ProALARM	130 511	1 TE	248	ProTec T1-350-2+0	59.0023	2 TE	76
ProBloc B 1000 DC	56.0670	3TE	232	ProTec T1-350-2+0-R	59.0024	2 TE	76
ProBloc BR 1000 DC	56.0671	3TE	232	ProTec T1-350-3+0	59.0033	3 TE	78
ProSCT	130 571		249	ProTec T1-350-3+0-R	59.0034	3 TE	78
ProSCT, Case & Adapter	130 572		249	ProTec T1-350-3+1	59.0061	4 TE	84
ProSCT SPD Adapter	130 573		250	ProTec T1-350-3+1-R	59.0062	4 TE	84
ProSEC II+	130 100	2 TE	246	ProTec T1-350-4+0	59.0351	4 TE	80
ProSLS	130 551	2 TE	247	ProTec T1-350-4+0-R	59.0352	4 TE	80
ProTec DMDR 20/120	510 835	1 TE	238	ProTec T1-350-P	59.0004	1 TE plug	74-84
ProTec DMDR 20/120M	510 838	1 TE Plug	238	ProTec T1-440-1+0	59.0531	1 TE	74
ProTec DMDR 20/24	510 783	1 TE	238	ProTec T1-440-1+0-R	59.0532	1 TE	74
ProTec DMDR 20/24M	510 784	1 TE Plug	238	ProTec T1-440-2+0	59.0533	2 TE	76
ProTec DMDR 20/48	510 833	1 TE	238	ProTec T1-440-2+0-R	59.0534	2 TE	76
ProTec DMDR 20/48M	510 836	1 TE Plug	238	ProTec T1-440-3+0	59.0535	3 TE	78
ProTec DMDR 20/60	510 834	1 TE	238	ProTec T1-440-3+0-R	59.0536	3 TE	78
ProTec DMDR 20/60M	510 837	1 TE Plug	238	ProTec T1-440-4+0	59.0537	4 TE	80
ProTec T1-75-1+0	59.0007	1 TE	74	ProTec T1-440-4+0-R	59.0538	4 TE	80
ProTec T1-75-1+0-R	59.0008	1 TE	74	ProTec T1-440-P	59.0539	1 TE plug	74-80
ProTec T1-75-1+1	59.0047	2 TE	82	ProTec T1-480-1+0	59.0015	1 TE	74
ProTec T1-75-1+1-R	59.0048	2 TE	82	ProTec T1-480-1+0-R	59.0016	1 TE	74
ProTec T1-75-2+0	59.0349	2 TE	76	ProTec T1-480-2+0	59.0025	2 TE	76
ProTec T1-75-2+0-R	59.0350	2 TE	76	ProTec T1-480-2+0-R	59.0026	2 TE	76
ProTec T1-75-P	59.0001	1 TE plug	74-76,82	ProTec T1-480-3+0	59.0035	3 TE	78
ProTec T1-150-1+0	59.0009	1 TE	74	ProTec T1-480-3+0-R	59.0036	3 TE	78
ProTec T1-150-1+0-R	59.0010	1 TE	74	ProTec T1-480-4+0	59.0043	4 TE	80
ProTec T1-150-1+1	59.0049	2 TE	82	ProTec T1-480-4+0-R	59.0044	4 TE	80
ProTec T1-150-1+1-R	59.0050	2 TE	82	ProTec T1-480-P	59.0005	1 TE plug	74-80
ProTec T1-150-2+0	59.0019	2 TE	76	ProTec T1-550PV-00-P	59.A446	1 TE plug	198
ProTec T1-150-2+0-R	59.0020	2 TE	76	ProTec T1-550PV-00M-P	59.A447	1 TE plug	198
ProTec T1-150-3+0	59.0029	3 TE	78	ProTec T1-550PV-01-P	59.A468	1 TE plug	200
ProTec T1-150-3+0-R	59.0030	3 TE	78	ProTec T1-550PV-01M-P	59.A469	1 TE plug	200
ProTec T1-150-4+0	59.0039	4 TE	80	ProTec T1-550PV-M-P	59.0284	1 TE plug	208
ProTec T1-150-4+0-R	59.0040	4 TE	80	ProTec T1-550PV-P	59.0283	1 TE plug	208
ProTec T1-150-P	59.0002	1 TE plug	74-82	ProTec T1-600PV-3+0	59.A574	3 TE	208
ProTec T1-300-1+0	59.0011	1 TE	74	ProTec T1-600PV-3+0-R	59.A575	3 TE	208
ProTec T1-300-1+0-LH	59.A371	1 TE	90	ProTec T1-750-1+0	59.0017	1 TE	74
ProTec T1-300-1+0-LH-R	59.A372	1 TE	90	ProTec T1-750-1+0-R	59.0018	1 TE	74
ProTec T1-300-1+0-R	59.0012	1 TE	74	ProTec T1-750-2+0	59.0027	2 TE	76
ProTec T1-300-1+1	59.0051	2 TE	82	ProTec T1-750-2+0-R	59.0028	2 TE	76
ProTec T1-300-1+1-LH-R	59.A380	2 TE	98	ProTec T1-750-3+0	59.0037	3 TE	78
ProTec T1-300-1+1-R	59.0052	2 TE	82	ProTec T1-750-3+0-R	59.0038	3 TE	78
ProTec T1-300-2+0	59.0021	2 TE	76	ProTec T1-750-P	59.0006	1 TE plug	74-78
ProTec T1-300-2+0-LH	59.A373	2 TE	92	ProTec T1-750PV-S-M-P	59.0918	1 TE plug	206
ProTec T1-300-2+0-LH-R	59.A374	2 TE	92	ProTec T1-750PV-S-P	59.0919	1 TE plug	206
ProTec T1-300-2+0-R	59.0022	2 TE	76	ProTec T1-1100PV-3+0	59.0285	3 TE	208
ProTec T1-300-3+0	59.0031	3 TE	78	ProTec T1-1100PV-3+0-R	59.0286	3 TE	208
ProTec T1-300-3+0-LH	59.A375	3 TE	94	ProTec T1-1100PV-3Y-2MC-Box	515 657		222
ProTec T1-300-3+0-LH-R	59.A376	3 TE	94	ProTec T1-1100PV-3Y-Box	515 608		214
ProTec T1-300-3+0-R	59.0032	3 TE	78	ProTec T1-1100PV-3Y-MC Box	515 615		222
ProTec T1-300-3+1	59.0059	4 TE	84	ProTec T1-1100PV-3Y-RG Box	515 649		214
ProTec T1-300-3+1-LH	59.A381	4 TE	100	ProTec T1-1100PV-5Y-00	59.A444	5 TE	198
ProTec T1-300-3+1-LH-R	59.A382	4 TE	100	ProTec T1-1100PV-5Y-00-R	59.A445	5 TE	198
ProTec T1-300-3+1-R	59.0060	4 TE	84	ProTec T1-1100PV-5Y-01	59.A466	5 TE	200
ProTec T1-300-4+0	59.0041	4 TE	80	ProTec T1-1100PV-5Y-01-R	59.A467	5 TE	200
ProTec T1-300-4+0-LH	59.A377	4 TE	96	ProTec T1-1100PV-5Y-2MC-Box	515 658		224
ProTec T1-300-4+0-LH-R	59.A378	4 TE	96	ProTec T1-1100PV-5Y-Box	515 609		216
ProTec T1-300-4+0-R	59.0042	4 TE	80	ProTec T1-1100PV-5Y-MC-Box	515 616		224
ProTec T1-300-LH-1+1	59.A379	2 TE	98	ProTec T1-1100PV-5Y-RG-Box	515 650		216
ProTec T1-300-LH-P	59.A383	1 TE plug	90-100	ProTec T1-1500PV-3+0-S	59.0917	3 TE	206
ProTec T1-300-P	59.0003	1 TE plug	74-84	ProTec T1-1500PV-3+0-S-R	59.0916	3 TE	206
ProTec T1-300PV-M-P	59.A577	1 TE plug	208	ProTec T1-1500PV-3Y-S-2MC-Box	515 659		222
ProTec T1-300PV-P	59.A576	1 TE plug	208	ProTec T1-1500PV-3Y-S-Box	515 612		214
ProTec T1-350-1+0	59.0013	1 TE	74	ProTec T1-1500PV-3Y-S-MC-Box	515 617		222
ProTec T1-350-1+0-R	59.0014	1 TE	74	ProTec T1-1500PV-3Y-S-RG-Box	515 651		214

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ProTec T1-1500PV-5Y-S-Box	515 613		216	ProTec T1SF-275-1+0-R	59.A501	2 TE	16
ProTec T1-1500PV-5Y-S-MC-Box	515 618		224	ProTec T1SF-275-P	59.A502	2 TE plug	16
ProTec T1-1500PV-5Y-S-RG-Box	515 652		216	ProTec T2-75-1+0	59.0069	1 TE	136
ProTec T1H-300-1+0	59.0310	1 TE	58	ProTec T2-75-1+0-R	59.0070	1 TE	136
ProTec T1H-300-1+0-R	59.0311	1 TE	58	ProTec T2-75-1+1	59.0109	2 TE	144
ProTec T1H-300-1+1	59.0318	2 TE	66	ProTec T2-75-1+1-R	59.0110	2 TE	144
ProTec T1H-300-1+1-R	59.0319	2 TE	66	ProTec T2-75-2+0	59.0343	2 TE	138
ProTec T1H-300-2+0	59.0312	2 TE	60	ProTec T2-75-2+0-R	59.0344	2 TE	138
ProTec T1H-300-2+0-R	59.0313	2 TE	60	ProTec T2-75-P	59.0063	1 TE plug	136-138, 144
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ProTec T1H-300-3+0-R	59.0315	3 TE	62	ProTec T2-150-1+0	59.0071	1 TE	136
ProTec T1H-300-3+1	59.0320	4 TE	68	ProTec T2-150-1+0-R	59.0072	1 TE	136
ProTec T1H-300-3+1-R	59.0321	4 TE	68	ProTec T2-150-1+1	59.0111	2 TE	144
ProTec T1H-300-4+0	59.0316	4 TE	64	ProTec T2-150-1+1-R	59.0112	2 TE	144
ProTec T1H-300-4+0-R	59.0317	4 TE	64	ProTec T2-150-2+0	59.0081	2 TE	136
ProTec T1H-300-P	59.0308	1 TE plug	58-68	ProTec T2-150-2+0-R	59.0082	2 TE	136
ProTec T1HS-300-1+0	59.A594	2 TE	46	ProTec T2-150-3+0	59.0091	3 TE	140
ProTec T1HS-300-1+0-R	59.A595	2 TE	46	ProTec T2-150-3+0-R	59.0092	3 TE	140
ProTec T1HS-300-3+0	59.0304	6 TE	48	ProTec T2-150-4+0	59.0101	4 TE	142
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ProTec T1HS-300-4+0	59.0260	8 TE	50	ProTec T2-250PV-3+0-R	59.0979	3 TE	10
ProTec T1HS-300-4+0-R	59.0261	8 TE	50	ProTec T2-300-1+0	59.0073	1 TE	136
ProTec T1HS-300-P	59.0302	2 TE plug	46-52	ProTec T2-300-1+0-R	59.0074	1 TE	136
ProTec T1S-275-1+0	59.0738	1 TE	26	ProTec T2-300-1+1	59.0113	2 TE	144
ProTec T1S-275-1+0-R	59.0739	1 TE	26	ProTec T2-300-1+1-R	59.0114	2 TE	144
ProTec T1S-275-1+1	59.0746	2 TE	34	ProTec T2-300-2+0	59.0083	2 TE	138
ProTec T1S-275-1+1-R	59.0747	2 TE	34	ProTec T2-300-2+0-R	59.0084	2 TE	138
ProTec T1S-275-2+0	59.0740	2 TE	28	ProTec T2-300-3+0	59.0093	3 TE	140
ProTec T1S-275-2+0-R	59.0741	2 TE	28	ProTec T2-300-3+0-R	59.0094	3 TE	140
ProTec T1S-275-3+0	59.0742	3 TE	30	ProTec T2-300-3+1	59.0121	4 TE	146
ProTec T1S-275-3+0-R	59.0743	3 TE	30	ProTec T2-300-3+1-R	59.0122	4 TE	146
ProTec T1S-275-3+1	59.0748	4 TE	36	ProTec T2-300-4+0	59.0103	4 TE	142
ProTec T1S-275-3+1-N	59.0382	4 TE	38	ProTec T2-300-4+0-R	59.0104	4 TE	142
ProTec T1S-275-3+1-N-R	59.0383	4 TE	38	ProTec T2-300-P	59.0065	1 TE plug	136-146
ProTec T1S-275-3+1-R	59.0749	4 TE	36	ProTec T2-300PV-P	59.0992	1 TE plug	210
ProTec T1S-275-4+0	59.0744	4 TE	32	ProTec T2-350-1+0	59.0075	1 TE	136
ProTec T1S-275-4+0-R	59.0745	4 TE	32	ProTec T2-350-1+0-R	59.0076	1 TE	136
ProTec T1S-275-N-P	59.0385	1 TE plug	38	ProTec T2-350-1+1	59.0115	2 TE	144
ProTec T1S-275-P	59.0384	1 TE plug	26-36	ProTec T2-350-1+1-R	59.0116	2 TE	144
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ProTec T1S-35-275-P	59.A532	2 TE plug	22	ProTec T2-350-3+0	59.0095	3 TE	140
ProTec T1S-35-440-1+0	59.A536	2 TE	22	ProTec T2-350-3+0-R	59.0096	3 TE	140
ProTec T1S-35-440-1+0-R	59.A537	2 TE	22	ProTec T2-350-3+1	59.0123	4 TE	146
ProTec T1S-35-440-P	59.A538	2 TE plug	22	ProTec T2-350-3+1-R	59.0124	4 TE	146
ProTec T1S-440-1+0	59.A517	1 TE	26	ProTec T2-350-4+0	59.0300	4 TE	142
ProTec T1S-440-1+0-R	59.A518	1 TE	26	ProTec T2-350-4+0-R	59.0301	4 TE	142
ProTec T1S-440-1+1	59.A525	2 TE	34	ProTec T2-350-P	59.0066	1 TE plug	136-146
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ProTec T1S-440-2+0	59.A519	2 TE	28	ProTec T2-440-1+0-R	59.0546	1 TE	136
ProTec T1S-440-2+0-R	59.A520	2 TE	28	ProTec T2-440-2+0	59.0548	2 TE	138
ProTec T1S-440-3+0	59.A521	3 TE	30	ProTec T2-440-2+0-R	59.0549	2 TE	138
ProTec T1S-440-3+0-R	59.A522	3 TE	30	ProTec T2-440-3+0	59.0550	3 TE	140
ProTec T1S-440-3+1	59.A527	4 TE	36	ProTec T2-440-3+0-R	59.0551	3 TE	140
ProTec T1S-440-3+1-N	59.A657	4 TE	38	ProTec T2-440-4+0	59.0552	4 TE	142
ProTec T1S-440-3+1-N-R	59.A658	4 TE	38	ProTec T2-440-4+0-R	59.0552	4 TE	142
ProTec T1S-440-3+1-R	59.A528	4 TE	36	ProTec T2-440-P	59.0547	1 TE plug	136-142
ProTec T1S-440-4+0	59.A523	4 TE	32	ProTec T2-480-1+0	59.0077	1 TE	136
ProTec T1S-440-4+0-R	59.A524	4 TE	32	ProTec T2-480-1+0-R	59.0078	1 TE	136
ProTec T1S-440-P	59.A515	1 TE plug	26-38	ProTec T2-480-2+0	59.0087	2 TE	138
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ProTec T1S-50-275-1+0-R	59.A534	2 TE	20	ProTec T2-480-3+0	59.0097	3 TE	140
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ProTec T2-480-4+0-R	59.0106	4 TE	142	ProTec T2-ADV-300-1+0	59.0212	1 TE	152
ProTec T2-480-P	59.0067	1 TE plug	136-142	ProTec T2-ADV-300-1+0-R	59.0213	1 TE	152
ProTec T2-550-1+0	59.0677	1 TE	136	ProTec T2-ADV-300-1+1	59.0248	2 TE	160
ProTec T2-550-1+0-R	59.0678	1 TE	136	ProTec T2-ADV-300-1+1-R	59.0249	2 TE	160
ProTec T2-550-2+0	59.0679	2 TE	138	ProTec T2-ADV-300-2+0	59.0222	2 TE	154
ProTec T2-550-2+0-R	59.0680	2 TE	138	ProTec T2-ADV-300-2+0-R	59.0223	2 TE	154
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ProTec T2-550-3+0-R	59.0682	3 TE	140	ProTec T2-ADV-300-3+0-R	59.0231	3 TE	156
ProTec T2-550-4+0	59.0683	4 TE	142	ProTec T2-ADV-350-3+1	59.0256	4 TE	162
ProTec T2-550-4+0-R	59.0684	4 TE	142	ProTec T2-ADV-300-3+1-R	59.0257	4 TE	162
ProTec T2-550-P	59.0685	1 TE plug	136-142	ProTec T2-ADV-300-4+0	59.0238	4 TE	158
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ProTec T2-550PV-01-P	59.A477	1 TE plug	204	ProTec T2-ADV-300-P	59.0204	1 TE plug	152-162
ProTec T2-550PV-P	59.0291	1 TE plug	210	ProTec T2-ADV-350-1+0	59.0214	1 TE	152
ProTec T2-600PV-3+0	59.0986	3 TE	210	ProTec T2-ADV-350-1+0-R	59.0215	1 TE	152
ProTec T2-600PV-3+0-R	59.0980	3 TE	210	ProTec T2-ADV-350-1+1	59.0250	2 TE	160
ProTec T2-750-1+0	59.0079	1 TE	136	ProTec T2-ADV-350-1+1-R	59.0251	2 TE	160
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ProTec T2-1100PV-5Y-L-MC-Box	515 549		228	ProTec T2-CM-275-1+1-L-E-R	515 597	1 TE	188
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