Raycap

Surge Protection for Low Voltage Power Systems

C A T A L O G

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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Surge Protection for 60mm Busbar Systems

	Product	Page		U_c	I_{imp} (10/350 µs)	I_{max} (8/20 µs)	I_n (8/20 µs)	Location
TYPE 1+2,2	**ProTec 60 Series** *ProTec T1H, T1, T2 and T2F Series*	**15**		300 V	12.5 kA -	65 kA 40 kA	20 kA 20 kA	• For installation in 60 mm Busbar Systems • Behind the power meter
Low Voltage Power Systems								
TYPE 1+2+3	**ProBloc T1SG** *12.5 kA & 7.5 kA Single-cell Spark Gap Technology*	**33**		255 V	12.5 kA 7.5 kA	50 kA 50 kA	20 kA 20 kA	• First level of protection • In front of the power meter
TYPE 1+2+3	**ProTec T1SF** *25 kA Series with integrated backup fuse*	**43**		275 V	25 kA	65 kA	25kA	• First level of protection • In front of the power meter
TYPE 1 + 2	**ProTec T1S** *35 kA & 50 kA Series*	**59**		275, 440 V	35 kA 50 kA	50 kA 50 kA	35 kA 50 kA	• First level of protection • In front of the power meter
TYPE 1 + 2	**ProTec T1S** *25 kA Series*	**65**		275, 440 V	25 kA	Up to 65 kA	25 kA	• First level of protection • In front of the power meter
TYPE 1 + 2	**ProTec T1HS** *25 kA Series*	**85**		300 V	25 kA	65 kA	25 kA	• First level of protection • In front of the power meter
TYPE 1 + 2	**ProTec T1H** *12.5 kA Series*	**97**		300 V	12.5 kA	65 kA	20 kA	• First level of protection • In front of the power meter
TYPE 1 + 2	**ProTec T1** *12.5 kA Series*	**113**		75, 150, 300, 350, 480, 750 V	Up to 12.5 kA	Up to 50 kA	20 kA	• First level of protection • Behind the power meter
TYPE 1 + 2	**ProTec T1-LH** *12.5 kA Series with T2 size plug*	**129**		300 V	12.5 kA	40 kA	20 kA	• First level of protection • Behind the power meter
TYPE 2	**ProTec T2F** *with integrated backup fuse*	**145**		300, 440 V		Up to 40 kA	Up to 20 kA	• Second level of protection • With integrated backup fuse
TYPE 2	**ProTec T2H**	**159**		300 V		50 kA	20 kA	• Second level of protection

Low Voltage Power Systems

	Product	Page		U_c	I_{imp} (10/350 µs)	I_{max} (8/20 µs)	I_n (8/20 µs)	Location
TYPE 2	ProTec T2	**175**		75, 150, 300, 350, 480, 550, 750 V		Up to 50 kA	20 kA	• Second level of protection
	ProTec T2-ADV	**191**		75, 150, 300, 350, 480 V		50 kA	20 kA	• Second level of protection
	SafeTec T2	**205**		75, 150, 300, 350, 480, 550,750, 880 V		Up to 50 kA	20 kA	• Second level of protection
TYPE 2+3	ProTec T2 CM-L-E	**221**		275, 440 V		20 kA	10 kA	• Second and third level of protection
AC & PV PCB	PCB Socket T1&T2, PV T1&T2	**233**		Up to 880 V Up to 750 VDC	Up to 25 kA I_{Total} up to 12.5 kA	Up to 65 kA Up to 40 kA	Up to 40 kA Up to 20 kA	• AC & PV systems
	PV Direct Mount Plugs	**235**		Up to 750 VDC	I_{Total} up to 12.5 kA	Up to 40 kA	Up to 20 kA	• PV systems
DC TYPE 1 + 2 & TYPE 2	PV Box T1 3Y PV Box T1 5Y PV Box T1 7Y	**237**		1100 / 1500 VDC	I_{Total} 12.5 kA	Up to 50 kA	20 kA	• PV DC side
	PV Box T2 3Y PV Box T2 5Y PV Box T2 7Y			1100 / 1500 VDC		40 kA	Up to 20 kA	• PV DC side
	ProTec T1-5Y-PV	**259**		1100 VDC	I_{Total} 10 kA	40 kA	20 kA	• PV DC side
	ProTec T2-5Y-PV			1100 VDC		40 kA	20 kA	• PV DC side
	ProTec T1-PV-S ProTec T1-PV			600, 1100, 1500 VDC	I_{Total} 12.5 kA	Up to 60 kA	20 kA	• PV DC side
	ProTec T2-PV			250, 600, 1100, 1500 VDC		Up to 50 kA	20 kA	• PV DC side
DC SPD	ProTec T2 DCB 3Y	**275**		250, 500, 750 VDC	I_{Total} 10 kA	50 kA	20 kA	• DC Systems
	ProTec T2 DCU 3Y			500, 1000, 1500 VDC	I_{Total} 10 kA	40 kA	20 kA	• DC Systems

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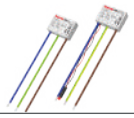
Low Voltage Power Systems

	Product	Page		U_c	I_{imp} (10/350 µs)	I_{max} (8/20 µs)	I_n (8/20 µs)	Location
EV SPD	ProTec T2 DCGU	**275**		1000,1500 VDC		40 kA	20 kA	• EV (DC) Fast chargers
	ProBloc EV T2 V	**283**		300 V		20 kA	10 kA	• AC EV Chargers
TYPE 3	ProTec BLD	**289**		275 V		10 kA	5 kA / 10 kA	• SPD for Motorized Window Shades
	ProTec DMDR	**293**		34, 60, 75, 150 V DC		Up to 4 kA	U_{oc} up to 6 kV	• Fine DC protection
	MPE Mini & MPE Mini LED			275 V			I_{cw} 3 kA	• Cable ducts & wiring outlets
TYPE 2 / CLASS 1L	EPZ 100/350 Ex	**301**		240, 350 V DC	25 kA	100 kA		• Explosive environments
	ProTec AQS			150, 275, 320, 440 V		40 kA	20 kA	• Overhead power lines
SURGE MONITORING	ProSEC II + *SPD Surge counter and monitoring solution*	**303**						• Main or Sub-distribution board • Installed on SPD ground conductor
	ProLEC Basic *Surge counter and monitoring solution*							• Surge protection systems per IEC 62561-6
	ProSLS *SPD Surge counter and monitoring solution*							• Main or Sub-distribution board • Installed on SPD line conductors
	ProAlarm II *Failure Indication Device*							• Main or Sub-distribution board • Wired to SPD remote contact
	ProSCT *Component Tester*							• Portable SPD component tester

References & Product Indexes

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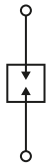
Typical SPD Technologies

SPD Based on Single-cell Spark Gap Technology (ScSG)

- Low follow-current conduction once triggered - extended operation life and no nuisance tripping of upstream protective devices
- It enables easy coordination with all downstream Type 2 devices
- High system availability
- Low follow currents
- Long service life



SPD Based on PGDT Technology

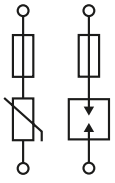
- Low residual voltage – suitable for the protection of sensitive electronic loads
- Low follow-current conduction once triggered - extended operation life and no nuisance tripping of upstream protective devices
- Safe operation – no venting of conductive ionized gases, encapsulated multi-cell gas discharge 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 ≤ 25 ns results in low residual voltage
- Responds well to low overvoltages
- High surge capacity up to 25 kA 10/350 µs
- 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



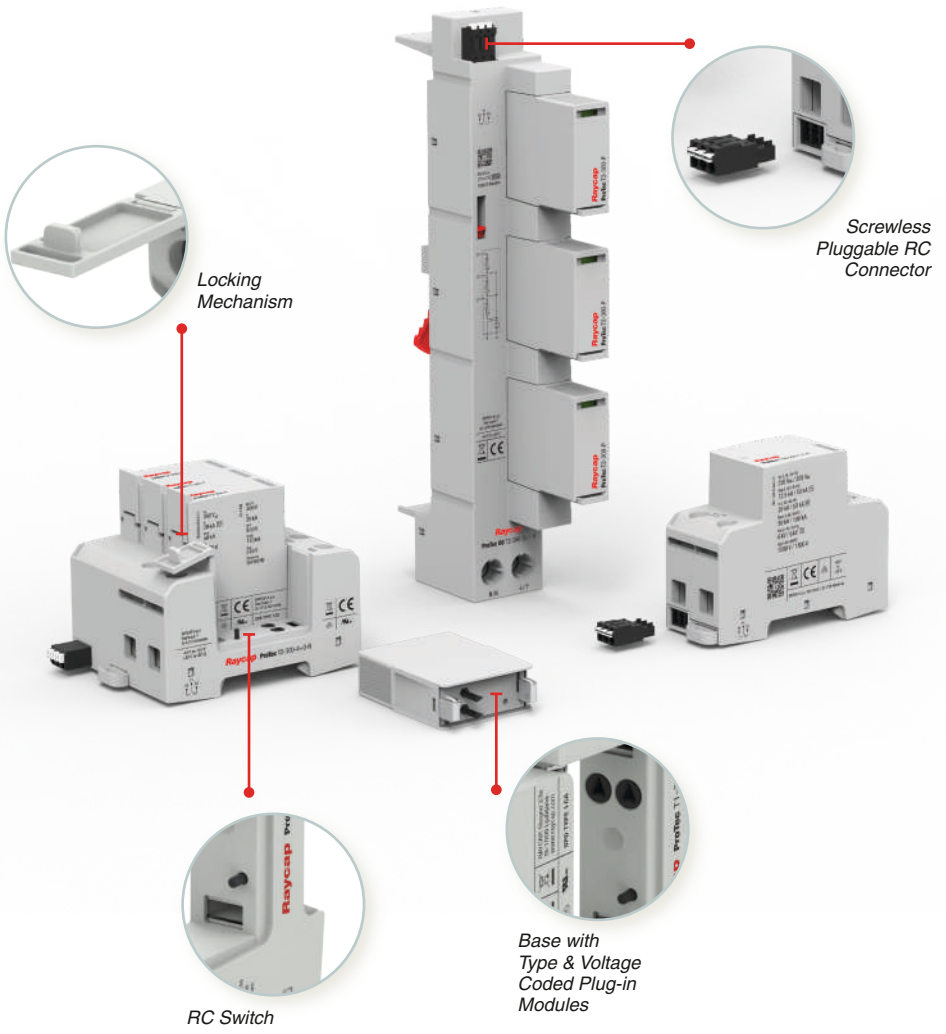
Combination SPD Based on PGDT or MOV Technology with Integrated Backup Fuse

- 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 backup fuse required up to 315 A
- 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



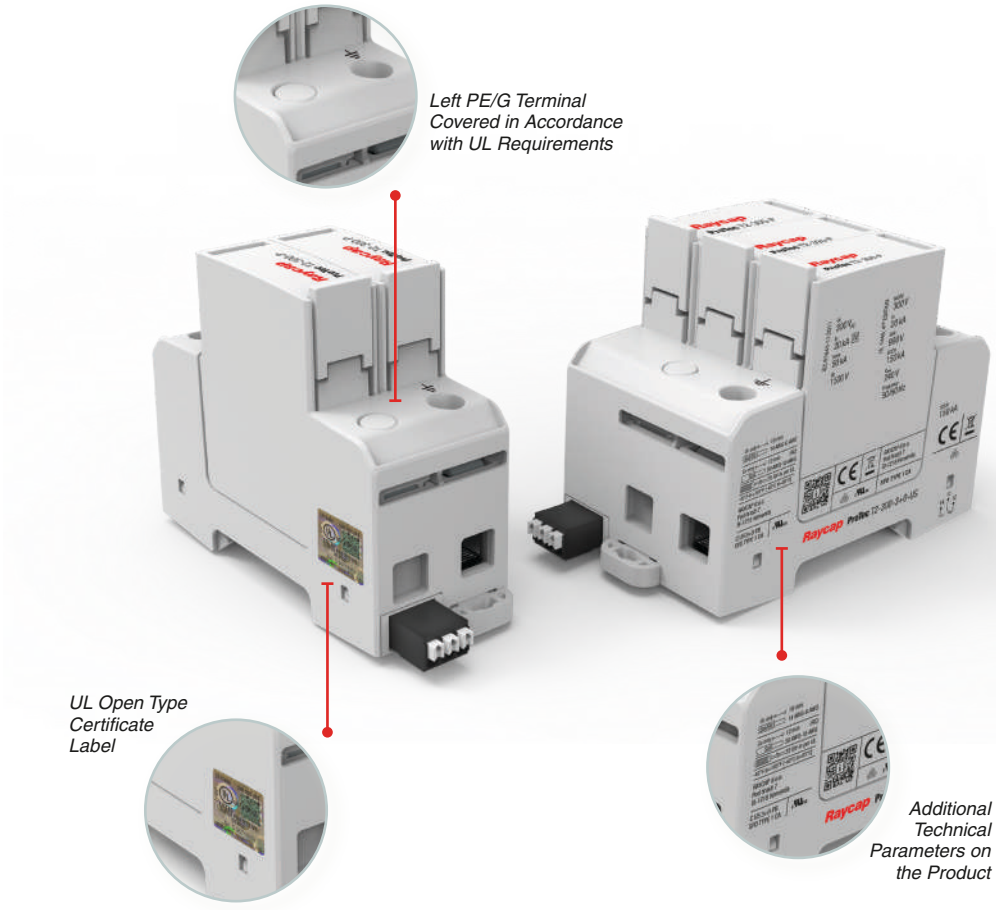
Surge Protective Devices with Open Type UL Listed Certificate

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



Download the catalog

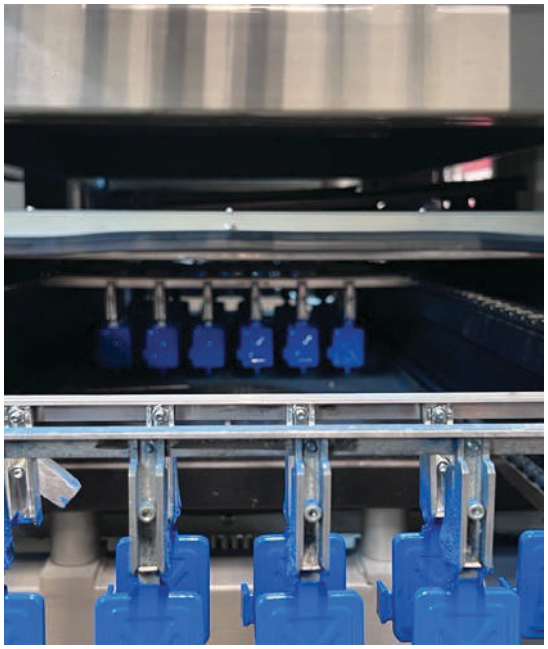
R&D and Manufacturing Capabilities

Custom Engineering Solutions & Vertical Integration

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.

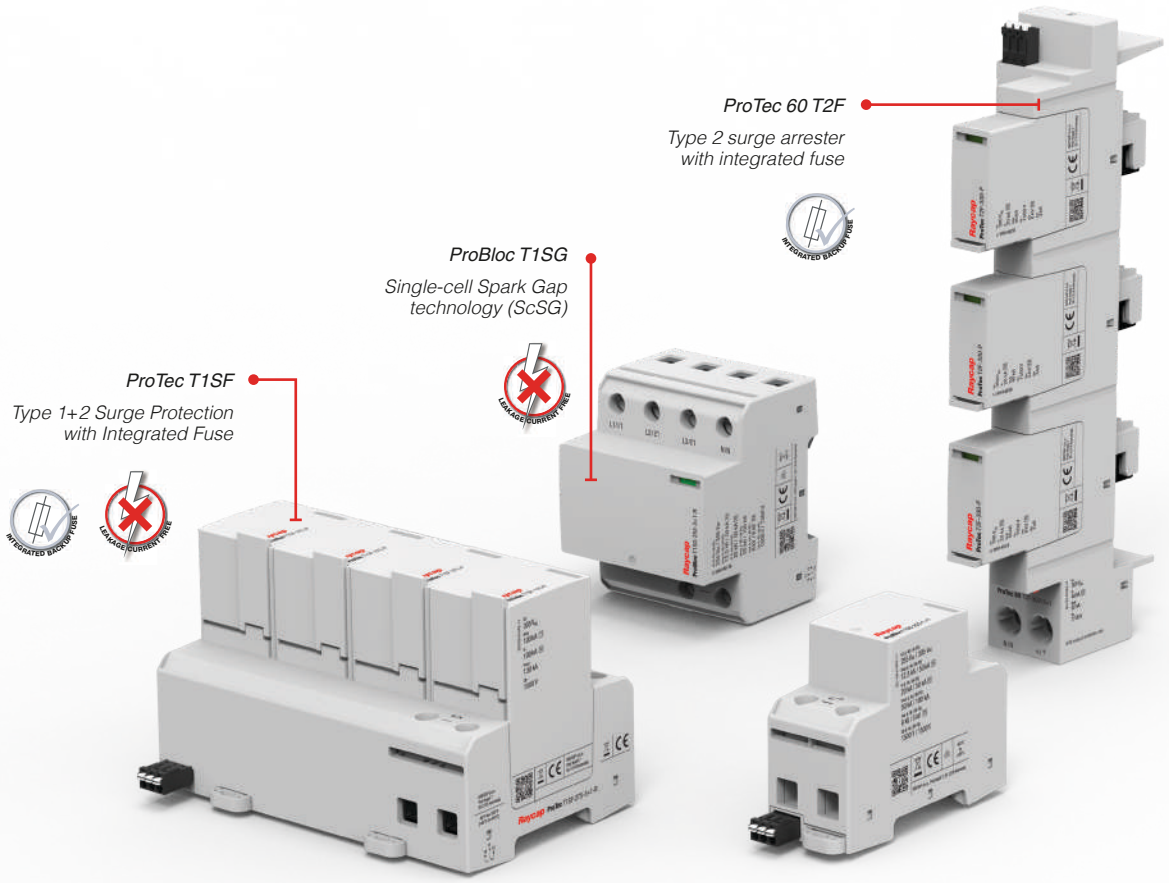
Raycap has a comprehensive technology range that includes surge arresters and metal oxide varistors (MOVs) as well as classic gas discharge tubes (GDTs) and hybrid proprietary technologies. Our production is characterized by an exceptionally high level of vertical integration in our products and their 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.



Single-cell Spark Gap Technology
ProBloc T1SG Series

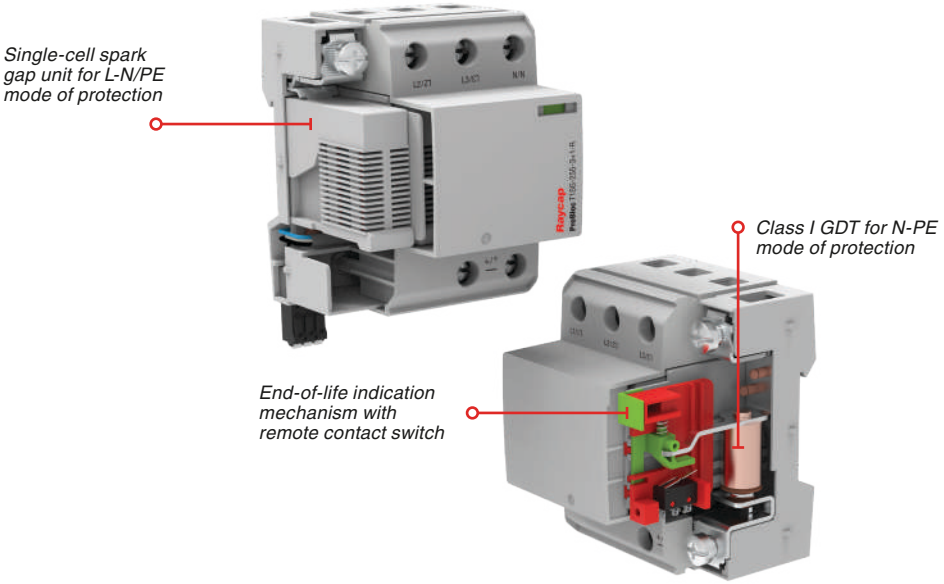
Special features:

- Leakage current free design
- Inherent self-regulated thermal stability due to a triggering mechanism
- Robust monobloc design endures the highest electromechanical stresses and assures non-disruptive end-of-life disconnection
- Applicable in AC networks with prospective currents as high as 25 kA

The Single-cell Spark Gap technology (ScSG) developed by Raycap controls and limits the follow currents to negligible values with an inverted-plate design of the arc-extinguishing chamber. Negligible follow currents enhance SPD lifetime and minimize nuisance tripping of upstream overcurrent protection, ensuring uninterrupted power. Due to the advantageous single-cell design, clamping voltages remain unaffected and at the lowest values.

Low clamping voltage provides the ultimate equipment protection by suppressing the surge energy, keeping it from propagating further downstream of the ProBloc T1SG SPD.
The minimization of let-through energy provides worry free coordination with Type 2 and Type 3 SPDs. In contrast to classical spark gap technology which has difficulties assuring safe operation under high prospective currents, the ProBloc T1SG can be used in installations with prospective currents up to 25 kA.

ProBloc's robust monobloc design endures the highest electromechanical stresses and assures a non-disruptive end-of-life disconnection.



More Details

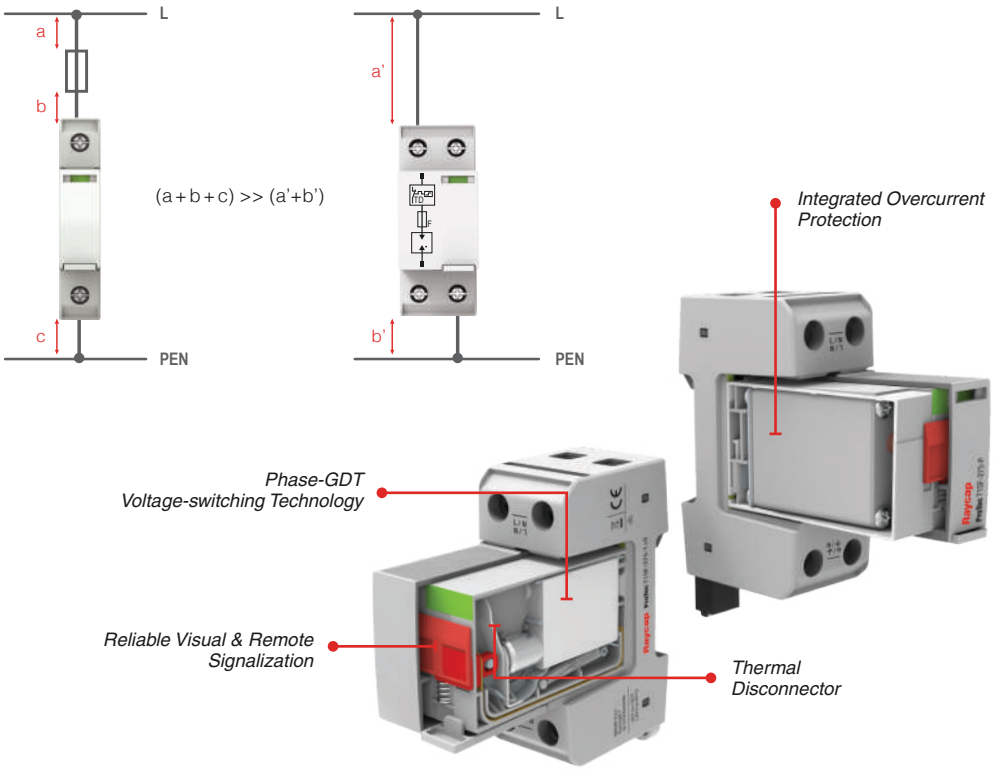
Phase-GDT based Technology

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) has up to 50% less space requirement in the control cabinet. The coordinated tripping characteristics of the thermal disconnector, the integrated fuse, and the fault-current protection provide enhanced safety on networks with high prospective currents. Raycap's ProTec T1SF with Phase-GDT and integrated backup fuse make 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

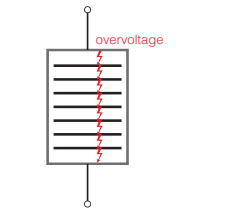
Phase GDT based Technology
Phase Gas Discharge Tube (PGDT)

Special features:

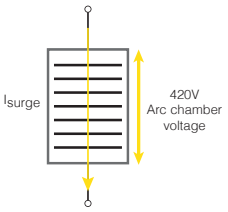
- Suitable for the protection of sensitive electronics
- Applicable in networks with high short-circuit currents (up to 100 kA)
- Less stress on the installation as the SPD doesn't conduct follow current after a surge
- No tripping of upstream overcurrent protection or catastrophic end-of-life
- No damage 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 35 kA and 50 kA in a 2 TE 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:

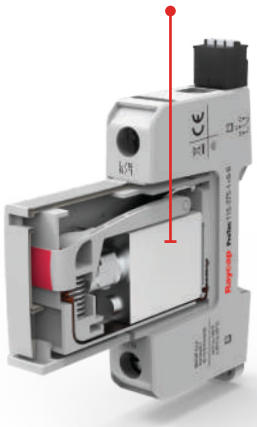


In the event of an overvoltage (transient, switching), an avalanche breakdown occurs between the opposing electrodes and Phase GDT starts to conduct.



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

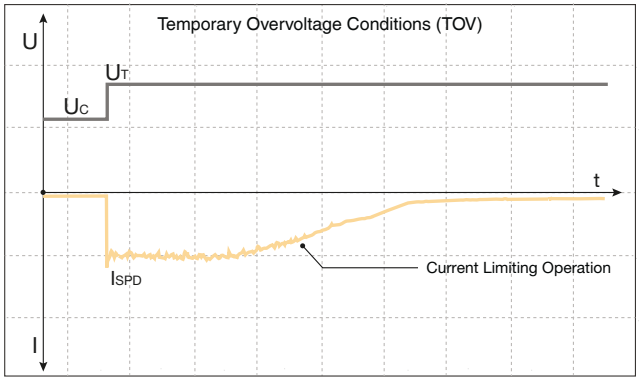
SafeTec Technology
SafeTec Surge Protection

Special features:

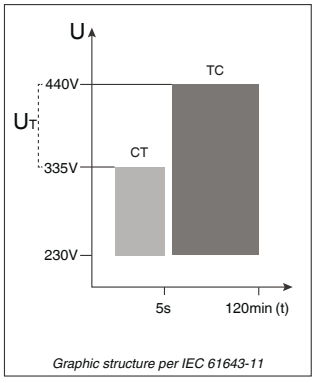
- Good protection level
- For use in situations where TOVs or switching transients are present on a distribution network
- Features open circuit mode in combination with current-limiting technology
- 5-year warranty, 10-year life span
- Low-maintenance cost
- Modular, pluggable, field replaceable modules

SafeTec delivers a reliable solution for all overvoltages, surges and transients. The all in one technology is suitable for DC and AC applications. 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 10 mA. 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



Graphic structure per IEC 61643-11

- SafeTec Technology-TC
- Conventional Technology-CT

SafeTec T2-300-1+0-R

SafeTec T2-300-2+0-R

Notes

Combined Lightning Current and Surge Arrester

ProTec 60 T1H, T1, T2 and T2F Series

Special features:

- For TN-C, TT and TN-S network systems
- Plugs available with Type 1 or Type 2 surge protection; and Type 2 with integrated fuse
- Better overall voltage protection levels due to less wiring
- Visual status monitoring of SPD and fuse (T2F) available via remote signalization
- Can be used with a variety of busbar widths and thicknesses
- Reduces installation cost and space requirements
- Shorter wiring time and minimized complexity
- Pluggable concept enables fast & simplified installation
- Shorter connecting cables improve voltage protection level across installation points

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

The Raycap ProTec 60mm Busbar series reduces installation time and space requirements, and enables fast and simplified installation. Shorter connecting cables improve the overall voltage protection level, providing optimal electrical protection to the installation.

More Product Information

RoHS COMPLIANT CE

Combined Lightning Current and Surge Arrester

ProTec 60 T1H 3+0

Class I • Class II • Type 1 • Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN: Class I+II / Type 1+2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

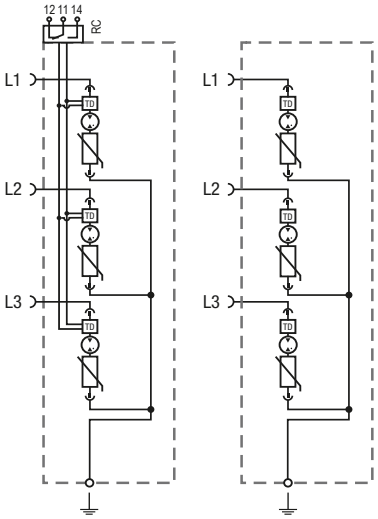
CE RoHS COMPLIANT

Technical Data

ProTec 60 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 µs)		I_n	20 kA
Maximum Discharge Current (8/20 µs)		I_{max}	65 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	12.5 kA
Specific Energy		W/R	39 kJ/Ω
Charge		Q	6.25 As
Voltage Protection Level		U_p	1500 V
Response Time		t_A	< 25ns
Overvoltage Category			III
Maximum Backup fuse, if required			315 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s		U_T	442 V
TOV SafeFail 120min		U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
			Width: 12, 15, 20, 25, 30 mm
			Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection			IP 20*
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

**IP 40 (in combination with cover)*

Internal Configuration

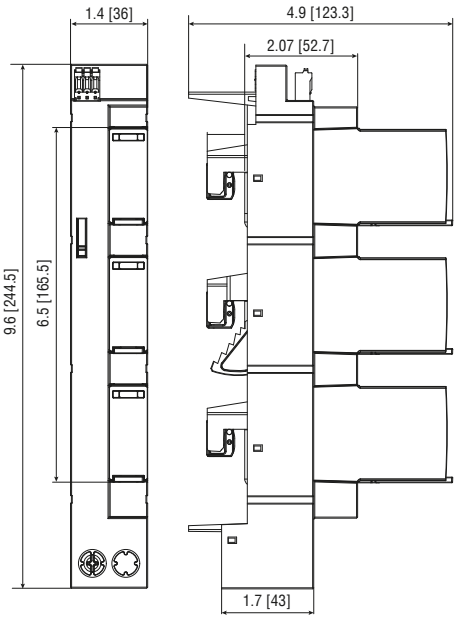


Legend

L	*Line Busbar Terminal*
⏚	*PEN Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*

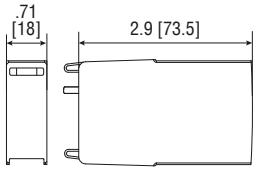
Order Information	
Order Code	**300**
ProTec 60 T1H-xxx-3+0	515 961
ProTec 60 T1H-xxx-3+0-R (with remote contacts)	515 962
ProTec T1H-xxx-P (plug)	59.C384

Dimensions & Packaging



Complete Unit		
ProTec 60 T1H-xxx-3+0		**300**
Weight	pounds [grams]	1.232 [559]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T1H-xxx-3+0-R		**300**
Weight	pounds [grams]	1.250 [567]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T1H-xxx-P		**300**
Weight	pounds [grams]	.223 [101]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		28 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T1H 3+1

Class I • Class II • Type 1 • Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN: Class I+II / Type 1+2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

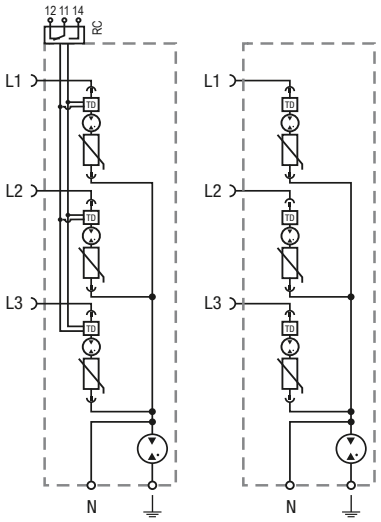
CE RoHS COMPLIANT

Technical Data

ProTec 60 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)	U_c	300 V
	(N-PE)	U_c	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 80 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	65 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5 kA / 50 kA
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ/Ω / 625 kJ/Ω
Charge	(L-N)/(N-PE)	Q	6.25 As / 25As
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500 V / 1500 V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			315 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s	(L-N)	U_T	442 V
TOV SafeFail 120min	(L-N)	U_T	442 V
Number of Ports			1
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
			Width: 12, 15, 20, 25, 30 mm
			Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection			IP 20*
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

**IP 40 (in combination with cover)*

Internal Configuration

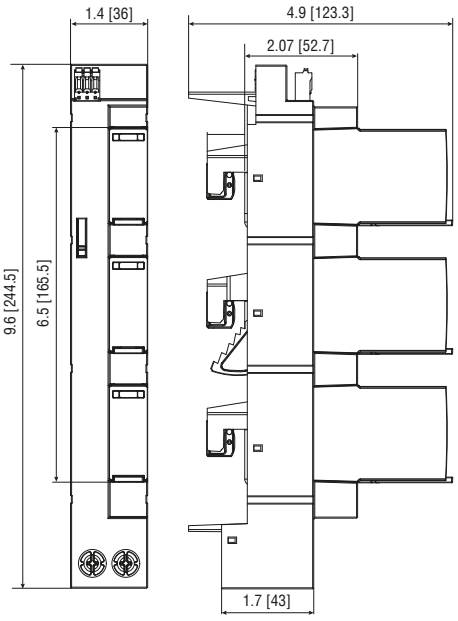


Legend

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

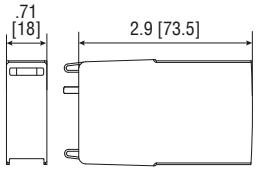
Order Information	
Order Code	**300**
ProTec 60 T1H-xxx-3+1	515 963
ProTec 60 T1H-xxx-3+1-R (with remote contacts)	515 964
ProTec T1H-xxx-P (plug)	59.C384

Dimensions & Packaging



Complete Unit		
ProTec 60 T1H-xxx-3+1		**300**
Weight	pounds [grams]	1.325 [601]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T1H-xxx-3+1-R		**300**
Weight	pounds [grams]	1.340 [608]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T1H-xxx-P		**300**
Weight	pounds [grams]	.223 [101]
DIN 43880 Dimension		1 TE / .71" [18]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		28 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T1 3+0

Class I • Class II • Type 1 • Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN: Class I+II / Type 1+2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

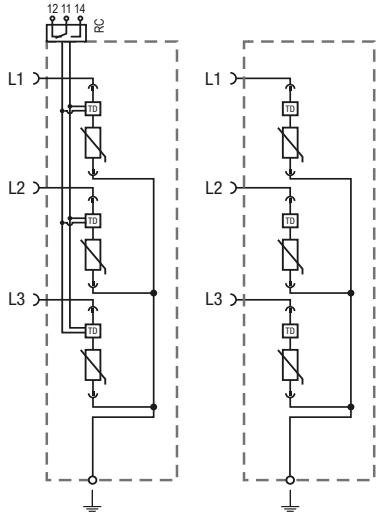
CE RoHS COMPLIANT

Technical Data

ProTec 60 T1-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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	12.5 kA
Specific Energy	W/R	39 kJ/Ω
Charge	Q	6.25 As
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25ns
Overvoltage Category		III
Maximum Backup fuse, if required		315 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA
TOV Withstand 5s	U_T	337 V
TOV SafeFail 120min	U_T	442 V
Number of Ports		1
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
		Width: 12, 15, 20, 25, 30 mm
		Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection		IP 20*
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

**IP 40 (in combination with cover)*

Internal Configuration

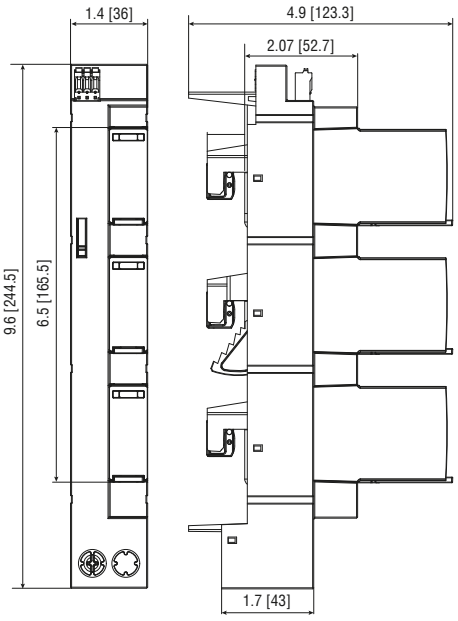


Legend

L *Line Busbar Terminal*
⏚ *PEN Conductor Terminal*
RC *Remote Contacts Terminal (Optional)*
TD *Thermal Disconnector*

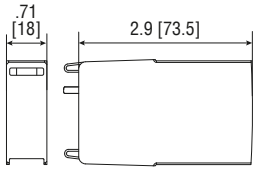
Order Information	
Order Code	**300**
ProTec 60 T1-xxx-3+0	515 943
ProTec 60 T1-xxx-3+0-R (with remote contacts)	515 944
ProTec T1-xxx-P (plug)	59.C345

Dimensions & Packaging



Complete Unit		
ProTec 60 T1-xxx-3+0		**300**
Weight	pounds [grams]	1.252 [568]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T1-xxx-3+0-R		**300**
Weight	pounds [grams]	1.270 [576]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T1-xxx-P		**300**
Weight	pounds [grams]	.229 [104]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		28 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T1 3+1

Class I • Class II • Type 1 • Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN: Class I+II / Type 1+2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

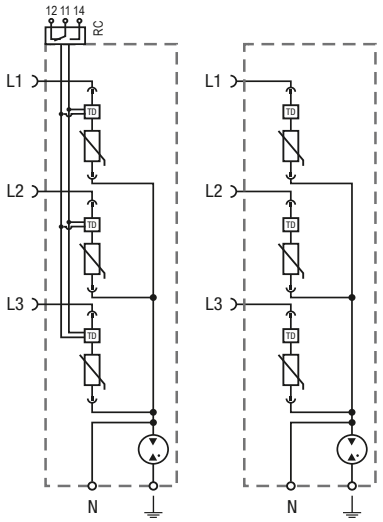
CE RoHS COMPLIANT

Technical Data

ProTec 60 T1-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 µs)	(L-N)/(N-PE)	I_n	20 kA / 80 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5 kA / 50 kA
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ/Ω / 625 kJ/Ω
Charge	(L-N)/(N-PE)	Q	6.25 As / 25As
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500 V / 1500 V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			315 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s	(L-N)	U_T	337 V
TOV SafeFail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
			Width: 12, 15, 20, 25, 30 mm
			Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection			IP 20*
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

**IP 40 (in combination with cover)*

Internal Configuration

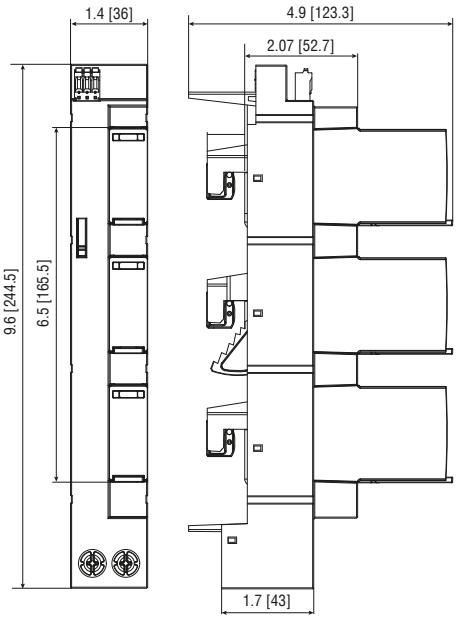


Legend

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

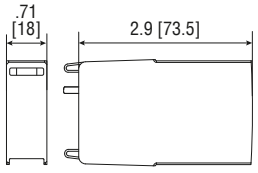
Order Information	
Order Code	**300**
ProTec 60 T1-xxx-3+1	515 949
ProTec 60 T1-xxx-3+1-R (with remote contacts)	515 950
ProTec T1-xxx-P (plug)	59.C345

Dimensions & Packaging



Complete Unit		
ProTec 60 T1-xxx-3+1		**300**
Weight	pounds [grams]	1.345 [610]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T1-xxx-3+1-R		**300**
Weight	pounds [grams]	1.360 [617]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T1-xxx-P		**300**
Weight	pounds [grams]	.229 [104]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		28 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T2F 3+0

Class II • Class III • Type 2 • Type 3

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN: Class II+III / Type 2+3
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

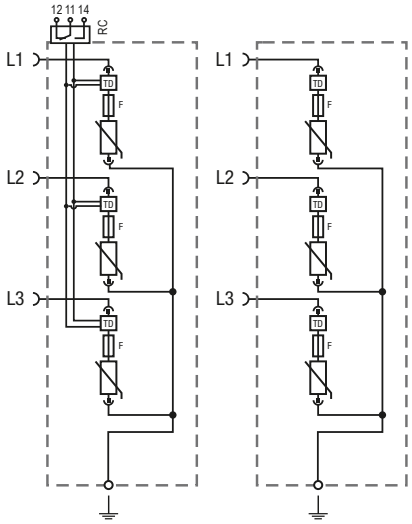
CE RoHS COMPLIANT

Technical Data

ProTec 60 T2F-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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA
Voltage Protection Level	U_p	1500 V
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kV
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		Not Required
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
TOV Withstand 5s	U_T	337 V
TOV SafeFail 120min	U_T	442 V
Number of Ports		1
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
		Width: 12, 15, 20, 25, 30 mm
		Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection		IP 20*
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

**IP 40 (in combination with cover)*

Internal Configuration

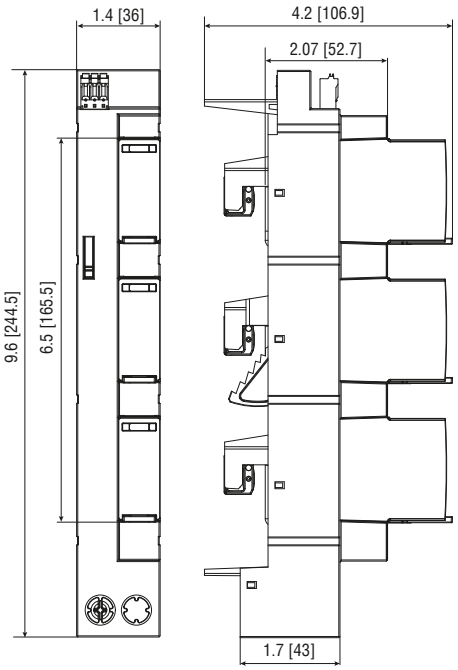


Legend

L	*Line Busbar Terminal*
⏚	*PEN Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
F	*Integrated Surge Adapted Backup Fuse*

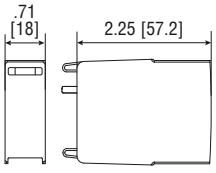
Order Information	
Order Code	**300**
ProTec 60 T2F-xxx-3+0	515 945
ProTec 60 T2F-xxx-3+0-R (with remote contacts)	515 946
ProTec T2F-xxx-P (plug)	59.C347

Dimensions & Packaging



Complete Unit		
ProTec 60 T2F-xxx-3+0		**300**
Weight	pounds [grams]	1.021 [463]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T2F-xxx-3+0-R		**300**
Weight	pounds [grams]	1.038 [471]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T2F-xxx-P		**300**
Weight	pounds [grams]	.152 [69]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T2F 3+1

Class II • Class III • Type 2 • Type 3

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN: Class II+III / Type 2+3
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

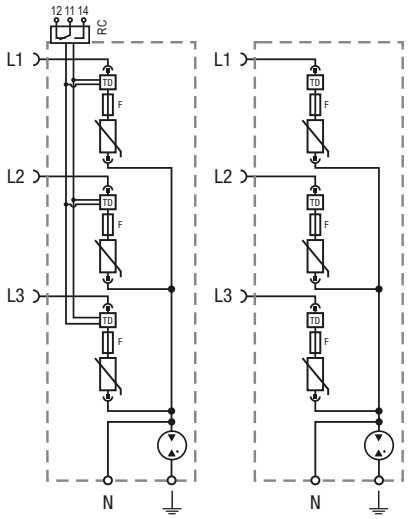
CE RoHS COMPLIANT

Technical Data

ProTec 60 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 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(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 µs)	(L-N)/(N-PE)	U_{oc}	6 kA / 6 kA
Short Circuit Current of Combination Wave Generator (8/20 µs)	(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
Overvoltage Category			III
Maximum Backup fuse, if required			Not Required
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
TOV Withstand 5s	(L-N)	U_T	337 V
TOV SafeFail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
			Width: 12, 15, 20, 25, 30 mm
			Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection			IP 20*
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

**IP 40 (in combination with cover)*

Internal Configuration

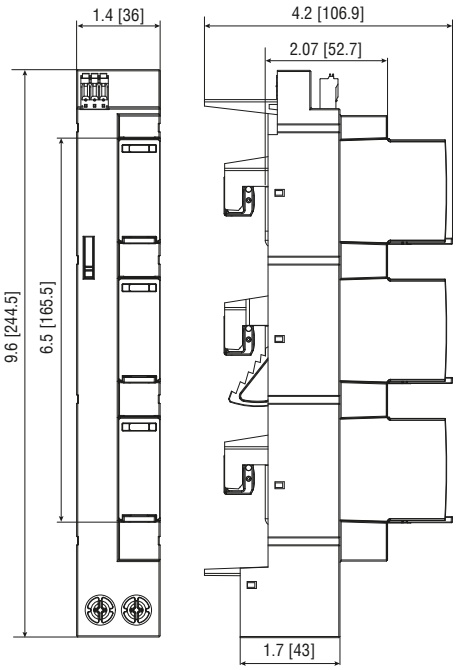


Legend

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

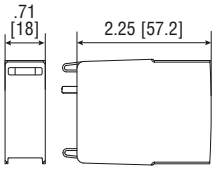
Order Information	
Order Code	**300**
ProTec 60 T2F-xxx-3+1	515 951
ProTec 60 T2F-xxx-3+1-R (with remote contacts)	515 952
ProTec T2F-xxx-P (plug)	59.C347

Dimensions & Packaging



Complete Unit		
ProTec 60 T2F-xxx-3+1		**300**
Weight	pounds [grams]	1.100 [499]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T2F-xxx-3+1-R		**300**
Weight	pounds [grams]	1.118 [507]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T2F-xxx-P		**300**
Weight	pounds [grams]	.152 [69]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T2 3+0

Class II• Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN: Class II / Type 2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

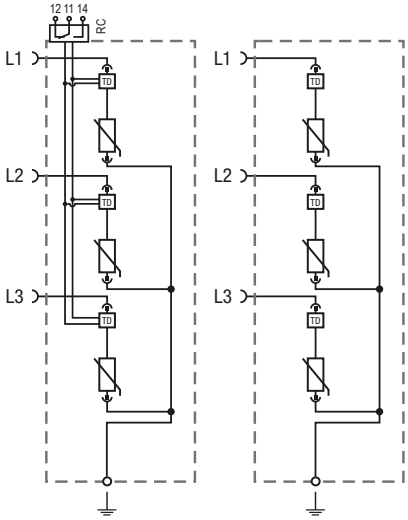
CE RoHS COMPLIANT

Technical Data

ProTec 60 T2-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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		315 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25 kA
TOV Withstand 5s	U_T	337 V
TOV SafeFail 120min	U_T	442 V
Number of Ports		1
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		60 mm Busbar Systems
		Width: 12, 15, 20, 25, 30 mm
		Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection		IP 20*
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

**IP 40 (in combination with cover)*

Internal Configuration

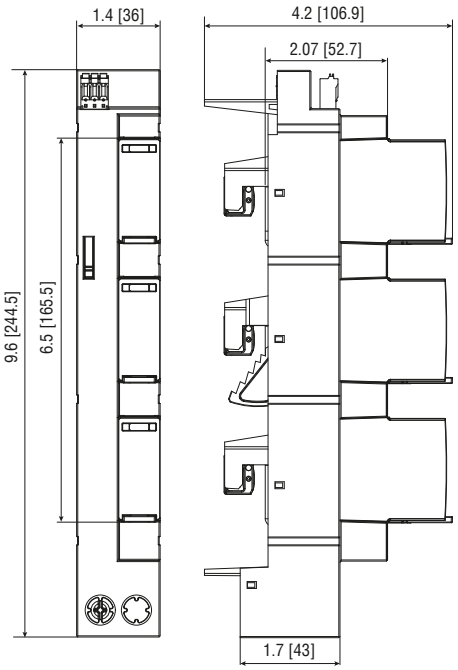


Legend

L	*Line Busbar Terminal*
⏚	*PEN Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*

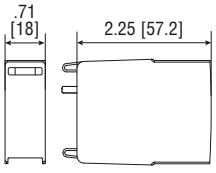
Order Information	
Order Code	**300**
ProTec 60 T2-xxx-3+0	515 933
ProTec 60 T2-xxx-3+0-R (with remote contacts)	515 942
ProTec T2-xxx-P (plug)	59.C346

Dimensions & Packaging



Complete Unit		
ProTec 60 T2-xxx-3+0		**300**
Weight	pounds [grams]	.955 [433]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T2-xxx-3+0-R		**300**
Weight	pounds [grams]	.972 [441]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Plug



Single Unit		
ProTec T2-xxx-P		**300**
Weight	pounds [grams]	.130 [59]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Combined Lightning Current and Surge Arrester

ProTec 60 T2 3+1

Class II • Type 2

Location of Use: Main Distribution Boards, 60 mm Busbar Systems
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN: Class II / Type 2
Housing: Pluggable design
Compliance: IEC 61643-11:2011
EN 61643-11:2012 + A11:2018

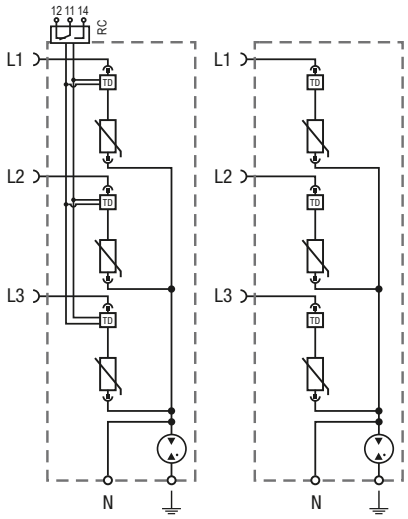
CE RoHS COMPLIANT

Technical Data

ProTec 60 T2-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 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500 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
Overvoltage Category			III
Maximum Backup fuse, if required			315 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25 kA
TOV Withstand 5s	(L-N)	U_T	337 V
TOV SafeFail 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	PH2 / 40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			60 mm Busbar Systems
			Width: 12, 15, 20, 25, 30 mm
			Thickness: 5 mm, 10 mm (with removed spacers)
Degree Of Protection			IP 20*
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

**IP 40 (in combination with cover)*

Internal Configuration

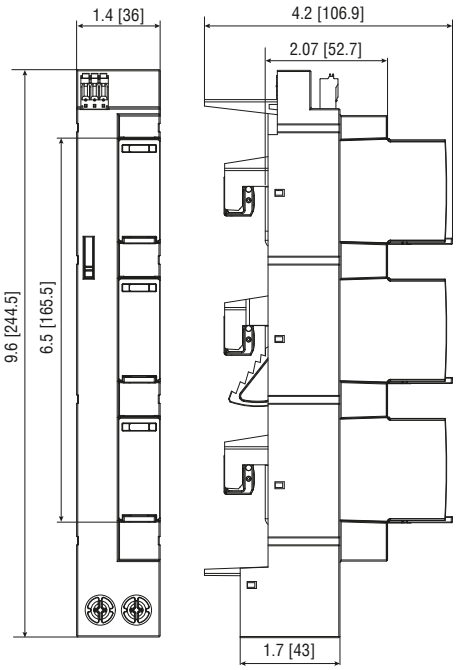


Legend

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

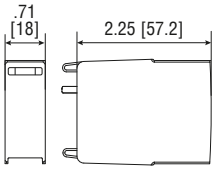
Order Information	
Order Code	**300**
ProTec 60 T2-xxx-3+1	515 947
ProTec 60 T2-xxx-3+1-R (with remote contacts)	515 948
ProTec T2-xxx-P (plug)	59.C346

Dimensions & Packaging



Complete Unit		
ProTec 60 T2-xxx-3+1		**300**
Weight	pounds [grams]	1.034 [469]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
ProTec 60 T2-xxx-3+1-R		**300**
Weight	pounds [grams]	1.052 [477]
Packaging Dimensions (H x W x L)		10.6 × 14.8 × 15.5" [270 × 375 × 395 mm]
Standard Order Quantity		20 Units

Spare Unit



Single Unit		
ProTec T2-xxx-P		**300**
Weight	pounds [grams]	.130 [59]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Notes

Compact Multi-pole Surge Protective Devices (SPDs)

Overvoltage Protection (SG Technology)

ProBloc T1SG Series

Special features:

- Leakage-current free design
- Single-cell spark gap technology providing a very low clamping voltage, unmatched protection of downstream equipment and carefree coordination with downstream Type 2 and Type 3 SPDs
- Robust monobloc design endures the highest stresses and assures non-disruptive end-of-life disconnection
- Available configurations for TN-C, TN-S, TN-C-S, TT single and 3 phase systems

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

The developed spark gap technology controls and limits the follow currents to negligible values with a patented inverted-plate design of the arc-extinguishing chamber. Negligible follow currents enhance SPD lifetime and minimize nuisance tripping of upstream overcurrent protection, ensuring uninterrupted power reliability. Due to the advantageous single-cell design, clamping voltages remain unaffected and at the lowest values. Low clamping voltage provides the ultimate equipment protection by suppressing the surge energy from propagating further downstream of the ProBloc T1SG SPD. The minimization of let-through energy provides worry free coordination with Type 2 and Type 3 SPDs. In contrast to classical spark gap technology which has difficulties meeting prospective short-circuit requirements, the ProBloc T1SG can be used in installations with prospective currents as high as 25 kA.

More Product Information

RoHS COMPLIANT

Lightning and Overvoltage Protection

ProBloc T1SG 3+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

12.5kA Series

Location of Use: Main Distribution Boards
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN Category: Class I+II+III / Type 1+2+3
Technology: Spark Gap
Leakage Current Free: Yes
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

CE DVE RoHS COMPLIANT

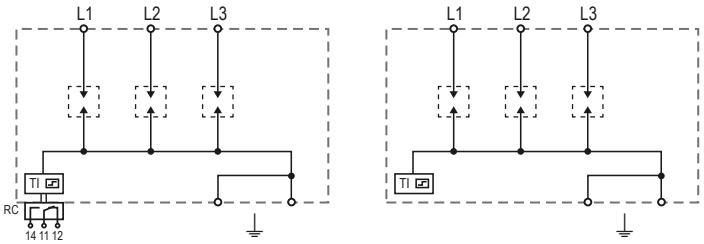
Technical Data

ProBloc T1SG-xxx-3+0(-R)		255
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o/U_n	240V
Maximum Continuous Operating Voltage (AC)	U_c	255V
Nominal Discharge Current (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)	U_{oc}	6kV
Short Circuit Current of Combination Wave Generator (8/20µs)	I_{cw}	3kA
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 100ns
Overvoltage Category		III
Maximum Backup fuse, if required		250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA
Follow Current Interrupt Rating (AC)	I_{fi}	25kA
TOV Withstand 120min	U_T	442V
Number of Ports		1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1200V
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)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/0.5A, 125V/0.1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

L	*Line Conductor Terminal*
⏚	*PEN Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indicator*

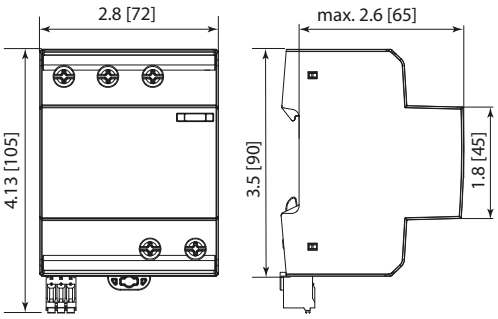


ProBloc T1SG-xxx-3+0(-R)

Order Information	
Order Code	**255**
ProBloc T1SG-xxx-3+0	53.0005
ProBloc T1SG-xxx-3+0-R (with remote contacts)	53.0006

Dimensions & Packaging

inches [mm]



Complete Unit		
ProBloc T1SG-xxx-3+0		**255**
Weight	pounds [grams]	0.860 [390]
ProBloc T1SG-xxx-3+0-R		
Weight	pounds [grams]	0.864 [392]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Lightning and Overvoltage Protection

ProBloc T1SG 4+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

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+III / Type 1+2+3
Technology: Spark Gap
Leakage Current Free: Yes
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

CE DVE RoHS COMPLIANT

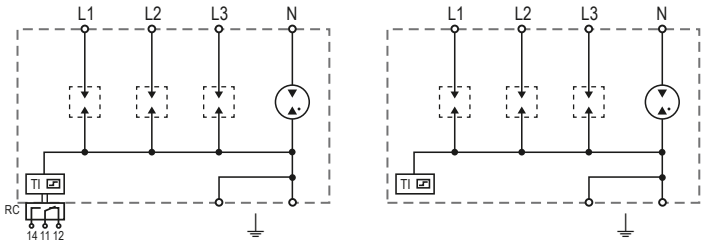
Technical Data

ProBloc T1SG-xxx-4+0(-R)			255
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V
Maximum Continuous Operating Voltage (AC)		U_c	255V
Nominal Discharge Current (8/20µs)		I_n	20kA
Maximum Discharge Current (8/20µs)		I_{max}	50kA
Impulse Discharge Current (10/350µs)		I_{imp}	12.5kA
Specific Energy		W/R	39kJ/Ω
Charge		Q	6.25As
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)		U_{oc}	6kV
Short Circuit Current of Combination Wave Generator (8/20µs)		I_{cw}	3kA
Voltage Protection Level		U_p	1500V
Response Time		t_A	< 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			250A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	25kA
Follow Current Interrupt Rating (AC)	(L-PE) / (N-PE)	I_{fi}	25kA / 100A
TOV Withstand 120min	(L-PE)	U_T	442V
Number of Ports			1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-PE) / (N-PE)	U_{res}	1200V / 255V
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)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/0.5A, 125V/0.1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indicator*

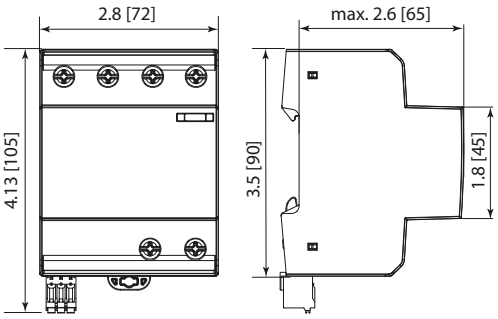


ProBloc T1SG-xxx-3+0(-R)

Order Information	
Order Code	**255**
ProBloc T1SG-xxx-4+0	53.0009
ProBloc T1SG-xxx-4+0-R (with remote contacts)	53.0010

Dimensions & Packaging

inches [mm]



Complete Unit		
ProBloc T1SG-xxx-4+0		**255**
Weight	pounds [grams]	0.917 [416]
ProBloc T1SG-xxx-4+0-R		
Weight	pounds [grams]	0.924 [419]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Lightning and Overvoltage Protection

ProBloc T1SG 1+1

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

12.5kA 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+III / Type 1+2+3
Technology: Spark Gap
Leakage Current Free: Yes
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

CE DVE RoHS COMPLIANT

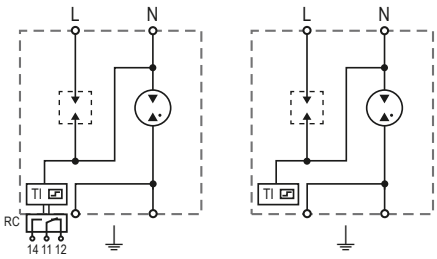
Technical Data

ProBloc T1SG-xxx-1+1(-R)			255
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	255V / 305V
Nominal Discharge Current (8/20µs)	(L-N) / (N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N) / (N-PE)	I_{max}	50kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N) / (N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N) / (N-PE)	W/R	39kJ/Ω / 625kJ/Ω
Charge	(L-N) / (N-PE)	Q	6.25As / 25As
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)	(L-N) / (N-PE)	U_{oc}	6kV / 6kV
Short Circuit Current of Combination Wave Generator (8/20µs)	(L-N) / (N-PE)	I_{cw}	3kA / 3kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1500V / 1500V
Response Time	(L-N) / (N-PE)	t_A	< 100ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			250A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25kA
Follow Current Interrupt Rating (AC)	(L-N) / (N-PE)	I_{fi}	25kA / 100A
TOV Withstand 120min	(L-N)	U_T	442V
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 µs)	(L-N) / (N-PE)	U_{res}	1200V / 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 [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/0.5A, 125V/0.1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indicator*

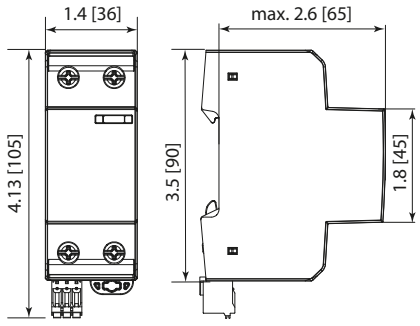


ProBloc T1SG-xxx-1+1(-R)

Order Information	
Order Code	**255**
ProBloc T1SG-xxx-1+1	53.0003
ProBloc T1SG-xxx-1+1-R (with remote contacts)	53.0004

Dimensions & Packaging

inches [mm]



Complete Unit		
ProBloc T1SG-xxx-1+1		**255**
Weight	pounds [grams]	0.503 [228]
ProBloc T1SG-xxx-1+1-R		
Weight	pounds [grams]	0.507 [230]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Lightning and Overvoltage Protection

ProBloc T1SG 3+1

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

12.5kA 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+III / Type 1+2+3
Technology: Spark Gap
Leakage Current Free: Yes
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

CE VDE RoHS COMPLIANT

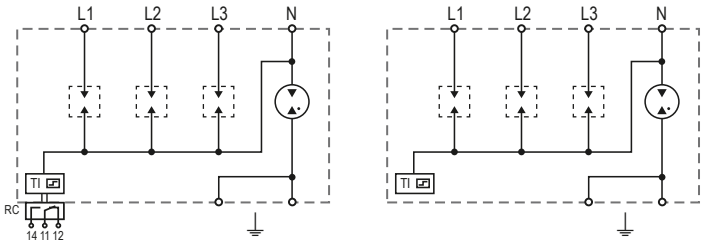
Technical Data

ProBloc T1SG-xxx-3+1(-R)			255
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	255V / 305V
Nominal Discharge Current (8/20µs)	(L-N) / (N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N) / (N-PE)	I_{max}	50kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N) / (N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N) / (N-PE)	W/R	39kJ/Ω / 625kJ/Ω
Charge	(L-N) / (N-PE)	Q	6.25As / 25As
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)	(L-N) / (N-PE)	U_{oc}	6kV / 6kV
Short Circuit Current of Combination Wave Generator (8/20µs)	(L-N) / (N-PE)	I_{cw}	3kA / 3kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1500V / 1500V
Response Time	(L-N) / (N-PE)	t_A	< 100ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			250A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25kA
Follow Current Interrupt Rating (AC)	(L-N) / (N-PE)	I_{fi}	25kA / 100A
TOV Withstand 120min	(L-N)	U_T	442V
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 µs)	(L-N) / (N-PE)	U_{res}	1200V / 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 [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/0.5A, 125V/0.1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indicator*

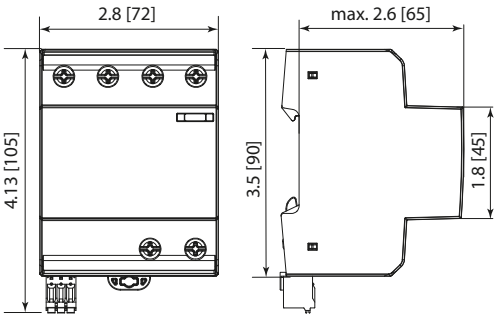


ProBloc T1SG-xxx-3+1(-R)

Order Information	
Order Code	**255**
ProBloc T1SG-xxx-3+1	53.0007
ProBloc T1SG-xxx-3+1-R (with remote contacts)	53.0008

Dimensions & Packaging

inches [mm]



Complete Unit		
ProBloc T1SG-xxx-3+1		**255**
Weight	pounds [grams]	0.948 [430]
ProBloc T1SG-xxx-3+1-R		
Weight	pounds [grams]	0.952 [432]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Extended Product Group

ProBloc T1SG E

The products are also available with an Impulse discharge current [I_{imp}] of 7.5 kA.

Scan the QR code for the datasheets.

Pluggable Single Pole & Multi-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 disconnector
- Visual and remote signalization of the device status
- Short circuit current rating up to 100 kA

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

RoHS COMPLIANT CE

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 1+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

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+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

RoHS COMPLIANT

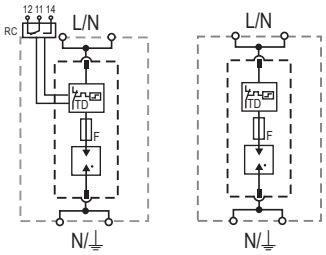
Technical Data

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 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	W/R	156.2 kJ/Ω
Charge	Q	12.5 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
Maximum Backup fuse, if required		Not Required
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 µs)	U_{res}	1200 V
Minimum Backup fuse, if required		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%
Pollution Degree		2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

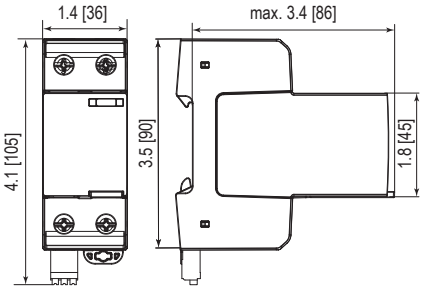


ProTec T1SF-xxx-1+0(-R)

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

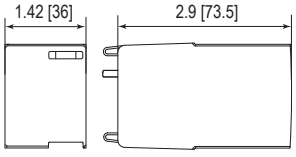
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-1+0		**275**
Weight	pounds [grams]	.727 [330]
ProTec T1SF-xxx-1+0-R		
Weight	pounds [grams]	.736 [334]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		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		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 2+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TN-S
Mode of Protection: L-PE, N-PE
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11: 2011
EN 61643-11: 2012+A11:2018

CE DVE RoHS COMPLIANT

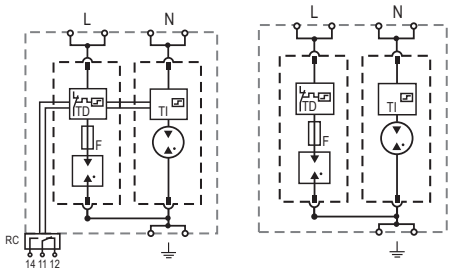
Technical Data

ProTec T1SF-xxx-2+0(-R)			275
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-PE) / (N-PE)	U_c	275 V / 305 V
Nominal Discharge Current (8/20 µs)	(L-PE) / (N-PE)	I_n	25 kA / 25 kA
Maximum Discharge Current (8/20 µs)	(L-PE) / (N-PE)	I_{max}	65 kA / 65 kA
Impulse Discharge Current (10/350 µs)	(L-PE) / (N-PE)	I_{imp}	25 kA / 25 kA
Specific Energy	(L-PE) / (N-PE)	W/R	156.2 kJ/Ω / 156.2 kJ/Ω
Charge	(L-PE) / (N-PE)	Q	12.5 As / 12.5 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-PE) / (N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(L-PE) / (N-PE)	I_{cw}	3 kA / 3 kA
Voltage Protection Level	(L-PE) / (N-PE)	U_p	1900 V / 1500 V
Response Time	(L-PE) / (N-PE)	t_A	< 100 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			Not Required
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Follow Current Interrupt Rating (AC)	(L-PE) / (N-PE)	I_{fi}	100 kA / 100 A
TOV Withstand 120min	(L-PE)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-PE) / (N-PE)	U_{res}	1200 V / 305 V
Minimum Backup fuse, if required			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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*

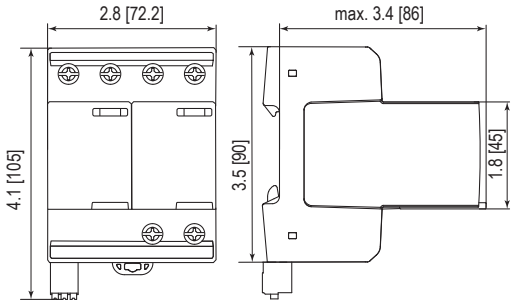


ProTec T1SF-xxx-2+0(-R)

Order Information	
Order Code	**275**
ProTec T1SF-xxx-2+0	59.C245
ProTec T1SF-xxx-2+0-R (with remote contacts)	59.C246
ProTec T1SF-xxx-P (plug L-N)	59.A502
ProTube T1SF-25-P (plug N-PE)	59.C674

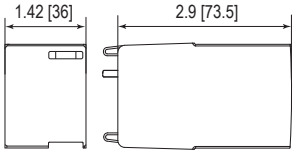
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-2+0		**275**
Weight	pounds [grams]	1.171 [531]
ProTec T1SF-xxx-2+0-R		
Weight	pounds [grams]	1.186 [538]
DIN 43880 Dimension		4 TE / 2.8" [72.2 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Spare Plug



Single Unit		
ProTec T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
ProTube T1SF-xx-P		**25**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 3+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11: 2011
EN 61643-11: 2012+A11:2018

RoHS COMPLIANT

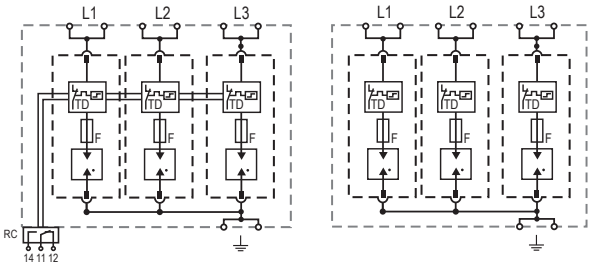
Technical Data

ProTec T1SF-xxx-3+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 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	W/R	156.2 kJ/Ω
Charge	Q	12.5 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kA
Voltage Protection Level	U_p	1900 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
Maximum Backup fuse, if required		Not Required
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 µs)	U_{res}	1200 V
Minimum Backup fuse, if required		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%
Pollution Degree		2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

L	*Line Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
F	*Integrated Surge Adapted Backup Fuse*

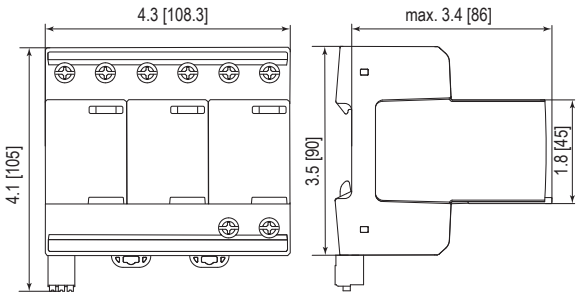


ProTec T1SF-xxx-3+0(-R)

Order Information	
Order Code	**275**
ProTec T1SF-xxx-3+0	59.C170
ProTec T1SF-xxx-3+0-R (with remote contacts)	59.C171
ProTec T1SF-xxx-P (plug)	59.A502

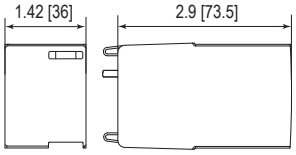
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-3+0		**275**
Weight	pounds [grams]	1.892 [858]
ProTec T1SF-xxx-3+0-R		
Weight	pounds [grams]	1.914 [868]
DIN 43880 Dimension		6 TE / 4.3" [108.3 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		3 Units

Spare Plug



Single Unit		
ProTec T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
DIN 43880 Dimension		2TE / 1.42" [36 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 4+0

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TN-S
Mode of Protection: L-PE, N-PE
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11: 2011
EN 61643-11: 2012+A11:2018

RoHS COMPLIANT

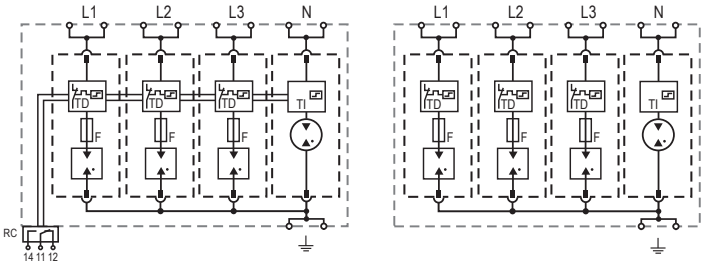
Technical Data

ProTec T1SF-xxx-4+0(-R)			275
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 25 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 65 kA
Impulse Discharge Current (10/350 µs)	(L-N) / (N-PE)	I_{imp}	25 kA / 25 kA
Specific Energy	(L-N) / (N-PE)	W/R	156.2 kJ/Ω / 156.2 kJ/Ω
Charge	(L-N) / (N-PE)	Q	12.5 As / 12.5 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-N) / (N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(L-N) / (N-PE)	I_{cw}	3 kA / 3 kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1900 V / 1500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			Not Required
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Follow Current Interrupt Rating (AC)	(L-N) / (N-PE)	I_{fi}	100 kA / 100 A
TOV Withstand 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-PE) / (N-PE)	U_{res}	1200 V / 305 V
Minimum Backup fuse, if required			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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*

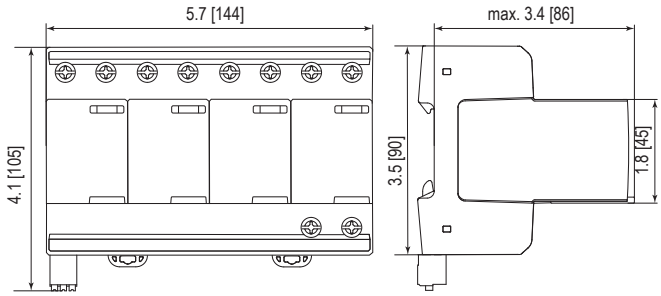


ProTec T1SF-xxx-4+0(-R)

Order Information	
Order Code	**275**
ProTec T1SF-xxx-4+0	59.C247
ProTec T1SF-xxx-4+0-R (with remote contacts)	59.C248
ProTec T1SF-xxx-P (plug L-N)	59.A502
ProTube T1SF-25-P (plug N-PE)	59.C674

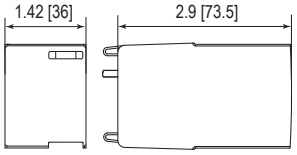
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-4+0		**275**
Weight	pounds [grams]	2.348 [1065]
ProTec T1SF-xxx-4+0-R		
Weight	pounds [grams]	2.368 [1074]
DIN 43880 Dimension		8 TE / 5.7" [144 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		2 Units

Spare Plug



Single Unit		
ProTec T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
ProTube T1SF-xx-P		**25**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2TE / 1.42" [36 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 1+1

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11: 2011
EN 61643-11: 2012+A11:2018

RoHS COMPLIANT

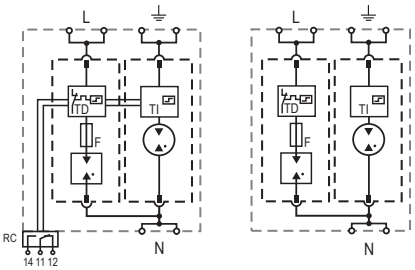
Technical Data

ProTec T1SF-xxx-1+1(-R)			275
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 150 kA
Impulse Discharge Current (10/350 µs)	(L-N) / (N-PE)	I_{imp}	25 kA / 100 kA
Specific Energy	(L-N) / (N-PE)	W/R	156.2 kJ/Ω / 2500 kJ/Ω
Charge	(L-N) / (N-PE)	Q	12.5 As / 50 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-N) / (N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(L-N) / (N-PE)	I_{cw}	3 kA / 3 kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1900 V / 1500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			Not Required
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Follow Current Interrupt Rating (AC)	(L-N) / (N-PE)	I_{fi}	100 kA / 100 A
TOV Withstand 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1200 V / 305 V
Minimum Backup fuse, if required			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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*

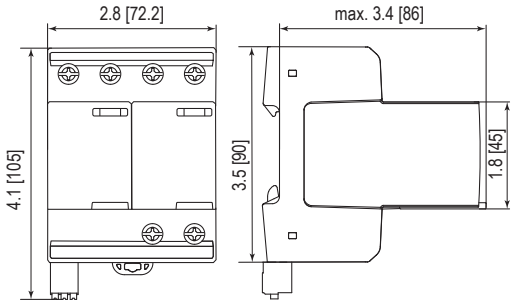


ProTec T1SF-xxx-1+1(-R)

Order Information	
Order Code	**275**
ProTec T1SF-xxx-1+1	59.C672
ProTec T1SF-xxx-1+1-R (with remote contacts)	59.C673
ProTec T1SF-xxx-P (plug L-N)	59.A502
ProTube T1SF-100-P (plug N-PE)	59.C175

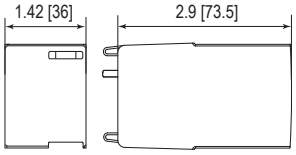
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-1+1		**275**
Weight	pounds [grams]	1.171 [531]
ProTec T1SF-xxx-1+1-R		
Weight	pounds [grams]	1.186 [538]
DIN 43880 Dimension		4 TE / 2.8" [72.2 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Spare Plug



Single Unit		
ProTec T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
ProTube T1SF-xx-P		**25**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTec T1SF 3+1

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11: 2011
EN 61643-11: 2012+A11:2018

RoHS COMPLIANT

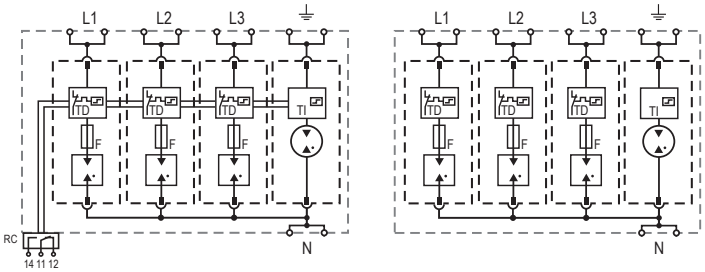
Technical Data

ProTec T1SF-xxx-3+1(-R)			275
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 150 kA
Impulse Discharge Current (10/350 µs)	(L-N) / (N-PE)	I_{imp}	25 kA / 100 kA
Specific Energy	(L-N) / (N-PE)	W/R	156.2 kJ/Ω / 2500 kJ/Ω
Charge	(L-N) / (N-PE)	Q	12.5 As / 50 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-N) / (N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(L-N) / (N-PE)	I_{cw}	3 kA / 3 kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1900 V / 1500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			Not Required
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Follow Current Interrupt Rating (AC)	(L-N) / (N-PE)	I_{fi}	100 kA / 100 A
TOV Withstand 120min	(L-N)	U_T	442 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V
Number of Ports			1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1200 V / 305 V
Minimum Backup fuse, if required			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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*

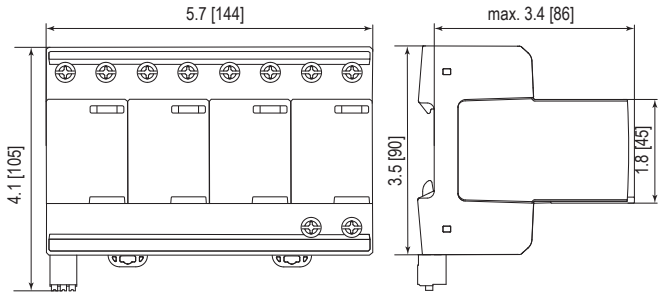


ProTec T1SF-xxx-3+1(-R)

Order Information	
Order Code	**275**
ProTec T1SF-xxx-3+1	59.C172
ProTec T1SF-xxx-3+1-R (with remote contacts)	59.C173
ProTec T1SF-xxx-P (plug L-N)	59.A502
ProTube T1SF-100-P (plug N-PE)	59.C175

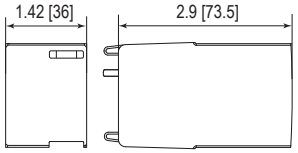
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1SF-xxx-3+1		**275**
Weight	pounds [grams]	2.348 [1065]
ProTec T1SF-xxx-3+1-R		
Weight	pounds [grams]	2.368 [1074]
DIN 43880 Dimension		8 TE / 5.7" [144 mm]
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 T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
ProTube T1SF-xxx-P		**100**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2 TE / 1.42 [36 mm]
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		14 Units

Lightning and Overvoltage Protection with Integrated Fuse

ProTube T1SF 0+1

Class I • Class II • Class III • Type 1 • Type 2 • Type 3

Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: N-PE
IEC/EN Category: Class I+II+III, Type 1+2+3
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

RoHS COMPLIANT

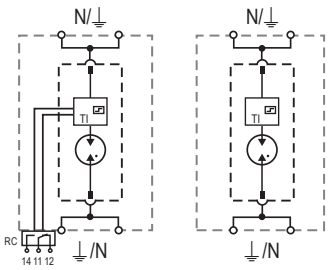
Technical Data

ProTube T1SF-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 µs)	I_n	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	150 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	100 kA
Specific Energy	W/R	2500 kJ/Ω
Charge	Q	50 As
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
Maximum Backup fuse, if required		Not Required
Follow Current Interrupt Rating (AC)	I_{fi}	100 A
TOV Withstand 200ms	U_T	1200 V
Number of Ports		1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305 V
Minimum Backup fuse, if required		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%
Pollution Degree		2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indication*

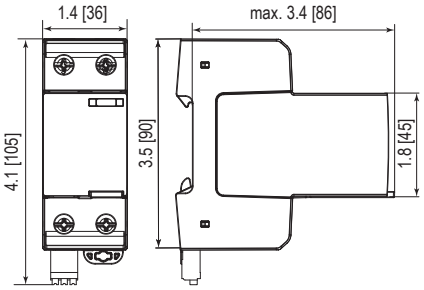


ProTube T1SF-xxx-0+1(-R)

Order Information	
Order Code	**100**
ProTube T1SF-xxx-0+1	59.C234
ProTube T1SF-xxx-0+1-R (with remote contacts)	59.C235
ProTube T1SF-100-P	59.C175

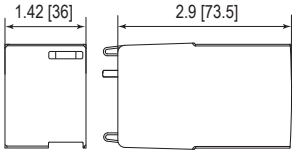
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T1SF-xxx-0+1		**100**
Weight	pounds [grams]	.509 [231]
ProTube T1SF-xxx-0+1-R		
Weight	pounds [grams]	.518 [235]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug



Single Unit		
ProTube T1SF-xxx-P		**100**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

Notes

Pluggable Single Pole Surge Protective Devices (SPDs)

Overvoltage Protection (PGDT Technology)

ProTec T1S 35 kA & 50 kA Series

Special features:

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

CE RoHS COMPLIANT

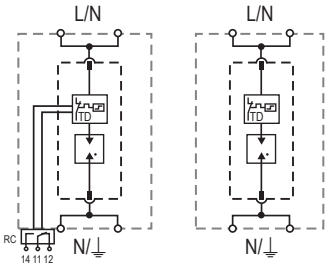
Technical Data

ProTec T1S-50-xxx-1+0(-R)		275
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o/U_n	240V
Maximum Continuous Operating Voltage (AC)	U_c	275V
Nominal Discharge Current (8/20µs)	I_n	50kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA
Impulse Discharge Current (10/350µs)	I_{imp}	50kA
Specific Energy	W/R	625kJ/Ω
Charge	Q	25As
Voltage Protection Level	U_p	1500V
Rated Load Current	I_L	100A
Response Time	t_A	< 100ns
Overvoltage Category		III
Maximum Backup fuse, if required		500A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA
Follow Current Interrupt Rating (AC)	I_{fi}	100kA
TOV Withstand 120min	U_T	442V
Number of Ports		1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1000V
Minimum Backup fuse, if required		500A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA
Minimum Backup fuse, if required		500A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

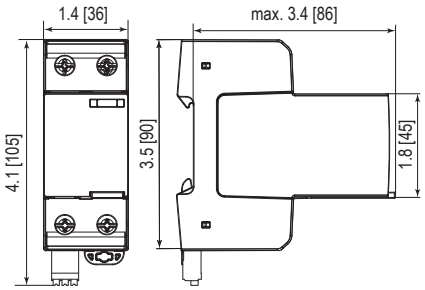


ProTec T1S-50-xxx-1+0(-R)

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

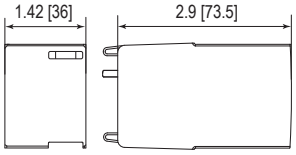
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1S-50-xxx-1+0		**275**
Weight	pounds [grams]	.623 [283]
ProTec T1S-50-xxx-1+0-R		
Weight	pounds [grams]	.643 [292]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		16 Units

Lightning and Overvoltage Protection

ProTec T1S-35 1+0

Class I • Class II • Type 1 • Type 2

35 kA Series

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

CE RoHS COMPLIANT

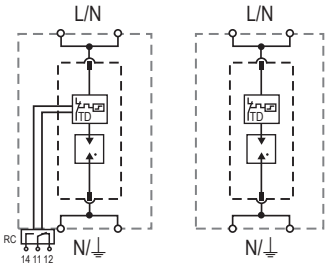
Technical Data

ProTec T1S-35-xxx-1+0(-R)		275	440
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	35 kA	35 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	35 kA	35 kA
Specific Energy	W/R	306.25 kJ/Ω	306.25 kJ/Ω
Charge	Q	17.5 As	17.5 As
Voltage Protection Level	U_p	1500 V	2500 V
Rated Load Current	I_L	100 A	100 A
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Maximum Backup fuse, if required		500 A gG	400 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	100 kA	100 kA
TOV Withstand 120min	U_T	442 V	762 V
TOV Safe Fail 200ms	U_T	-	1640 V
Number of Ports		1	1
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1000 V	1500 V
Minimum Backup fuse, if required		400 A gG	400 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Minimum Backup fuse, if required		500 A gG	400 A gG
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 lbf-in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

Internal Configuration

Legend

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



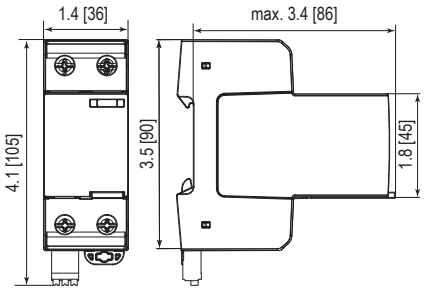
ProTec T1S-35-xxx-1+0(-R)

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

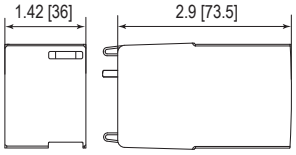
Dimensions & Packaging

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			
Weight	pounds [grams]	.643 [292]	.676 [307]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		7 Units	

Spare Plug



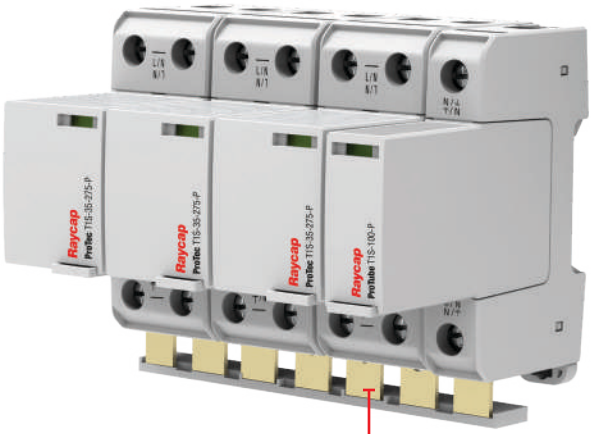
Single Unit			
ProTec T1S-35-xxx-P		**275**	**440**
Weight	pounds [grams]	.412 [187]	.445 [202]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		16 Units	

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 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 kA
- Low voltage protection level, U_p < 2.5 kV
- Can be installed in IT systems (only SPD with U_c 440 V)
- No external arrester backup fuse required up to 315 A
- Vibration and shock withstand capability
- Sensitive and reliable state-of-the-art disconnector
- 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 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

25 kA 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

CE DVE RoHS COMPLIANT

Technical Data

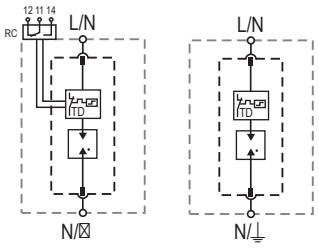
ProTec T1S-xxx-1+0(-R)		275	440*
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	25 kA	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/Ω	156.2 kJ/Ω
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	U_p	1500 V	2500 V
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Maximum Backup fuse, if required		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 120 min	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Safe Fail 200ms	U_T	-	1640 V
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1400 V	1500 V
Minimum Backup fuse, if required		250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Minimum Backup fuse, if required		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%	
Pollution Degree		2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

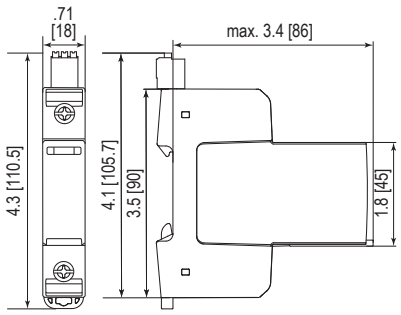
Order Information

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.*

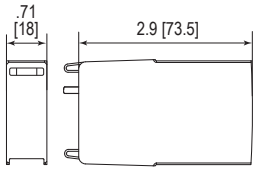
Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T1S-xxx-1+0		**275**	**440***
Weight	pounds [grams]	.381 [173]	.392 [178]
ProTec T1S-xxx-1+0-R			
Weight	pounds [grams]	.396 [180]	.407 [185]
DIN 43880 Dimension		1 TE / .71" [18 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

CE DVE RoHS COMPLIANT

Technical Data

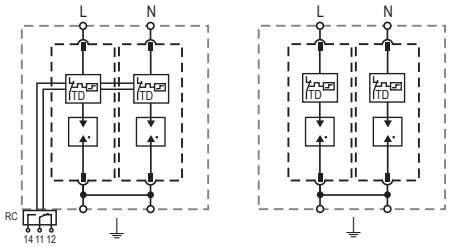
ProTec T1S-xxx-2+0(-R)		275	440*
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	25 kA	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/Ω	156.2 kJ/Ω
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	U_p	1500 V	2500 V
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Maximum Backup fuse, if required		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 120 min	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Safe Fail 200ms	U_T	-	1640 V
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1400 V	1500 V
Minimum Backup fuse, if required		250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Minimum Backup fuse, if required		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%	
Pollution Degree		2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**No VDE Certification.*

Internal Configuration

Legend

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



ProTec T1S-xxx-2+0(-R

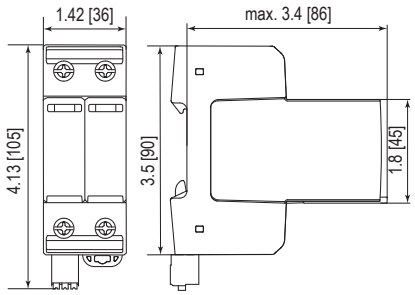
Order Information

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

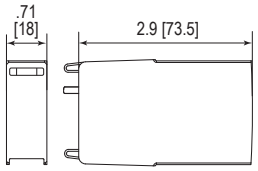
inches [mm]



Complete Unit

ProTec T1S-xxx-2+0		**275**	**440***
Weight	pounds [grams]	.749 [340]	.771 [350]
ProTec T1S-xxx-2+0-R			
Weight	pounds [grams]	.769 [349]	.791 [359]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

Technical Data

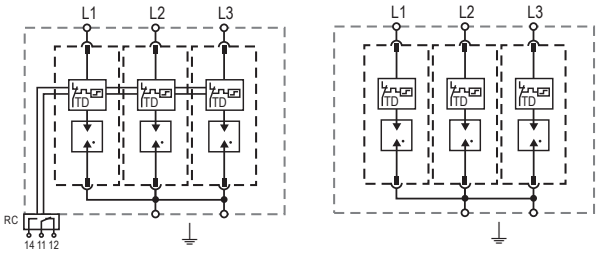
ProTec T1S-xxx-3+0(-R)		275	440*
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	25 kA	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/Ω	156.2 kJ/Ω
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	U_p	1500 V	2500 V
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Maximum Backup fuse, if required		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 120 min	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Safe Fail 200ms	U_T	-	1640 V
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1400 V	1500 V
Minimum Backup fuse, if required		250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Minimum Backup fuse, if required		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%	
Pollution Degree		2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

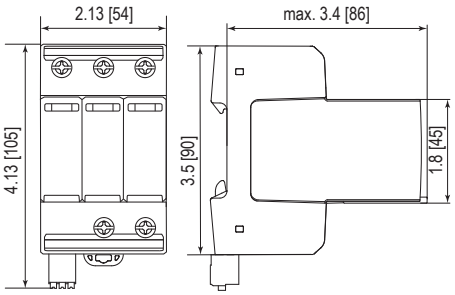
Order Information

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

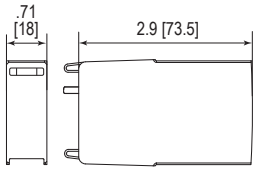
inches [mm]



Complete Unit

ProTec T1S-xxx-3+0		**275**	**440***
Weight	pounds [grams]	1.100 [499]	1.133 [514]
ProTec T1S-xxx-3+0-R			
Weight	pounds [grams]	1.119 [508]	1.166 [529]
DIN 43880 Dimension		3 TE / 2.13" [54 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

Technical Data

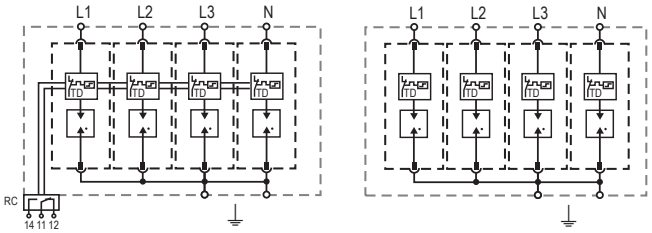
ProTec T1S-xxx-4+0(-R)		275	440*
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	25 kA	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA	50 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA	25 kA
Specific Energy	W/R	156.2 kJ/Ω	156.2 kJ/Ω
Charge	Q	12.5 As	12.5 As
Voltage Protection Level	U_p	1500 V	2500 V
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Maximum Backup fuse, if required		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 120 min	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Safe Fail 200ms	U_T	-	1640 V
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1400 V	1500 V
Minimum Backup fuse, if required		250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	
Minimum Backup fuse, if required		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%	
Pollution Degree		2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

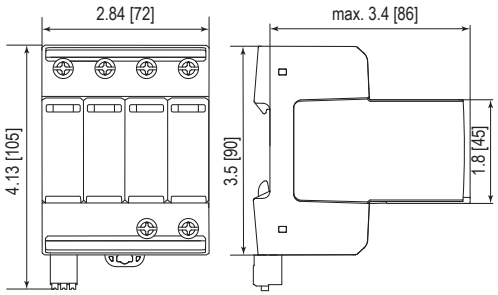
Order Information

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.*

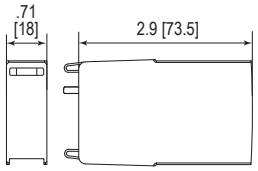
Dimensions & Packaging

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			
Weight	pounds [grams]	1.501 [681]	1.545 [701]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		28 Units	

Lightning and Overvoltage Protection

ProTec T1S 1+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

CE VDE RoHS COMPLIANT

Technical Data

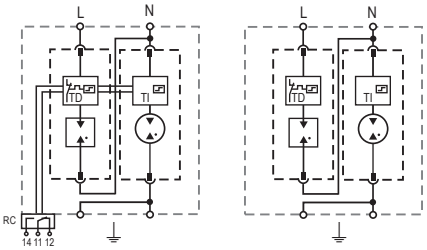
ProTec T1S-xxx-1+1(-R)			275	440*
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V	440 V / 440V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 150 kA	50 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(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/Ω / 2500 kJ/Ω	156.2 kJ/Ω / 2500 kJ/Ω
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	1500 V / 1500 V	2500 V / 2500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns	< 100 ns / < 100 ns
Overvoltage Category			III	III
Maximum Backup fuse, if required			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 120 min	(L-N)	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V	1200 V
Number of Ports			1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1400 V / 305 V	1500 V / 305 V
Minimum Backup fuse, if required			250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA	
Minimum Backup fuse, if required			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%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

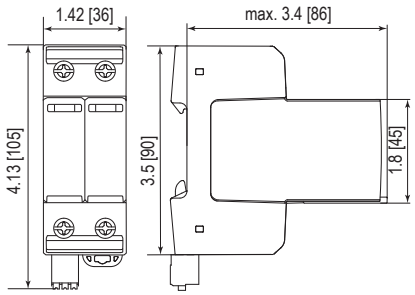
Order Information

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]



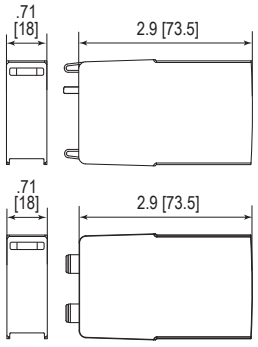
Complete Unit

ProTec T1S-xxx-1+1		**275**	**440***
Weight	pounds [grams]	.773 [351]	.785 [356]
ProTec T1S-xxx-1+1-R			
Weight	pounds [grams]	.787 [357]	.798 [362]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		7 Units	

Spare Plug

ProTec T1S

ProTubeT1S



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

Lightning and Overvoltage Protection

ProTec T1S 3+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

RoHS COMPLIANT

Technical Data

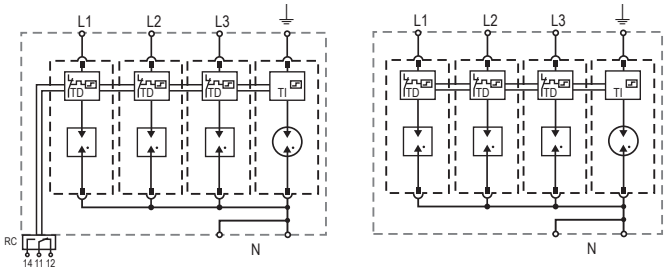
ProTec T1S-xxx-3+1(-R)			275	440*
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V	440 V / 440V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 150 kA	50 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(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/Ω / 2500 kJ/Ω	156.2 kJ/Ω / 2500 kJ/Ω
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	1500 V / 1500 V	2500 V / 2500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns	< 100 ns / < 100 ns
Overvoltage Category			III	III
Maximum Backup fuse, if required			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 120 min	(L-N)	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V	1200 V
Number of Ports			1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1400 V / 305 V	1500 V / 305 V
Minimum Backup fuse, if required			250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA	
Minimum Backup fuse, if required			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%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

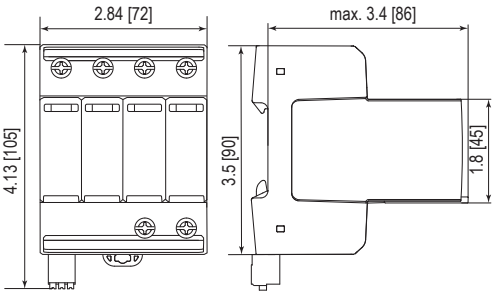
Order Information

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

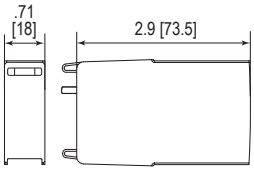
inches [mm]



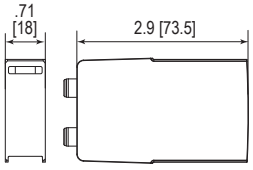
Complete Unit			
ProTec T1S-xxx-3+1		**275**	**440***
Weight	pounds [grams]	1.503 [682]	1.537 [697]
ProTec T1S-xxx-3+1-R			
Weight	pounds [grams]	1.523 [691]	1.556 [706]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]	
Packaging Dimensions (H x W x L)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		4 Units	

Spare Plug

ProTec T1S



ProTubeT1S



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 mm]	
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	

Lightning and Overvoltage Protection

ProTec T1S 3+1 N

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

RoHS COMPLIANT

Technical Data

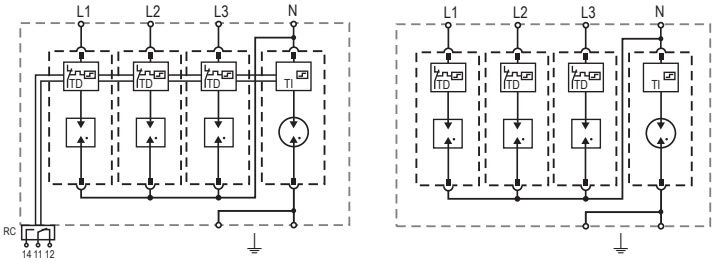
ProTec T1S-xxx-3+1-N(-R)			275	440*
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	400 V
Maximum Continuous Operating Voltage (AC)	(L-N) / (N-PE)	U_c	275 V / 305 V	440 V / 440V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 150 kA	50 kA / 100 kA
Impulse Discharge Current (10/350 µs)	(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/Ω / 2500 kJ/Ω	156.2 kJ/Ω / 2500 kJ/Ω
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	1700 V / 1500 V	2500 V / 2500 V
Response Time	(L-N) / (N-PE)	t_A	< 100 ns / < 100 ns	< 100 ns / < 100 ns
Overvoltage Category			III	III
Maximum Backup fuse, if required			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 120 min	(L-N)	U_T / mode	442 V / Withstand	762 V / Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V	1200 V
Number of Ports			1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1400 V / 305 V	1500 V / 305 V
Minimum Backup fuse, if required			250 A gG	250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA	
Minimum Backup fuse, if required			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%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

**No VDE Certification.*

Internal Configuration

Legend

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



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

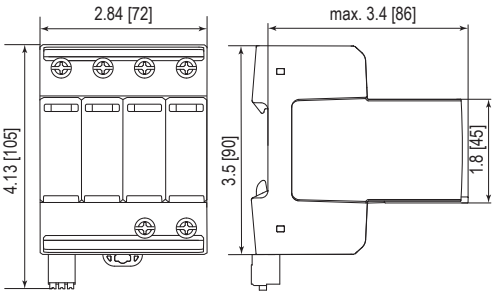
Order Information

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]



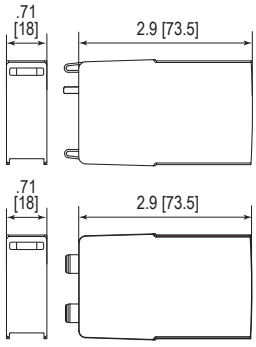
Complete Unit

ProTec T1S-xxx-3+1-N		**275**	**440***
Weight	pounds [grams]	1.503 [682]	1.537 [697]
ProTec T1S-xxx-3+1-N-R			
Weight	pounds [grams]	1.523 [691]	1.556 [706]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		4 Units	

Spare Plug

ProTec T1S

ProTubeT1S



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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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: 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

CE DVE RoHS COMPLIANT

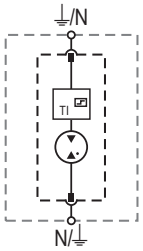
Technical Data

ProTube T1S-xxx-0+1		100
IEC Electrical		
Maximum Continuous Operating Voltage (AC)	U_c	305 V
Nominal Discharge Current (8/20 µs)	I_n	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	150 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	100 kA
Specific Energy	W/R	2500 kJ/Ω
Charge	Q	50 As
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
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 µs)	U_{res}	305 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude		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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

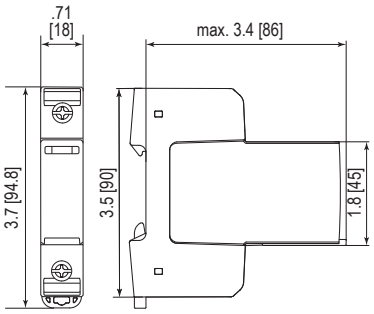


ProTube T1S-xxx-0+1

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

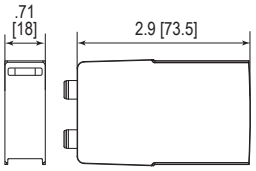
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T1S-xxx-0+1		**100**
Weight	pounds [grams]	.410 [186]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		12 Units

Spare Plug



Single Unit		
ProTube T1S-100-P		**100**
Weight	pounds [grams]	.227 [103]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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: 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

CE RoHS COMPLIANT

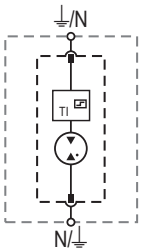
Technical Data

ProTube T1S-440-xxx-0+1		100
IEC Electrical		
Maximum Continuous Operating Voltage (AC)	U_c	440 V
Nominal Discharge Current (8/20 µs)	I_n	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	100 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	100 kA
Specific Energy	W/R	2500 kJ/Ω
Charge	Q	50 As
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
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 µs)	U_{res}	440 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude		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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

N *Neutral Conductor Terminal*
PE Conductor Terminal
TI *Thermal Indication*

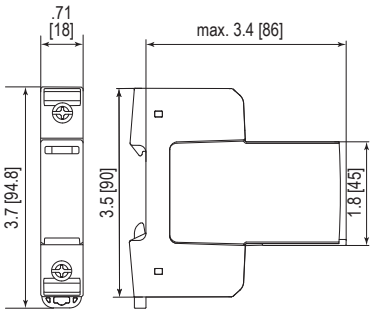


ProTube T1S-440-xxx-0+1

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

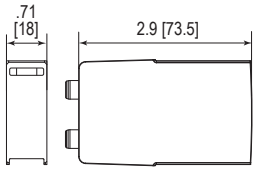
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T1S-440-xxx-0+1		**100**
Weight	pounds [grams]	.403 [183]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		12 Units

Spare Plug

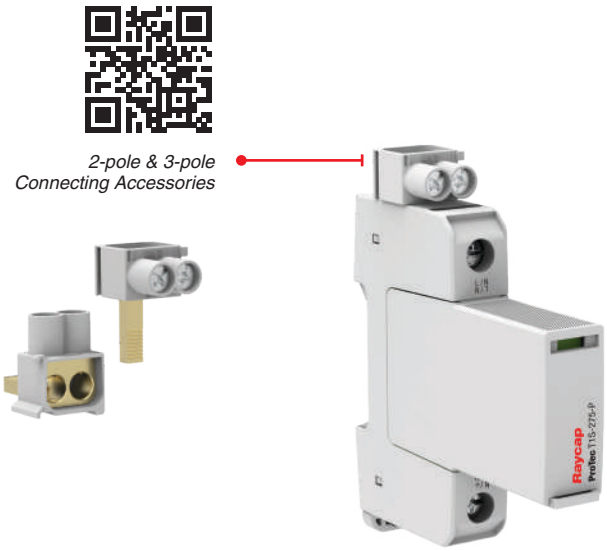


Single Unit		
ProTube T1S-440-100-P		**100**
Weight	pounds [grams]	.253 [115]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		28 Units

Accessories

Cable Extender

- Connecting accessories for 2-pole and 3-pole surge protective device (SPD) input terminals
- Overvoltage Category 3
- Limited width to one DIN Rail standard module, 1 TE
- Connection terminals can be easily connected to each other

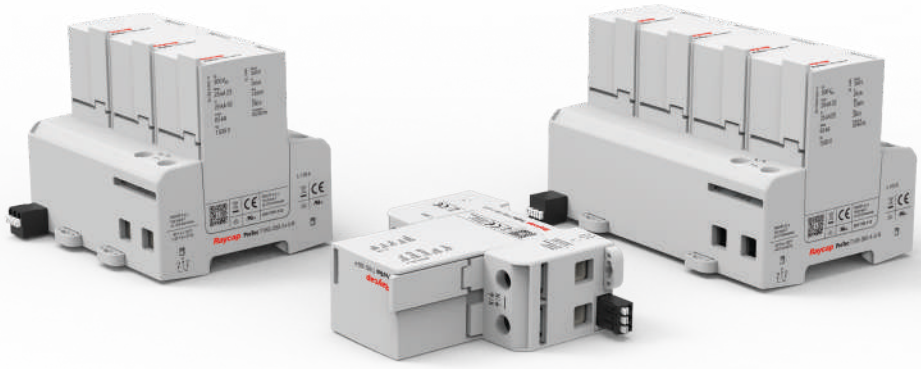


Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

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 disconnector
- 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, ensures 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.

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

More Product Information

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

CE RoHS COMPLIANT

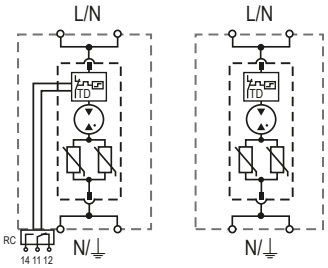
Technical Data

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 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	W/R	156.2 kJ/Ω
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
Overvoltage Category		III
Maximum Backup fuse, if required		315 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
TOV Withstand 120min	U_T	442 V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1280V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1100V
Minimum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude		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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

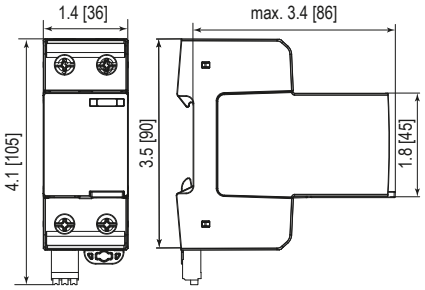


ProTec T1HS-xxx-1+0(-R)

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.C669

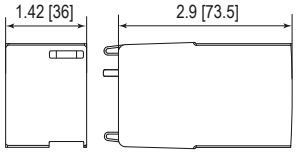
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1HS-xxx-1+0		**300**
Weight	pounds [grams]	.650 [295]
ProTec T1HS-xxx-1+0-R		
Weight	pounds [grams]	.670 [304]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug



Single Unit		
ProTec T1HS-xxx-01-P		**300**
Weight	pounds [grams]	.364 [165]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

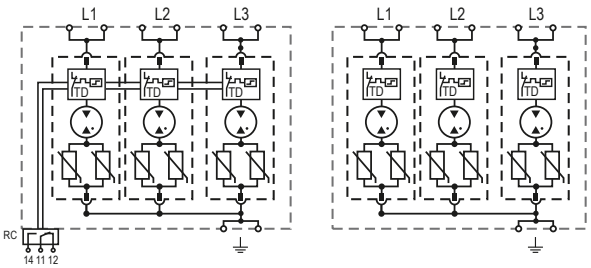
Technical Data

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 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	W/R	156.2 kJ/Ω
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
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	I_n	20 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1100 V
Minimum Backup fuse, if required		250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		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%
Pollution Degree		2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

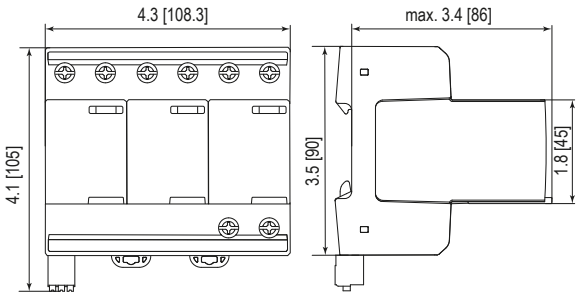


ProTec T1HS-xxx-3+0(-R)

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

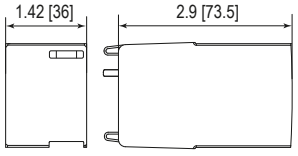
Dimensions & Packaging

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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

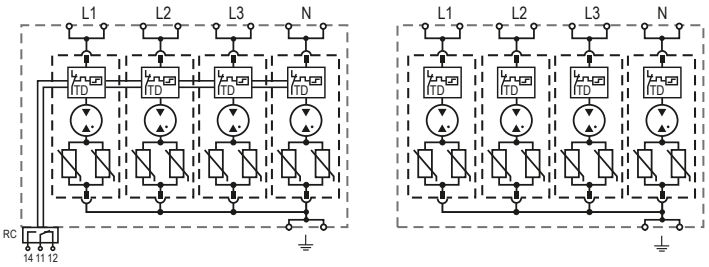
Technical Data

ProTec T1HS-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 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	W/R	156.2 kJ/Ω
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
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	I_n	20 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1100 V
Minimum Backup fuse, if required		250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		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%
Pollution Degree		2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

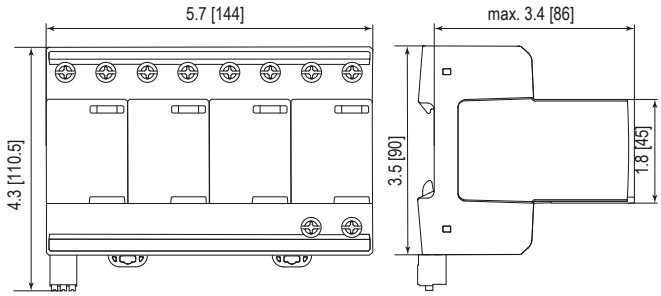


ProTec T1HS-xxx-4+0(-R)

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

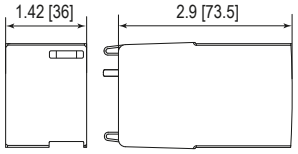
Dimensions & Packaging

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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

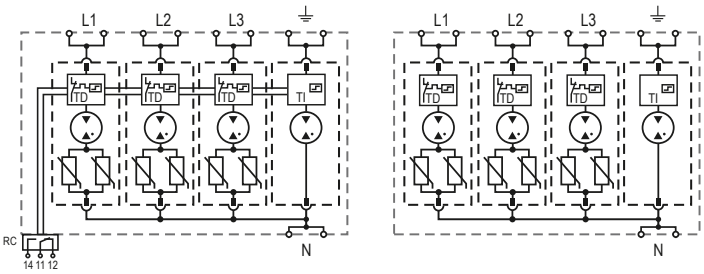
Technical Data

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 µs)	(L-N) / (N-PE)	I_n	25 kA / 100 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	65 kA / 130 kA
Impulse Discharge Current (10/350 µs)	(L-N) / (N-PE)	I_{imp}	25 kA / 100 kA
Specific Energy	(L-N) / (N-PE)	W/R	156.2 kJ/Ω / 2500 kJ/Ω
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
Overvoltage Category			III
Maximum Backup fuse, if required			315 A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	50 kA
Follow Current Interrupt Rating	(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	1280 V / 1000 V
Nominal Discharge Current (8/20 µs)	(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 µs)	(L-N) / (N-PE)	U_{res}	1100 V / 305 V
Minimum Backup fuse, if required			250 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Maximum Backup fuse, if required			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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

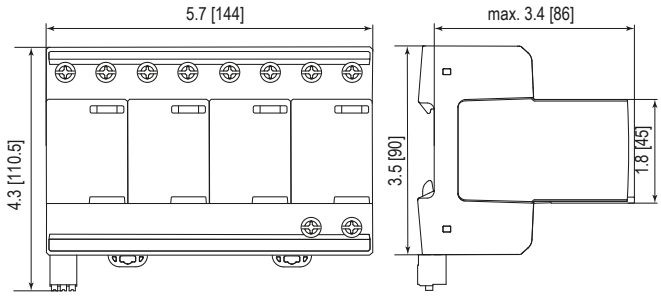


ProTec T1HS-xxx-3+1(-R)

Order Information	
Order Code	**300**
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

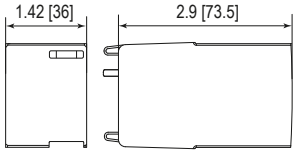
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1HS-xxx-3+1		**300**
Weight	pounds [grams]	2.348 [1065]
ProTec T1HS-xxx-3+1-R		
Weight	pounds [grams]	2.368 [1074]
DIN 43880 Dimension		8 TE / 5.7" [144 mm]
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]
ProTube T1HS-100-P		**100**
Weight	pounds [grams]	0.209 [95]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		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

CE RoHS COMPLIANT

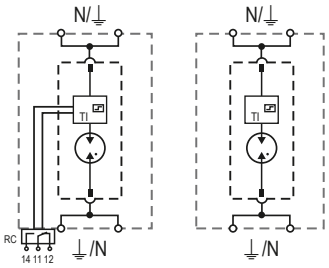
Technical Data

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 µs)	I_n	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	130 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	100 kA
Specific Energy	W/R	2500 kJ/Ω
Charge	Q	50 As
Voltage Protection Level	U_p	1500 V
Rated Load Current	I_L	100 A
Response Time	t_A	< 100 ns
Overvoltage Category		III
Follow Current Interrupt Rating	I_{fi}	100 A
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 µs)	I_n	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude		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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

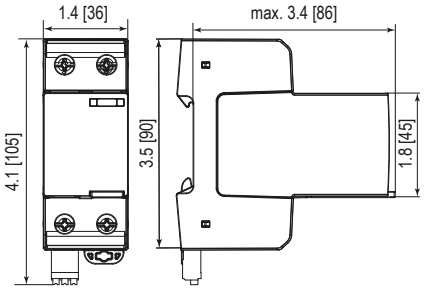


ProTube T1HS-xxx-0+1(-R)

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-P (plug)	59.C670

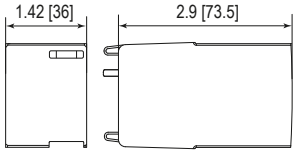
Dimensions & Packaging

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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug



Single Unit		
ProTube T1HS-100-P		**100**
Weight	pounds [grams]	0.209 [95]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 disconnector
- 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 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 300 V AC 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 100 kA* without using a back up to a main fuse, with a nominal current of 315 A. 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 50 kA, 100 kA 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

12.5kA 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

RoHS COMPLIANT

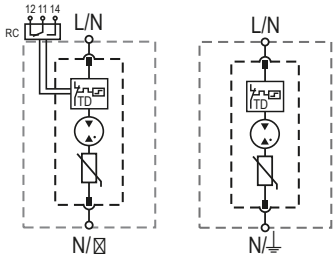
Technical Data

ProTec T1H-xxx-1+0(-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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	65kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 100ns
Overvoltage Category		III
Maximum Backup fuse, if required		315A / 250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA
TOV Withstand 120min	U_T	442V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1220V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V
Minimum Backup fuse, if required		160A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA
Maximum Backup fuse, if required		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%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

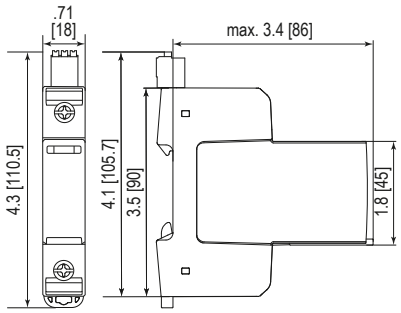


ProTec T1H-xxx-1+0(-R)

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

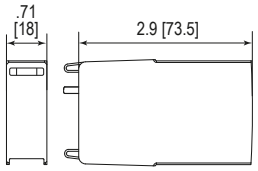
Dimensions & Packaging

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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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

12.5kA 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

RoHS COMPLIANT

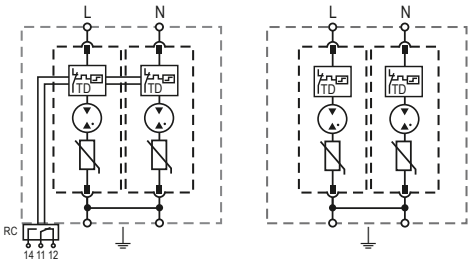
Technical Data

ProTec T1H-xxx-2+0(-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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	65kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 100ns
Overvoltage Category		III
Maximum Backup fuse, if required		315A / 250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA
TOV Withstand 120min	U_T	442V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1220V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V
Minimum Backup fuse, if required		160A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA
Maximum Backup fuse, if required		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%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

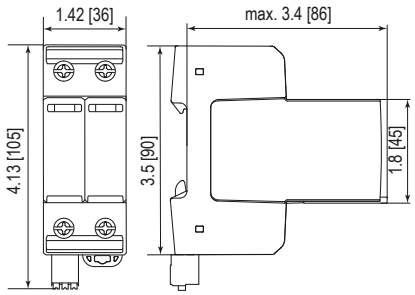


ProTec T1H-xxx-2+0(-R)

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

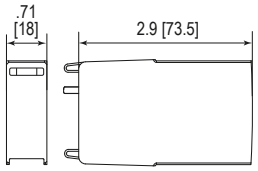
Dimensions & Packaging

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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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

RoHS COMPLIANT

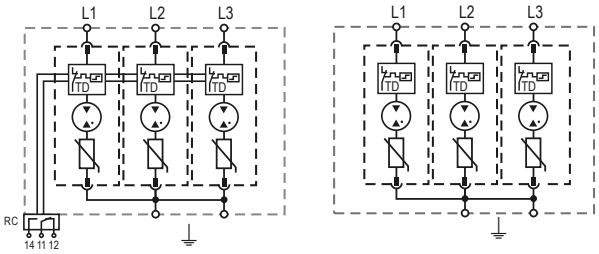
Technical Data

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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	12.5 kA
Specific Energy	W/R	39 kJ/Ω
Charge	Q	6.25 As
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 100 ns
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	I_n	20 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800 V
Minimum Backup fuse, if required		160 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

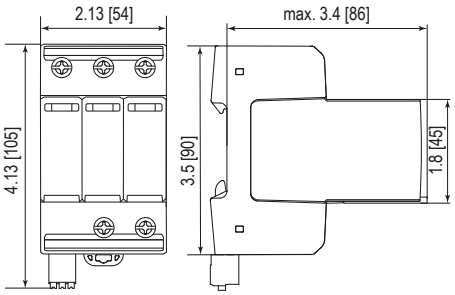


ProTec T1H-xxx-3+0(-R)

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

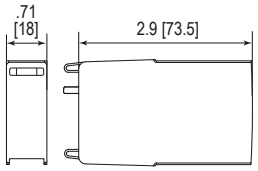
Dimensions & Packaging

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

Lightning and Overvoltage Protection

ProTec T1H 4+0

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

12.5kA 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

RoHS COMPLIANT

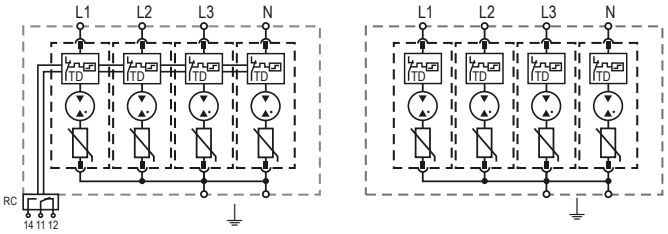
Technical Data

ProTec T1H-xxx-4+0(-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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	65kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 100ns
Overvoltage Category		III
Maximum Backup fuse, if required		315A / 250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA
TOV Withstand 120min	U_T	442V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1220V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V
Minimum Backup fuse, if required		160A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA
Maximum Backup fuse, if required		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%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

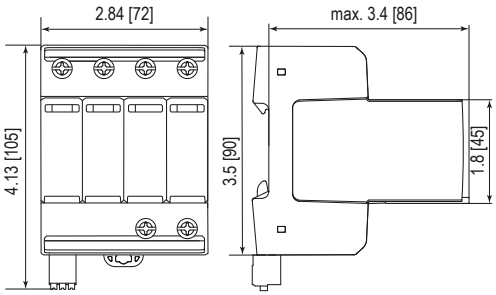


ProTec T1H-xxx-4+0(-R)

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

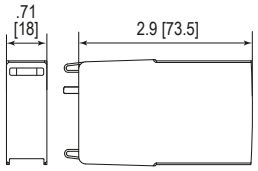
Dimensions & Packaging

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 mm]
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		4 Units

Spare Plug



Single Unit		
ProTec T1H-xxx-P		**300**
Weight	pounds [grams]	.223 [101]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		28 Units

Lightning and Overvoltage Protection

ProTec T1H 1+1

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

12.5kA 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

RoHS COMPLIANT

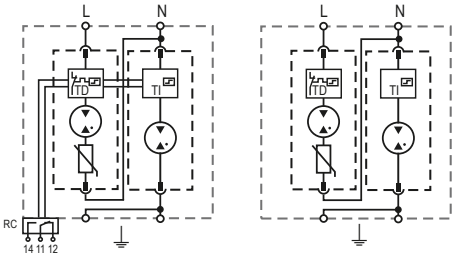
Technical Data

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 (8/20µs)	(L-N) / (N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N) / (N-PE)	I_{max}	65kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N) / (N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N) / (N-PE)	W/R	39kJ/Ω / 625kJ/Ω
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
Overvoltage Category			III
Maximum Backup fuse, if required			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 (8/20µs)	(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 µs)	(L-N) / (N-PE)	U_{res}	800V / 305V
Minimum Backup fuse, if required			160A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)		I_{SCCR}	100kA
Maximum Backup fuse, if required			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%
Pollution Degree			2
Altitude (max)			13123 ft [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

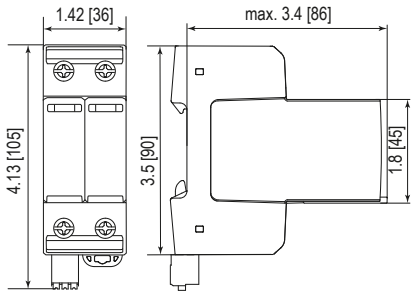


ProTec T1H-xxx-1+1(-R)

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

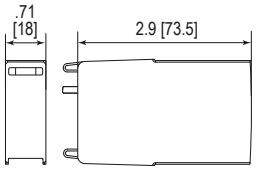
inches [mm]



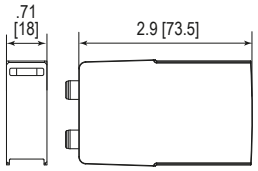
Complete Unit		
ProTec T1H-xxx-1+1		**300**
Weight	pounds [grams]	.730 [331]
ProTec T1H-xxx-1+1-R		
Weight	pounds [grams]	.743 [337]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug

ProTec T1H



ProTube T1H



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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

12.5kA 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

RoHS COMPLIANT

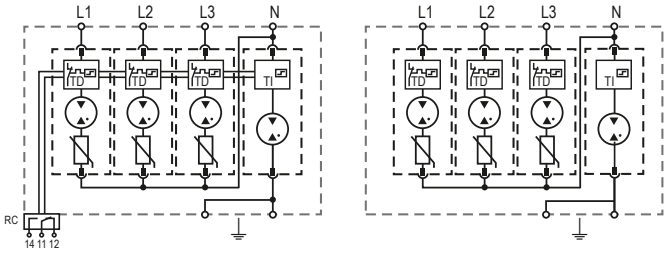
Technical Data

ProTec T1H-xxx-3+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 (8/20µs)	(L-N) / (N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N) / (N-PE)	I_{max}	65kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N) / (N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N) / (N-PE)	W/R	39kJ/Ω / 625kJ/Ω
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
Overvoltage Category			III
Maximum Backup fuse, if required			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 (8/20µs)	(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 µs)	(L-N) / (N-PE)	U_{res}	800V / 305V
Minimum Backup fuse, if required			160A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)		I_{SCCR}	100kA
Maximum Backup fuse, if required			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%
Pollution Degree			2
Altitude (max)			13123 ft [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

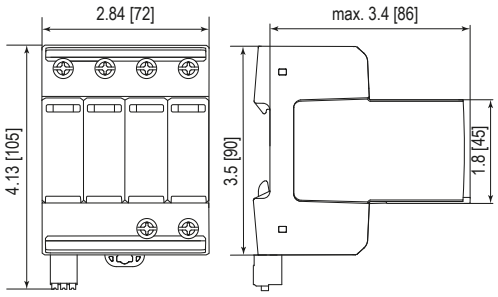


ProTec T1H-xxx-3+1(-R)

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

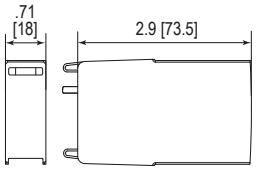
inches [mm]



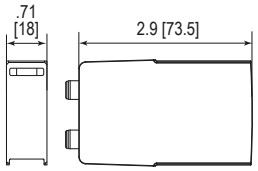
Complete Unit		
ProTec T1H-xxx-3+1		**300**
Weight	pounds [grams]	1.446 [656]
ProTec T1H-xxx-3+1-R		
Weight	pounds [grams]	1.466 [665]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Spare Plug

ProTec T1H



ProTube T1H



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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

12.5kA 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

RoHS COMPLIANT

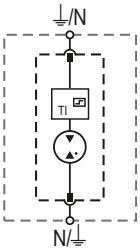
Technical Data

ProTube T1H-xxx-0+1		50
IEC Electrical		
Maximum Continuous Operating Voltage (AC)	U_c	305 V
Nominal Discharge Current (8/20 µs)	I_n	50 kA
Maximum Discharge Current (8/20 µs)	I_{max}	100 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	50 kA
Specific Energy	W/R	625 kJ/Ω
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
Overvoltage Category		III
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 µs)	I_n	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag

Internal Configuration

Legend

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

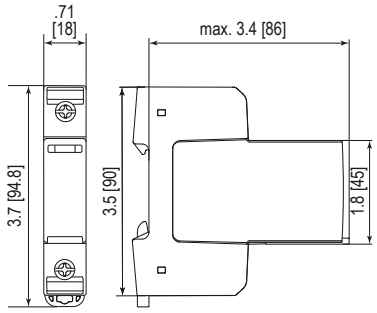


ProTube T1H-xxx-0+1

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

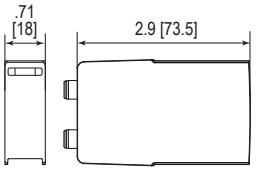
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T1H-50-0+1		**50**
Weight	pounds [grams]	.395 [179]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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, 75 V to 750 V
- High impulse current capability using single MOV– 480 V and 750 V versions come with reduced impulse current
- Sensitive state-of-the-art thermal disconnector
- Back-up fuse up to 315 A gG, 750 V version comes with 250 A gG
- Short circuit current rating up to 100 kA*
- Vibration and shock withstand capability
- All modules, also N-PE, with operating state green-red
- Optional remote contact (RC) signaling

IEC 61643-11:2011	EN 61643-11:2012 +A11:2018	UL 1449 5th Edition
✓	✓	✓

The ProTec T1 series offers basic protection as a Type 1 surge protective device that comes with an extended maximum continuous operating voltage range span from 75 V to 750 V. Due to its Type 1 classification the product can be installed between boundaries OA – 1 and higher. The varistor based protection module features outstanding short-circuit currents up to 100 kA* without using a back up to a main fuse nominal current of 315 A. All modules are equipped with state-of-the-art thermal disconnector and life-status monitoring (green-red). Due to a unique vibration-proof locking mechanism design, these products are suitable for use in high vibration environments. An optional remote contact (RC) feature offers a three-pole remote signaling terminal to remotely monitor the operating state of the device.

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

More Product Information

RoHS COMPLIANT

Lightning and Overvoltage Protection

ProTec T1 1+0

12.5kA Series

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

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

RoHS COMPLIANT

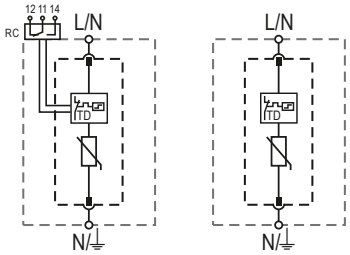
Technical Data

ProTec T1-xxx-1+0(-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω	6.25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	6.25As	5As	2.5As
Voltage Protection Level	U_p	700V	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25ns					
Overvoltage Category		III					
Maximum Backup fuse, if required		315A / 250A gG					250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					50kA
TOV Withstand 5s	U_T	114V	175V	337V	403V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1200V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	200kA	150kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*							
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required		160A gG					80A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*							
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA					
Maximum Backup fuse, if required		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%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000m]					
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35mm² (Solid, Stranded) / 25mm² (Flexible)					
Mounting		35mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

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



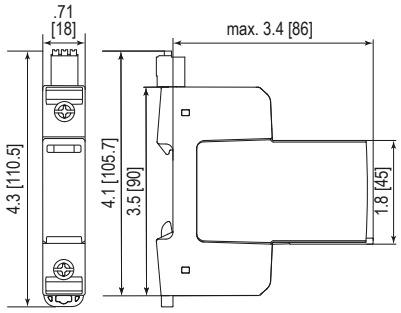
ProTec T1-xxx-1+0(-R)

Order Information

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

Dimensions & Packaging

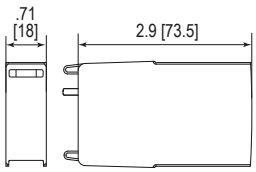
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 2+0

12.5kA Series

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

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

RoHS COMPLIANT

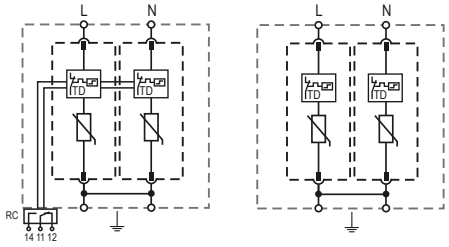
Technical Data

ProTec T1-xxx-2+0(-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω	6.25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	6.25As	5As	2.5As
Voltage Protection Level	U_p	700V	1000V	1500V	1750V	2100V	3200V
Response Time	t_A	< 25ns					
Overvoltage Category		III					
Maximum Backup fuse, if required		315A / 250A gG					250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					50kA
TOV Withstand 5s	U_T	114V	175V	337V	403V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1200V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	150kA	200kA	150kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*							
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required		160A gG					80A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*							
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA					
Maximum Backup fuse, if required		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%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000m]					
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35mm² (Solid, Stranded) / 25mm² (Flexible)					
Mounting		35mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

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



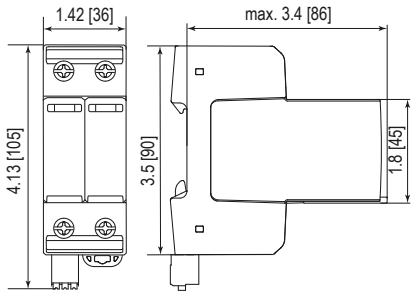
ProTec T1-xxx-2+0(-R)

Order Information

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

Dimensions & Packaging

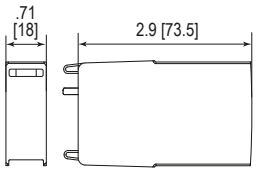
inches [mm]



Complete Unit

ProTec T1-xxx-2+0		75	150	300	350	480	750
Weight	pounds	.595	.697	.750	.833	.847	.860
	grams	270	316	340	378	384	390
ProTec T1-xxx-2+0-US-R							
Weight	pounds	.615	.717	.769	.853	.884	.880
	grams	279	325	349	387	401	399
DIN 43880 Dimension		2 TE / 1.42" [36 mm]					
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]					
Standard Order Quantity		7 Units					

Spare Plug



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 3+0

12.5kA Series

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

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

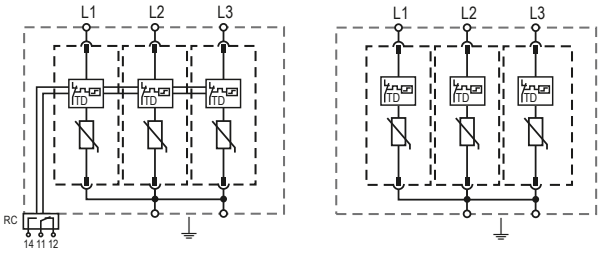
Technical Data

ProTec T1-xxx-3+0(-R)		150	300	350	480	750
IEC Electrical						
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	35kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	10kA	5kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω	6.25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	5As	2.5As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V	3200V
Response Time	t_A			< 25ns		
Overvoltage Category				III		
Maximum Backup fuse, if required			315A / 250A gG			250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}		25kA / 50kA			50kA
TOV Withstand 5s	U_T	175V	337V	403V	581V	871V
TOV 120min	U_T	229V	442V	529V	762V	1143V
	mode	Safe Fail	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports				1		
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	200kA	150kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V	1100V	1300V	1500V	2500V
Minimum Backup fuse, if required			160A gG			80A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)	I_{SCCR}			100kA		
Maximum Backup fuse, if required				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%		
Pollution Degree				2		
Altitude (max)				13123 ft [4000m]		
Terminal Screw Torque	M_{max}			40 lbf·in [4.5Nm]		
Conductor Cross Section (max)				2 AWG (Solid, Stranded) / 4 AWG (Flexible)		
				35mm² (Solid, Stranded) / 25mm² (Flexible)		
Mounting				35mm DIN Rail, EN 60715		
Degree of Protection				IP 20 (built-in)		
Housing Material				Thermoplastic: Extinguishing Degree UL 94 V-0		
Thermal Protection				Yes		
Operating State / Fault Indication				Green Flag / Not Green Flag		
Remote Contacts (RC)				Optional		
RC Switching Capacity				AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A		
RC Conductor Cross Section (max)				16 AWG (Solid) / 1.5mm² (Solid)		
Overvoltage Category				III		

Internal Configuration

Legend

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



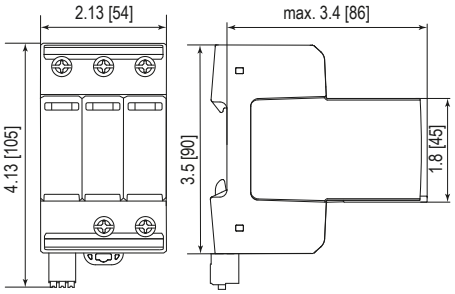
ProTec T1-xxx-3+0(-R)

Order Information

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

Dimensions & Packaging

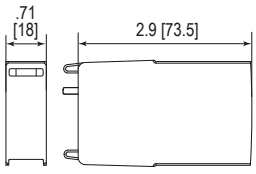
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 4+0

12.5kA Series

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

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

RoHS COMPLIANT

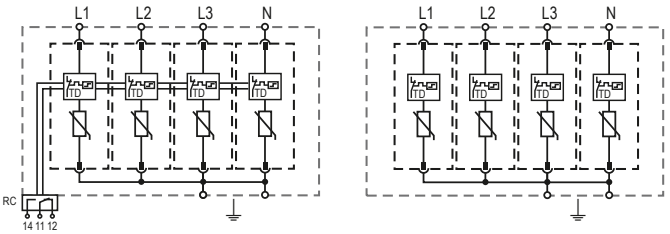
Technical Data

ProTec T1-xxx-4+0(-R)		150	300	350	480
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA	12.5kA	12.5kA	10kA
Specific Energy	W/R	39kJ/Ω	39kJ/Ω	39kJ/Ω	25kJ/Ω
Charge	Q	6.25As	6.25As	6.25As	5As
Voltage Protection Level	U_p	1000V	1500V	1750V	2100V
Response Time	t_A	< 25ns			
Overvoltage Category		III			
Maximum Backup fuse, if required		315A / 250A gG			
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA			
TOV Withstand 5s	U_T	175V	337V	403V	581V
TOV 120min	U_T	229V	442V	529V	762V
	mode	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1			
UL Electrical					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	150kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*					
Residual Voltage at 5 kA (8/20 µs)	U_{res}	800V	1100V	1300V	1500V
Minimum Backup fuse, if required		160A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*					
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA			
Maximum Backup fuse, if required		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%			
Pollution Degree		2			
Altitude (max)		13123 ft [4000m]			
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]			
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
		35mm² (Solid, Stranded) / 25mm² (Flexible)			
Mounting		35mm DIN Rail, EN 60715			
Degree of Protection		IP 20 (built-in)			
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection		Yes			
Operating State / Fault Indication		Green Flag / Not Green Flag			
Remote Contacts (RC)		Optional			
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)			
Overvoltage Category		III			

Internal Configuration

Legend

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



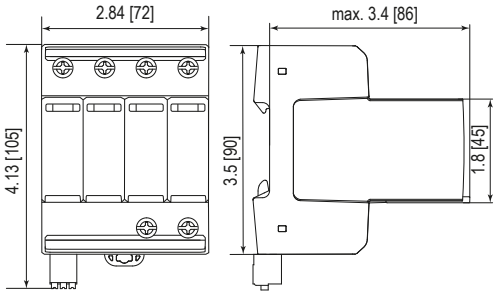
ProTec T1-xxx-4+0(-R)

Order Information

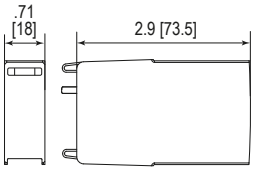
Order Code	150	300	350	480
ProTec T1-xxx-4+0	59.0039	59.0041	59.0351	59.0043
ProTec T1-xxx-4+0-R (with remote contacts)	59.0040	59.0042	59.0352	59.0044
ProTec T1-xxx-P (plug)	59.0002	59.0003	59.0004	59.0005

Dimensions & Packaging

inches [mm]



Spare Plug



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

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

Lightning and Overvoltage Protection

ProTec T1 1+1

12.5kA Series

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

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

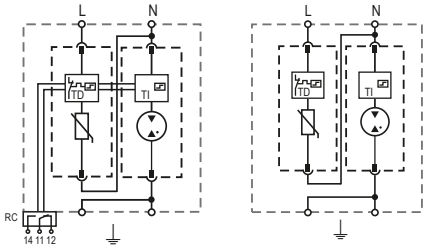
Technical Data

ProTec T1-xxx-1+1(-R)			75	150	300	350
IEC Electrical						
Nominal AC Voltage (50/60Hz)		U_o/U_n	60 V	120 V	240 V	277 V
Maximum Continuous Operating Voltage	(L-N)	U_c	75 V	150 V	300 V	350 V
	(N-PE)	U_c	305 V	305 V	305 V	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 50 kA			
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 100 kA			
Impulse Discharge Current (10/350 µs)	(L-N)/(N-PE)	I_{imp}	12.5kA / 50 kA			
Specific Energy	(L-N)/(N-PE)	W/R	39 kJ/Ω / 625 kJ/Ω			
Charge	(L-N)/(N-PE)	Q	6.25 As / 25 As			
Voltage Protection Level	(L-N)/(N-PE)	U_p	700 V / 1500 V	1000 V / 1500 V	1500 V / 1500 V	1750 V / 1500 V
Follow Current Interrupt Rating (AC)	(N-PE)	I_{fi}	100 A			
Response Time	(L-N)/(N-PE)	t_A	< 25 ns / < 100 ns			
Overvoltage Category			III			
Maximum Backup fuse, if required			315 A / 250 A gG			
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA			
TOV Withstand 5s	(L-N)	U_T	114 V	175 V	337 V	403 V
TOV 120min	(L-N)	U_T	114 V	229 V	442 V	529 V
		mode	Withstand	Safe Fail	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200 V			
Number of Ports			1			
UL Electrical						
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G)	MCOV	75 V / 305 V	150 V / 305 V	300 V / 305 V	350 V / 305 V
Voltage Protection Rating	(L-N)/(N-G)	VPR	330 V / 1200 V	600 V / 1200 V	900 V / 1200 V	1200 V / 1200 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA / 20 kA	20 kA / 20 kA	20 kA / 20 kA	20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	100 kA	200 kA	150 kA	150 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	(L-N)/(N-PE)	U_{res}	400 V / 305 V	800 V / 305 V	1100 V / 305 V	1300 V / 305 V
Minimum Backup fuse, if required			160 A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA			
Maximum Backup fuse, if required			250 A gG			
Mechanical & Environmental						
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity		RH	5%...95%			
Pollution Degree			2			
Altitude (max)			13123 ft [4000 m]			
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]			
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)			
Mounting			35 mm DIN Rail, EN 60715			
Degree of Protection			IP 20 (built-in)			
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection			Yes			
Operating State / Fault Indication			Green Flag / Not Green Flag			
Remote Contacts (RC)			Optional			
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A			
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)			
Overvoltage Category			III			

Internal Configuration

Legend

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



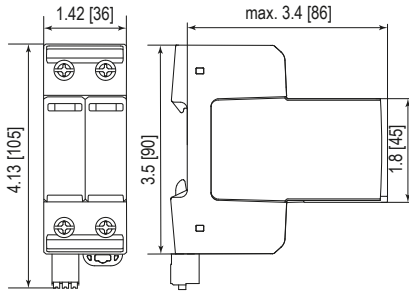
ProTec T1-xxx-1+1(-R)

Order Information

Order Code	75	150	300	350
ProTec T1-xxx-1+1	59.0047	59.0049	59.0051	59.0053
ProTec T1-xxx-1+1-R (with remote contacts)	59.0048	59.0050	59.0052	59.0054
ProTec T1-xxx-P (plug L-N)	59.0001	59.0002	59.0003	59.0004
ProTube T1-50-P (plug N-PE)	59.0269	59.0269	59.0269	59.0269

Dimensions & Packaging

inches [mm]



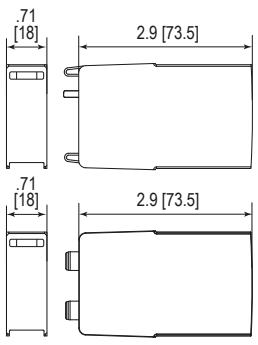
Complete Unit

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

Spare Plug

ProTec T1

ProTube T1



Single Unit

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

Lightning and Overvoltage Protection

ProTec T1 3+1

12.5kA Series

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

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

RoHS COMPLIANT

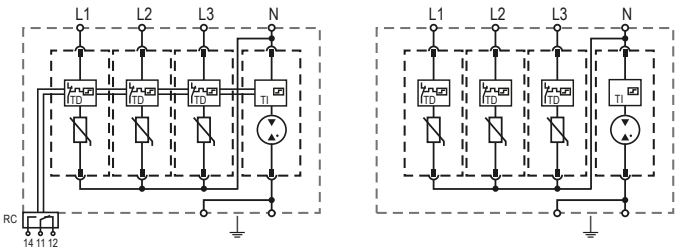
Technical Data

ProTec T1-xxx-3+1(-R)			300	350
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V	277V
Maximum Continuous Operating Voltage	(L-N)	U_c	300V	350V
	(N-PE)	U_c	305V	305V
Nominal Discharge Current (8/20µs)	(L-N)/(N-PE)	I_n	20kA / 50kA	
Maximum Discharge Current (8/20µs)	(L-N)/(N-PE)	I_{max}	50kA / 100kA	
Impulse Discharge Current (10/350µs)	(L-N)/(N-PE)	I_{imp}	12.5kA / 50kA	
Specific Energy	(L-N)/(N-PE)	W/R	39kJ/Ω / 625kJ/Ω	
Charge	(L-N)/(N-PE)	Q	6.25As / 25As	
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V	1750V / 1500V
Follow Current Interrupt Rating (AC)	(N-PE)	I_{fi}	100A	
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			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	442V	529V
		mode	Safe Fail	Safe Fail
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	350V / 305V
Voltage Protection Rating	(L-N)/(N-G)	VPR	900V / 1200V	1200V / 1200V
Nominal Discharge Current (8/20µs)	(L-N)/(N-G)	I_n	20kA / 20kA	20kA / 20kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	150kA	150kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)	(L-N)/(N-PE)	U_{res}	1100V/305V	1300V/305V
Minimum Backup fuse, if required			160A gG	
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100kA	
Maximum Backup fuse, if required			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%	
Pollution Degree			2	
Altitude (max)			13123 ft [4000m]	
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]	
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35mm² (Solid, Stranded) / 25mm² (Flexible)	
Mounting			35mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)	
Overvoltage Category			III	

Internal Configuration

Legend

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



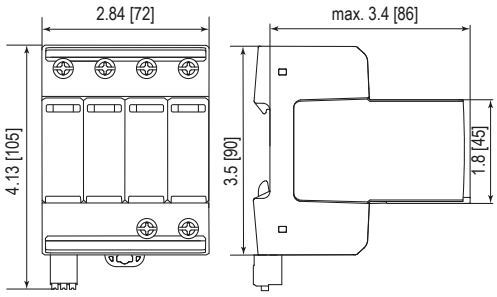
ProTec T1-xxx-3+1(-R)

Order Information

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

Dimensions & Packaging

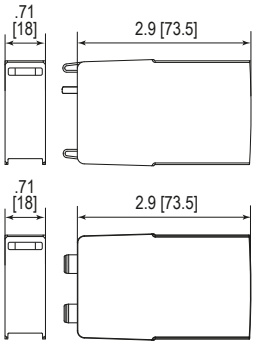
inches [mm]



Spare Plug

ProTec T1

ProTube T1



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

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

Lightning and Overvoltage Protection

ProTube T1 0+1

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

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

RoHS COMPLIANT

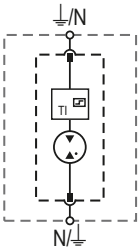
Technical Data

ProTube T1-xxx-0+1		50	100
IEC Electrical			
Maximum Continuous Operating Voltage	U_c	305 V	305 V
Nominal Discharge Current (8/20 µs)	I_n	50 kA	100 kA
Maximum Discharge Current (8/20 µs)	I_{max}	100 kA	150 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	50 kA	100 kA
Specific Energy	W/R	625 kJ/Ω	2500 kJ/Ω
Charge	Q	25 As	50 As
Voltage Protection Level	U_p	1500 V	1500 V
Follow Current Interrupt Rating (AC)	I_{fi}	100 A	100 A
Response Time	t_A	< 100 ns	< 100 ns
Overvoltage Category		III	
TOV Withstand 200ms	U_T	1200 V	1200 V
Number of Ports		1	
UL Electrical			
Maximum Continuous Operating Voltage (AC)	MCOV	305V	305V
Voltage Protection Rating	VPR	1200V	1200V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	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%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	

Internal Configuration

Legend

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

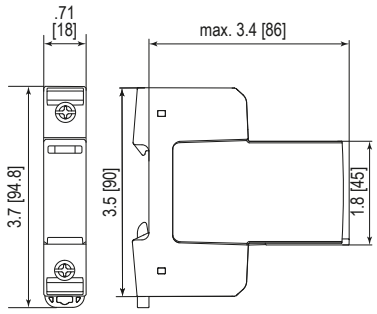


ProTube T1-xxx-0+1

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

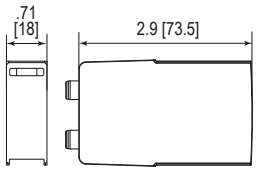
Dimensions & Packaging

inches [mm]



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

Spare Plug

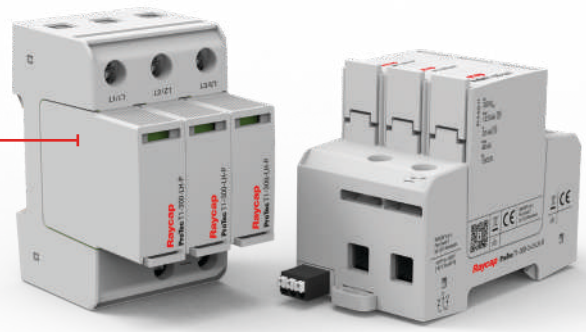


Single Unit			
ProTube T1-xxx-P		**50**	**100**
Weight	pounds	.214	.251
	grams	97	114
DIN 43880 Dimension		1 TE / .71" [18 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		28 Units	

Lightning and Overvoltage Protection

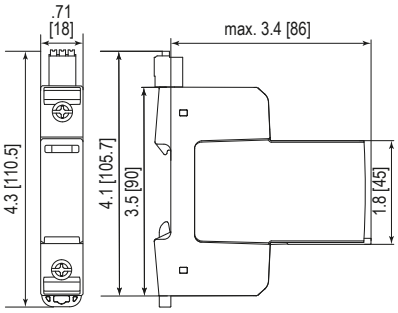
ProTec T1-LH Series

Type 1 SPD in low height (T2)– 70mm

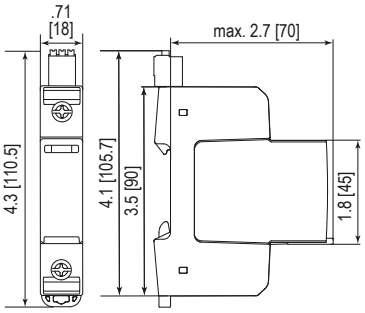


Product Comparison

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



ProTec T1 Series



ProTec T1-LH Series

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 kA
- Continuous Operating Voltage U_c 300V
- Back-up fuse up to 160 A gG
- Short circuit current rating up to 50 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
✓	✓	✓

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 50 kA without using a back up to a main fuse nominal current of 160 A. All modules are equipped with state-of-the-art thermal disconnector and life-status monitoring (green-red). Due to a unique vibration-proof locking mechanism design, these products are suitable for use in high vibration environments. An optional remote contact (RC) feature offers a three-pole remote signaling terminal to remotely monitor the operating state of the device.

More Product Information

RoHS COMPLIANT

Lightning and Overvoltage Protection

ProTec T1 1+0 LH

12.5kA Series

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

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

RoHS COMPLIANT

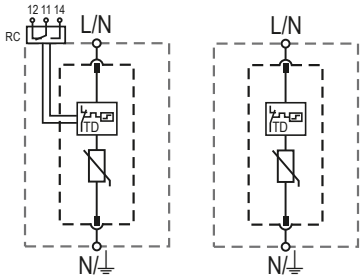
Technical Data

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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overvoltage Category		III
Maximum Backup fuse, if required		160A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50kA
TOV Withstand 5s	U_T	337V
TOV 120min	U_T	442V
	mode	Safe Fail
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1200V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V
Minimum Backup fuse, if required		160A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

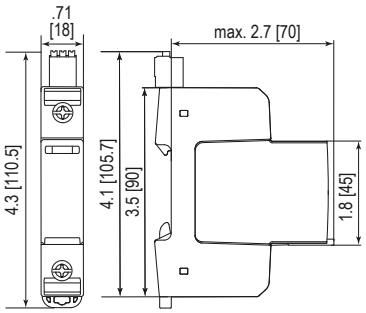


ProTec T1-xxx-1+0-LH(-R)

Order Information	
Order Code	**300**
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

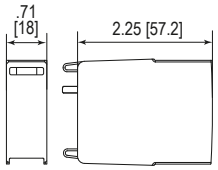
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxx-1+0-LH		**300**
Weight	pounds	.414
	grams	188
ProTec T1-xxx-1+0-LH-R		
Weight	pounds	.421
	grams	191
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		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-LH-P		**300**
Weight	pounds	.255
	grams	116
DIN 43880 Dimension		1 TE / .71" [18 mm]
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

Lightning and Overvoltage Protection

ProTec T1 2+0 LH

12.5kA Series

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

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

RoHS COMPLIANT

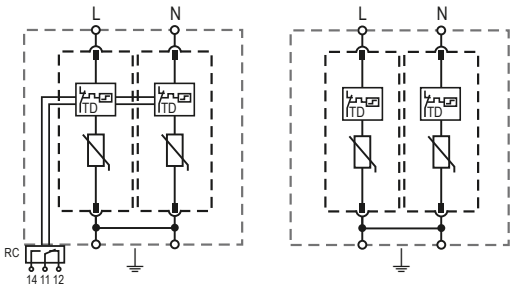
Technical Data

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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overvoltage Category		III
Maximum Backup fuse, if required		160A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50kA
TOV Withstand 5s	U_T	337V
TOV 120min	U_T	442V
	mode	Safe Fail
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1200V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V
Minimum Backup fuse, if required		160A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

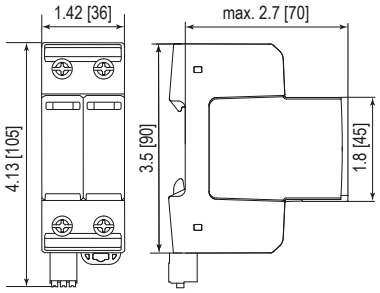


ProTec T1-xxx-2+0-LH(-R)

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

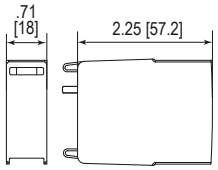
Dimensions & Packaging

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 mm]
Packaging Dimensions (H x W x L)		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 mm]
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

Lightning and Overvoltage Protection

ProTec T1 3+0 LH

12.5kA Series

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

Location of Use: Main Distribution Boards
Network Systems: TN-C
Mode of Protection: L-PEN
IEC/EN 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

RoHS COMPLIANT

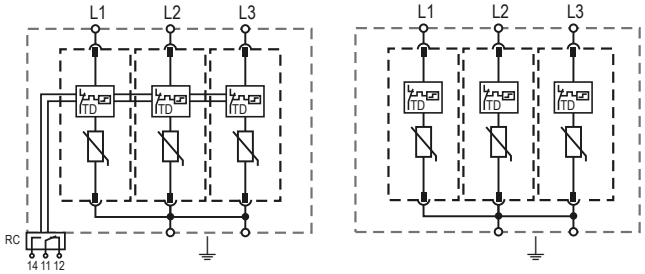
Technical Data

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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overvoltage Category		III
Maximum Backup fuse, if required		160A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50kA
TOV Withstand 5s	U_T	337V
TOV 120min	U_T	442V
	mode	Safe Fail
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1200V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V
Minimum Backup fuse, if required		160A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf-in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

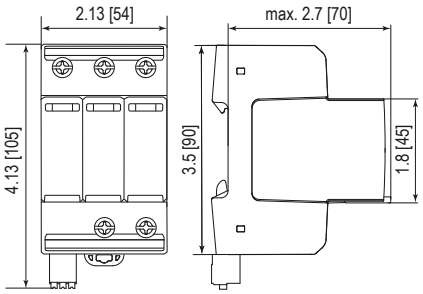
L	*Line Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*



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

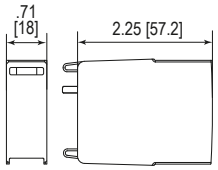
Dimensions & Packaging

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 mm]
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 Unit

Spare Plug



Single Unit		
ProTec T1-xxx-LH-P		**300**
Weight	pounds	.255
	grams	116
DIN 43880 Dimension		1 TE / .71" [18 mm]
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

Lightning and Overvoltage Protection

ProTec T1 4+0 LH

12.5kA Series

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

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

RoHS COMPLIANT

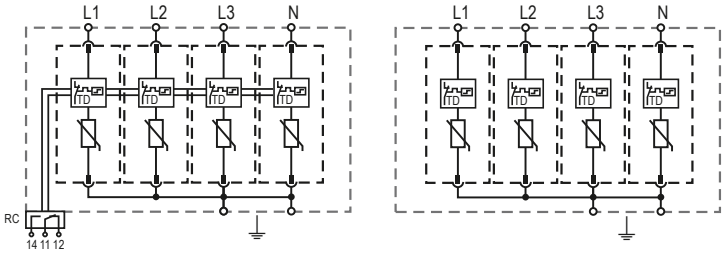
Technical Data

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 (8/20µs)	I_n	20kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA
Impulse Discharge Current (10/350µs)	I_{imp}	12.5kA
Specific Energy	W/R	39kJ/Ω
Charge	Q	6.25As
Voltage Protection Level	U_p	1500V
Response Time	t_A	< 25ns
Overvoltage Category		III
Maximum Backup fuse, if required		160A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50kA
TOV Withstand 5s	U_T	337V
TOV 120min	U_T	442V
	mode	Safe Fail
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	300V
Measured Limiting Voltage	MLV	1200V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V
Minimum Backup fuse, if required		160A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

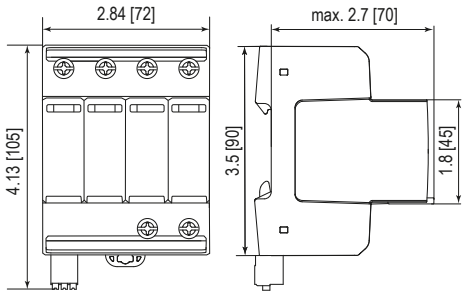


ProTec T1-xxx-4+0-LH(-R)

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

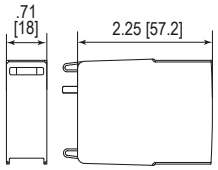
Dimensions & Packaging

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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 116 × 352 mm]
Standard Order Quantity		24 Units

Lightning and Overvoltage Protection

ProTec T1 1+1 LH

12.5kA Series

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

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

RoHS COMPLIANT

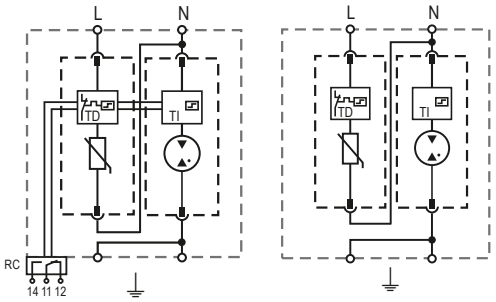
Technical Data

ProTec T1-xxx-1+1-LH(-R)			300
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V
Maximum Continuous Operating Voltage	(L-N)	U_c	300V
	(N-PE)	U_c	305V
Nominal Discharge Current (8/20µs)	(L-N)/(N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N)/(N-PE)	I_{max}	40kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N)/(N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N)/(N-PE)	W/R	39kJ/Ω / 625kJ/Ω
Charge	(L-N)/(N-PE)	Q	6.25As / 25As
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V
Follow Current Interrupt Rating (AC)	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			160A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	50kA
TOV Withstand 5s	(L-N)	U_T	337V
TOV 120min	(L-N)	U_T	442V
		mode	Safe Fail
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	1200V / 1500V
Nominal Discharge Current (8/20µs)	(L-N)/(N-G)	I_n	20kA / 20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)		U_{res}	700V / 305V
Minimum Backup fuse, if required			160A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

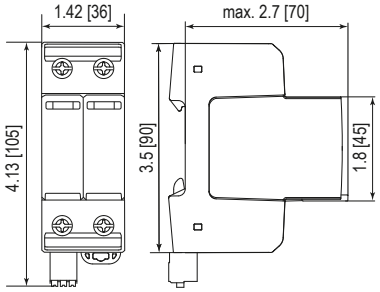
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*



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

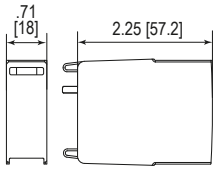
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxx-1+1-LH		**300**
Weight	pounds	.679
	grams	308
ProTec T1-xxx-1+1-LH-R		
Weight	pounds	.687
	grams	312
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug



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

Lightning and Overvoltage Protection

ProTec T1 3+1 LH

12.5kA Series

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

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

RoHS COMPLIANT

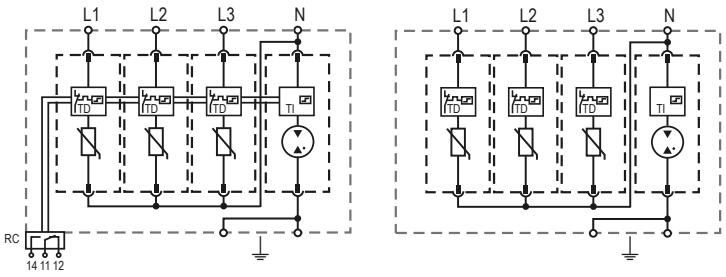
Technical Data

ProTec T1-xxx-3+1-LH(-R)			300
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240V
Maximum Continuous Operating Voltage	(L-N)	U_c	300V
	(N-PE)	U_c	305V
Nominal Discharge Current (8/20µs)	(L-N)/(N-PE)	I_n	20kA / 50kA
Maximum Discharge Current (8/20µs)	(L-N)/(N-PE)	I_{max}	40kA / 100kA
Impulse Discharge Current (10/350µs)	(L-N)/(N-PE)	I_{imp}	12.5kA / 50kA
Specific Energy	(L-N)/(N-PE)	W/R	39kJ/Ω / 625kJ/Ω
Charge	(L-N)/(N-PE)	Q	6.25As / 25As
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500V / 1500V
Follow Current Interrupt Rating (AC)	(N-PE)	I_{fi}	100A
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			160A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	50kA
TOV Withstand 5s	(L-N)	U_T	337V
TOV 120min	(L-N)	U_T	442V
		mode	Safe Fail
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	1200V / 1500V
Nominal Discharge Current (8/20µs)	(L-N)/(N-G)	I_n	20kA / 20kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)		U_{res}	700V / 305V
Minimum Backup fuse, if required			160A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting			35mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

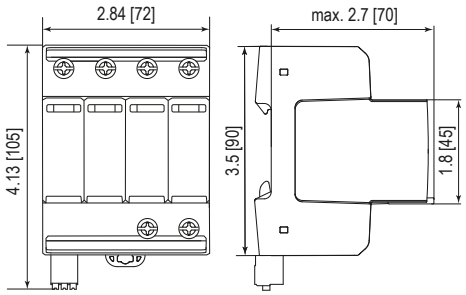


ProTec T1-xxx-3+1-LH(-R)

Order Information	
Order Code	**300**
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

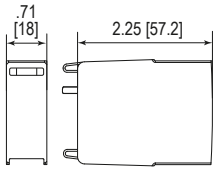
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxx-3+1-LH		**300**
Weight	pounds	1.419
	grams	644
ProTec T1-xxx-3+1-LH-R		
Weight	pounds	1.441
	grams	654
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Spare Plug



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

Lightning and Overvoltage Protection

ProTube T1 0+1 LH

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

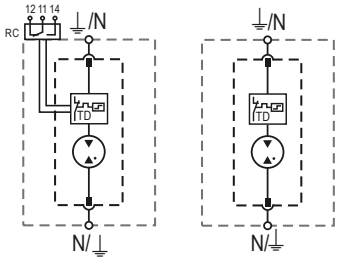
Location of Use: Main Distribution Boards
Network Systems: TT, TN-S
Mode of Protection: N-PE
IEC/EN Category: Class I+II / Type 1+2 / Type 4CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

RoHS COMPLIANT

Technical Data

ProTube T1-xxx-0+1-LH(-R)		50
IEC Electrical		
Maximum Continuous Operating Voltage	U_c	305 V
Nominal Discharge Current (8/20 µs)	I_n	50 kA
Maximum Discharge Current (8/20 µs)	I_{max}	100 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	50 kA
Specific Energy	W/R	625 kJ/Ω
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
Overvoltage Category		III
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	1500 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration



Legend

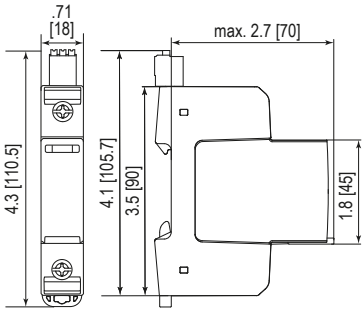
N *Neutral Conductor Terminal*
⏚ *PE/G Conductor Terminal*
TI *Thermal Indication*

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

Order Information	
Order Code	**50**
ProTube T1-xxx-0+1-LH	59.A384
ProTube T1-xxx-0+1-LH-R	59.A761
ProTube T1-50-LH-P (plug)	59.A385

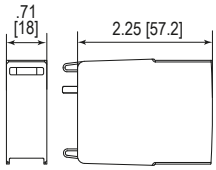
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T1-xxx-0+1-LH		**50**
Weight	pounds	.268
	grams	122
ProTube T1-xxx-0+1-LH-R		
Weight	pounds	.276
	grams	126
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 116 × 352 mm]
Standard Order Quantity		24 Units

Notes

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 - Imax 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 1,500 V, a maximum discharge capacity of 40 kA 8/20 µs and a rated discharge current of 20 kA 8/20 µs. Thus, in addition to the proven Raycap ProTec T2 product technology, developed for use in systems with a rated current of up to 315 A, 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

RoHS COMPLIANT CE

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 440 V)
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

CE RoHS COMPLIANT

Technical Data

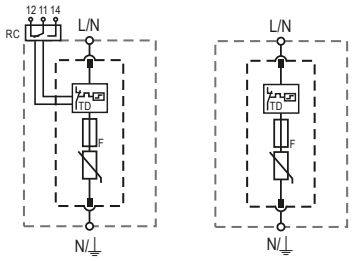
ProTec T2F-xxx-1+0(-R)		300	440
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	240 V
Maximum Continuous Operating Voltage (AC)	U_c	300 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	15 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kA	3 kA
Voltage Protection Level	U_p	1500 V	2000 V
Response Time	t_A	< 25ns	< 25ns
Overvoltage Category		III	III
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	100 kA
TOV Withstand 5s	U_T	337 V	580 V
TOV 120min	U_T	442 V	630 V
	mode	Safe Fail	Safe Fail
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1150 V	1500 V
Overcurrent Protection (min)		Not Required	Not Required
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	100 kA
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**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).*

Internal Configuration

Legend

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



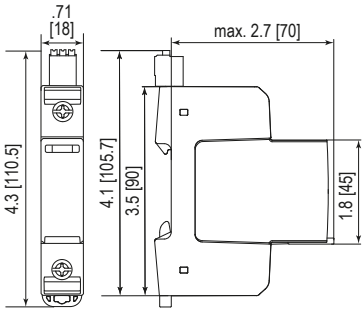
ProTec T2F-xxx-1+0(-R)

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

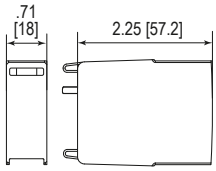
Dimensions & Packaging

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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 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

CE RoHS COMPLIANT

Technical Data

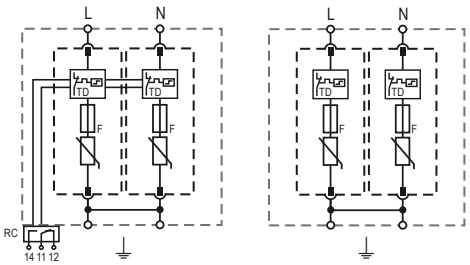
ProTec T2F-xxx-2+0(-R)		300	440
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240V	240V
Maximum Continuous Operating Voltage (AC)	U_c	300V	440V
Nominal Discharge Current (8/20µs)	I_n	20kA	15kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA	30kA
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)	U_{oc}	6kV	6kV
Short Circuit Current of Combination Wave Generator (8/20µs)	I_{cw}	3kA	3kA
Voltage Protection Level	U_p	1500V	2000V
Response Time	t_A	< 25ns	< 25ns
Overvoltage Category		III	III
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	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA	100kA
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35mm² (Solid, Stranded) / 25mm² (Flexible)	
Mounting		35mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)	
Overvoltage Category		III	

**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).*

Internal Configuration

Legend

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



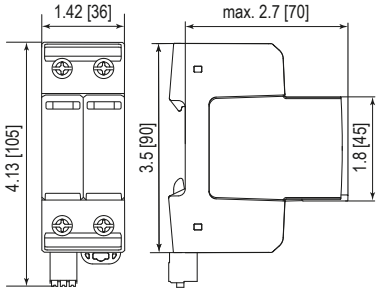
ProTec T2F-xxx-2+0(-R)

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

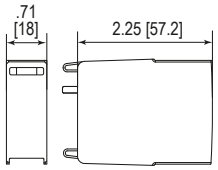
Dimensions & Packaging

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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]	
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 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 440 V)
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

CE RoHS COMPLIANT

Technical Data

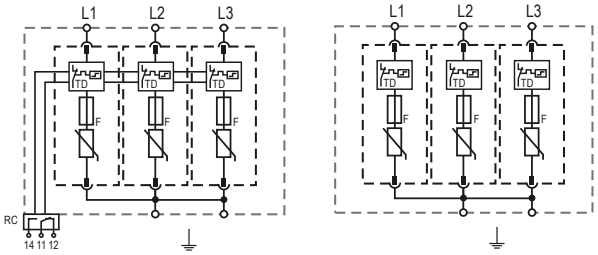
ProTec T2F-xxx-3+0(-R)		300	440
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	240 V
Maximum Continuous Operating Voltage (AC)	U_c	300 V	440 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	15 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA	30 kA
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	U_{oc}	6 kV	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	I_{cw}	3 kA	3 kA
Voltage Protection Level	U_p	1500 V	2000 V
Response Time	t_A	< 25ns	< 25ns
Overvoltage Category		III	III
Overcurrent Protection		Not Required	Not Required
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	100 kA
TOV Withstand 5s	U_T	337 V	580 V
TOV 120min	U_T	442 V	630 V
	mode	Safe Fail	Safe Fail
Number of Ports		1	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1150 V	1500 V
Overcurrent Protection (min)		Not Required	Not Required
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA	100 kA
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

**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).*

Internal Configuration

Legend

L	*Line Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
F	*Integrated Surge Adapted Backup Fuse*



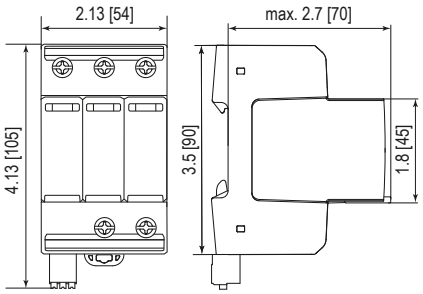
ProTec T2F-xxx-3+0(-R)

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

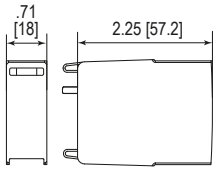
Dimensions & Packaging

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 mm]	
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 T2F-xxx-P		**300**	**440**
Weight	pounds	.152	.167
	grams	69	76
DIN 43880 Dimension		1 TE / .71" [18 mm]	
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	

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

CE RoHS COMPLIANT

Technical Data

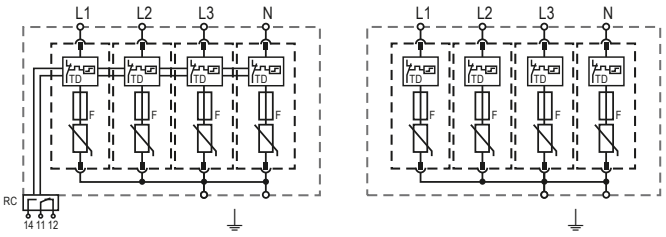
ProTec T2F-xxx-4+0(-R)		300	440
IEC Electrical			
Nominal AC Voltage (50/60Hz)	U_o/U_n	240V	240V
Maximum Continuous Operating Voltage (AC)	U_c	300V	440V
Nominal Discharge Current (8/20µs)	I_n	20kA	15kA
Maximum Discharge Current (8/20µs)	I_{max}	40kA	30kA
Open Circuit Voltage of Combination Wave Generator (1.2/50µs)	U_{oc}	6kV	6kV
Short Circuit Current of Combination Wave Generator (8/20µs)	I_{cw}	3kA	3kA
Voltage Protection Level	U_p	1500V	2000V
Response Time	t_A	< 25ns	< 25ns
Overvoltage Category		III	III
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	
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	1150V	1500V
Overcurrent Protection (min)		Not Required	Not Required
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA	100kA
Mechanical & Environmental			
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity	RH	5%...95%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35mm² (Solid, Stranded) / 25mm² (Flexible)	
Mounting		35mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)	
Overvoltage Category		III	

**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).*

Internal Configuration

Legend

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



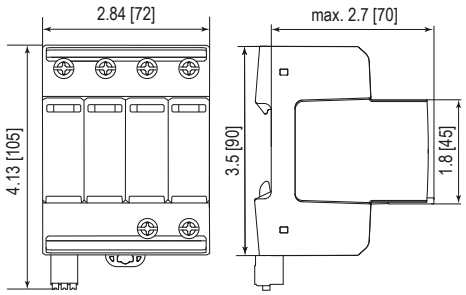
ProTec T2F-xxx-4+0(-R)

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

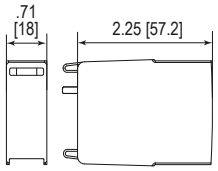
inches [mm]



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 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		4 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 mm]	
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 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

CE RoHS COMPLIANT

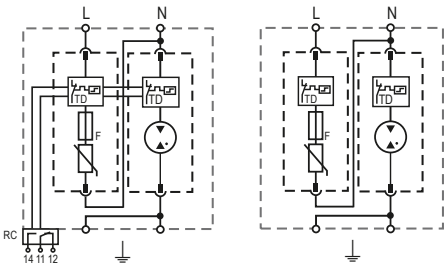
Technical Data

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 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(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 µs)	(L-N)/(N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(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
Overvoltage Category			III
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 µs)		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
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

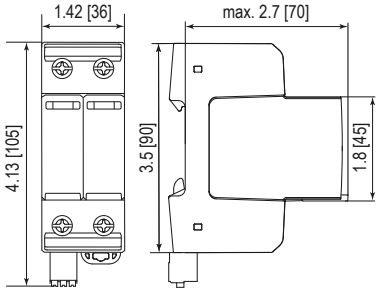


ProTec T2F-xxx-1+1(-R)

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

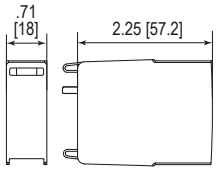
Dimensions & Packaging

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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		7 Units

Spare Plug



Single Unit		
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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 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

CE RoHS COMPLIANT

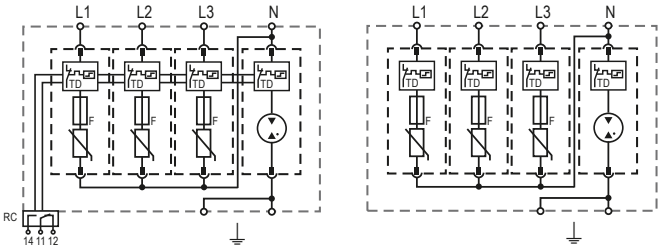
Technical Data

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 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(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 µs)	(L-N)/(N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)	(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
Overvoltage Category			III
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 µs)		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
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

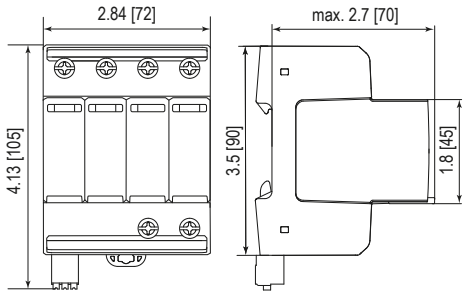


ProTec T2F-xxx-3+1(-R)

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

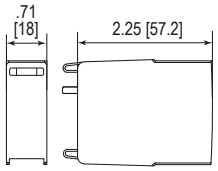
Dimensions & Packaging

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 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 Units

Spare Plug



Single Unit		
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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Notes

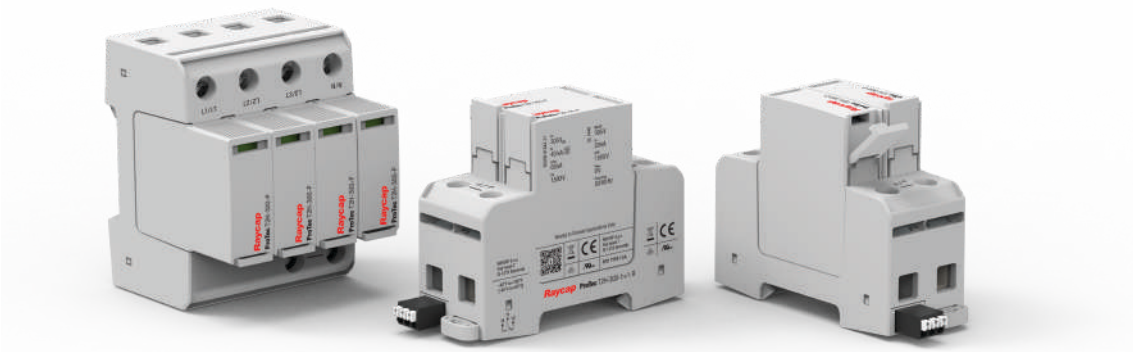
Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

Overvoltage Protection

ProTec T2H

Special features:

- High maximum discharge current capacity (I_{max}) of 50 kA
- State-of-the-art thermal disconnector
- Leakage current-free technology
- Backup fuse up to 315 A gG
- 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
✓	✓	✓

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 300 V AC. 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 disconnector 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 50 kA, 100 kA additionally tested by VDE.*

More Product Information

Overvoltage Protection

ProTec T2H 1+0

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

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

RoHS COMPLIANT

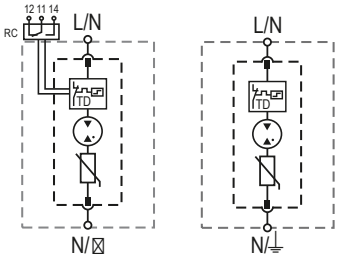
Technical Data

ProTec T2H-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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	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 µs)	U_{res}	1000 V
Minimum Backup fuse, if required		80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

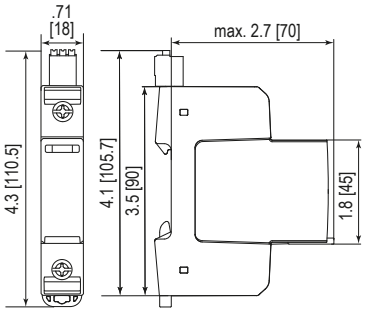


ProTec T2H-xxx-1+0(-R)

Order Information	
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

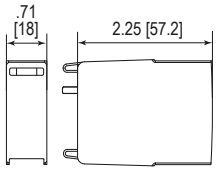
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-1+0		**300**
Weight	pounds [grams]	.264 [120]
ProTec T2H-xxx-1+0-R		
Weight	pounds [grams]	.279 [127]
DIN 43880 Dimension		1 TE / .71" [18mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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" [18mm]
Packaging Dimensions (HxWxL)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTec T2H 2+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

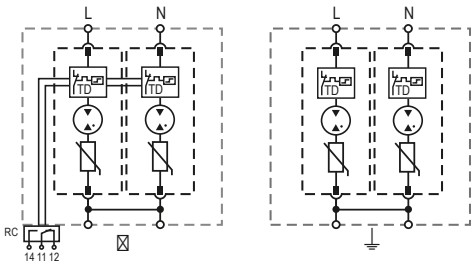
Technical Data

ProTec T2H-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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	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 µs)	U_{res}	1000 V
Minimum Backup fuse, if required		80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

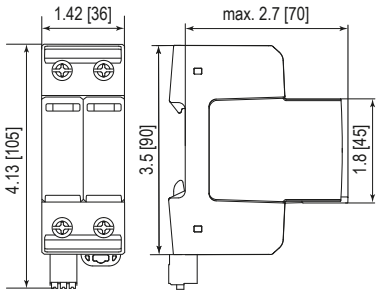


ProTec T2H-xxx-2+0(-R)

Order Information	
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

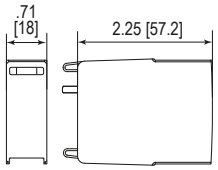
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-2+0		**300**
Weight	pounds [grams]	.514 [233]
ProTec T2H-xxx-2+0-R		
Weight	pounds [grams]	.534 [242]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTec T2H 3+0

Class II • Type 2 • Type 1CA

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

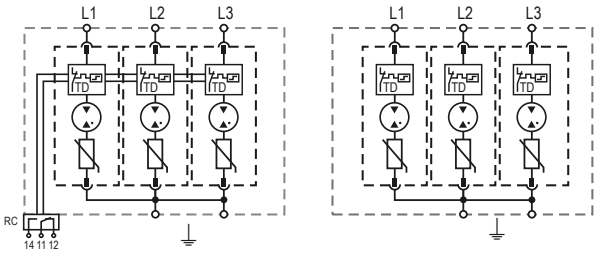
Technical Data

ProTec T2H-xxx-3+0(-R)		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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	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 µs)	U_{res}	1000 V
Minimum Backup fuse, if required		80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

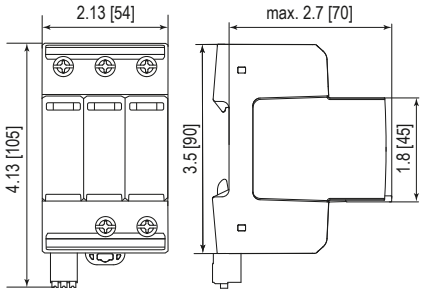


ProTec T2H-xxx-3+0(-R)

Order Information	
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

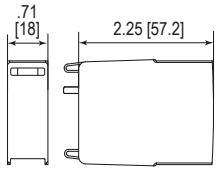
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-3+0		**300**
Weight	pounds [grams]	.747 [339]
ProTec T2H-xxx-3+0-R		
Weight	pounds [grams]	.767 [348]
DIN 43880 Dimension		3 TE / 2.13" [54 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTec T2H 4+0

Class II • Type 2 • Type 1CA

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

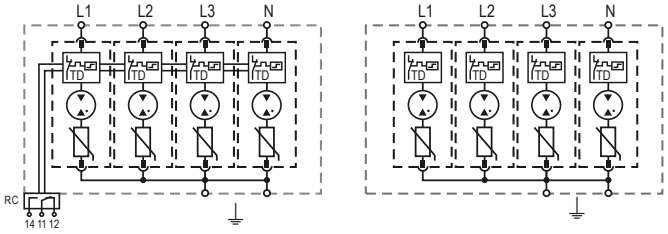
Technical Data

ProTec T2H-xxx-4+0(-R)		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 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA
Voltage Protection Level	U_p	1500 V
Response Time	t_A	< 25 ns
Overvoltage Category		III
Maximum Backup fuse, if required		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 µs)	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 µs)	U_{res}	1000 V
Minimum Backup fuse, if required		80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*		
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Maximum Backup fuse, if required		250 A gG
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

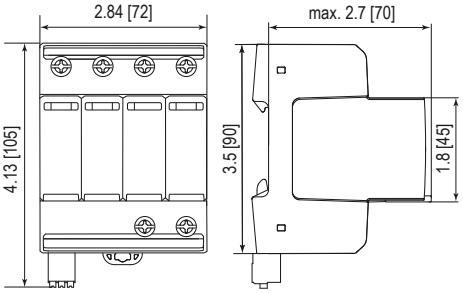


ProTec T2H-xxx-4+0(-R)

Order Information	
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

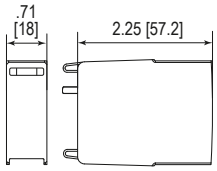
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-4+0		**300**
Weight	pounds [grams]	.944 [428]
ProTec T2H-xxx-4+0-R		
Weight	pounds [grams]	.964 [437]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTec T2H 1+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

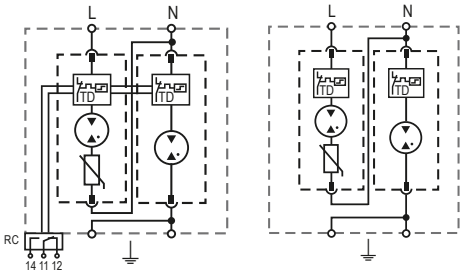
Technical Data

ProTec T2H-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) / (N-PE)	U_c	300 V
Nominal Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_n	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	50 kA / 65 kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1500 V / 1500 V
Response Time	(L-N) / (N-PE)	t_A	< 25 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			315 A / 250 A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA
Follow Current Interrupt Rating	(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
Voltage Protection Rating	(L-N)/(N-G)	VPR	1200 V / 1000 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	200 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1000 V / 305 V
Minimum Backup fuse, if required			80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Maximum Backup fuse, if required			250 A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

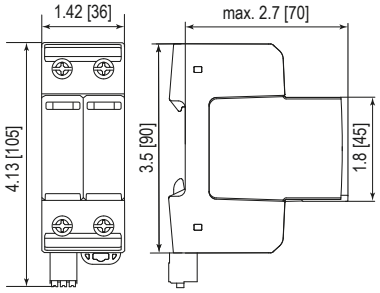


ProTec T2H-xxx-1+1(-R)

Order Information	
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

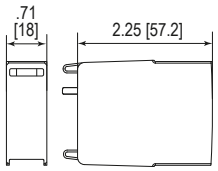
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-1+1		**300**
Weight	pounds [grams]	.516 [234]
ProTec T2H-xxx-1+1-R		
Weight	pounds [grams]	.525 [238]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTec T2H 3+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

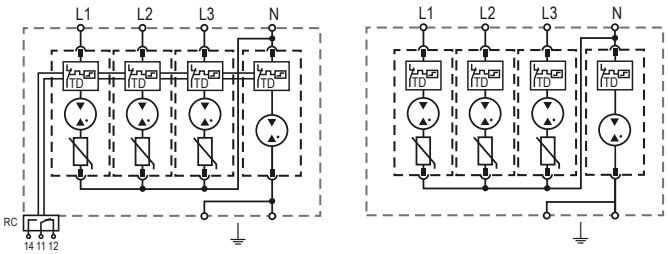
Technical Data

ProTec T2H-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 µs)	(L-N) / (N-PE)	I_n	20 kA / 40kA
Maximum Discharge Current (8/20 µs)	(L-N) / (N-PE)	I_{max}	50 kA / 65 kA
Voltage Protection Level	(L-N) / (N-PE)	U_p	1500 V / 1500 V
Response Time	(L-N) / (N-PE)	t_A	< 25 ns / < 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			315 A / 250 A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA
Follow Current Interrupt Rating	(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
Voltage Protection Rating	(L-N)/(N-G)	VPR	1200 V / 1000 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA / 20 kA
Short-Circuit Current Rating (AC)	(L-N)	SCCR	200 kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	1000 V / 305 V
Minimum Backup fuse, if required			80 A gG
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*			
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA
Maximum Backup fuse, if required			250 A gG
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

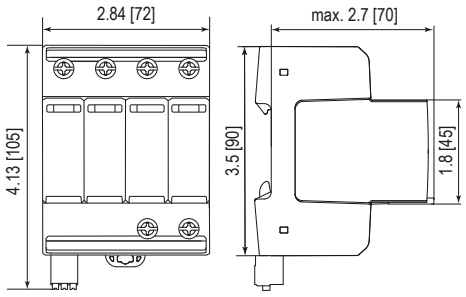


ProTec T2H-xxx-3+1(-R)

Order Information	
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

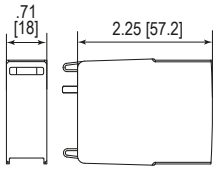
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2H-xxx-3+1		**300**
Weight	pounds [grams]	.947 [429]
ProTec T2H-xxx-3+1-R		
Weight	pounds [grams]	.958 [434]
DIN 43880 Dimension		4 TE / 2.84" [72 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		4 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 mm]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

Overvoltage Protection

ProTube T2H 40 0+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

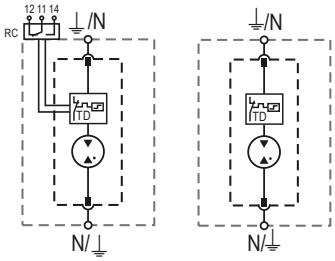
Technical Data

ProTube T2H-xxx-0+1(-R)		40
IEC Electrical		
Maximum Continuous Operating Voltage (AC)	U_c	305 V
Nominal Discharge Current (8/20 µs)	I_n	40kA
Maximum Discharge Current (8/20 µs)	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
Overvoltage Category		III
TOV Withstand 120min	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 µs)	I_n	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305 V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

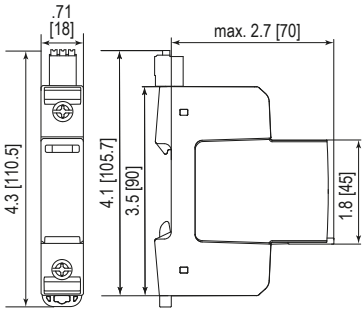


ProTube T2H-xxx-0+1(-R)

Order Information	
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

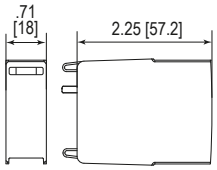
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T2H-xxx-0+1		**40**
Weight	pounds [grams]	.244 [111]
ProTube T2H-xxx-0+1-R		**40**
Weight	pounds [grams]	.259 [118]
DIN 43880 Dimension		1 TE / .71" [18mm]
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 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" [18mm]
Packaging Dimensions (HxWxL)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

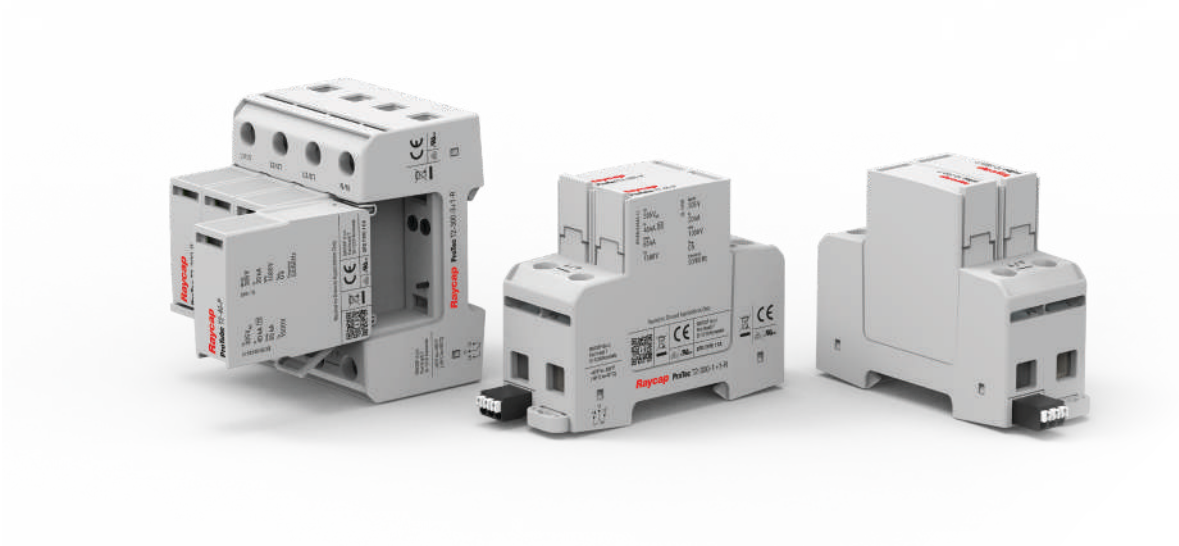
Notes

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

Overvoltage Protection
ProTec T2

Special features:

- Available in a wide variety of operating voltages 75 V to 750 V
- High Impulse Current capability using a single MOV
- Sensitive state-of-the-art thermal disconnector
- Backup fuse up to 315 A gG
- 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 (RC) signaling



IEC 61643-11:2011	EN 61643-11:2012	UL 1449 5th Edition
✓	✓	✓

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 75 V up to 750 V. With the Type 2 classification, ProTec T2 can be installed between boundaries Ob – 1 and higher. The varistor-based protection modules feature outstanding short-circuit currents up to 100 kA* without using a back-up to a main fuse nominal current of 315 A. All modules are equipped with a state-of-the-art thermal disconnector 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 50 kA, 100 kA additionally tested by VDE.*

More Product Information

Overvoltage Protection

ProTec T2 1+0

Class II • Type 2 • Type 1CA

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

CE cULus VDE RoHS COMPLIANT

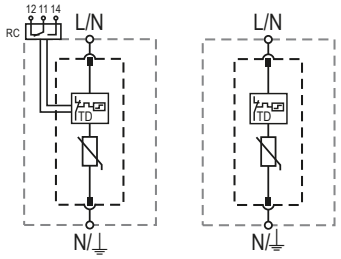
Technical Data

ProTec T2-xxx-1+0 (-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	U_p	800V	1250V	1500V	1750V	2300V	3400V
Response Time	t_A	< 25ns					
Overvoltage Category		III					
Maximum Backup fuse, if required		315A / 250A gG					
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					
TOV Withstand 5s	U_T	114V	229V	337V	403V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	762V	1143V
	mode	Withstand	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1000V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*							
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	750V	1000V	1300V	1500V	2500V
Minimum Backup fuse, if required		80A gG					
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*							
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA					
Maximum Backup fuse, if required		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%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000 m]					
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)					
Mounting		35 mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

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



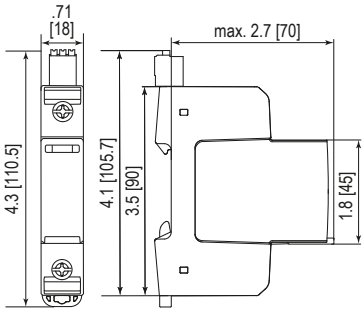
ProTec T2-xxx-1+0 (-R)

Order Information

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

Dimensions & Packaging

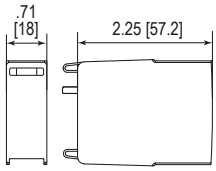
inches [mm]



Complete Unit

ProTec T2-xxx-1+0)		75	150	300	350	480	750
Weight	pounds	.259	.275	.281	.292	.306	.336
	grams	118	125	128	133	139	153
ProTec T2-xxx-1+0-R							
Weight	pounds	.275	.290	.297	.308	.321	.352
	grams	125	132	135	140	146	160
DIN 43880 Dimension		1 TE / .71" [18 mm]					
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]					
Standard Order Quantity		12 Units					

Spare Plug



Single Unit

ProTec T2-xxx-P		75	150	300	350	480	750
Weight	pounds	.108	.123	.130	.141	.154	.185
	grams	49	56	59	64	70	84
DIN 43880 Dimension		1 TE / .71" [18 mm]					
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]					
Standard Order Quantity		24 Units					

Overvoltage Protection

ProTec T2 2+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

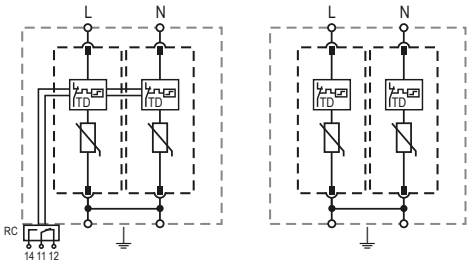
Technical Data

ProTec T2-xxx-2+0(-R)		75	150	300	350	480	750
IEC Electrical							
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	75V	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	U_p	800V	1250V	1500V	1750V	2300V	3400V
Response Time	t_A	< 25ns					
Overvoltage Category		III					
Maximum Backup fuse, if required		315A / 250A gG					
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA					
TOV Withstand 5s	U_T	114V	229V	337V	403V	581V	871V
TOV 120min	U_T	114V	229V	442V	529V	762V	1143V
	mode	Withstand	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1					
UL Electrical							
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	330V	600V	900V	1000V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*							
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	750V	1000V	1300V	1500V	2500V
Minimum Backup fuse, if required		80A gG					
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*							
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA					
Maximum Backup fuse, if required		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%					
Pollution Degree		2					
Altitude (max)		13123 ft [4000 m]					
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]					
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)					
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)					
Mounting		35 mm DIN Rail, EN 60715					
Degree of Protection		IP 20 (built-in)					
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0					
Thermal Protection		Yes					
Operating State / Fault Indication		Green Flag / Not Green Flag					
Remote Contacts (RC)		Optional					
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A					
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)					
Overvoltage Category		III					

Internal Configuration

Legend

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



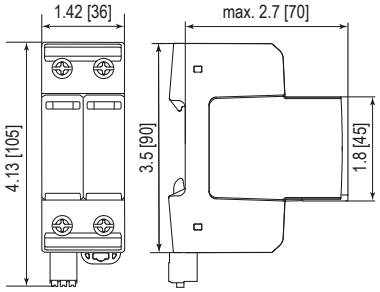
ProTec T2-xxx-2+0(-R)

Order Information

Order Code	75	150	300	350	480	750
ProTec T2-xxx-2+0	59.0343	59.0081	59.0083	59.0085	59.0087	59.0089
ProTec T2-xxx-2+0-R (with remote contacts)	59.0344	59.0082	59.0084	59.0086	59.0088	59.0090
ProTec T2-xxx-P (plug)	59.0063	59.0064	59.0065	59.0066	59.0067	59.0068

Dimensions & Packaging

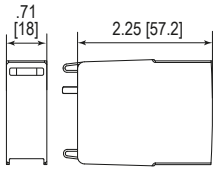
inches [mm]



Complete Unit

ProTec T2-xxx-2+0		75	150	300	350	480	750
Weight	pounds	.525	.556	.569	.591	.618	.680
	grams	238	252	258	268	280	308
ProTec T2-xxx-2+0-R							
Weight	pounds	.545	.576	.619	.611	.638	.699
	grams	247	261	267	272	289	317
DIN 43880 Dimension		2 TE / 1.42" [36 mm]					
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]					
Standard Order Quantity		7 Units					

Spare Plug



Single Unit

ProTec T2-xxx-P		75	150	300	350	480	750
Weight	pounds	.108	.123	.130	.141	.154	.185
	grams	49	56	59	64	70	84
DIN 43880 Dimension		1 TE / .71" [18 mm]					
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]					
Standard Order Quantity		24 Units					

Overvoltage Protection

ProTec T2 3+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

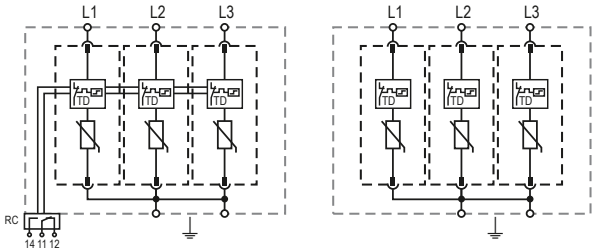
Technical Data

ProTec T2-xxx-3+0(-R)		150	300	350	480	750
IEC Electrical						
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V	600V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V	750V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	35kA
Voltage Protection Level	U_p	1250V	1500V	1750V	2300V	3400V
Response Time	t_A			< 25ns		
Overvoltage Category				III		
Maximum Backup fuse, if required				315A / 250A gG		
Short-Circuit Current Rating (AC)	I_{SCCR}			25kA / 50kA		
TOV Withstand 5s	U_T	229V	337V	403V	581V	871V
TOV 120min	U_T	229V	442V	529V	762V	1143V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail	Safe Fail
Number of Ports				1		
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V	750V
Voltage Protection Rating	VPR	600V	900V	1000V	1500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	U_{res}	750V	1000V	1300V	1500V	2500V
Minimum Backup fuse, if required				80A gG		
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)	I_{SCCR}			100kA		
Maximum Backup fuse, if required				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%				
Pollution Degree		2				
Altitude (max)		13123 ft [4000m]				
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]				
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)				
		35mm² (Solid, Stranded) / 25mm² (Flexible)				
Mounting		35mm DIN Rail, EN 60715				
Degree of Protection		IP 20 (built-in)				
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0				
Thermal Protection		Yes				
Operating State / Fault Indication		Green Flag / Not Green Flag				
Remote Contacts (RC)		Optional				
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)				
Overvoltage Category		III				

Internal Configuration

Legend

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



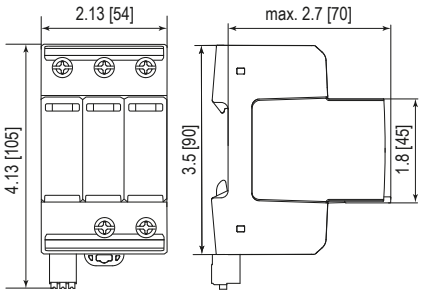
ProTec T2-xxx-3+0(-R)

Order Information

Order Code	150	300	350	480	750
ProTec T2-xxx-3+0	59.0091	59.0093	59.0095	59.0097	59.0099
ProTec T2-xxx-3+0-R (with remote contacts)	59.0092	59.0094	59.0096	59.0098	59.0100
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0067	59.0068

Dimensions & Packaging

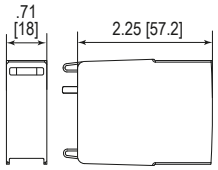
inches [mm]



Complete Unit

ProTec T2-xxx-3+0		**150**	**300**	**350**	**480**	**750**
Weight	pounds	.800	.820	.853	.893	.985
	grams	363	372	387	405	447
ProTec T2-xxx-3+0-R						
Weight	pounds	.820	.840	.873	.912	1.005
	grams	372	381	396	414	456
DIN 43880 Dimension		3 TE / 2.13" [54 mm]				
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]				
Standard Order Quantity		5 Units				

Spare Plug



Single Unit

ProTec T2-xxx-P		**150**	**300**	**350**	**480**	**750**
Weight	pounds	.123	.130	.141	.154	.185
	grams	56	59	64	70	84
DIN 43880 Dimension		1 TE / .71" [18 mm]				
Packaging Dimensions (HxWxL)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]				
Standard Order Quantity		24 Units				

Overvoltage Protection

ProTec T2 4+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

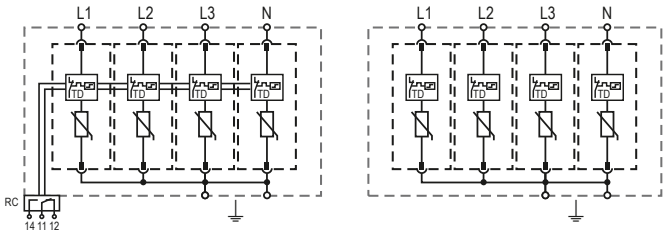
Technical Data

ProTec T2-xxx-4+0(-R)		150	300	350	480
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA
Voltage Protection Level	U_p	1250V	1500V	1750V	2300V
Response Time	t_A	< 25ns			
Overvoltage Category		III			
Maximum Backup fuse, if required		315A / 250A gG			
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA			
TOV Withstand 5s	U_T	229V	337V	403V	581V
TOV 120min	U_T	229V	442V	529V	762V
	mode	Withstand	Safe Fail	Safe Fail	Safe Fail
Number of Ports		1			
UL Electrical					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1000V	1500V
Nominal Discharge Current (8/20µs)	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)*					
Residual Voltage at 5 kA (8/20 µs)	U_{res}	750V	1000V	1300V	1500V
Minimum Backup fuse, if required		80A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*					
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA			
Maximum Backup fuse, if required		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%			
Pollution Degree		2			
Altitude (max)		13123 ft [4000m]			
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]			
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
		35mm² (Solid, Stranded) / 25mm² (Flexible)			
Mounting		35mm DIN Rail, EN 60715			
Degree of Protection		IP 20 (built-in)			
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection		Yes			
Operating State / Fault Indication		Green Flag / Not Green Flag			
Remote Contacts (RC)		Optional			
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)			
Overvoltage Category		III			

Internal Configuration

Legend

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



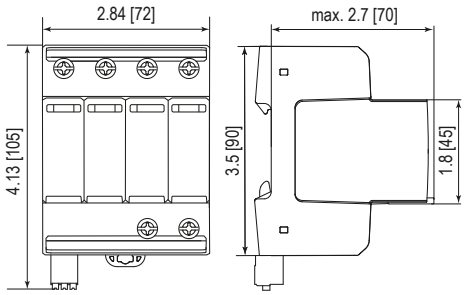
ProTec T2-xxx-4+0(-R)

Order Information

Order Code	150	300	350	480
ProTec T2-xxx-4+0	59.0101	59.0103	59.0300	59.0105
ProTec T2-xxx-4+0-R (with remote contacts)	59.0102	59.0104	59.0301	59.0106
ProTec T2-xxx-P (plug)	59.0064	59.0065	59.0066	59.0067

Dimensions & Packaging

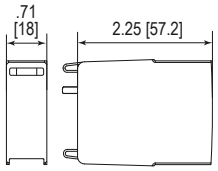
inches [mm]



Complete Unit

ProTec T2-xxx-4+0		**150**	**300**	**350**	**480**
Weight	pounds	1.009	1.035	1.079	1.132
	grams	457	469	489	513
ProTec T2-xxx-4+0-R					
Weight	pounds	1.028	1.055	1.099	1.152
	grams	466	478	498	522
DIN 43880 Dimension		4 TE / 2.84" [72 mm]			
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]			
Standard Order Quantity		4 Units			

Spare Plug



Single Unit

ProTec T2-xxx-P		**150**	**300**	**350**	**480**
Weight	pounds	.123	.130	.141	.154
	grams	56	59	64	70
DIN 43880 Dimension		1 TE / .71" [18 mm]			
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]			
Standard Order Quantity		24 Units			

Overvoltage Protection

ProTec T2 1+1

Class II • Type 2 • Type 1CA

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
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

RoHS COMPLIANT

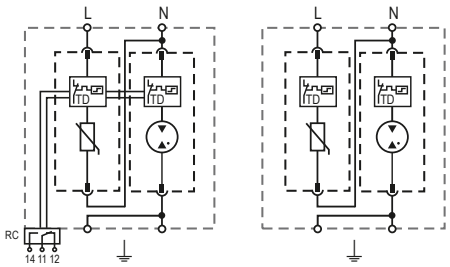
Technical Data

ProTec T2-xxx-1+1(-R)			75	150	300	350
IEC Electrical						
Nominal AC Voltage (50/60Hz)		U_o/U_n	60 V	120 V	240 V	277 V
Maximum Continuous Operating Voltage (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 µs)	(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 µs)	(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	1500 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			
Overvoltage Category			III			
Maximum Backup fuse, if required			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	229 V	337 V	403 V
TOV 120min	(L-N)	U_T	114 V	229 V	442 V	529 V
		mode	Withstand	Withstand	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200V			
Number of Ports			1			
UL Electrical						
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-G)	MCOV	75 V / 305 V	150 V / 305 V	300 V / 305 V	350 V / 305 V
Voltage Protection Rating	(L-N)/(N-G)	VPR	330 V / 1000 V	600 V / 1000 V	900 V / 1000 V	1000 V / 1000 V
Nominal Discharge Current (8/20 µs)	(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
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)		U_{res}	400 V / 305 V	750 V / 305 V	1000 V / 305 V	1300 V / 305 V
Minimum Backup fuse, if required			80 A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA			
Maximum Backup fuse, if required			250 A gG			
Mechanical & Environmental						
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity		RH	5%...95%			
Pollution Degree			2			
Altitude (max)			13123 ft [4000 m]			
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]			
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)			
Mounting			35 mm DIN Rail, EN 60715			
Degree of Protection			IP 20 (built-in)			
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection			Yes			
Operating State / Fault Indication			Green Flag / Not Green Flag			
Remote Contacts (RC)			Optional			
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A			
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)			
Overvoltage Category			III			

Internal Configuration

Legend

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



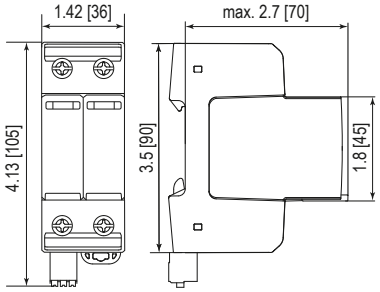
ProTec T2-xxx-1+1(-R)

Order Information

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

Dimensions & Packaging

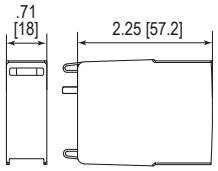
inches [mm]



Complete Unit

ProTec T2-xxx-1+1		**75**	**150**	**300**	**350**
Weight	pounds	.532	.547	.554	.565
	grams	241	248	251	256
ProTec T2-xxx-1+1-R					
Weight	pounds	.541	.556	.563	.574
	grams	245	253	255	260
DIN 43880 Dimension		2 TE / 1.42" [36 mm]			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity		7 Units			

Spare Plug



Single Unit

ProTec T2-xxx-P		**75**	**150**	**300**	**350**
Weight	pounds	.108	.123	.130	.141
	grams	49	56	59	64
ProTube T2-40-P			**40**		
Weight	pounds		.093		
	grams		42		
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 3+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

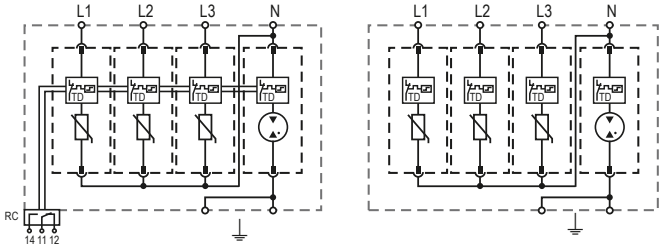
Technical Data

ProTec T2-xxx-3+1(-R)			300	350
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	277 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	300 V	350 V
	(N-PE)	U_c	305 V	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA / 40 kA	20 kA / 40 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA / 65 kA	50 kA / 65 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1500 V / 1500 V	1750 V / 1500 V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100 A	
Response Time	(L-N)/(N-PE)	t_A	< 25 ns / < 100 ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			315 A / 250 A gG	
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	25 kA / 50 kA	
TOV Withstand 5s	(L-N)	U_T	337 V	403 V
TOV 120min	(L-N)	U_T	442 V	529 V
		mode	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200V	
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 / 1000 V	1000 V / 1000 V
Nominal Discharge Current (8/20 µs)	(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)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V / 305 V	1300 V / 305 V
Minimum Backup fuse, if required			80 A gG	
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100 kA	
Maximum Backup fuse, if required			250 A gG	
Mechanical & Environmental				
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude (max)			13123 ft [4000 m]	
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

Internal Configuration

Legend

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



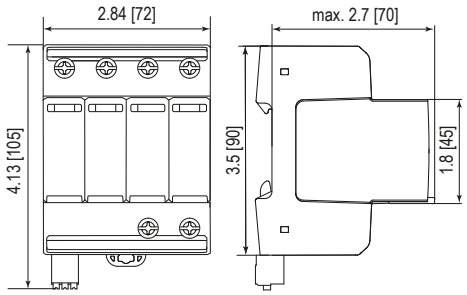
ProTec T2-xxx-3+1(-R)

Order Information

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

Dimensions & Packaging

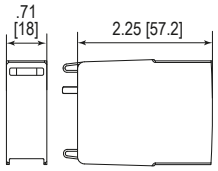
inches [mm]



Complete Unit

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
DIN 43880 Dimension		4 TE / 2.84" [72 mm]	
Packaging Dimensions (H x W x L)		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 mm]	
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	

Overvoltage Protection

ProTube T2 40 0+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

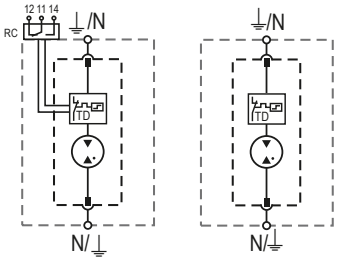
Technical Data

ProTube T2-xxx-0+1(-R)		40
IEC Electrical		
Maximum Continuous Operating Voltage	U_c	305V
Nominal Discharge Current (8/20µs)	I_n	40kA
Maximum Discharge Current (8/20µs)	I_{max}	65kA
Voltage Protection Level	U_p	1500V
Follow Current Interrupt Rating	I_{fi}	100A
Response Time	t_A	< 100ns
Overvoltage Category		III
TOV Withstand 200ms	U_T	1200V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	305V
Voltage Protection Rating	VPR	1000V
Nominal Discharge Current (8/20µs)	I_n	20kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35mm² (Solid, Stranded) / 25mm² (Flexible)
Mounting		35mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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

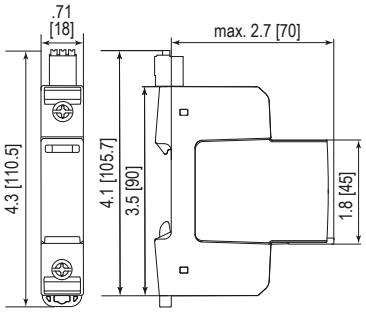


ProTube T2-xxx-0+1(-R)

Order Information	
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

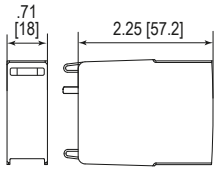
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTube T2-xxx-0+1		**40**
Weight	pounds	.244
	grams	111
ProTube T2-xxx-0+1-R		
Weight	pounds	.259
	grams	118
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
Standard Order Quantity		24 Units

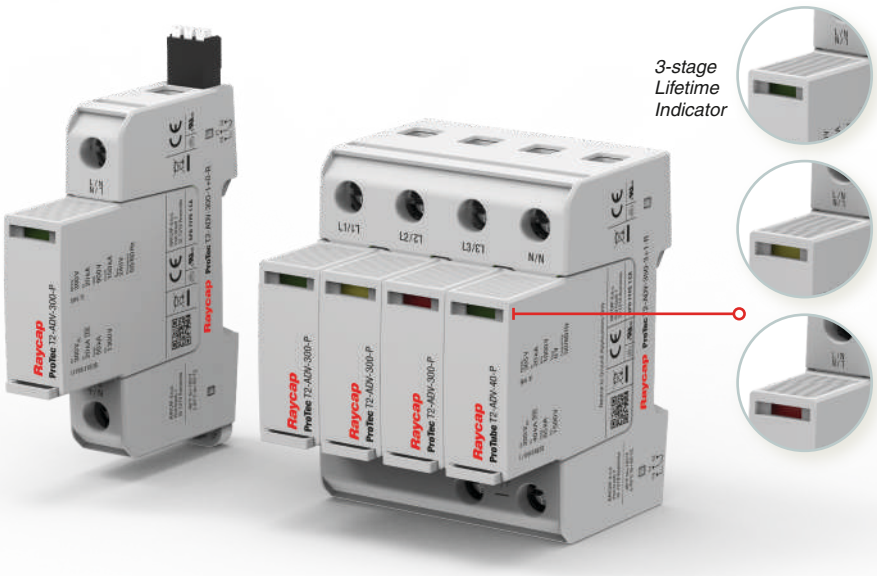
Notes

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 75 V to 480 V
- High maximum discharge current capability of 50 kA
- Short circuit current rating up to 100 kA*
- State-of-the-art thermal disconnector
- Backup fuse up to 160 A gG
- Vibration and shock withstand capability
- Optional remote contact (RC) signaling



IEC 61643-11:2011	EN 61643-11:2012+A11:2018	UL 1449 5th Edition
✓	✓	✓

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 disconnector, 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 50 kA, 100 kA additionally tested by VDE.*

More Product Information

RoHS COMPLIANT

Overvoltage Protection

ProTec T2-ADV 1+0

Class II • Type 2 • Type 1CA

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

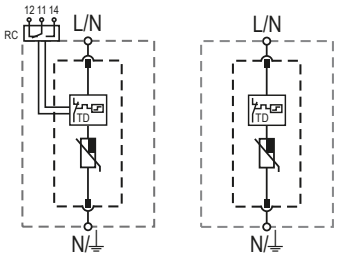
Technical Data

ProTec T2-ADV-xxx-1+0(-R)		75	150	300	350	480
IEC Electrical						
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	U_p	600V	1000V	1300V	1700V	2000V
Response Time	t_A			< 25ns		
Overvoltage Category				III		
Maximum Backup fuse, if required				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		
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V
Voltage Protection Rating	VPR	400V	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	700V	1000V	1300V	1600V
Minimum Backup fuse, if required				80A gG		
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)	I_{SCCR}			100kA		
Maximum Backup fuse, if required				160A gG		
Mechanical & Environmental						
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]				
Permissible Operating Humidity	RH	5%...95%				
Pollution Degree		2				
Altitude (max)		13123 ft [4000m]				
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]				
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)				
		35mm² (Solid, Stranded) / 25mm² (Flexible)				
Mounting		35mm DIN Rail, EN 60715				
Degree of Protection		IP 20 (built-in)				
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0				
Thermal Protection		Yes				
Operating State / Fault Indication		Green Flag / Not Green Flag				
Remote Contacts (RC)		Optional				
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)				
Overvoltage Category		III				

Internal Configuration

Legend

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



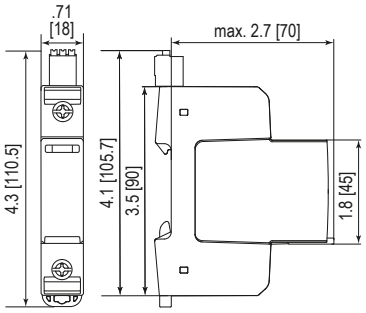
ProTec T2-ADV-xxx-1+0(-R)

Order Information

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

Dimensions & Packaging

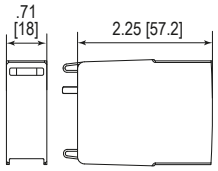
inches [mm]



Complete Unit

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
DIN 43880 Dimension		1 TE / .71" [18 mm]				
Packaging Dimensions (H x W x L)		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-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 mm]				
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				

Overvoltage Protection

ProTec T2-ADV 2+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

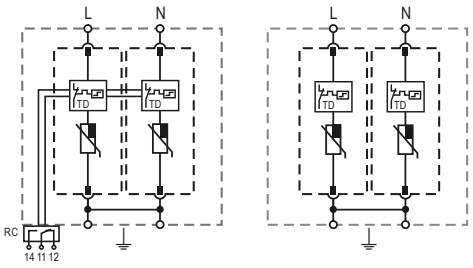
Technical Data

ProTec T2-ADV-xxx-2+0(-R)		75	150	300	350	480
IEC Electrical						
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA
Voltage Protection Level	U_p	600V	1000V	1300V	1700V	2000V
Response Time	t_A			< 25ns		
Overvoltage Category				III		
Maximum Backup fuse, if required				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		
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	75V	150V	300V	350V	480V
Voltage Protection Rating	VPR	400V	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	700V	1000V	1300V	1600V
Minimum Backup fuse, if required				80A gG		
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)	I_{SCCR}			100kA		
Maximum Backup fuse, if required				160A gG		
Mechanical & Environmental						
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]				
Permissible Operating Humidity	RH	5%...95%				
Pollution Degree		2				
Altitude (max)		13123 ft [4000m]				
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]				
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)				
		35mm² (Solid, Stranded) / 25mm² (Flexible)				
Mounting		35mm DIN Rail, EN 60715				
Degree of Protection		IP 20 (built-in)				
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0				
Thermal Protection		Yes				
Operating State / Fault Indication		Green Flag / Not Green Flag				
Remote Contacts (RC)		Optional				
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A				
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)				
Overvoltage Category		III				

Internal Configuration

Legend

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



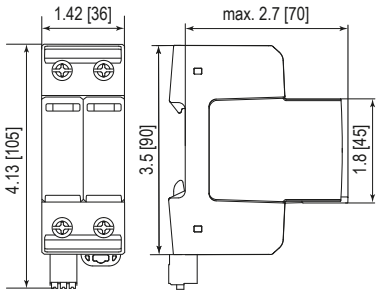
ProTec T2-ADV-xxx-2+0(-R)

Order Information

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

Dimensions & Packaging

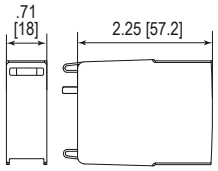
inches [mm]



Complete Unit

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	267	293	303
DIN 43880 Dimension		2 TE / 1.42" [36 mm]				
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]				
Standard Order Quantity		7 Units				

Spare Plug



Single Unit

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 mm]				
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]				
Standard Order Quantity		24 Units				

Overvoltage Protection

ProTec T2-ADV 3+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

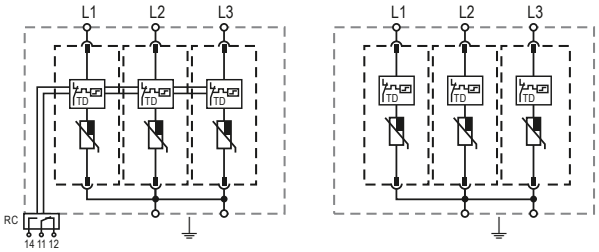
Technical Data

ProTec T2-ADV-xxx-3+0(-R)		150	300	350	480
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA
Voltage Protection Level	U_p	1000V	1300V	1700V	2000V
Response Time	t_A	< 25ns			
Overvoltage Category		III			
Maximum Backup fuse, if required		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					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*					
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V	1000V	1300V	1600V
Minimum Backup fuse, if required		80A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*					
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA			
Maximum Backup fuse, if required		160A gG			
Mechanical & Environmental					
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity	RH	5%...95%			
Pollution Degree		2			
Altitude (max)		13123 ft [4000m]			
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]			
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
		35mm² (Solid, Stranded) / 25mm² (Flexible)			
Mounting		35mm DIN Rail, EN 60715			
Degree of Protection		IP 20 (built-in)			
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection		Yes			
Operating State / Fault Indication		Green Flag / Not Green Flag			
Remote Contacts (RC)		Optional			
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)			
Overvoltage Category		III			

Internal Configuration

Legend

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



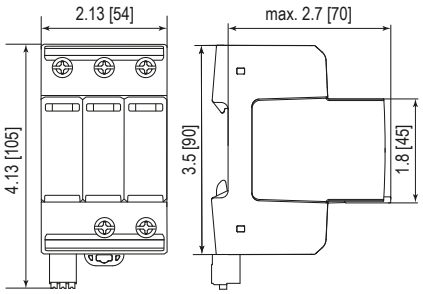
ProTec T2-ADV-xxx-3+0(-R)

Order Information

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

Dimensions & Packaging

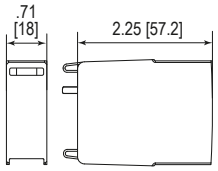
inches [mm]



Complete Unit

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
DIN 43880 Dimension		3 TE / 2.13" [54 mm]			
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]			
Standard Order Quantity		5 Units			

Spare Plug



Single Unit

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 mm]			
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]			
Standard Order Quantity		24 Units			

Overvoltage Protection

ProTec T2-ADV 4+0

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

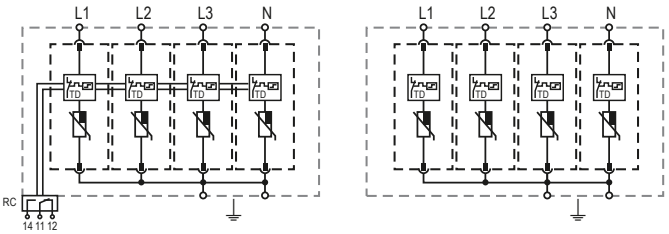
Technical Data

ProTec T2-ADV-xxx-4+0(-R)		150	300	350	480
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA
Voltage Protection Level	U_p	1000V	1300V	1700V	2000V
Response Time	t_A	< 25ns			
Overvoltage Category		III			
Maximum Backup fuse, if required		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					
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V
Voltage Protection Rating	VPR	600V	900V	1200V	1500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*					
Residual Voltage at 5 kA (8/20 µs)	U_{res}	700V	1000V	1300V	1600V
Minimum Backup fuse, if required		80A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*					
Short-Circuit Current Rating (AC)	I_{SCCR}	100kA			
Maximum Backup fuse, if required		160A gG			
Mechanical & Environmental					
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity	RH	5%...95%			
Pollution Degree		2			
Altitude (max)		13123 ft [4000m]			
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]			
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
		35mm² (Solid, Stranded) / 25mm² (Flexible)			
Mounting		35mm DIN Rail, EN 60715			
Degree of Protection		IP 20 (built-in)			
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection		Yes			
Operating State / Fault Indication		Green Flag / Not Green Flag			
Remote Contacts (RC)		Optional			
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)			
Overvoltage Category		III			

Internal Configuration

Legend

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



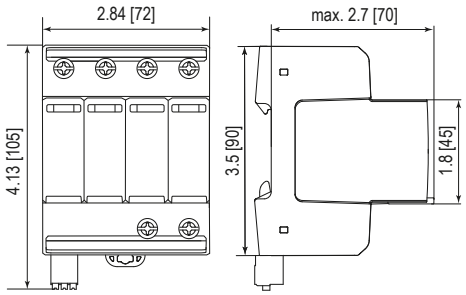
ProTec T2-ADV-xxx-4+0(-R)

Order Information

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

Dimensions & Packaging

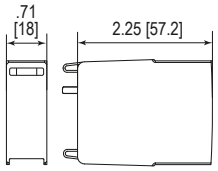
inches [mm]



Complete Unit

ProTec T2-ADV-xxx-4+0)		**150**	**300**	**350**	**480**
Weight	pounds	1.087	1.148	1.192	1.236
	grams	493	521	5411	561
ProTec T2-ADV-xxx-4+0-R					
Weight	pounds	1.106	1.168	1.212	1.256
	grams	502	530	550	570
DIN 43880 Dimension		4 TE / 2.84" [72 mm]			
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]			
Standard Order Quantity		4 Units			

Spare Plug



Single Unit

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 mm]			
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]			
Standard Order Quantity		24 Units			

Overvoltage Protection

ProTec T2-ADV 1+1

Class II • Type 2 • Type 1CA

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

CE cULus VDE RoHS COMPLIANT

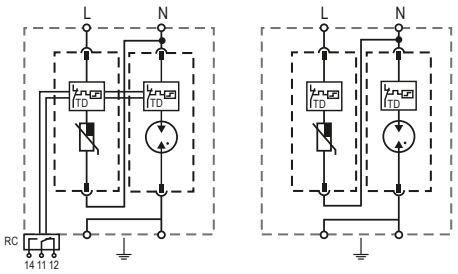
Technical Data

ProTec T2-ADV-xxx-1+1(-R)			75	150	300	350
IEC Electrical						
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 µs)	(L-N)/(N-PE)	I_n	20kA / 40kA	20kA / 40kA	20kA / 40kA	20kA / 40kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50kA / 65kA	50kA / 65kA	50kA / 65kA	50kA / 65kA
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}	100A			
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns			
Overvoltage Category			III			
Maximum Backup fuse, if required			160A gG			
Short-Circuit Current Rating (AC)		I_{SCCR}	50kA			
TOV Withstand 5s	(L-N)	U_T	114V	229V	337V	403V
TOV 120min	(L-N)	U_T	114V	229V	442V	528V
		mode	Withstand	Withstand	Safe Fail	Safe Fail
TOV Withstand 200ms	(N-PE)	U_T	1200V			
Number of Ports			1			
UL Electrical						
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 µs)	(L-N)/(N-G)	I_n	20kA / 20kA			
Short-Circuit Current Rating (AC)	(L-N)	SCCR	100kA	200kA	150kA	200kA
Additional Electrical Parameters - Standard *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	(L-N) / (N-PE)	U_{res}	400V / 305V	700V / 305V	1000V / 305V	1300V / 305V
Minimum Backup fuse, if required			160A gG			
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*						
Short-Circuit Current Rating (AC)		I_{SCCR}	100kA			
Maximum Backup fuse, if required			160A gG			
Mechanical & Environmental						
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity		RH	5%...95%			
Pollution Degree			2			
Altitude (max)			13123 ft [4000m]			
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]			
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)			
Mounting			35mm DIN Rail, EN 60715			
Degree of Protection			IP 20 (built-in)			
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection			Yes			
Operating State / Fault Indication			Green Flag / Not Green Flag			
Remote Contacts (RC)			Optional			
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)			
Overvoltage Category			III			

Internal Configuration

Legend

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



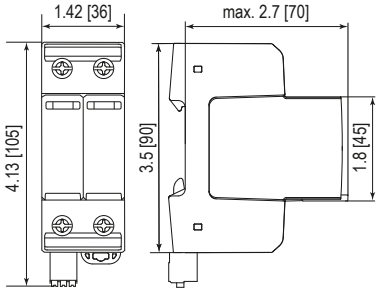
ProTec T2-ADV-xxx-1+1(-R)

Order Information

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

Dimensions & Packaging

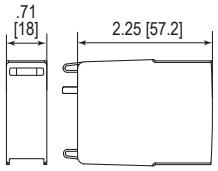
inches [mm]



Complete Unit

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
DIN 43880 Dimension		2 TE / 1.42" [36 mm]			
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]			
Standard Order Quantity		7 Units			

Spare Plug



Single Unit

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

Overvoltage Protection

ProTec T2-ADV 3+1

Class II • Type 2 • Type 1CA

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

RoHS COMPLIANT

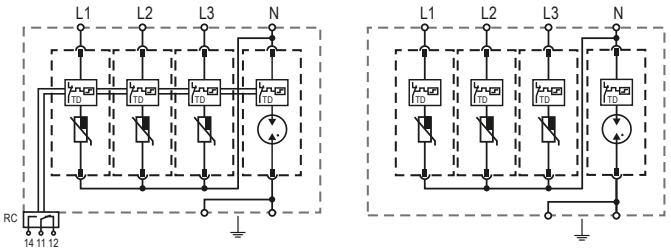
Technical Data

ProTec T2-ADV-xxx-3+1(-R)			300	350
IEC Electrical				
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 (8/20µs)	(L-N)/(N-PE)	I_n	20kA / 40kA	20kA / 40kA
Maximum Discharge Current (8/20µs)	(L-N)/(N-PE)	I_{max}	50kA / 65kA	50kA / 65kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1300V / 1500V	1700V / 1500V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100A	
Response Time	(L-N)/(N-PE)	t_A	< 25ns / < 100ns	
Overvoltage Category			III	III
Maximum Backup fuse, if required			160A gG	
Short-Circuit Current Rating (AC)		I_{SCCR}	50kA	
TOV Withstand 5s	(L-N)	U_T	337V	403V
TOV 120min	(L-N)	U_T	442V	528V
		mode	Safe Fail	Safe Fail
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	350V / 305V
Voltage Protection Rating	(L-N)/(N-G)	VPR	900V / 1000V	1200V / 1000V
Nominal Discharge Current (8/20µs)	(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 µs)	(L-N) / (N-PE)	U_{res}	1000V / 305V	1300V / 305V
Minimum Backup fuse, if required			80A gG	
Additional Electrical Parameters - Extended *(Additionally tested by VDE)*				
Short-Circuit Current Rating (AC)		I_{SCCR}	100kA	
Maximum Backup fuse, if required			160A gG	
Mechanical & Environmental				
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude (max)			13123 ft [4000m]	
Terminal Screw Torque		M_{max}	40 lbf·in [4.5Nm]	
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35mm² (Solid, Stranded) / 25mm² (Flexible)	
Mounting			35mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)	
Overvoltage Category			III	

Internal Configuration

Legend

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

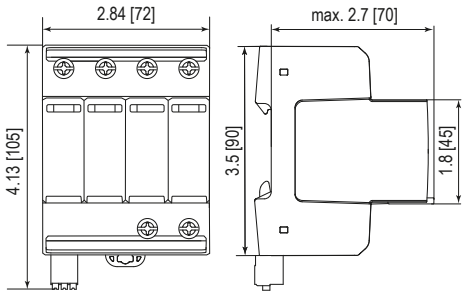


ProTec T2-ADV-xxx-3+1(-R)

Order Information		
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

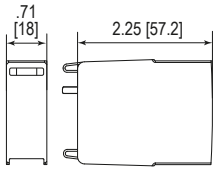
Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T2-ADV-xxx-3+1		**300**	**350**
Weight	pounds	1.080	1.113
	grams	490	505
ProTec T2-ADV-xxx-3+1-R			
Weight	pounds	1.100	1.133
	grams	499	514
DIN 43880 Dimension		4 TE / 2.84" [72 mm]	
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]	
Standard Order Quantity		4 Units	

Spare Plug



Single Unit			
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 mm]	
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]	
Standard Order Quantity		24 Units	

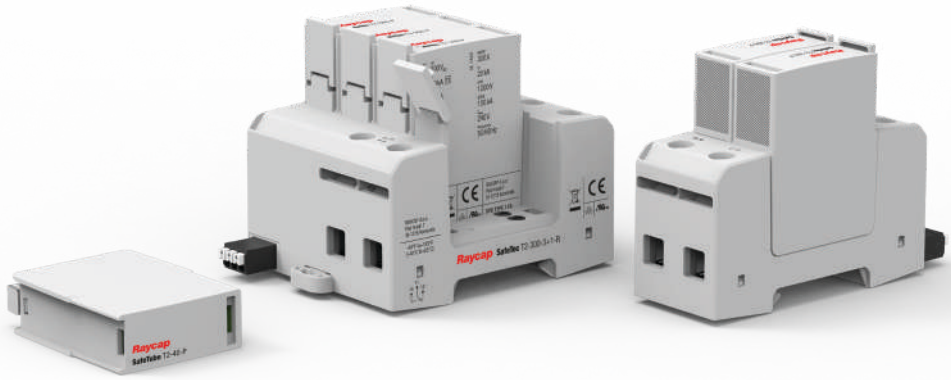
Notes

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 50 kA
- State-of-the-art thermal disconnector
- Continuous power to the equipment at end-of-life (EOL)
- AC current up to 880 V
- Back-up fuse up to 315 A gG
- Short circuit current rating up to 50 kA
- Vibration and shock withstand capability
- All modules, including N-PE with operating state green-red
- Optional remote contact (RC) signaling
- Worldwide thermal control (TC) technology



IEC 61643-11:2011	EN 61643-11:2012+A11:2018	UL 1449 5th Edition
✓	✓	✓

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

RoHS COMPLIANT

Overvoltage Protection

SafeTec T2 1+0

Class II • Type 2 • Type 1CA

Location of Use: Sub-distribution Boards
Network Systems: TN-S, TN-C, TT (only L-N)
Mode of Protection: L-N, L-PE, N-PE (only TN-S), L-PEN
IEC/EN/UL Category: Class II / Type 2 / Type 1CA
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

RoHS COMPLIANT

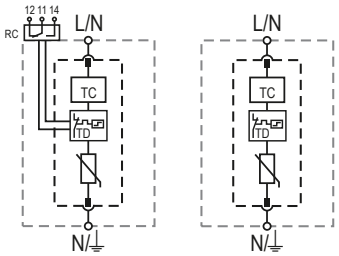
Technical Data

SafeTec T2-xxx-1+0(-R)		75	150	300	350	480	550	750	880
IEC Electrical									
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	50kA	35kA	35kA
Voltage Protection Level	U_p	800V	1250V	1650V	1750V	2300V	2500V	3500V	3600V
Response Time	t_A	< 25ns							
Overvoltage Category		III							
Maximum Backup fuse, if required		315A/250A gG							
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA/50kA							
TOV Withstand 120min	U_T	150V	255V	442V	529V	762V	918V	1200V	1250V
Number of Ports		1							
UL Electrical									
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA	200kA	200kA	100kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*									
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	750V	1000V	1300V	1600V	1900V	2700V	2800V
Minimum Backup fuse, if required		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%							
Pollution Degree		2							
Altitude (max)		13123 ft [4000m]							
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]							
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)							
		35mm² (Solid, Stranded) / 25mm² (Flexible)							
Mounting		35mm DIN Rail, EN 60715							
Degree of Protection		IP 20 (built-in)							
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0							
Thermal Protection		Yes							
Operating State / Fault Indication		Green Flag / Not Green Flag							
Remote Contacts (RC)		Optional							
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A							
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)							
Overvoltage Category		III							

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 Disconnector*



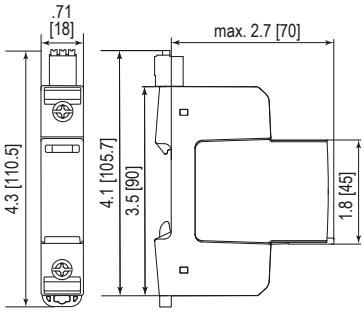
SafeTec T2-xxx-1+0(-R)

Order Information

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

Dimensions & Packaging

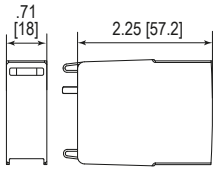
inches [mm]



Complete Unit

SafeTec T2-xxx-1+0		75	150	300	350	480	550	750	880
Weight	pounds	.279	.290	.297	.314	.317	.328	.345	.350
	grams	127	132	135	143	144	149	157	159
SafeTecT2-xxx-1+0-R									
Weight	pounds	.295	.306	.312	.330	.332	.343	.361	.365
	grams	134	139	142	150	151	156	164	166
DIN 43880 Dimension		1 TE / .71" [18 mm]							
Packaging Dimensions (H x W x L)		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	.194	.198
	grams	58	63	66	74	75	80	88	90
DIN 43880 Dimension		1 TE / .71" [18 mm]							
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							

Overvoltage Protection

SafeTec T2 2+0

Class II • Type 2 • Type 1CA

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
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

CE cULus DVE RoHS COMPLIANT

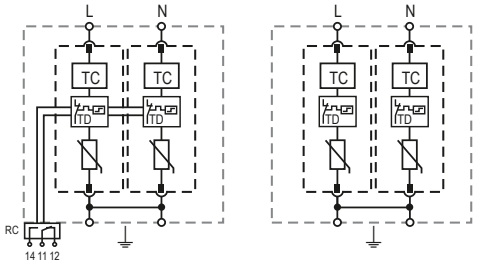
Technical Data

SafeTec T2-xxx-2+0(-R)		75	150	300	350	480	550	750	880
IEC Electrical									
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	50kA	35kA	35kA
Voltage Protection Level	U_p	800V	1250V	1650V	1750V	2300V	2500V	3500V	3600V
Response Time	t_A	< 25ns							
Overvoltage Category		III							
Maximum Backup fuse, if required		315A/250A gG							
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA/50kA							
TOV Withstand 120min	U_T	150V	255V	442V	529V	762V	918V	1200V	1250V
Number of Ports		1							
UL Electrical									
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 (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	100kA	200kA	150kA	200kA	200kA	200kA	200kA	200kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*									
Residual Voltage at 5 kA (8/20 µs)	U_{res}	400V	750V	1000V	1300V	1600V	1900V	2700V	2800V
Minimum Backup fuse, if required		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%							
Pollution Degree		2							
Altitude (max)		13123 ft [4000m]							
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]							
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)							
		35mm² (Solid, Stranded) / 25mm² (Flexible)							
Mounting		35mm DIN Rail, EN 60715							
Degree of Protection		IP 20 (built-in)							
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0							
Thermal Protection		Yes							
Operating State / Fault Indication		Green Flag / Not Green Flag							
Remote Contacts (RC)		Optional							
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A							
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)							
Overvoltage Category		III							

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 Disconnector*



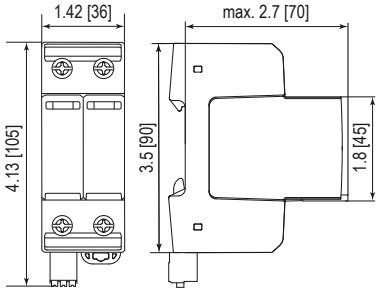
SafeTec T2-xxx-2+0(-R)

Order Information

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

Dimensions & Packaging

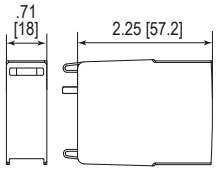
inches [mm]



Complete Unit

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
DIN 43880 Dimension		2 TE / 1.42" [36 mm]							
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]							
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]							
Standard Order Quantity		24 Units							

Overvoltage Protection

SafeTec T2 3+0

Class II • Type 2 • Type 1CA

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
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

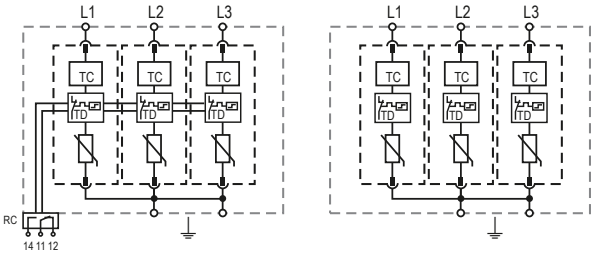
Technical Data

SafeTec T2-xxx-3+0(-R)		150	300	350	480	550	750	880
IEC Electrical								
Nominal AC Voltage (50/60Hz)	U_o/U_n	120V	240V	277V	400V	400V	600V	600V
Maximum Continuous Operating Voltage (AC)	U_c	150V	300V	350V	480V	550V	750V	880V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Maximum Discharge Current (8/20µs)	I_{max}	50kA	50kA	50kA	50kA	50kA	35kA	35kA
Voltage Protection Level	U_p	1250V	1650V	1750V	2300V	2500V	3500V	3600V
Response Time	t_A	< 25ns						
Overvoltage Category		III						
Maximum Backup fuse, if required		315A/250A gG						
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA/50kA						
TOV Withstand 120min	U_T	255V	442V	529V	762V	918V	1200V	1250V
Number of Ports		1						
UL Electrical								
Maximum Continuous Operating Voltage (AC)	MCOV	150V	300V	350V	480V	550V	750V	880V
Voltage Protection Rating	VPR	700V	1200V	1200V	1500V	1800V	2500V	2500V
Nominal Discharge Current (8/20µs)	I_n	20kA	20kA	20kA	20kA	20kA	20kA	20kA
Short-Circuit Current Rating (AC)	SCCR	200kA	150kA	200kA	200kA	200kA	200kA	200kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*								
Residual Voltage at 5 kA (8/20 µs)	U_{res}	750V	1000V	1300V	1600V	1900V	2700V	2800V
Minimum Backup fuse, if required		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%						
Pollution Degree		2						
Altitude (max)		13123 ft [4000m]						
Terminal Screw Torque	M_{max}	40 lbf·in [4.5Nm]						
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)						
		35mm² (Solid, Stranded) / 25mm² (Flexible)						
Mounting		35mm DIN Rail, EN 60715						
Degree of Protection		IP 20 (built-in)						
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0						
Thermal Protection		Yes						
Operating State / Fault Indication		Green Flag / Not Green Flag						
Remote Contacts (RC)		Optional						
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A						
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5mm² (Solid)						
Overvoltage Category		III						

Internal Configuration

Legend

L	*Line Conductor Terminal*
⏚	*PEN/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TC	*Thermal Control Function*
TD	*Thermal Disconnector*



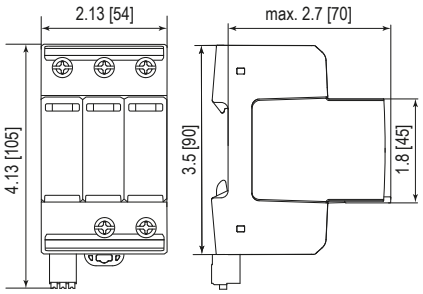
SafeTec T2-xxx-3+0(-R)

Order Information

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

Dimensions & Packaging

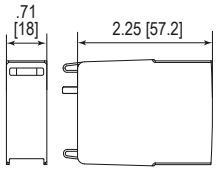
inches [mm]



Complete Unit

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
DIN 43880 Dimension		3 TE / 2.13" [54 mm]						
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

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 mm]						
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						

Overvoltage Protection

SafeTec T2 4+0

Class II • Type 2 • Type 1CA

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
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

CE cULus VDE RoHS COMPLIANT

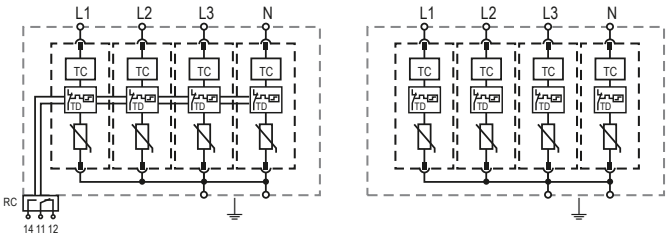
Technical Data

SafeTec T2-xxx-4+0(-R)		150	300	350	480	550
IEC Electrical						
Nominal AC Voltage (50/60Hz)	U_o/U_n	120 V	240 V	277 V	400 V	400 V
Maximum Continuous Operating Voltage (AC)	U_c	150 V	300 V	350 V	480 V	550 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	50 kA	50 kA	50 kA	50 kA	50 kA
Voltage Protection Level	U_p	1250 V	1650 V	1750 V	2300 V	2500 V
Response Time	t_A			< 25 ns		
Overvoltage Category				III		
Maximum Backup fuse, if required				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
Number of Ports				1		
UL Electrical						
Maximum Continuous Operating Voltage (AC)	MCOV	150 V	300 V	350 V	480 V	550 V
Voltage Protection Rating	VPR	700 V	1200 V	1200 V	1500 V	1800 V
Nominal Discharge Current (8/20 µs)	I_n	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
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	U_{res}	750 V	1000 V	1300 V	1600 V	1900 V
Minimum Backup fuse, if required				80 A gG		
Mechanical & Environmental						
Operating Temperature Range	T_a			-40 °F to +185 °F [-40 °C to +85 °C]		
Permissible Operating Humidity	RH			5%...95%		
Pollution Degree				2		
Altitude (max)				13123 ft [4000 m]		
Terminal Screw Torque	M_{max}			40 lbf·in [4.5 Nm]		
Conductor Cross Section (max)				2 AWG (Solid, Stranded) / 4 AWG (Flexible)		
				35 mm² (Solid, Stranded) / 25 mm² (Flexible)		
Mounting				35 mm DIN Rail, EN 60715		
Degree of Protection				IP 20 (built-in)		
Housing Material				Thermoplastic: Extinguishing Degree UL 94 V-0		
Thermal Protection				Yes		
Operating State / Fault Indication				Green Flag / Not Green Flag		
Remote Contacts (RC)				Optional		
RC Switching Capacity				AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A		
RC Conductor Cross Section (max)				16 AWG (Solid) / 1.5 mm² (Solid)		
Overvoltage Category				III		

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 Disconnector*



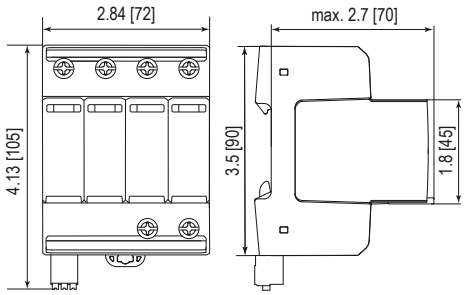
SafeTec T2-xxx-4+0(-R)

Order Information

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

Dimensions & Packaging

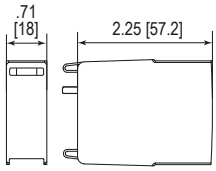
inches [mm]



Complete Unit

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
DIN 43880 Dimension		4 TE / 2.84" [72 mm]				
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]				
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]				
Standard Order Quantity		24 Units				

Overvoltage Protection

SafeTec T2 1+1

Class II • Type 2 • Type 1CA

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
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

RoHS COMPLIANT

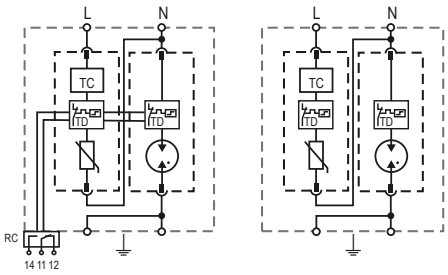
Technical Data

SafeTec T2-xxx-1+1(-R)			75	150	300	350
IEC Electrical						
Nominal AC Voltage (50/60Hz)		U_o/U_n	60 V	120 V	240 V	277 V
Maximum Continuous Operating Voltage (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 µs)	(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 µs)	(L-N)/(N-PE)	I_{max}	50 kA/65kA	50 kA/65kA	50 kA/65kA	50 kA/65kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	800V/1500V	1250V/1500V	1650V/1500V	1750V/1500V
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100 A			
Response Time	(L-N)/(N-PE)	t_A	< 25 ns/< 100 ns			
Overvoltage Category			III			
Maximum Backup fuse, if required			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			
UL Electrical						
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	600V/1000V	700V/1000V	1200V/1000V	1200V/1000V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-G)	I_n	20 kA/20 kA			
Short-Circuit Current Rating (AC)	(L-N)	SCCR	100kA	200 kA	150 kA	200 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*						
Residual Voltage at 5 kA (8/20 µs)	(L-N)/(N-PE)	U_{res}	400V/305V	750V/305V	1000V/305V	1300V/305V
Minimum Backup fuse, if required			80 A gG			
Mechanical & Environmental						
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]			
Permissible Operating Humidity		RH	5%...95%			
Pollution Degree			2			
Altitude (max)			13123 ft [4000 m]			
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]			
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)			
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)			
Mounting			35 mm DIN Rail, EN 60715			
Degree of Protection			IP 20 (built-in)			
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0			
Thermal Protection			Yes			
Operating State / Fault Indication			Green Flag / Not Green Flag			
Remote Contacts (RC)			Optional			
RC Switching Capacity			AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A			
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)			
Overvoltage Category			III			

Internal Configuration

Legend

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



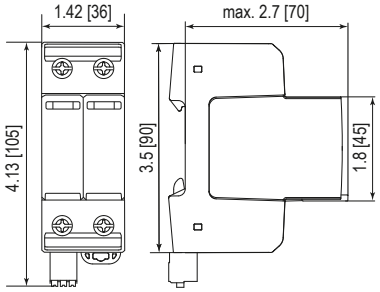
SafeTec T2-xxx-1+1(-R)

Order Information

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

Dimensions & Packaging

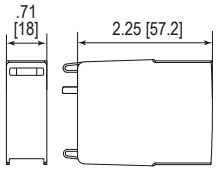
inches [mm]



Complete Unit

SafeTec T2-xxx-1+1		**75**	**150**	**300**	**350**
Weight	pounds	.552	.563	.569	.587
	grams	250	255	258	266
SafeTec T2-xxx-1+1-R					
Weight	pounds	.561	.572	.578	.596
	grams	254	259	262	270
DIN 43880 Dimension		2 TE / 1.42" [36 mm]			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Standard Order Quantity		7 Units			

Spare Plug



Single Unit

SafeTec T2-xxx-P		**75**	**150**	**300**	**350**
Weight	pounds	.128	.139	.146	.163
	grams	58	63	66	74
SafeTube T2-40-P			**40**		
Weight	pounds		.093		
	grams		42		
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

SafeTec T2 3+1

Class II • Type 2 • Type 1CA

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
Safety: Current Limiting Technology
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

RoHS COMPLIANT

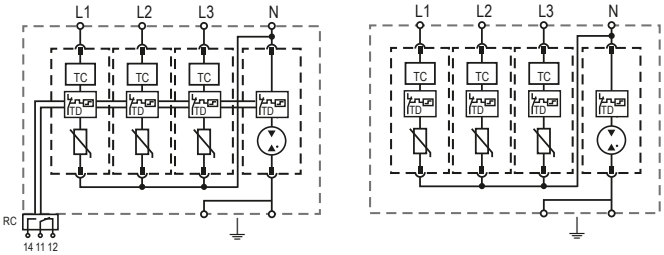
Technical Data

SafeTec T2-xxx-3+1(-R)			300	350
IEC Electrical				
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V	277 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	300 V	350 V
	(N-PE)	U_c	305 V	305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA/40 kA	20 kA/40 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	50 kA/65kA	50 kA/65kA
Voltage Protection Level	(L-N)/(N-PE)	$U_{p.}$	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	
Overvoltage Category			III	
Maximum Backup fuse, if required			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	442 V	529 V
TOV Withstand 200ms	(N-PE)	U_T	1200 V	
Number of Ports			1	
UL Electrical				
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE)	MCOV	300 V/305 V	350 V/305 V
Voltage Protection Rating	(L-N)/(N-PE)	VPR	1200 V/1000 V	1200 V/1000 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	20 kA/20 kA	
Short-Circuit Current Rating (AC)	(L-N)	SCCR	150 kA	150 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)	(L-N)/(N-PE)	U_{res}	1000 V/305 V	1300 V/305 V
Minimum Backup fuse, if required			80 A gG	
Mechanical & Environmental				
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude (max)			13123 ft [4000 m]	
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Remote Contacts (RC)			Optional	
RC Switching Capacity			AC: 250 V/1A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

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 Disconnector*



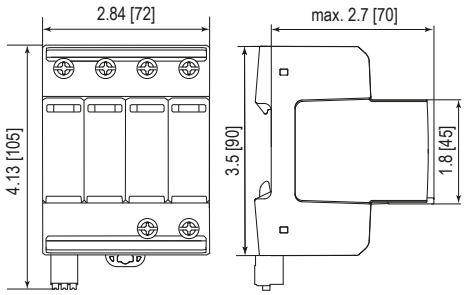
SafeTec T2-xxx-3+1(-R)

Order Information

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

Dimensions & Packaging

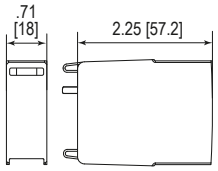
inches [mm]



Complete Unit

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

Spare Plug



Single Unit

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 mm]	
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

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

RoHS COMPLIANT

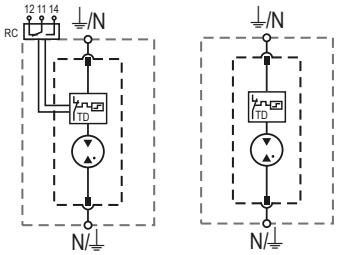
Technical Data

SafeTube T2-xx 0+1(-R)		40
IEC Electrical		
Maximum Continuous Operating Voltage	U_c	305V
Nominal Discharge Current (8/20 µs)	I_n	40 kA
Maximum Discharge Current (8/20 µs)	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
Overvoltage Category		III
TOV Withstand 200ms	U_T	1200 V
Number of Ports		1
UL Electrical		
Maximum Continuous Operating Voltage (AC)	MCOV	305V
Voltage Protection RatingN)	VPR	1000V
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*		
Residual Voltage at 5 kA (8/20 µs)	U_{res}	305V
Mechanical & Environmental		
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Pollution Degree		2
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TC	*Thermal Control Function*
TD	*Thermal Disconnector*

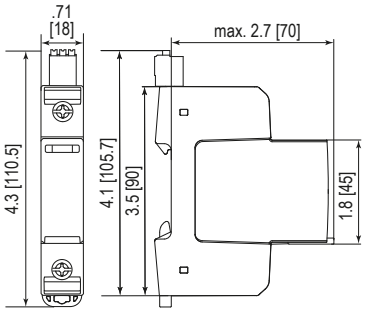


SafeTube T2-xx 0+1(-R)

Order Information	
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

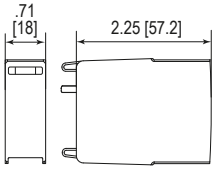
Dimensions & Packaging

inches [mm]



Complete Unit		
SafeTube T2-xxx-0+1		**40**
Weight	pounds	.244
	grams	111
SafeTube T2-xxx-0+1-R		
Weight	pounds	.259
	grams	118
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 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 mm]
Packaging Dimensions (H x W x L)		3.2 × 4.5 × 12" [83 × 116 × 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 9 mm size per pole
- Type 2 and high rated Type 3 SPD
- Available in operating voltages 275 V and 440 V
- Short-circuit current rating up to 25 kA
- Discharge capacity Imax up to 10 kA (L-N) and 20 kA (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) 275 V and 440 V. The varistor-based protection modules feature outstanding short-circuit current up to 25 kA 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 disconnector 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

CE RoHS COMPLIANT

Technical Data

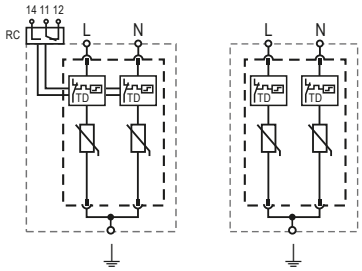
ProTec T2-CM-xxx-2+0-L-E(-R)			275	440
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	230 V
Maximum Continuous Operating Voltage (AC)		U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)		I_n	10 kA	
Maximum Discharge Current (8/20 µs)		I_{max}	20 kA	
Voltage Protection Level for Type 2+3		U_p	1200 V	1700 V
Voltage Protection Level for Type 3 only		U_p	1000 V	1400 V
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)		U_{oc}	6 kV	
Short Circuit Current of Combination Wave Generator (8/20 µs)		I_{cw}	3 kA	
Response Time		t_A	< 25 ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			100 A gG	
Short-Circuit Current Rating		I_{SCCR}	25 kA	
TOV Withstand 5 s		U_T	335 V	440 V
TOV 120 min		U_T/mode	440 V / Safe Fail	440 V / Withstand
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V	1500 V
Minimum Backup fuse, if required			40 A gG	
Mechanical & Environmental				
Temperature Range		T_a	-40 °C to +85 °C	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 6 mm² (Flexible)	
	(PE)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
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 mm²]	
RC Terminal Screw Torque		M_{max}	3.5 lbf·in [0.4 Nm]	
Overvoltage Category			III	

**Only applicable for SPD with Uc 440 V 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).*

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal*
TD	*Thermal Disconnector*

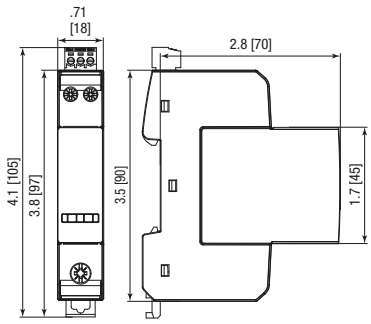


ProTec T2-CM-xxx-2+0-L-E(-R)

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

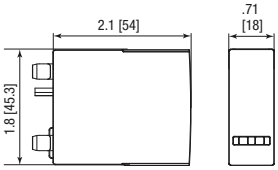
Dimensions & Packaging



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 × W × L)		3.2 × 1.7 × 4.6" [83.5 × 44 × 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 × W × L)		2.5 × 1.8 × 8.7" [64 × 45 × 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

CE RoHS COMPLIANT

Technical Data

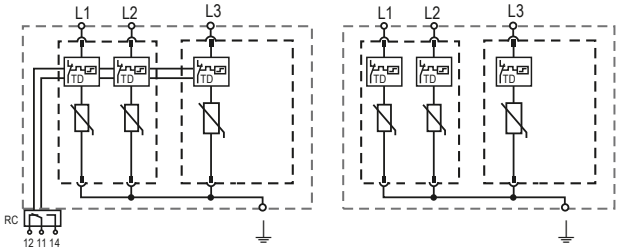
ProTec T2-CM-xxx-3+0-L-E(-R)			275	440
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	230 V
Maximum Continuous Operating Voltage (AC)		U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)		I_n	10 kA	
Maximum Discharge Current (8/20 µs)		I_{max}	20 kA	
Voltage Protection Level for Type 2+3		U_p	1200 V	1700 V
Voltage Protection Level for Type 3 only		U_p	1000 V	1400 V
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs)		U_{oc}	6 kV	
Short Circuit Current of Combination Wawe Generator (8/20 µs)		I_{cw}	3 kA	
Response Time		t_A	< 25 ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			100 A gG	
Short-Circuit Current Rating		I_{SCCR}	25 kA	
TOV Withstand 5 s		U_T	335 V	440 V
TOV 120 min		U_T/mode	440 V / Safe Fail	440 V / Withstand
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V	1500 V
Minimum Backup fuse, if required			40 A gG	
Mechanical & Environmental				
Temperature Range		T_a	-40 °C to +85 °C	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 6 mm² (Flexible)	
	(PEN)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
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 mm²]	
RC Terminal Screw Torque		M_{max}	3.5 lbf·in [0.4 Nm]	
Overvoltage Category			III	

**Only applicable for SPD with Uc 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).*

Internal Configuration

Legend

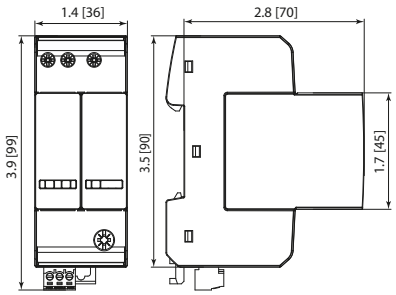
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PEN Conductor Terminal*
RC	*Remote Contacts Terminal*
TD	*Thermal Disconnector*



ProTec T2-CM-xxx-3+0-L-E(-R)

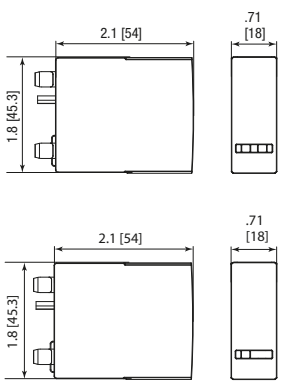
Order Information		
Order Code	**275**	**440**
ProTec T2-CM-xxx-3+0-L-E	515 700	515 703
ProTec T2-CM-xxx-3+0-L-E-R (with remote contact)	515 701	515 704
ProTec T2-CM-xxx-L-E-P (plug)	515 667	515 668
ProTec T2-CM-xxx-L-E-01-P (L3-PEN plug)	515 702	515 705

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		
Weight	pounds [grams]	.549 [249]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]
Packaging Dimensions (H × W × L)		3.2 × 1.7 × 4.6" [83.5 × 44 × 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 × W × L)		2.5 × 1.8 × 8.7" [64 × 45 × 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

CE RoHS COMPLIANT

Technical Data

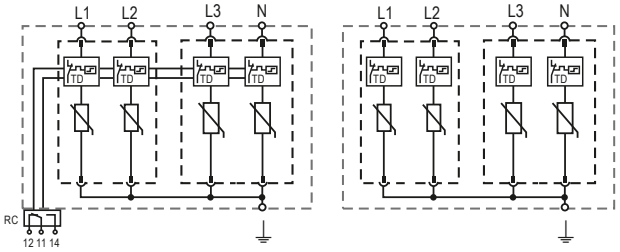
ProTec T2-CM-xxx-4+0-L-E(-R)			275	440
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	230 V
Maximum Continuous Operating Voltage (AC)		U_c	275 V	440 V
Nominal Discharge Current (8/20 µs)		I_n	10 kA	
Maximum Discharge Current (8/20 µs)		I_{max}	20 kA	
Voltage Protection Level for Type 2+3		U_p	1200 V	1700 V
Voltage Protection Level for Type 3 only		U_p	1000 V	1400 V
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs)		U_{oc}	6 kV	
Short Circuit Current of Combination Wawe Generator (8/20 µs)		I_{cw}	3 kA	
Response Time		t_A	< 25 ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			100 A gG	
Short-Circuit Current Rating		I_{SCCR}	25 kA	
TOV Withstand 5s		U_T	335 V	440 V
TOV 120 min		U_T/mode	440 V / Safe Fail	440 V / Withstand
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V	1500 V
Minimum Backup fuse, if required			40 A gG	
Mechanical & Environmental				
Temperature Range		T_a	-40 °C to +85 °C	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 6 mm² (Flexible)	
	(PE)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
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 mm²]	
RC Terminal Screw Torque		M_{max}	3.5 lbf·in [0.4 Nm]	
Overvoltage Category			III	

**Only applicable for SPD with Uc 440 V 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).*

Internal Configuration

Legend

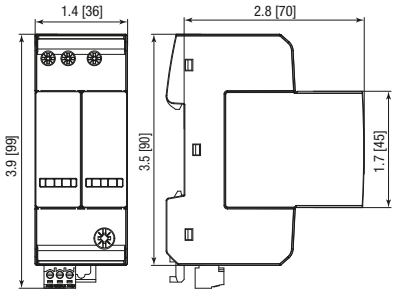
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal*
TD	*Thermal Disconnector*



ProTec T2-CM-xxx-4+0-L-E(-R)

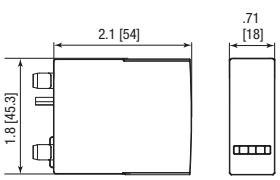
Order Information		
Order Code	**275**	**440**
ProTec T2-CM-xxx-4+0-L-E	515 603	515 605
ProTec T2-CM-xxx-4+0-L-E-R (with remote contact)	515 604	515 606
ProTec T2-CM-xxx-L-E-P (plug)	515 667	515 668

Dimensions & Packaging



Complete Unit			
ProTec T2-CM-xxx-4+0-L-E		**275**	**440**
Weight	pounds [grams]	.618 [281]	.654 [297]
ProTec T2-CM-xxx-4+0-L-E-R			
Weight	pounds [grams]	.632 [287]	.667 [303]
DIN 43880 Dimension		2 TE / 1.42" [36 mm]	
Packaging Dimensions (H × W × L)		3.2 × 1.7 × 4.6" [83.5 × 44 × 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 × W × L)		2.5 × 1.8 × 8.7" [64 × 45 × 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

CE RoHS COMPLIANT

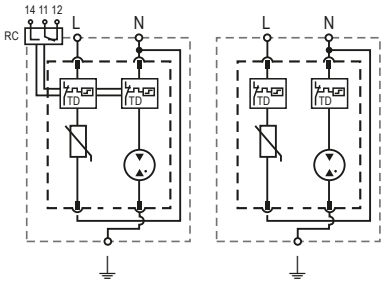
Technical Data

ProTec T2-CM-xxx-1+1-L-E(-R)			275	440
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	230 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	275 V	440 V
	(N-PE)	U_c	255 V	255 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	10 kA / 20 kA	
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	20 kA / 40 kA	
Voltage Protection Level for Type 2+3	(L-N)	U_p	1200 V	1700 V
	(N-PE)	U_p	1500 V	1500 V
Voltage Protection Level for Type 3 only	(L-N)	U_p	1000 V	1400 V
	(N-PE)	U_p	1000 V	1000 V
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs)	(L-N)/(N-PE)	U_{oc}	6 kV / 6 kV	
Short Circuit Current of Combination Wawe Generator (8/20 µs)	(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	
Overvoltage Category			III	
Maximum Backup fuse, if required			100 A gG	
Short-Circuit Current Rating		I_{SCCR}	25 kA	
TOV Withstand 5 s	(L-N)	U_T	335 V	440 V
TOV 120 min	(L-N)	U_T/mode	440 V / Safe Fail	440 V / Withstand
TOV Withstand 200 ms	(N-PE)	U_T	1200 V / 300 A	
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V / 255 V	1500 V / 255 V
Minimum Backup fuse, if required			40 A gG	
Mechanical & Environmental				
Temperature Range		T_a	-40 °C to +85 °C	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 6 mm² (Flexible)	
	(PE)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
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 mm²]	
RC Terminal Screw Torque		M_{max}	3.5 lbf·in [0.4 Nm]	
Overvoltage Category			III	

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal*
TD	*Thermal Disconnector*

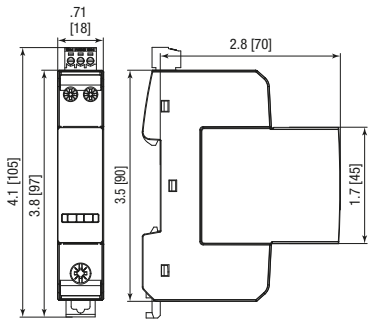


ProTec T2-CM-xxx-1+1-L-E(-R)

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

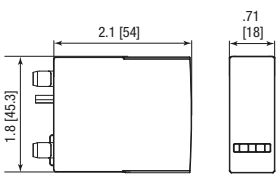
Dimensions & Packaging



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 × W × L)		3.2 × 1.7 × 4.6" [83.5 × 44 × 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 × W × L)		2.5 × 1.8 × 8.7" [64 × 45 × 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

CE RoHS COMPLIANT

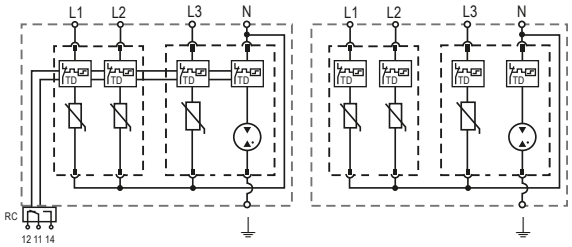
Technical Data

ProTec T2-CM-xxx-3+1-L-E(-R)			275	440
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	230 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	275 V	440 V
	(N-PE)	U_c	255 V	255 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	10 kA / 20 kA	
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	20 kA / 40 kA	
Voltage Protection Level for Type 2+3	(L-N)	U_p	1200 V	1700 V
	(N-PE)	U_p	1500 V	1500 V
Voltage Protection Level for Type 3 only	(L-N)	U_p	1000 V	1400 V
	(N-PE)	U_p	1000 V	1000 V
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs)	(L-N)/(N-PE)	U_{oc}	6 kV / 6 kV	
Short Circuit Current of Combination Wawe Generator (8/20 µs)	(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	
Overvoltage Category			III	
Maximum Backup fuse, if required			100 A gG	
Short-Circuit Current Rating		I_{SCCR}	25 kA	
TOV Withstand 5 s	(L-N)	U_T	335 V	440 V
TOV 120 min	(L-N)	U_T/mode	440 V / Safe Fail	440 V / Withstand
TOV Withstand 200 ms	(N-PE)	U_T	1200 V / 300 A	
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Residual Voltage at 5 kA (8/20 µs)		U_{res}	1000 V / 255 V	1500 V / 255 V
Minimum Backup fuse, if required			40 A gG	
Mechanical & Environmental				
Temperature Range		T_a	-40 °C to +85 °C	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
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 mm² (Solid, Stranded) / 6 mm² (Flexible)	
	(PE)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting			35 mm DIN Rail, EN 60715	
Degree of Protection			IP 20 (built-in)	
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 mm²]	
RC Terminal Screw Torque		M_{max}	3.5 lbf·in [0.4 Nm]	
Overvoltage Category			III	

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal*
TD	*Thermal Disconnector*

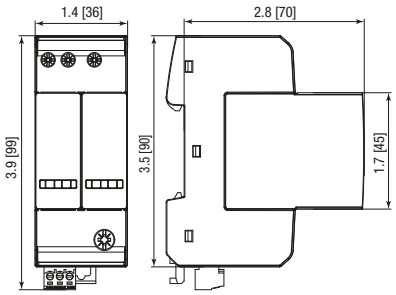


ProTec T2-CM-xxx-3+1-L-E(-R)

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

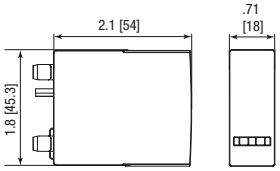
Dimensions & Packaging



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 × W × L)		3.2 × 1.7 × 4.6" [83.5 × 44 × 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		**275**	**440**
Weight	pounds [grams]	.144 [65.5]	.151 [68.5]
DIN 43880 Dimension		1 TE / .70" [18 mm]	
Packaging Dimensions (H × W × L)		2.5 × 1.8 × 8.7" [64 × 45 × 220 mm]	
Standard Order Quantity		24 Units	

Notes

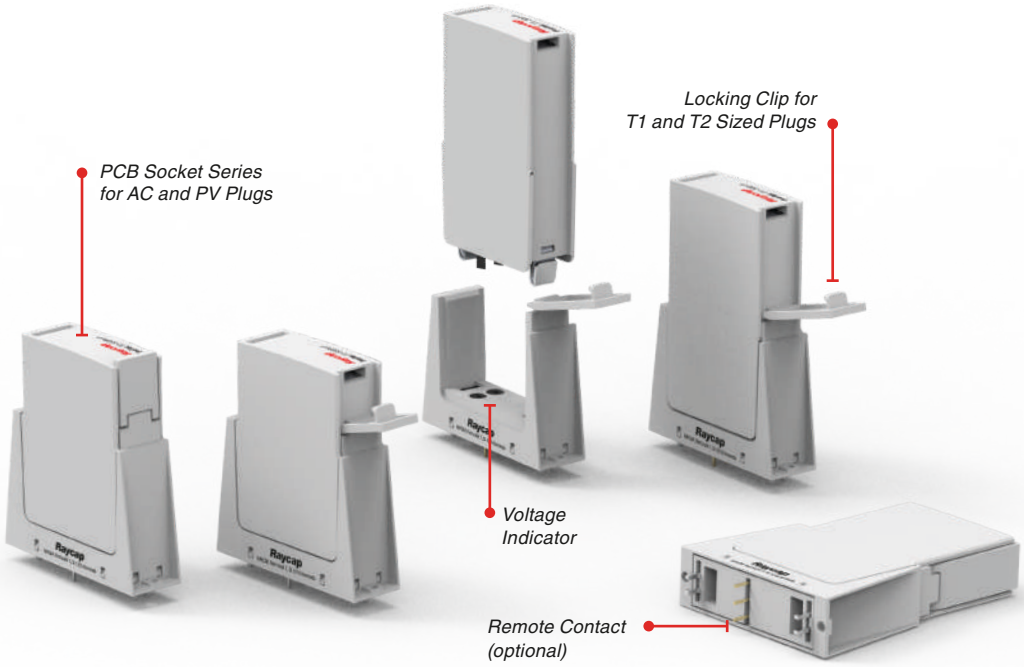
PCB Mount SPD Socket for AC and PV Systems

Lightning and Overvoltage Protection
PCB Socket T1 & PCB Socket T2

Special features:

- For use with maximum continuous operating AC voltage (U_C) up to 880 V and PV voltage (U_{CPV}) up to 750 V plugs
- 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

More Product Information

To see the complete line of Raycap product solutions visit raycap.com or ask for dedicated case applications. Contact us: info@raycap.com.

RoHS COMPLIANT CE

Notes

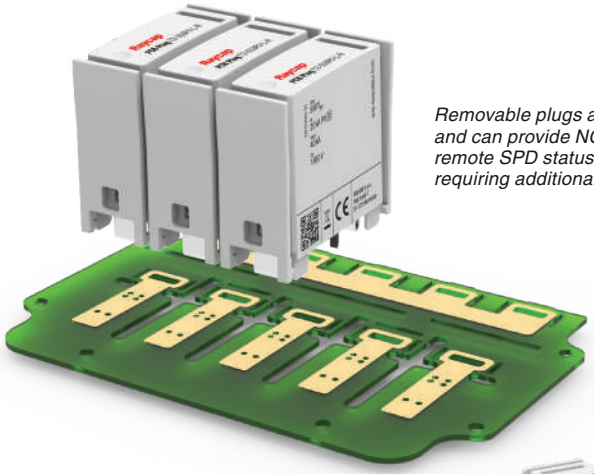
A Versatile Protection Solution for PV Systems: Direct-mounted SPDs

Advanced and Dedicated
Direct Mount SPD

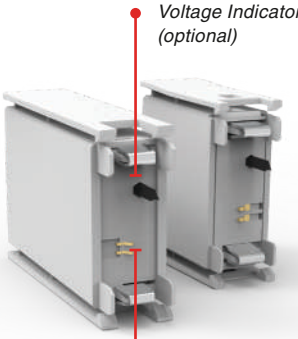
Special features:

- 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.



Voltage Indicator (optional)

Remote Contacts

Example of dedicated application. Contact us for your custom solution.

To see the complete line of Raycap product solutions visit raycap.com or ask for dedicated case applications. Contact us: info@raycap.com.

RoHS COMPLIANT CE

Notes

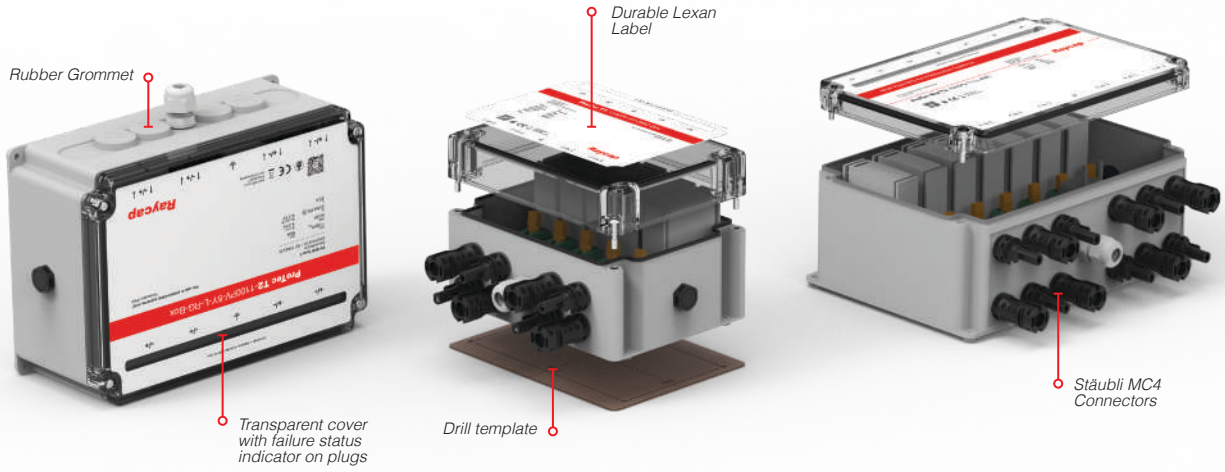
Enclosure with Multi-Pole SPD
for Photovoltaic Systems

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, and 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
- Fast, on-wall installation of DC-side protection near 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 1100 V and 1500 V 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 allows clear visibility of module fault status indicators.

PV Box T1

PV Box T2

More Product Information

RoHS COMPLIANT CE

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: IP 65 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

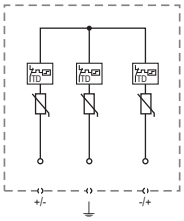
Technical Data

ProTec T1 PV(-3Y)(-S)-RG-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Total Discharge Current (8/20 µs)		I_{total}	50 kA	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	50 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA	6.25 kA
Total Discharge Current (10/350 µs)		I_{total}	12.5 kA	12.5 kA
Specific Energy		W/R	9.77 kJ/Ω	9.77 kJ/Ω
Charge		Q	3.125 As	3.125 As
Voltage Protection Level		U_p	< 4.4 kV	< 5.2 kV
Rated Load Current		I_L	35 A	35 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
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%	
Pollution Degree			2	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20 AWG [0.5 mm²] (stranded, flexible)	
	(max)		9 AWG [6 mm²] (stranded, flexible)	
Degree of Protection			IP 65	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Housing Material			Polycarbonate with Semi-transparent	
Mounting			Wall - Indoor/Outdoor	

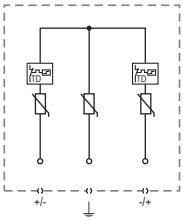
Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



1100V Version



1500V Version

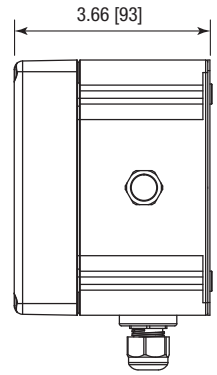
ProTec T1 PV(-3Y)(-5Y)(-S)-RG-Box

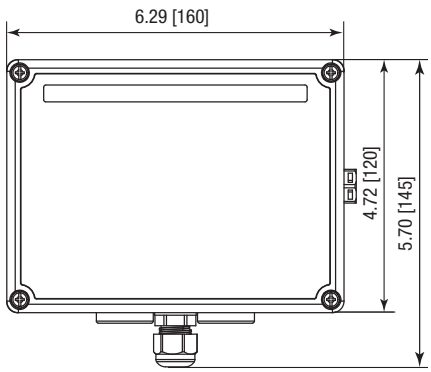
Order Information

Order Code	1100	1500
ProTec T1-xxxxPV-3Y-RG-Box	515 649	-
ProTec T1-xxxxPV-3Y-S-RG-Box	-	515 651

Dimensions & Packaging

inches [mm]





Complete Unit			
ProTec T1-xxxxPV-3Y(-S)-Box		**1100**	**1500**
Single Unit Weight	pounds [grams]	1.94 [881]	2.17 [986]
ProTec T1-xxxxPV-3Y(-S)-RG-Box			
Single Unit Weight	pounds [grams]	2.46 [1117]	2.86 [1298]
Packaging Dimensions (H×W×L)		4.1×6.9×7.8" [105×175×200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec Box T1 5Y RG

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 65 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

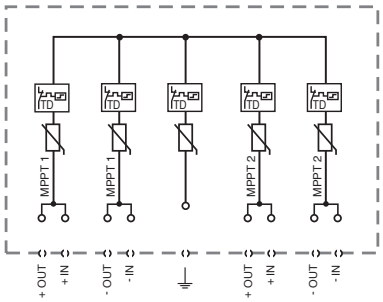
Technical Data

ProTec Box T1-xxxxPV-5Y(-S)(-RG)			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100V	1500V
Nominal Discharge Current (8/20µs)		I_n	20kA	20kA
Total Discharge Current (8/20µs)		I_{total}	50kA	50kA
Maximum Discharge Current (8/20µs)		I_{max}	40kA	50kA
Impulse Discharge Current (10/350µs)		I_{imp}	6.25kA	6.25kA
Total Discharge Current (10/350µs)		I_{total}	12.5kA	12.5kA
Specific Energy		W/R	9.77kJ/Ω	9.77kJ/Ω
Charge		Q	3.125As	3.125As
Voltage Protection Level		U_p	4400V	5200V
Rated Load Current		I_L	45A	45A
Response Time		t_A	< 25ns	< 25ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	11kA	30kA
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%	
Pollution Degree			2	
Altitude			13123ft [4000m]	
Type of Cable Entry			Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)		.15" [4mm] (stranded, flexible)	
	(max)		.31" [8mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)		24 AWG [0.2mm²] (stranded, flexible)	
	(max)		5 AWG [16mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20 AWG [0.5mm²] (stranded, flexible)	
	(max)		9 AWG [6mm²] (stranded, flexible)	
Degree of Protection			IP 65	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Housing Material			Polycarbonate with Semi-transparent	
Mounting			Wall - Indoor/Outdoor	

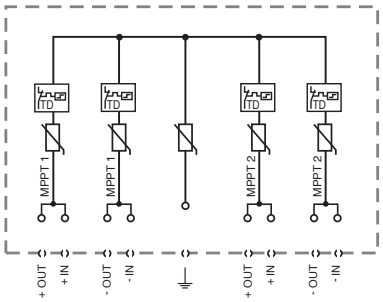
Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



1100V Version



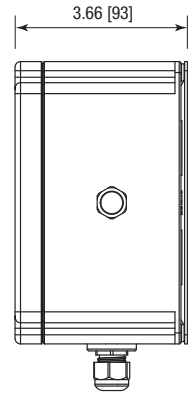
1500V Version

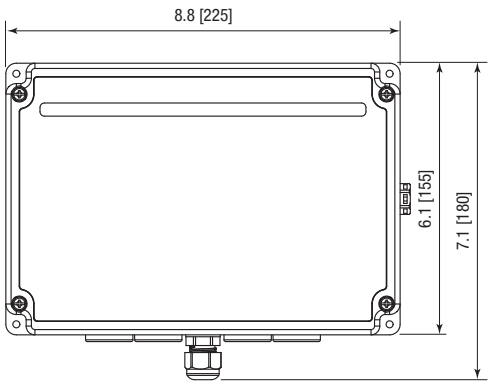
ProTec Box T1-xxxxPV-5Y(-S)(-RG)

Order Information		
Order Code	**1100**	**1500**
ProTec Box T1-xxxxPV-5Y-RG	515 936	-
ProTec Box T1-xxxxPV-5Y-S-RG	-	515 937

Dimensions & Packaging

inches [mm]





Complete Unit			
ProTec Box T1-xxxxPV-5Y(-S)(-RG)		**1100**	**1500**
Single Unit Weight	pounds [grams]	3.289 [1492]	3.739 [1696]
Packaging Dimensions (H × W × L)		4.1 x 8.7 x 10.8" [105 x 220 x 275 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec T1 PV-3Y(-S)-2MC-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

CE RoHS COMPLIANT

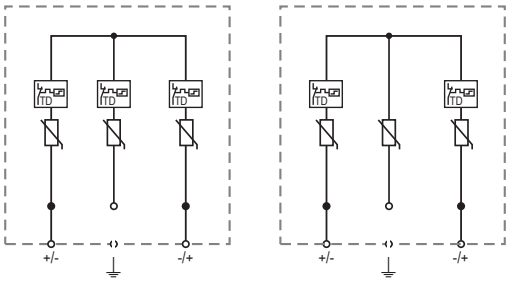
Technical Data

ProTec T1-xxxxPV-3Y(-S)-2MC-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Total Discharge Current (8/20 µs)		I_{total}	50 kA	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	50 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA	6.25 kA
Total Discharge Current (10/350 µs)		I_{total}	12.5 kA	12.5 kA
Specific Energy		W/R	9.77 kJ/Ω	9.77 kJ/Ω
Charge		Q	3.125 As	3.125 As
Voltage Protection Level		U_p	< 4.4 kV	< 5.2 kV
Rated Load Current		I_L	35 A	35 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
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%	
Pollution Degree			2	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (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	

Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



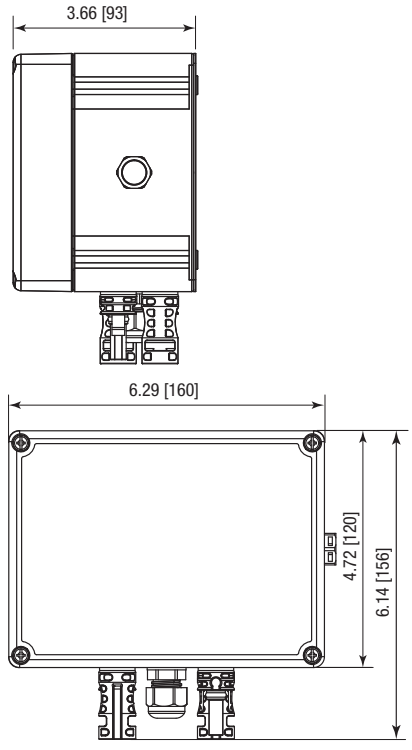
1100V Version *1500V Version*

ProTec T1-xxxxPV-3Y(-S)-2MC-Box

Order Information		
Order Code	**1100**	**1500**
ProTec T1-xxxxPV-3Y-2MC-Box	515 657	-
ProTec T1-xxxxPV-3Y-S-2MC-Box	-	515 659

Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T1-xxxxPV-3Y(-S)-2MC-Box			
Single Unit Weight	pounds [grams]	2.01 [915]	2.24 [1020]
Packaging Dimensions (H × W × L)		4.1 × 6.9 × 7.8" [105 × 175 × 200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec T1 PV-5Y(-S)-2MC-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

CE RoHS COMPLIANT

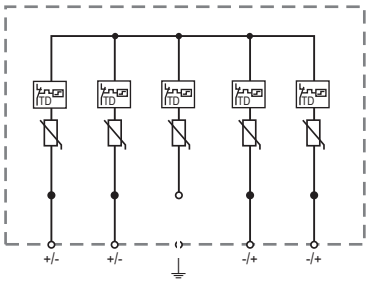
Technical Data

ProTec T1-xxxxPV-5Y(-S)-2MC-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Total Discharge Current (8/20 µs)		I_{total}	50 kA	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	50 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA	6.25 kA
Total Discharge Current (10/350 µs)		I_{total}	12.5 kA	12.5 kA
Specific Energy		W/R	9.77 kJ/Ω	9.77 kJ/Ω
Charge		Q	3.125 As	3.125 As
Voltage Protection Level		U_p	< 4.4 kV	< 5.2 kV
Rated Load Current		I_L	35 A	35 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
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%	
Pollution Degree			2	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (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	

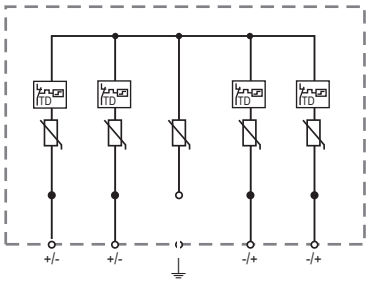
Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



1100V Version

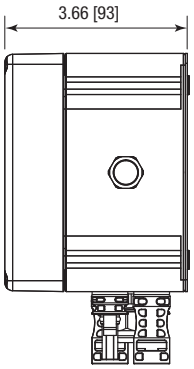


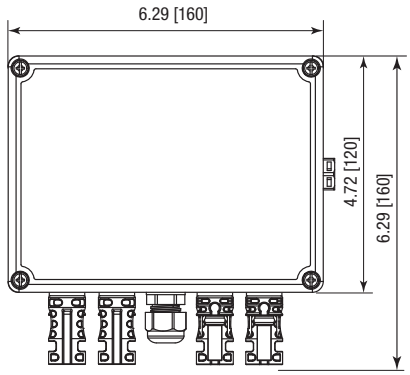
1500V Version

ProTec T1-xxxxPV-5Y(-S)-(x)MC-Box

Order Information		
Order Code	**1100**	**1500**
ProTec T1-xxxxPV-5Y-2MC-Box	515 658	-
ProTec T1-xxxxPV-5Y-S-2MC-Box	-	515 660

Dimensions & Packaging





inches [mm]

Complete Unit			
ProTec T1-xxxxPV-5Y(-S)-2MC-Box			
Single Unit Weight	pounds [grams]	2.53 [1151]	2.93 [1332]
Packaging Dimensions (H × W × L)		4.1 x 6.9 x 7.8" [105 x 175 x 200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec Box T1 7Y RG & 2MC4

Class I • Class II • Type 1 • Type 2

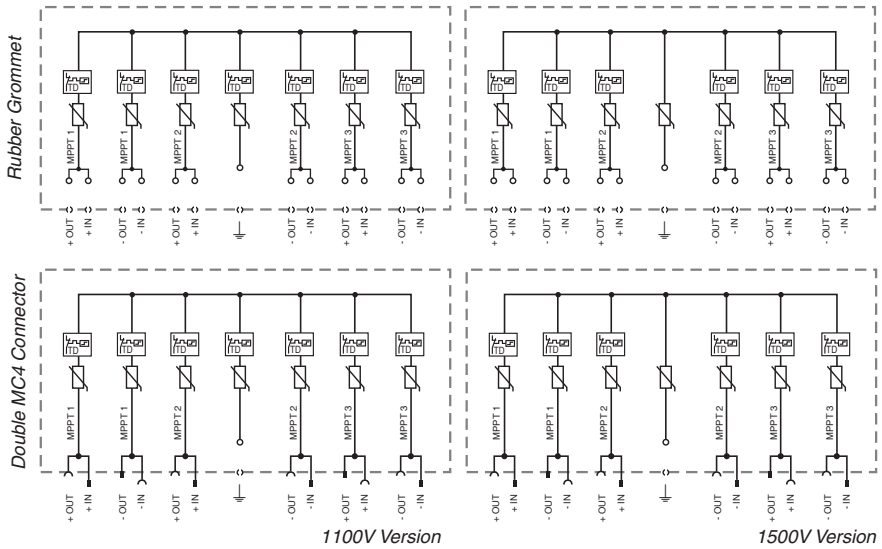
Location of Use: Photovoltaic Systems
Mode of Protection: (+)-PE, (-)-PE, (+)-(-)
IEC/EN Category: Class I+II, Type 1+2
Housing: Up to IP 67 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

Technical Data

ProTec Box T1-xxxxPV-7Y(-S)(-RG)(-2MC4)			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Total Discharge Current (8/20 µs)		I_{total}	50 kA	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	50 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA	6.25 kA
Total Discharge Current (10/350 µs)		I_{total}	12.5 kA	12.5 kA
Specific Energy		W/R	9.77 kJ/Ω	9.77 kJ/Ω
Charge		Q	3.125 As	3.125 As
Voltage Protection Level [Rubber Grommet]		U_p	4400 V	5200 V
Voltage Protection Level [Double MC Connector]		U_p	4400 V	5200 V
Rated Load Current [Rubber Grommet]		I_L	45 A	45 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	11 kA	30 kA
Number of Strings per MPPT			3	
Mechanical & Environmental				
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude			13123 ft [4000 m]	
Type of Cable Entry			Cable Gland / Rubber Grommet / MC4	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20 AWG [0.5 mm²] (stranded, flexible)	
	(max)		9 AWG [6 mm²] (stranded, flexible)	
Degree of Protection [Double MC4 Connector / 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	

Internal Configuration



Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*

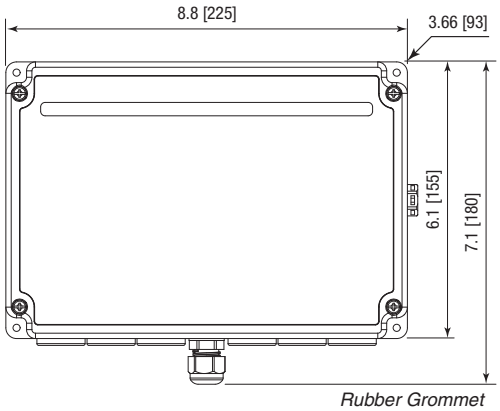
ProTec Box T1-xxxxPV-7Y(-S)(-RG)(-2MC4)

Order Information

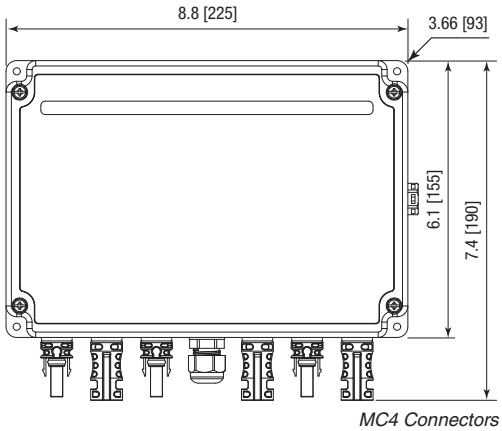
Order Code	1100	1500
ProTec Box T1-xxxxPV-7Y-RG (Rubber Grommet)	515 863	-
ProTec Box T1-xxxxPV-7Y-S-RG (Rubber Grommet)	-	515 864
ProTec Box T1-xxxxPV-7Y-2MC4 (Double MC4 Connectors)	515 850	-
ProTec Box T1-xxxxPV-7Y-S-2MC4 (Double MC4 Connectors)	-	515 851

Dimensions & Packaging

inches [mm]



Rubber Grommet



MC4 Connectors

Complete Unit

ProTec Box T1-xxxxPV-7Y(-S)(-RG)		**1100**	**1500**
Single Unit Weight	pounds [grams]	3.743 [1698]	4.361 [1978]
ProTec Box T1-xxxxPV-7Y(-S)(-2MC4)			
Single Unit Weight	pounds [grams]	3.699 [1678]	4.317 [1958]
Packaging Dimensions (H × W × L)		4.1 x 8.7 x 10.8" [105 x 220 x 275 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: IP 65 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

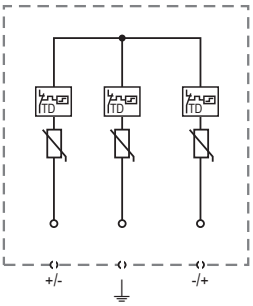
Technical Data

ProTec T2-xxxxPV-3Y-L-RG-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	15 kA
Total Discharge Current (8/20 µs)		I_{total}	40 kA	40 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	40 kA
Voltage Protection Level		U_p	< 4.2 kV	< 4.8 kV
Rated Load Current		I_L	35 A	35 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	9 kA	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%	
Pollution Degree			2	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20 AWG [0.5 mm²] (stranded, flexible)	
	(max)		9 AWG [6 mm²] (stranded, flexible)	
Degree of Protection [Cable Gland / Rubber Grommet]			IP 65	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Housing Material			Polycarbonate with Semi-transparent	
Mounting			Wall - Indoor/Outdoor	

Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*

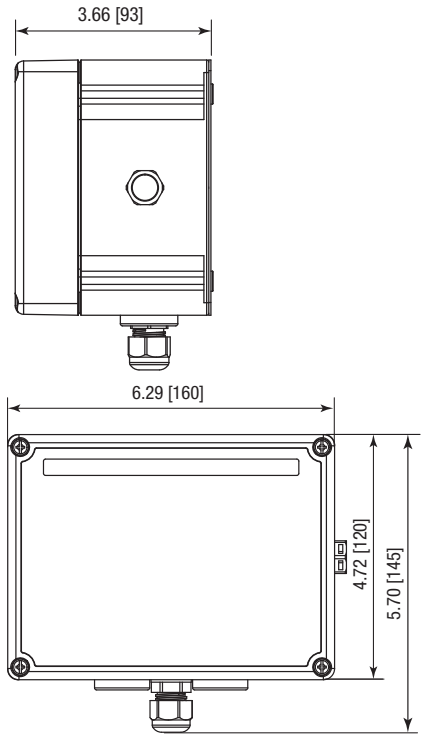


ProTec T2-xxxxPV-3Y-L-RG-Box

Order Information		
Order Code	**1100**	**1500**
ProTec T2-xxxxPV-3Y-L-RG-Box	515 646	515 648

Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T2-xxxxPV-3Y-L-RG-Box		**1100**	**1500**
Single Unit Weight	pounds [grams]	1.73 [787]	1.79 [814]
Packaging Dimensions (H × W × L)		4.1 x 6.9 x 7.8" [105 × 175 × 200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec Box T2 5Y RG

Class II • Type 2

Location of Use: Photovoltaic Systems
Mode of Protection: (+)-PE, (-)-PE, (+)-(-)
IEC/EN Category: Class II, Type 2
Housing: IP 65 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

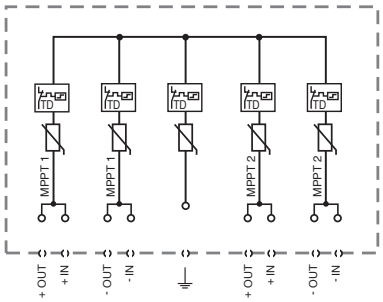
Technical Data

ProTec Box T2-xxxxPV-5Y(-L)(-RG)			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100V	1500V
Nominal Discharge Current (8/20µs)		I_n	20kA	15kA
Total Discharge Current (8/20µs)		I_{total}	40kA	40kA
Maximum Discharge Current (8/20µs)		I_{max}	40kA	40kA
Voltage Protection Level		U_p	4200V	4800V
Rated Load Current		I_L	45A	45A
Response Time		t_A	< 25ns	< 25ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	9kA	9kA
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%	
Pollution Degree			2	
Altitude			13123ft [4000m]	
Type of Cable Entry			Cable Gland / Rubber Grommet	
Wire Insulation Outer Diameter	(min)		.15" [4mm] (stranded, flexible)	
	(max)		.31" [8mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)		24 AWG [0.2mm²] (stranded, flexible)	
	(max)		5 AWG [16mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20 AWG [0.5mm²] (stranded, flexible)	
	(max)		9 AWG [6mm²] (stranded, flexible)	
Degree of Protection [Rubber Grommet]			IP 65	
Thermal Protection			Yes	
Operating State / Fault Indication			Green Flag / Not Green Flag	
Housing Material			Polycarbonate with Semi-transparent	
Mounting			Wall - Indoor/Outdoor	

Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



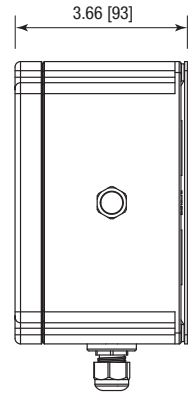
ProTec Box T2-xxxxPV-5Y(-S)(-RG)

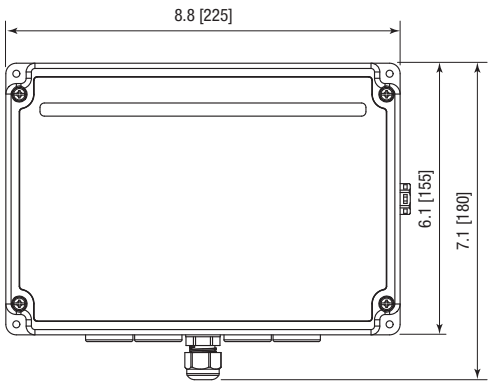
Order Information

Order Code	1100	1500
ProTec Box T2-xxxxPV-5Y-L-RG	515 938	-
ProTec Box T2-xxxxPV-5Y-L-RG	-	515 939

Dimensions & Packaging

inches [mm]





Complete Unit

ProTec Box T2-xxxxPV-5Y(-L)(-RG)		1100	1500
Single Unit Weight	pounds [grams]	2.800 [1270]	2.888 [1310]
Packaging Dimensions (H × W × L)		4.1 x 8.7 x 10.8" [105 x 220 x 275 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

CE RoHS COMPLIANT

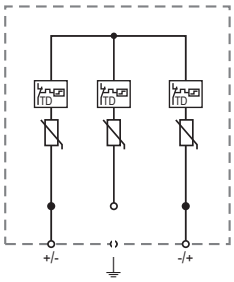
Technical Data

ProTec T2-xxxxPV-3Y-L-2MC-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	15 kA
Total Discharge Current (8/20 µs)		I_{total}	40 kA	40 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA	40 kA
Voltage Protection Level		U_p	< 4.2 kV	< 4.8 kV
Rated Load Current		I_L	35 A	35 A
Response Time		t_A	< 25 ns	< 25 ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	9 kA	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%	
Pollution Degree			2	
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 mm²] (stranded, flexible)	
	(max)		5 AWG [16 mm²] (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	

Internal Configuration

Legend

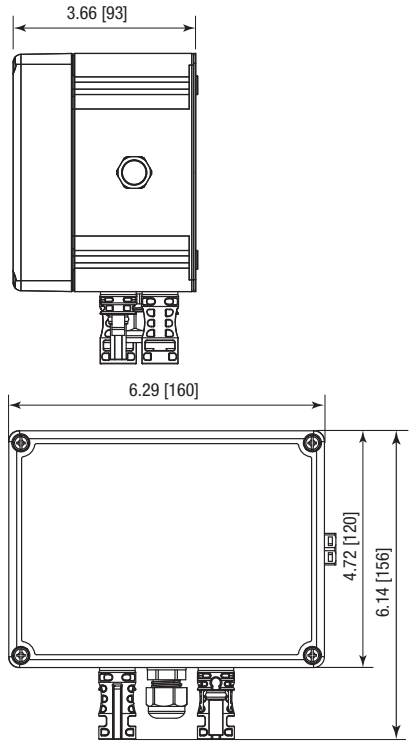
+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*



ProTec T2-xxxxPV-3Y-L-2MC-Box

Order Information		
Order Code	**1100**	**1500**
ProTec T2-xxxxPV-3Y-L-2MC-Box	515 654	515 656

Dimensions & Packaging



inches [mm]

Complete Unit			
ProTec T2-xxxxPV-3Y-L-2MC-Box			
Single Unit Weight	pounds [grams]	1.80 [821]	1.86 [848]
Packaging Dimensions (H × W × L)		4.1 x 6.9 x 7.8" [105 x 175 x 200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec T2 PV-5Y-L-2MC-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

CE RoHS COMPLIANT

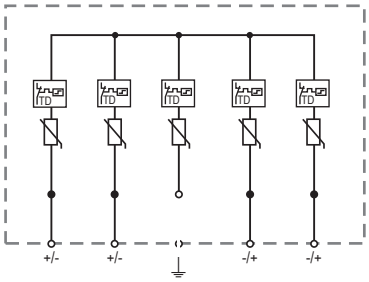
Technical Data

ProTec T2-xxxxPV-5Y-L-2MC-Box			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100V	1500V
Nominal Discharge Current (8/20µs)		I_n	20kA	15kA
Total Discharge Current (8/20µs)		I_{total}	40kA	40kA
Maximum Discharge Current (8/20µs)		I_{max}	40kA	40kA
Voltage Protection Level		U_p	< 4.2kV	< 4.8kV
Rated Load Current		I_L	35A	35A
Response Time		t_A	< 25ns	< 25ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	9kA	9kA
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%	
Pollution Degree			2	
Altitude			13123ft [4000m]	
Type of Cable Entry			Cable Gland / MC4 Connectors	
Wire Insulation Outer Diameter	(min)		.15" [4mm] (stranded, flexible)	
	(max)		.31" [8mm] (stranded, flexible)	
Conductor Cross Section Grounding [Cable Gland]	(min)		24 AWG [0.2mm²] (stranded, flexible)	
	(max)		5 AWG [16mm²] (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	

Internal Configuration

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*

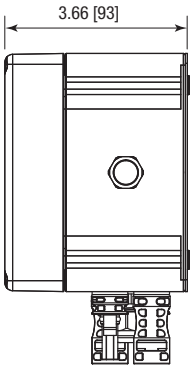


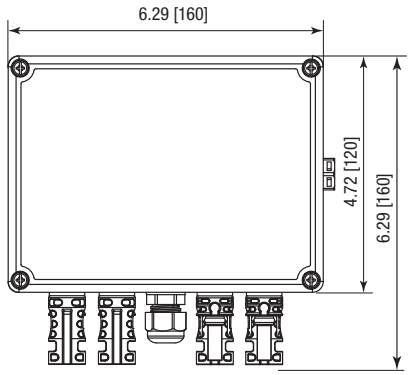
ProTec T2-xxxxPV-5Y-L-2MC-Box

Order Information		
Order Code	**1100**	**1500**
ProTec T2-xxxxPV-5Y-L-2MC-Box	515 653	515 655

Dimensions & Packaging

inches [mm]





Complete Unit			
ProTec T2-xxxxPV-5Y-L-2MC-Box			
Single Unit Weight	pounds [grams]	2.21 [1003]	2.26 [1029]
Packaging Dimensions (H × W × L)		4.1 x 6.9 x 7.8" [105 x 175 x 200 mm]	
Minimum Package Quantity		1 Unit	

Box with Multi-Pole SPD for Photovoltaic Systems

ProTec Box T2 7Y RG & 2MC4

Class II • Type 2

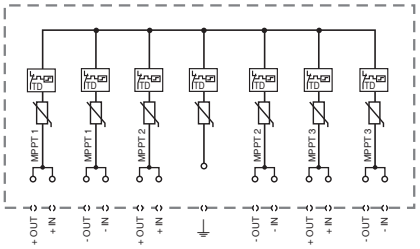
Location of Use: Photovoltaic Systems
Mode of Protection: (+)-PE, (-)-PE, (+)-(-)
IEC/EN Category: Class II, Type 2
Housing: Up to IP 67 Enclosure
Compliance: EN 61643-31:2019
IEC 61643-31:2018

CE RoHS COMPLIANT

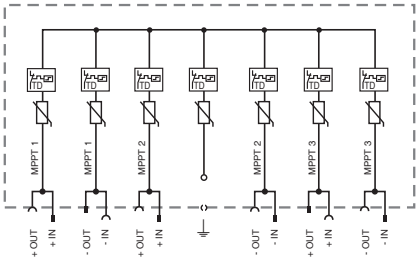
Technical Data

ProTec Box T2-xxxxPV-7Y(-L)(-RG)(-2MC4)			1100	1500
EN Electrical				
Maximum Continuous Operating Voltage (DC)		U_{CPV}	1100V	1500V
Nominal Discharge Current (8/20µs)		I_n	20kA	15kA
Total Discharge Current (8/20µs)		I_{total}	40kA	40kA
Maximum Discharge Current (8/20µs)		I_{max}	40kA	40kA
Voltage Protection Level [Rubber Grommet]		U_p	4200V	4800V
Voltage Protection Level [Double MC Connector]		U_p	4200V	5200V
Rated Load Current [Rubber Grommet]		I_L	45A	45A
Response Time		t_A	< 25ns	< 25ns
Overvoltage Category			III	III
Short Circuit Current Rating		I_{SCPV}	9kA	9kA
Number of Strings per MPPT			3	
Mechanical & Environmental				
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude			13123ft [4000m]	
Type of Cable Entry			Cable Gland / Rubber Grommet / MC4	
Wire Insulation Outer Diameter	(min)		.15" [4mm] (stranded, flexible)	
	(max)		.31" [8mm] (stranded, flexible)	
Conductor Cross Section [Cable Gland]	(min)		24AWG [0.2mm²] (stranded, flexible)	
	(max)		5 AWG [16mm²] (stranded, flexible)	
2 Conductors with Same Cross Section and Twin Ferrule [Rubber Grommet]	(min)		20AWG [0.5mm²] (stranded, flexible)	
	(max)		9 AWG [6mm²] (stranded, flexible)	
Degree of Protection [Double MC4 / 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	

Internal Configuration



Rubber Grommet



Double MC Connector

Legend

+/-, -/+	*Terminal for +/-, -/+ Conductor*
⏚	*Terminal for PE/G Conductor*
TD	*Thermal Disconnector*

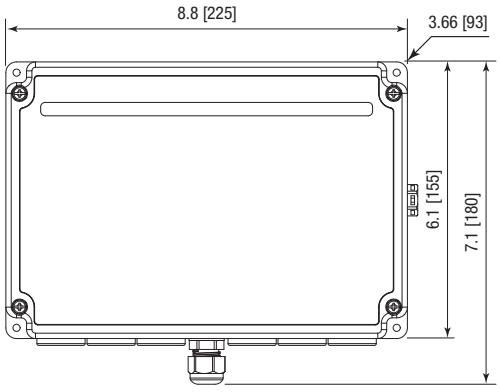
ProTec Box T2-xxxxPV-7Y(-S)(-RG)(-2MC4)

Order Information

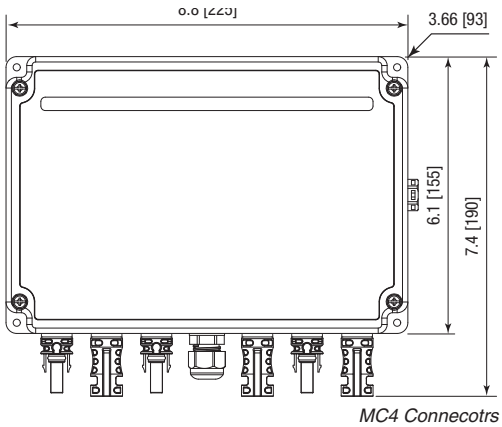
Order Code	1100	1500
ProTec Box T2-xxxxPV-7Y-L-RG (Rubber Grommet)	515 865	-
ProTec Box T2-xxxxPV-7Y-L-RG (Rubber Grommet)	-	515 866
ProTec Box T2-xxxxPV-7Y-L-2MC4 (Double MC4)	515 852	-
ProTec Box T2-xxxxPV-7Y-L-2MC4 (Double MC4)	-	515 853

Dimensions & Packaging

inches [mm]



Rubber Grommet



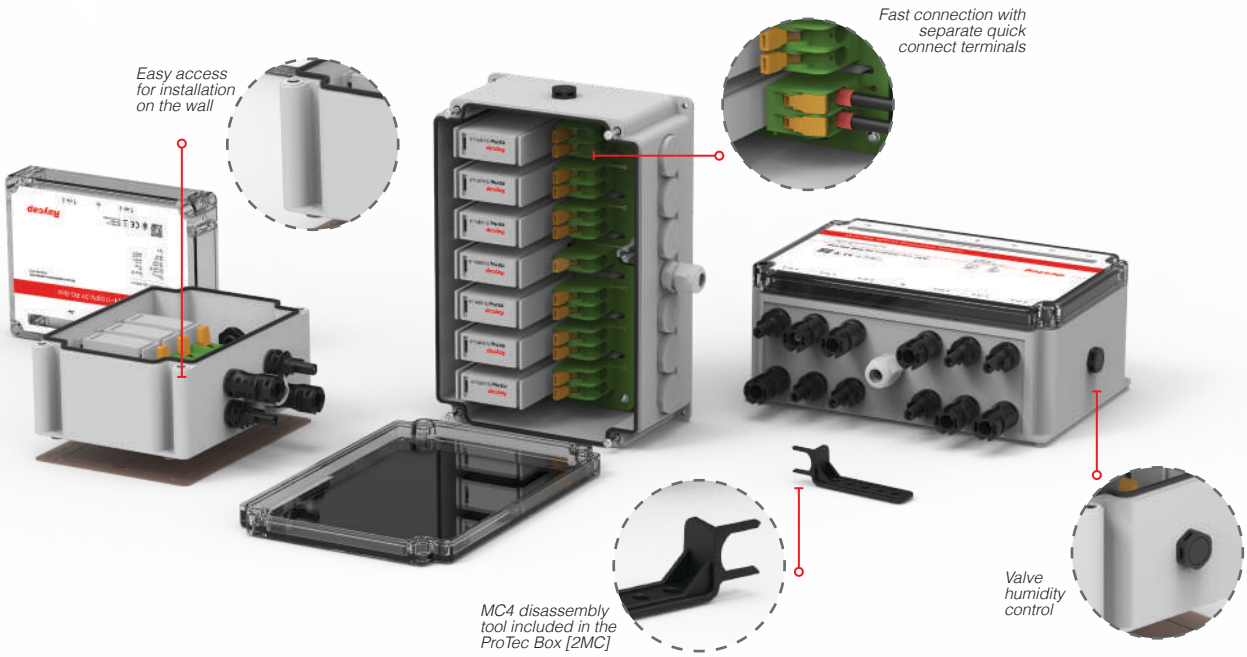
MC4 Connecotrs

Complete Unit

ProTec Box T2-xxxxPV-7Y(-L)(-RG)		**1100**	**1500**
Single Unit Weight	pounds [grams]	3.073 [1394]	3.197 [1450]
ProTec Box T2-xxxxPV-7Y(-L)(-2MC4)			
Single Unit Weight	pounds [grams]	3.029 [1374]	3.153 [1430]
Packaging Dimensions (H × W × L)		4.1 x 8.7 x 10.8" [105 x 220 x 275mm]	
Minimum Package Quantity		1 Unit	

ProTec PV Box Series

Product Selector



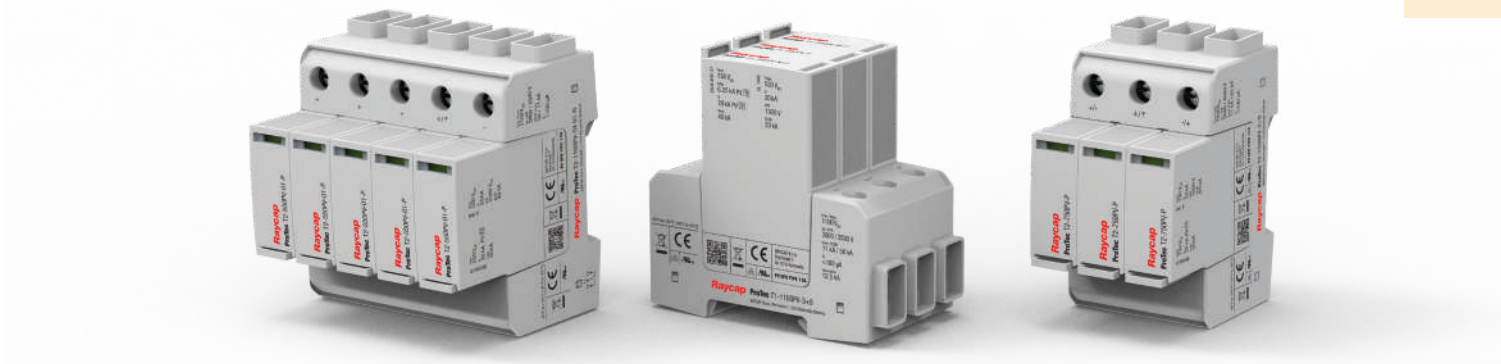
	Technical Features		Classification		Product Name	Order Code
RUBBER GROMMETS	• **T and V connection** • Quick connect terminals on PCB • IP65 ingress protection		1 MPPT [3Y]	TYPE 1	ProTec T1-1100PV-3Y-RG-Box	515 649
					ProTec T1-1500PV-3Y-S-RG-Box	515 651
				TYPE 2	ProTec T2-1100PV-3Y-L-RG-Box	515 646
					ProTec T2-1500PV-3Y-L-RG-Box	515 648
			2 MPPT [5Y]	TYPE 1	ProTec Box T1-1100PV-5Y-RG	515 936
					ProTec Box T1-1500PV-5Y-S-RG	515 937
				TYPE 2	ProTec Box T2-1100PV-5Y-L-RG	515 938
					ProTec Box T2-1500PV-5Y-L-RG	515 939
			3 MPPT [7Y]	TYPE 1	ProTec Box T1-1100PV-7Y-RG	515 863
					ProTec Box T1-1500PV-7Y-S-RG	515 864
				TYPE 2	ProTec Box T2-1100PV-7Y-L-RG	515 865
					ProTec Box T2-1500PV-7Y-L-RG	515 866
DOUBLE MC4 CONNECTORS	• **V connection** • Fast installation • Connectors on PCB preconnected to MC4 • IP67 ingress protection		1 MPPT [3Y]	TYPE 1	ProTec T1-1100PV-3Y-2MC-Box	515 657
					ProTec T1-1500PV-3Y-S-2MC-Box	515 659
				TYPE 2	ProTec T2-1100PV-3Y-L-2MC-Box	515 654
					ProTec T2-1500PV-3Y-L-2MC-Box	515 656
			2 MPPT [5Y]	TYPE 1	ProTec T1-1100PV-5Y-2MC-Box	515 658
					ProTec T1-1500PV-5Y-S-2MC-Box	515 660
				TYPE 2	ProTec T2-1100PV-5Y-L-2MC-Box	515 653
					ProTec T2-1500PV-5Y-L-2MC-Box	515 655
			3 MPPT [7Y]	TYPE 1	ProTec Box T1-1100PV-7Y-2MC4	515 850
					ProTec Box T1-1500PV-7Y-S-2MC4	515 851
				TYPE 2	ProTec Box T2-1100PV-7Y-L-2MC4	515 852
					ProTec Box T2-1500PV-7Y-L-2MC4	515 853

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 disconnector
- Short circuit current rating up to 30 kA
- Sensitive and reliable remote contact



ProTec T1 PV 5Y Series

ProTec T2 PV 5Y Series

ProTec T1 PV Series

ProTec T2 PV Series

More Product Information

IEC 61643-31:2018	EN 61643-31:2019	UL 1449 5th Edition
✓	✓	✓

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 1100 V DC and 1500 V DC 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 30 kA.

RoHS COMPLIANT

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

CE RoHS COMPLIANT

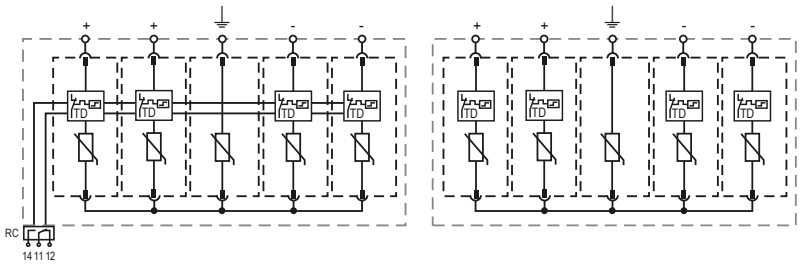
Technical Data

ProTec T1-xxxxPV-5Y-00(-R)			1100
EN Electrical			
Maximum Continuous Operating Voltage (PV)		U_{CPV}	1100 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	5 kA
Specific Energy		W/R	6.25 kJ/Ω
Charge		Q	2.5 As
Total Discharge Current (10/350 µs)		I_{Total}	10 kA
Total Discharge Current (8/20 µs)		I_{Total}	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA
Voltage Protection Level	(+/-)-PE	U_p	3800 V
	(+)-(-)	U_p	3800 V
Overvoltage Category			III
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 µs)		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 µs)		U_{res}	3000 V
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

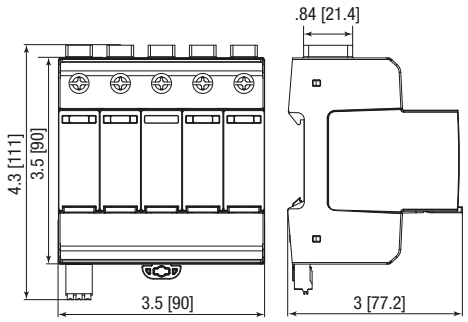


ProTec T1-xxxxPV-5Y-00(-R)

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

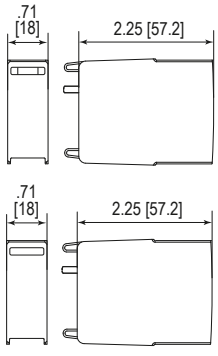
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxxxPV-5Y-00		**1100**
Weight	pounds	1.536
	grams	697
ProTec T1-xxxxPV-5Y-00-R		
Weight	pounds	1.552
	grams	704
DIN 43880 Dimension		5 TE / 3.5" [90 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		3 Units

Spare Plug



SIngle Unit		
ProTec T1-550PV-00M-P		**550**
Weight	pounds	.202
	grams	92
ProTec T1-550PV-00-P		
Weight	pounds	.182
	grams	83
Single Unit DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.2 × 4.5 × 12" [83 × 116 × 305 mm]
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

RoHS COMPLIANT

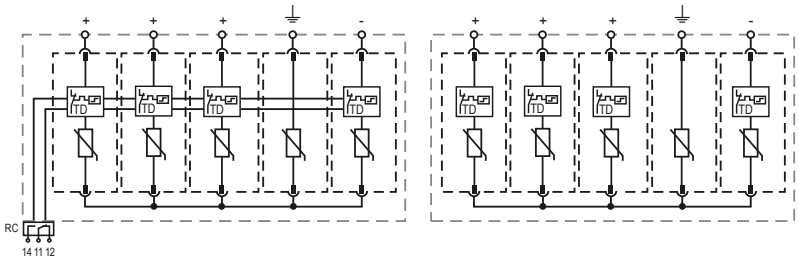
Technical Data

ProTec T1-xxxxPV-5Y-01(-R)			1100
EN Electrical			
Maximum Continuous Operating Voltage (PV)		U_{CPV}	1100 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	5 kA
Specific Energy		W/R	6.25 kJ/Ω
Charge		Q	2.5 As
Total Discharge Current (10/350 µs)		I_{Total}	10 kA
Total Discharge Current (8/20 µs)		I_{Total}	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA
Voltage Protection Level	(+/-)-PE	U_p	3800 V
	(+)-(-)	U_p	3800 V
Overvoltage Category			III
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 µs)		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 µs)		U_{res}	2900 V
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

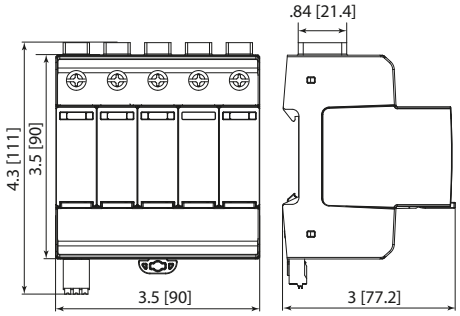


ProTec T1-xxxxPV-5Y-01(-R)

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

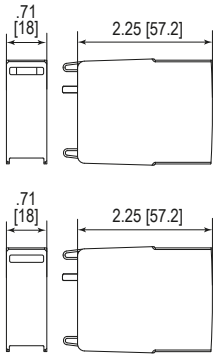
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxxxPV-5Y-01		**1100**
Weight	pounds	1.536
	grams	697
ProTec T1-xxxxPV-5Y-01-R		
Weight	pounds	1.552
	grams	704
DIN 43880 Dimension		5 TE / 3.5" [90 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		3 Units

Spare Plug



SIngle Unit		
ProTec T1-550PV-01M-P		**550**
Weight	pounds	.202
	grams	92
ProTec T1-550PV-01-P		
Weight	pounds	.182
	grams	83
Single Unit DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.2 × 4.5 × 12" [83 × 116 × 305 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

CE RoHS COMPLIANT

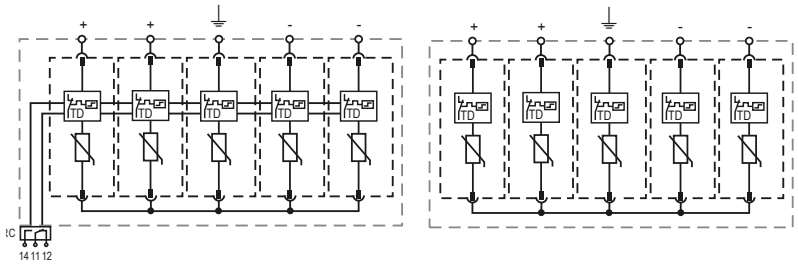
Technical Data

ProTec T2-xxxxPV-5Y-00(-R)			1100
EN Electrical			
Maximum Continuous Operating Voltage (PV)		U_{CPV}	1100 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Total Discharge Current (8/20 µs)		I_{Total}	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA
Voltage Protection Level	(+/-)-PE	U_p	3800 V
	(+)-(-)	U_p	3800 V
Overvoltage Category			III
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 µs)		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 µs)		U_{res}	3000 V
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

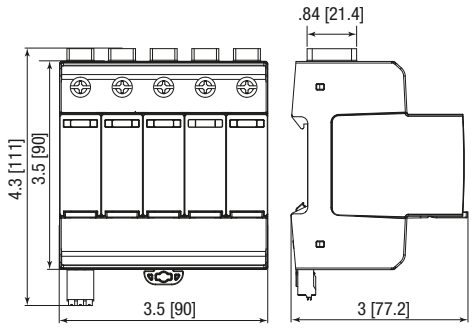


ProTec T2-xxxxPV-5Y-00(-R)

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

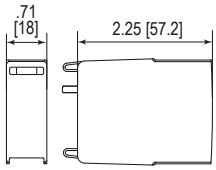
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2-xxxxPV-5Y-00		**1100**
Weight	pounds	1.313
	grams	596
ProTec T2-xxxxPV-5Y-00-R		
Weight	pounds	1.329
	grams	603
DIN 43880 Dimension		5 TE / 3.5" [90 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		3 Units

Spare Plug



SIngle Unit		
ProTec T2-xxxPV-00-P		**550**
Weight	pounds	.145
	grams	66
Single Unit DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.2 × 4.5 × 12" [83 × 116 × 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

CE cULus RoHS COMPLIANT

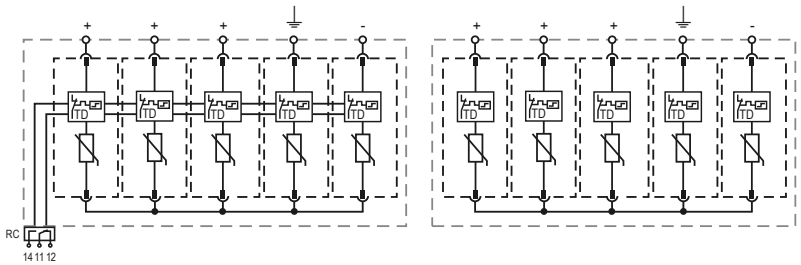
Technical Data

ProTec T2-xxxxPV-5Y-01(-R)			1100
EN Electrical			
Maximum Continuous Operating Voltage (PV)		U_{CPV}	1100 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Total Discharge Current (8/20 µs)		I_{Total}	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA
Voltage Protection Level	(+/-)-PE	U_p	3800 V
	(+)-(-)	U_p	3800 V
Overvoltage Category			III
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 µs)		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 µs)		U_{res}	2900 V
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

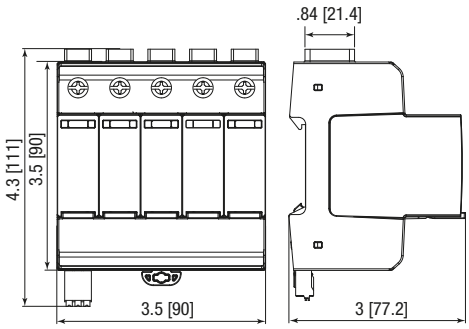


ProTec T2-xxxxPV-5Y-01(-R)

Order Information	
Order Code	**1100**
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.A476

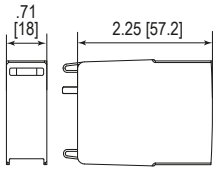
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T2-xxxxPV-5Y-01		**1100**
Weight	pounds	1.313
	grams	596
ProTec T2-xxxxPV-5Y-01-R		
Weight	pounds	1.329
	grams	603
DIN 43880 Dimension		5 TE / 3.5" [90 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		3 Units

Spare Plug



SIngle Unit		
ProTec T2-xxxPV-01-P		**550**
Weight	pounds	.145
	grams	66
Single Unit DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.2 × 4.5 × 12" [83 × 116 × 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

RoHS COMPLIANT

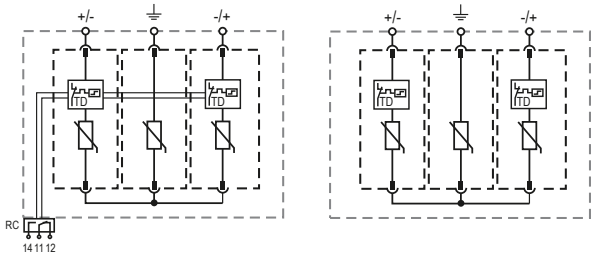
Technical Data

ProTec T1-xxxxPV-3+0-S(-R)			1500
EN Electrical			
Maximum Continuous Operating DC Voltage		U_{CPV}	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA
Specific Energy		W/R	9.77 kJ/Ω
Charge		Q	3.125As
Total Discharge Current (10/350 µs)		I_{Total}	12.5 kA
Total Discharge Current (8/20 µs)		I_{Total}	60 kA
Maximum Discharge Current (8/20 µs)		I_{max}	60 kA
Voltage Protection Level	(+)-PE, (-)-PE	U_p	4500 V
	(+)-(-)	U_p	4500 V
Response Time		t_A	< 25 ns
Overvoltage Category			III
Short-Circuit Current Rating		I_{SCPV}	30 kA
Number of Ports			1
UL Electrical			
Maximum Permitted DC Voltage		V_{pvdc}	1500 V
Voltage Protection Rating	(+)-G, (-)-G	VPR	3000 V
	(+)-(-)	VPR	3000 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Short-Circuit Current Rating		SCCR	100 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*			
Residual Voltage at 5 kA (8/20 µs)		U_{res}	3400 V
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%
Pollution Degree			2
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 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			10 AWG (Solid, Stranded) per UL 1449 [1.5 mm² (Solid)]
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

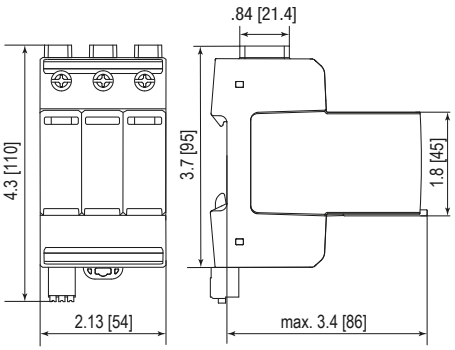


ProTec T1-xxxxPV-3+0-S(-R)

Order Information	
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

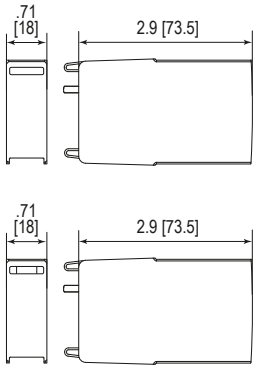
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxxxPV-3+0-S		**1500**
Weight	pounds	1.034
	grams	469
ProTec T1-xxxxPV-3+0-S-R		
Weight	pounds	1.045
	grams	474
Single Unit DIN 43880 Dimension		3 TE / 2.13 [54 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		5 Units

Spare Plug



SIngle Unit		
ProTec T1-xxxPV-S-P		**750**
Weight	pounds	.282
	grams	128
ProTec T1-xxxPV-S-M-P		
Weight	pounds	.196
	grams	89
Single Unit DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
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

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
Compliance: IEC 61643-31:2018
EN 61643-31:2019
UL 1449 5th Edition

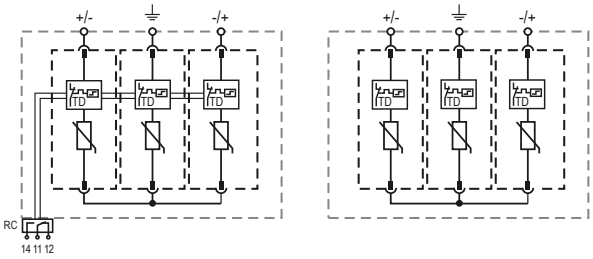
RoHS COMPLIANT

ProTec T1-xxxxPV-3+0(-R)			1100
EN Electrical			
Maximum Continuous Operating Voltage (PV)		U_{CPV}	1100 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	6.25 kA
Specific Energy		W/R	9.77 kJ/Ω
Charge		Q	3.125 As
Total Discharge Current (10/350 µs)		I_{Total}	12.5 kA
Total Discharge Current (8/20 µs)		I_{Total}	50 kA
Maximum Discharge Current (8/20 µs)		I_{max}	40 kA
Voltage Protection Level	(+)-PE, (-)-PE	U_p	3800 V
	(+)-(-)	U_p	3800 V
Response Time		t_A	< 25 ns
Overvoltage Category			III
Short-Circuit Current Rating		I_{SCPV}	11 kA
Number of Ports			1
UL Electrical			
Maximum Permitted DC Voltage		V_{pvdc}	1100 V
Voltage Protection Rating	(+)-G, (-)-G	VPR	2500 V
	(+)-(-)	VPR	2500 V
Nominal Discharge Current (8/20 µs)		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 µs)		U_{res}	3200 V
Mechanical & Environmental			
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity		RH	5%...95%
Pollution Degree			2
Altitude (max)			13123 ft [4000 m]
Terminal Screw Torque		M_{max}	40 lbf·in [4.5 Nm]
Conductor Cross Section (max)			2 AWG (Solid, Stranded) / 4 AWG (Flexible)
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715
Degree Of Protection			IP 20 (built-in)
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Operating State / Fault Indication			Green Flag / Not Green Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V / 1A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

+/-, -/+ + or - Conductor Terminal
⏚ PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector

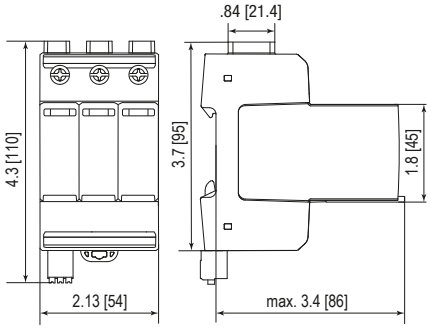


ProTec T1-xxxxPV-3+0(-R)

Order Information	
Order Code	**1100**
ProTec T1-xxxxPV-3+0	59.0285
ProTec T1-xxxxPV-3+0-R (with remote contacts)	59.0286
ProTec T1-550PV-P (middle plug)	59.0283
ProTec T1-550PV-M-P (side plug)	59.0284

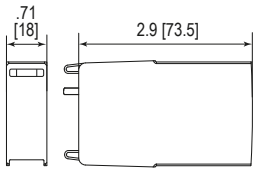
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec T1-xxxxPV-3+0		**1100**
Weight	pounds	.968
	grams	439
ProTec T1-xxxxPV-3+0-R		
Weight	pounds	.979
	grams	444
DIN 43880 Dimension		3 TE / 2.13" [54 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		5 Units

Spare Plug



Single Unit		
ProTec T1-xxxPV-P		**550**
Weight	pounds	.220
	grams	100
ProTec T1-xxxPV-M-P		
Weight	pounds	.194
	grams	88
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		4.3 × 4.5 × 13.8" [109 × 115 × 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

Location of Use: String box, Inverter
Mode of Protection: (+)-PE, (-)-PE, (+)-(-)
EN/UL Category: Type 2 / PV SPD Type 1CA
Housing: Pluggable Design
Compliance: IEC 61643-31:2018
UL 1449 5th Edition

RoHS COMPLIANT

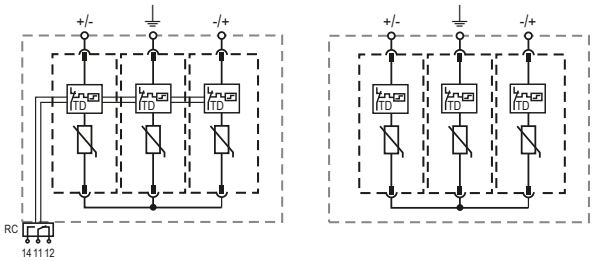
Technical Data

ProTec T2-xxxxPV-3+0(-R)		1100	1500
EN Electrical			
Maximum Continuous Operating Voltage (PV)	U_{CPV}	1100 V	1500 V
Nominal Discharge Current (8/20 µs)	I_n	20 kA	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA	30 kA
Total Discharge Current	I_{Total}	50 kA	40 kA
Voltage Protection Level	U_p	3800 V	5000 V
Response Time	t_A	< 25 ns	
Overvoltage Category		III	
Short-Circuit Current Rating	I_{SCPV}	11 kA	
Number of Ports		1	
UL Electrical			
Maximum Permitted DC Voltage	V_{pvdc}	1100 V	1500 V
Voltage Protection Rating	VPR	2500 V	4000 V
Nominal Discharge Current (8/20 µs)	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)*			
Residual Voltage at 5 kA (8/20 µs)	U_{res}	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%	
Pollution Degree		2	
Altitude (max)		13123 ft [4000 m]	
Terminal Screw Torque	M_{max}	40 lbf·in [4.5 Nm]	
Conductor Cross Section (max)		2 AWG (Solid, Stranded) / 4 AWG (Flexible)	
		35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
Mounting		35 mm DIN Rail, EN 60715	
Degree of Protection		IP 20 (built-in)	
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0	
Thermal Protection		Yes	
Operating State / Fault Indication		Green Flag / Not Green Flag	
Remote Contacts (RC)		Optional	
RC Switching Capacity		AC: 250 V / 1 A, 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category		III	

Internal Configuration

Legend

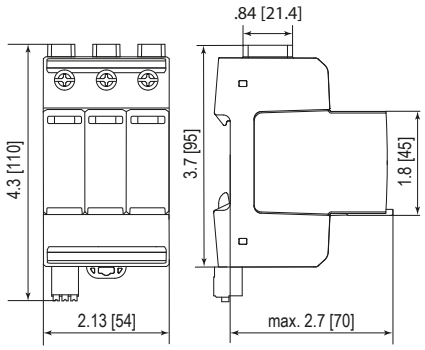
+/-, -/+ + or - Conductor Terminal
PE/G Conductor Terminal
RC Remote Contacts Terminal (Optional)
TD Thermal Disconnector



Order Information		
Order Code	**1100**	**1500**
ProTec T2-xxxxPV-3+0	59.0292	59.0295
ProTec T2-xxxxPV-3+0-R (with remote contacts)	59.0293	59.0296
ProTec T2-550PV-P (plug)	59.0291	-
ProTec T2-750PV-P (plug)	-	59.0294

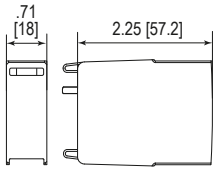
Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T2-xxxxPV-3+0		**1100**	**1500**
Weight	pounds	.806	.879
	grams	366	399
ProTec T2-xxxxPV-3+0-R			
Weight	pounds	.817	.890
	grams	371	404
DIN 43880 Dimension		3 TE / 2.13" [54 mm]	
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		5 Units	

Spare Plug

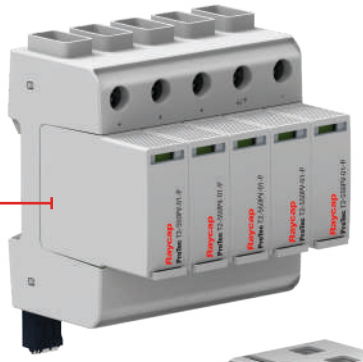


SIngle Unit			
ProTec T2-xxxPV-P		**550**	**750**
Weight	pounds	.150	.174
	grams	68	79
DIN 43880 Dimension		1 TE / .71" [18 mm]	
Packaging Dimensions (HxWxL)		3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity		24 Units	

Complete Range of Protection Solutions for PV Systems

Lower Voltage SPDs for PV Systems

A wide portfolio of products in various shapes and lower voltages is also available on the QR code.



ProTec T1 & T2 5Y 1100V
Products feature different connection options and UL certifications.

ProTec T2 PV Series
Voltage ranges of 125V and 250V available in 1+0 and 2+0 configurations.

Multi-pole SPD
Available in standard and lower voltage (300V and 600V) format.

Pluggable Multi-pole Surge Protective Devices (SPDs) for DC Systems

Lightning and Overvoltage Protection for DC Systems

ProTec T2 DCU & ProTec T2 DCB

ProTec T2 DCU & DCB:

- For use in various DC systems and EV fast chargers
- Available in Bipolar and Unipolar SPD versions
- Available in operating voltages from 250 V to 1500 V
- Optional remote contact (RC) signaling
- Vibration and shock withstand capability
- DC SPD Type 1 CA

ProTec T2 DCGU:

- For use in EV fast chargers (DC)
- Available as Unipolar SPD version
- Available in operating voltages 1000 V and 1500 V
- Optional remote contact (RC) signaling
- Vibration and shock withstand capability
- DC SPD Type 4 CA

IEC 61643-41:2025	UL 1449 5th Edition, Supplement SB
	Supplement SB - Direct Current (DC) SPDs
✓	✓

Raycap has developed a DC DIN rail SPD portfolio that meets the requirements of the IEC 61643-41:2025 DC SPD sub-standard under IEC 61643 and is at the same time certified to UL 1449 5th Edition under requirements of SUPPLEMENT SB – DIRECT CURRENT (DC) SPDs. This DC surge protection standard is necessary because existing Power SPDs, compliant with the IEC 61643-31 DC PV SPD supplement or IEC 61643-11 AC SPDs, do not cover requirements present in DC applications.

ProTec T2 DCB & DCU

ProTec T2 DCGU

More Product Information

RoHS COMPLIANT

Pluggable Multi-Pole SPD for DC Systems

ProTec T2 DCB 3Y

Bipolar

Class II • DC SPD Type 1

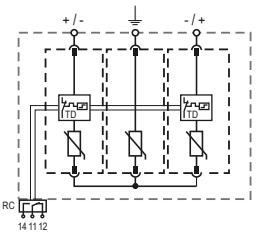
Location of Use: DC Systems, EV Chargers
Network Systems: Bipolar grounded, TN-C, TN-C-S, TN-S
Mode of Protection: (+)-PE/M/G, (-)-PE/M/G, (+)-(-)
IEC/UL Category: Class II, DC SPD Type 1
Housing: Pluggable Design
Compliance: IEC 61643-41:2025, UL 1449 5th Edition, Supplement SB

Technical Data

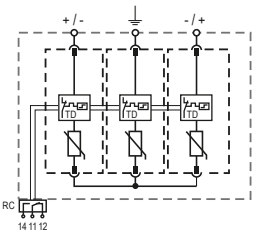
ProTec T2-xxxxDCB-3Y(-R)			250	500	750
IEC Electrical					
Nominal DC System Voltage	(+)/(-)-PE/M	U_n	250 V	500 V	750 V
Maximum Continuous Operating Voltage (DC)	(+)-(-)	U_c	500 V	1000 V	1500 V
	(+)/(-)-PE/M	U_c	250 V	500 V	750 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA	20 kA
Maximum Discharge Current		I_{max}	40 kA	40 kA	40 kA
Total Discharge Current (8/20 µs)		I_{Total}	70 kA	70 kA	55 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	5 kA	5 kA	2.8 kA
Total Discharge Current (10/350 µs)		I_{Total}	10 kA	10 kA	3 kA
Voltage Protection Level	(+)-(-)	U_p	2400 V	3150 V	3700 V
	(+)/(-)-PE/M	U_p	2400 V	3150 V	3700 V
Response Time		t_A		< 25 ns	
Overvoltage Category				III	
Backup fuse, if required			200 A gBat*	200 A gBat**	200 A gBat**
Short-Circuit Current Rating (DC)		I_{SCCR}		30 kA (L/R < 3 ms)	
Number of Ports				1	
TN-System Bipolar					
TOV Withstand 5s (DC)	(+)/(-)-PE/M	U_T	412 V	825 V	1238 V
TOV Withstand 120min (DC)	(+)/(-)-PE/M	U_T	550 V	1100 V	1650 V
TT-System Bipolar					
TOV Withstand 5s (DC)	(+)/(-)-PE	U_T	550 V	1100 V	1650 V
TOV Withstand 120min (DC)	(+)/(-)-PE	U_T	412 V	825 V	1238 V
TOV Withstand 5s (DC)	(+)/(-)-M	U_T	412 V	825 V	1238 V
TOV Withstand 120min (DC)	(+)/(-)-M	U_T	550 V	1100 V	1650 V
UL Electrical					
Maximum Permitted DC Voltage	(+)-(-)	V_{dcmcov}	500 V	1000 V	1500 V
	(+)/(-)-G	V_{dcmcov}	500 V	1000 V	1500 V
Voltage Protection Rating		VPR	1800 V	2500 V	3000 V
Nominal Discharge Current (8/20 µs)		I_n		20 kA	
Short-Circuit Current Rating (DC)		SCCR		100 kA	
Mechanical & Environmental					
Operating Temperature Range		T_a		-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity / Pollution Degree		RH		5%...95% / 2	
Altitude (max)				6562 ft [2000 m]	
Terminal Screw Torque		M_{max}		35 lbf·in per UL 1449 [4.5 Nm]	
Conductor Cross Section (max)				6 AWG (Solid, Stranded) per UL 1449	
				35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
				Cu Only per UL 1449	
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 / Operating State / Fault Indication				Yes / Green Flag / Not Green Flag	
Remote Contacts (RC)				Optional	
RC Switching Capacity				AC: 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)				16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category				III	

*ETI NH1 BAT 200A/500V DC (004723266), **ETI NH1 BAT 200A/1500V DC (004110656)

Internal Configuration



ProTec T2-250DCB-3Y(-R)
ProTec T2-500DCB-3Y(-R)



ProTec T2-750DCB-3Y(-R)

Legend

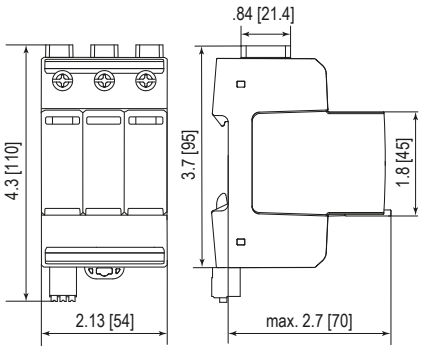
⏚ *PE/M/G Conductor Terminal*
RC *Remote Contacts Terminal (Optional)*
TD *Thermal Disconnector*

Order Information

Order Code	250	500	750
ProTec T2-xxxDCB-3Y	59.A955	59.A957	59.A959
ProTec T2-xxxDCB-3Y-R (with remote contacts)	59.A956	59.A958	59.A960
ProTec T2-250DCB-M-P (side plug)	59.A961	-	-
ProTec T2-250DCB-P (middle plug)	59.A962	-	-
ProTec T2-500DCB-M-P (side plug)	-	59.A963	-
ProTec T2-500DCB-P (middle plug)	-	59.A964	-
ProTec T2-750DCB-M-P (plug)	-	-	59.A965

Dimensions & Packaging

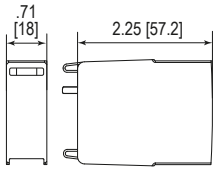
inches [mm]



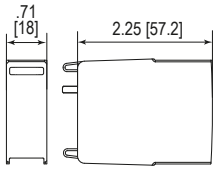
Complete Unit

ProTec T2-xxxxDCB-3Y		**250**	**500**	**750**
Weight	pounds	.772	.831	.791
	grams	350	377	359
ProTec T2-xxxxDCB-3Y-R				
Weight	pounds	.789	.849	.809
	grams	358	385	367
DIN 43880 Dimension		3 TE / 2.13" [54 mm]		
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity		5 Units		

Spare Plug



ProTec T2-250DCB-M-P
ProTec T2-500DCB-M-P
ProTec T2-750DCB-M-P



ProTec T2-250DCB-P
ProTec T2-500DCB-P

Single Unit

ProTec T2-xxxDCB-M-P		**250**	**500**	**750**
Weight	pounds	.141	.161	.146
	grams	64	73	66
ProTec T2-xxxDCB-P				
Weight	pounds	.134	.157	-
	grams	61	71	-
DIN 43880 Dimension		1 TE / .70" [18 mm]		
Packaging Dimensions (HxWxL)		3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity		24 Units		

Pluggable Multi-Pole SPD for DC Systems

ProTec T2 DCU 3Y

Unipolar

Class II • DC SPD Type 1

Location of Use: DC Systems, EV Chargers
Network Systems: Unipolar grounded / ungrounded, TN, TT*, IT*
Mode of Protection: (+)-PE /G, (-)-PE /G, (+)-(-)
IEC/UL Category: Class II, DC SPD Type 1
Housing: Pluggable Design
Compliance: IEC 61643-41:2025
UL 1449 5th Edition, Supplement SB

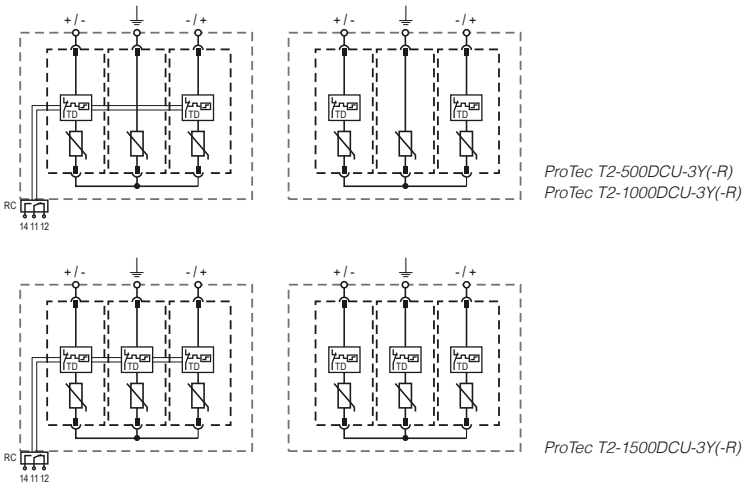
RoHS COMPLIANT

Technical Data

ProTec T2-xxxxDCU-3Y(-R)			500	1000	1500
IEC Electrical					
Nominal DC System Voltage	(+)-(-)	U_n	500 V	1000 V	1500 V
Maximum Continuous Operating Voltage (DC)	(+)-(-)	U_c	500 V	1000 V	1500 V
	(+)/(-)-PE	U_c	500 V	1000 V	1500 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA	20 kA
Maximum Discharge Current		I_{max}	40 kA	40 kA	40 kA
Total Discharge Current (8/20 µs)		I_{Total}	70 kA	70 kA	55 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	5 kA	5 kA	2.8 kA
Total Discharge Current (10/350 µs)		I_{Total}	10 kA	10 kA	3 kA
Voltage Protection Level	(+)-(-)	U_p	2400 V	3150 V	3700 V
	(+)/(-)-PE	U_p	2400 V	3150 V	3700 V
Response Time		t_A		<25 ns	
Overvoltage Category				III	
Backup fuse, if required			200 A gBat**	200 A gBat***	200 A gBat***
Short-Circuit Current Rating (DC)		I_{SCCR}		30 kA (L/R < 3 ms)	
Number of Ports				1	
UL Electrical					
Maximum Permitted DC Voltage	(+)-(-)	V_{dcmcov}	500 V	1000 V	1500 V
	(+)/(-)-G	V_{dcmcov}	500 V	1000 V	1500 V
Voltage Protection Rating		VPR	1800 V	2500 V	3000 V
Nominal Discharge Current (8/20 µs)		I_n		20 kA	
Short-Circuit Current Rating (DC)		SCCR		100 kA	
Mechanical & Environmental					
Operating Temperature Range		T_a		-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH		5%...95%	
Pollution Degree				2	
Altitude (max)				6562 ft [2000 m]	
Terminal Screw Torque		M_{max}		35 lbf·in per UL 1449 [4.5 Nm]	
Conductor Cross Section (max)				6 AWG (Solid, Stranded) per UL 1449	
				35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
				Cu Only per UL 1449	
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: 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)				16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category				III	

*Only for DC power systems which are electrically separated from AC power systems.
**ETI NH1 BAT 200A/500V DC (004723266), ***ETI NH1 BAT 200A/1500V DC (004110656)

Internal Configuration



ProTec T2-500DCU-3Y(-R)
ProTec T2-1000DCU-3Y(-R)

ProTec T2-1500DCU-3Y(-R)

Legend

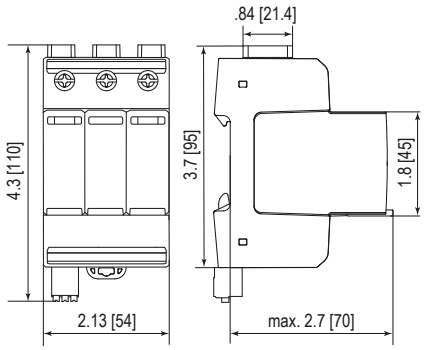
⏚	*PE / G Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*

Order Information

Order Code	500	1000	1500
ProTec T2-xxxxDCU-3Y	59.A983	59.A985	59.A987
ProTec T2-xxxxDCU-3Y-R (with remote contacts)	59.A984	59.A986	59.A988
ProTec T2-250DCU-M-P (side plug)	59.A989	-	-
ProTec T2-250DCU-P (middle plug)	59.A990	-	-
ProTec T2-500DCU-M-P (side plug)	-	59.A991	-
ProTec T2-500DCU-P (middle plug)	-	59.A992	-
ProTec T2-750DCU-M-P (plug)	-	-	59.A993

Dimensions & Packaging

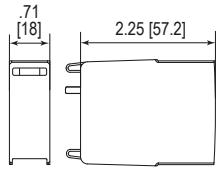
inches [mm]



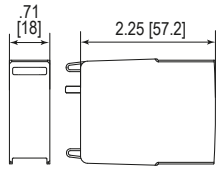
Complete Unit

ProTec T2-xxxxDCU-3Y		**500**	**1000**	**1500**
Weight	pounds	.772	.831	.791
	grams	350	377	359
ProTec T2-xxxxDCU-3Y-R				
Weight	pounds	.789	.849	.809
	grams	358	385	367
DIN 43880 Dimension		3 TE / 2.13" [54 mm]		
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



ProTec T2-250DCU-M-P
ProTec T2-500DCU-M-P
ProTec T2-750DCU-M-P



ProTec T2-250DCU-P
ProTec T2-500DCU-P

Single Unit

ProTec T2-xxxDCU-M-P		**250**	**500**	**750**
Weight	pounds	.141	.161	.146
	grams	64	73	66
ProTec T2-xxxDCU-P				
Weight	pounds	.134	.157	-
	grams	61	71	-
DIN 43880 Dimension		1 TE / .70" [18 mm]		
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 EV Chargers

ProTec T2 DCGU 3Y

Class II • DC SPD Type 4CA

Unipolar

Location of Use: EV Chargers
Network Systems: Unipolar grounded / ungrounded, TN, TT*, IT*
Mode of Protection: (+)-PE /G, (-)-PE /G, (+)-(-)
IEC/UL Category: Class II, DC SPD Type 4CA
Housing: Pluggable Design
Compliance: IEC 61643-41:2025
UL 1449 5th Edition, Supplement SB

RoHS COMPLIANT

Technical Data

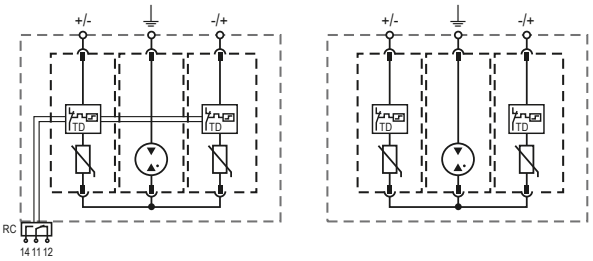
ProTec T2-xxxxDCGU-3Y(-R)			1000	1500
IEC Electrical				
Nominal DC System Voltage	(+)-(-)	U_n	900 V	1250 V
Maximum Continuous Operating Voltage (DC)	(+)-(-)	U_c	1000 V	1500 V
	(+)/(-)-PE	U_c	1000 V	1000 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Maximum Discharge Current		I_{max}	40 kA	40 kA
Impulse Discharge Current (10/350 µs)		I_{imp}	2.5 kA	2.5 kA
Total Discharge Current (10/350 µs)		I_{Total}	-	5 kA
Total Discharge Current (8/20 µs)		I_{Total}	65 kA	65 kA
Voltage Protection Level	(+)-(-)	U_p	3900 V	4100 V
	(+/-)-PE	U_p	2400 V	2500 V
Response Time	(+)-(-)	t_A	<25 ns	<25 ns
	(+)/(-)-PE	t_A	<100 ns	<100 ns
Overvoltage Category			III	III
Backup fuse, if required			200 A gBat**	200 A gBat**
Short-Circuit Current Rating (DC)		I_{SCCR}	50 kA (L/R < 3 ms)	100 kA (L/R < 3 ms)
Number of Ports			1	1
UL Electrical				
Maximum Permitted DC Voltage	(+)-(-)	V_{dcmcov}	1000 V	1500 V
	(+)/(-)-G	V_{dcmcov}	1000 V	1000 V
Measured Limiting Voltage	(+)-(-)	MLV	3700 V	3900 V
	(+)/(-)-G	MLV	4300 V	4300 V
Nominal Discharge Current (8/20 µs)		I_n	20 kA	20 kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Rated DC withstand voltage***		$U_{W\,DC}$	1200 V	1250 V
Mechanical & Environmental				
Operating Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Operating Humidity		RH	5%...95%	
Pollution Degree			2	
Altitude (max)			6562 ft [2000 m]	9842 ft [3000 m]
Terminal Screw Torque		M_{max}	35 lbf·in per UL 1449 [4.5 Nm]	
Conductor Cross Section (max)			6 AWG (Solid, Stranded) per UL 1449	
			35 mm² (Solid, Stranded) / 25 mm² (Flexible)	
			Cu Only per UL 1449	
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: 125 V / 1 A; DC: 48 V / 0.5 A, 24 V / 0.5 A, 12 V / 0.5 A	
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5 mm² (Solid)	
Overvoltage Category			III	

**Only for DC power systems which are electrically separated from AC power systems.*
***ETI NH1 BAT 200A/1500V DC (004110656)*
****In accordance with IEC 61851-23:2023 and prEN IEC CDV 61851-23-3:2024*

Internal Configuration

Legend

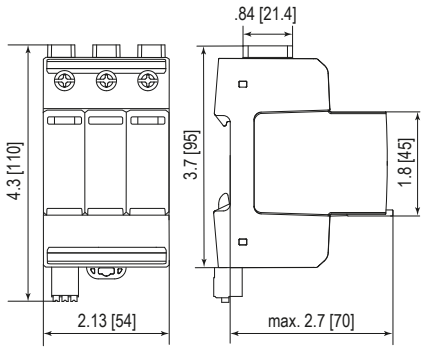
⏚ *PE / G Conductor Terminal*
RC *Remote Contacts Terminal (Optional)*
TD *Thermal Disconnector*



Order Information		
Order Code	**1000**	**1500**
ProTec T2-xxxxDCGU-3Y	59.C380	59.D040
ProTec T2-xxxxDCGU-3Y-R (with remote contacts)	59.C381	59.D041
ProTec T2-500DCGU-M-P (side plug)	59.C383	-
ProTec T2-750DCGU-M-P (side plug)	-	59.D043
ProTube T2-500DCGU-P (middle plug)	59.C382	59.C382

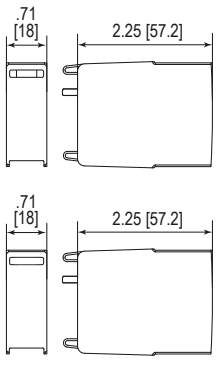
Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T2-xxxxDCGU-3Y		**1000**	**1500**
Weight	pounds	.758	.758
	grams	344	344
ProTec T2-xxxxDCGU-3Y-R			
Weight	pounds	.778	.778
	grams	353	353
DIN 43880 Dimension		3 TE / 2.13" [54 mm]	
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 T2-xxxDCGU-M-P		**500**	**750**
Weight	pounds	.148	.148
	grams	67	67
ProTube T2-xxxDCGU-P		**500**	
Weight	pounds	.088	
	grams	40	
DIN 43880 Dimension		1 TE / .70" [18 mm]	
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	

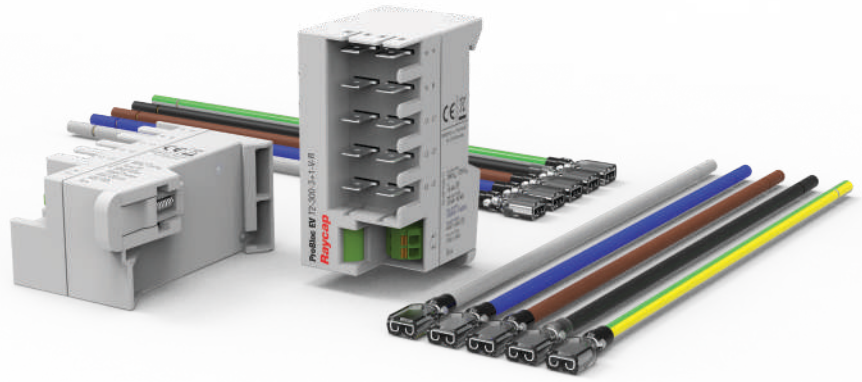
Notes

Compact Multi-Pole SPD with leads for use in EV (AC) Chargers

Lightning and Overvoltage Protection for AC Chargers
ProBloc EV T2 V

Special features:

- Enables V connectivity for in-line installation
- Compact design with 35 mm width – suitable for even the smallest AC EV chargers
- Type 2 + 3 SPD
- Discharge capacity up to 20 kA (L-N) and 40 kA (N-PE)
- Short circuit current rating 10 kA
- Mounts via DIN rail installation (only 2TE width needed) or mounts flush on the backplate
- Features FastOn connection terminals. Insulated connection leads can (optional) be supplied with the SPD



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

With the increasing number of electrical vehicles on the road, charging stations are becoming more prevalent. While technologies have been focused on new vehicle designs and battery capacities, protection of people and the charging infrastructure also must be considered. The safety of those using the infrastructure is covered under IEC 60364-7-722:2018 (DIN VDE 0100-722:2019) which requires the use of overvoltage protection in all publicly accessible charging stations. As well, safety-conscious businesses and homeowners will also want to protect themselves and their investments with purpose-built surge protection. The ProBloc EV T2 V surge protectors are uniquely designed for use in AC charging systems. Raycap also offers DC surge protectors for use in DC Fast Charging infrastructure.

More Product Information

RoHS COMPLIANT CE

Compact Multi-Pole SPD for EV Systems

ProBloc EV T2 1+1 (01) V

Class II • Class III • Type 2 • Type 3

Location of Use: EV Chargers
Mode of Protection: L-N, N-PE
IEC/EN Category: Class II+III / Type 2+3
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

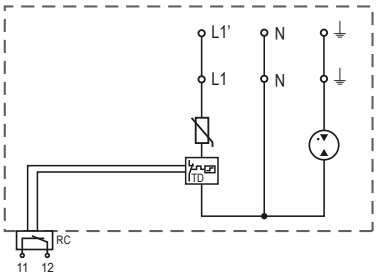
Technical Data

ProBloc EV T2-xxx-1+1-V(-01-R)			300
IEC Electrical			
Nominal AC Voltage (50/60 Hz)		U_0	240 V
Maximum Continuous Operating Voltage (AC)	(L-N/N-PE)	U_c	300 V/255 V
Nominal Discharge Current (8/20 µs)	(L-N/N-PE)	I_n	10 kA/10 kA
Maximum Discharge Current (8/20 µs)	(L-N/N-PE)	I_{max}	20 kA/40 kA
Voltage Protection Level	(L-N/N-PE)	U_p	1500 V/1500 V
Rated Load Current		I_L	32 A
Open Circuit Voltage of Combination Wawe Generator (1.2/50 µs)	(L-N/N-PE)	U_{oc}	6 kV/6 kV
Short Circuit Current of Combination Wawe Generator	(L-N/N-PE)	I_{cw}	3 kA/3 kA
Follow Current Interrupt Rating	(N-PE)		100 A
Response time	(L-N/N-PE)	t_A	<25 ns/<100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			63 A gG
Short-Circuit Current Rating		I_{SCCR}	10 kA
TOV Withstand 5 s	(L-N)	U_T	337 V
TOV Safe Fail 120 min	(L-N)	U_T	442 V
TOV 200 ms	(N-PE)	U_T	1200 V/300 A
Number of ports			1
Mechanical & Environmental			
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Humidity		RH	5%...95%
Altitude (max)			13123 ft [4000 m]
Conductor Cross Section			10 AWG / 6 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715 / Baseplate Screw-in Mounting
Degree of Protection			IP 20 (built-in)
Thermal Protection			Yes
Fault Indication			Red Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

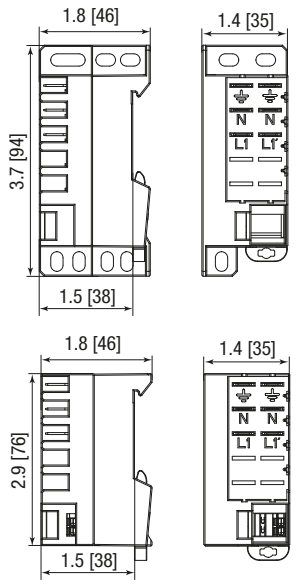


ProBloc EV T2-xxx-1+1-V(-01-R)

Order Information	
Order Code	**300**
ProBloc EV T2-xxx-1+1-V	515 756
ProBloc EV T2-xxx-1+1-V-R *(with remote contacts)*	515 757
ProBloc EV T2-xxx-1+1-V-01 *(with flush mount)*	515 758
ProBloc EV T2-xxx-1+1-V-01-R *(with flush mount and remote contacts)*	515 759

Dimensions & Packaging

inches [mm]



Single Unit		
ProBloc EV T2-xxx-1+1-V		**300**
Weight	pounds [grams]	.175 [79.2]
ProBloc EV T2-xxx-1+1-V-R		**300**
Weight	pounds [grams]	.180 [81.7]
ProBloc EV T2-xxx-1+1-V-01		**300**
Weight	pounds [grams]	.184 [83.6]
ProBloc EV T2-xxx-1+1-V-01-R		**300**
Weight	pounds [grams]	.188 [85,1]
Packaging Dimensions (H x W x L)		1.8 × 2.1 × 3.9" [46 × 54 × 100 mm]
Standard Order Quantity		12 Units

Compact Multi-Pole SPD for EV Systems

ProBloc EV T2 3+1 (01) V

Class II • Class III • Type 2 • Type 3

Location of Use: EV Chargers
Mode of Protection: L-N, N-PE
IEC/EN Category: Class II+II / Type 2+3
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

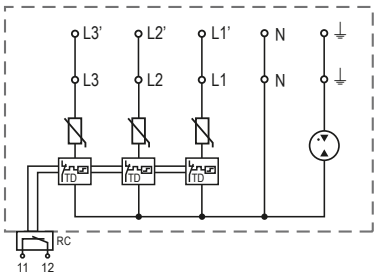
Technical Data

ProBloc EV T2-xxx-3+1-V(-01-R)			300
IEC Electrical			
Nominal AC Voltage (50/60 Hz)		U_0	240 V
Maximum Continuous Operating Voltage (AC)	(L-N/N-PE)	U_c	300 V/255 V
Nominal Discharge Current (8/20 µs)		I_n	10 kA
Maximum Discharge Current (8/20 µs)	(L-N/N-PE)	I_{max}	20 kA/40 kA
Voltage Protection Level	(L-N/N-PE)	U_p	1500 V/1500 V
Rated Load Current		I_L	32 A
Open Circuit Voltage of Combination Wave Generator (1.2/50 µs)	(L-N/N-PE)	U_{oc}	6 kV/6 kV
Short Circuit Current of Combination Wave Generator	(L-N/N-PE)	I_{cw}	3 kA/3 kA
Follow Current Interrupt Rating	(N-PE)		100 A
Response time	(L-N/N-PE)	t_A	<25 ns/<100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			63 A gG
Short-Circuit Current Rating		I_{SCCR}	10 kA
TOV Withstand 5 s	(L-N)	U_T	337 V
TOV Safe Fail 120 min	(L-N)	U_T	442 V
TOV 200 ms	(N-PE)	U_T	1200 V/300 A
Number of ports			1
Mechanical & Environmental			
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Humidity		RH	5%...95%
Altitude (max)			13123 ft [4000 m]
Conductor Cross Section			10 AWG / 6 mm² (Flexible)
Mounting			35 mm DIN Rail, EN 60715 / Baseplate Screw-in Mounting
Degree of Protection			IP 20 (built-in)
Thermal Protection			Yes
Fault Indication			Red Flag
Remote Contacts (RC)			Optional
RC Switching Capacity			AC: 250 V/1 A, 125 V/1 A; DC: 48 V/0.5 A, 24 V/0.5 A, 12 V/0.5 A
RC Conductor Cross Section (max)			16 AWG (Solid) / 1.5mm² (Solid)
Overvoltage Category			III

Internal Configuration

Legend

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

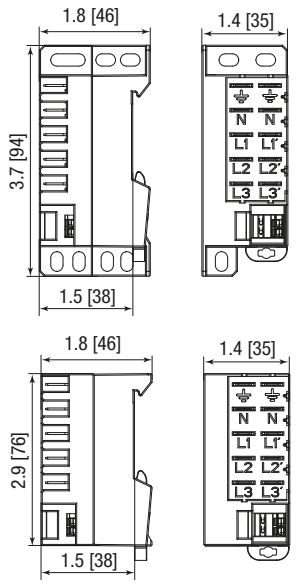


ProBloc EV T2-xxx-3+1-V(-01-R)

Order Information	
Order Code	**300**
ProBloc EV T2-xxx-3+1-V	515 760
ProBloc EV T2-xxx-3+1-V-R *(with remote contacts)*	515 761
ProBloc EV T2-xxx-3+1-V-01 *(with flush mount)*	515 762
ProBloc EV T2-xxx-3+1-V-01-R *(with flush mount and remote contacts)*	515 763

Dimensions & Packaging

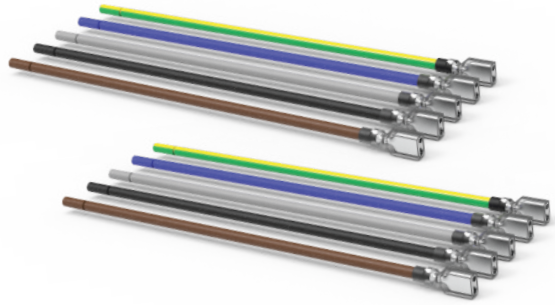
inches [mm]



Single Unit		
ProBloc EV T2-xxx-3+1-V		**300**
Weight	pounds [grams]	.234 [106.1]
ProBloc EV T2-xxx-3+1-V-R		**300**
Weight	pounds [grams]	.239 [108.6]
ProBloc EV T2-xxx-3+1-V-01		**300**
Weight	pounds [grams]	.244 [110.5]
ProBloc EV T2-xxx-3+1-V-01-R		**300**
Weight	pounds [grams]	.247 [112]
Packaging Dimensions (H x W x L)		1.8 × 2.1 × 3.9" [46 × 54 × 100 mm]
Standard Order Quantity		12 Units

Accessories

ProBloc EV T2 V Cable Set



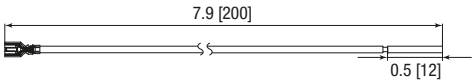
ProBloc EV T2 V Cable Set

Technical Data	
Length	7.8" [200 mm]
Conductor Material	Copper
Conductor Cross Section (max)	10 AWG / 6 mm²
Type of Faston	6.3 x 0.8
Type of Insulation Sleeve	TE 1-170823-6
Wire Testing Voltage (min)	1500 V
Type of Wire	Flexible

Order Information	
Order Code	
Cable set 5 (with insulated fast-on connector)	515 792
Cable set 10 (with insulated fast-on connector)	515 764

Dimensions & Packaging

inches [mm]



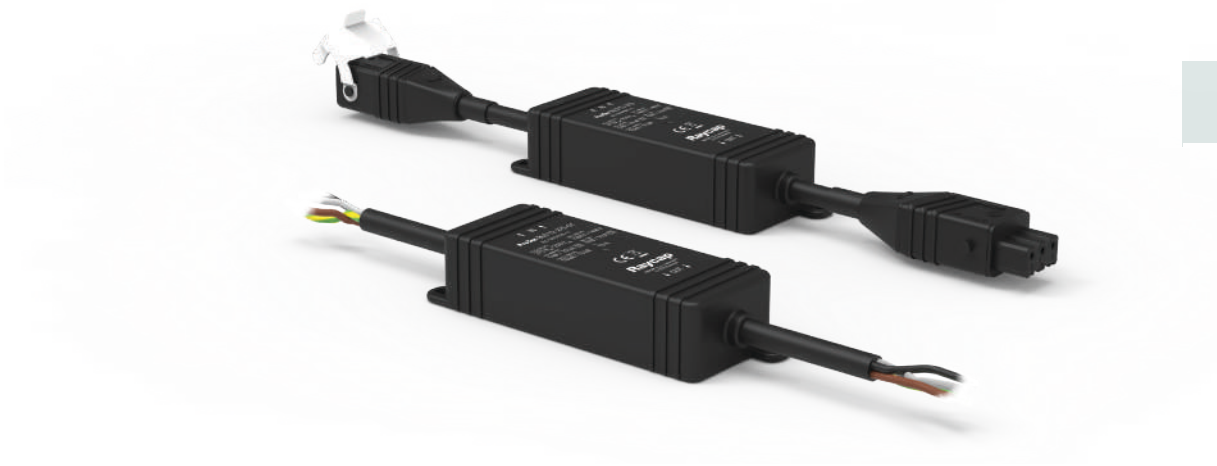
Complete Unit		
Cable Set 5		
Weight	pounds [grams]	.154 [70]
Cable Set 10		
Weight	pounds [grams]	.309 [140]
Packaging Dimensions (H x W x L)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		12 Units

Protective Device (SPD) for Motorized Window Shades

Lightning and Overvoltage Protection
ProTec BLD T2

Special features:

- Protects the motor in both directions (blinds up, blinds down)
- Dedicated small format easily installed into existing blinds mechanisms
- Uses industry standard STAK3/STAS3 connectors for fast and easy installation
- Acoustic fault indication upon failure
- Type 2 / Type 3 protection



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

Motorized window shades are common in many commercial and residential buildings. When combined with timers and light sensors, motorized shades will automatically open as the sun rises and close as the sun sets. Like everything else in the “smart home”, these sensitive electronics and motors must be protected from power overvoltage. Centrally controlled automated blinds have a safety feature that enables them to retract in a high wind weather emergency. ProTec T2 BLD is designed to fail in such a way that still allows the emergency retraction of the blinds. However, a failed SPD will not allow the blinds to lower, giving users an additional indication that the blinds require attention. Raycap’s ProTec BLD T2-275 SPD reduces the risk of replacing or repairing motorized blinds.

More Product Information

RoHS COMPLIANT CE

Compact SPD for Motorized Window Shades

ProTec BLD T2-275(-01)

Class II•Type 2•Class III•Type 3

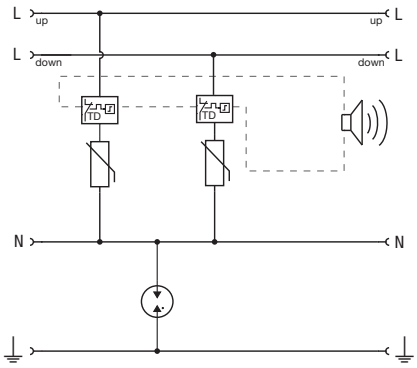
Location of Use: Motorized Window Shades
Network Systems: TN-S, TT
Mode of Protection: L-N, N-PE
IEC/EN Category: Class II+III / Type 2+3
Housing: Compact Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018

CE RoHS COMPLIANT

Technical Data

ProTec BLD T2-275(-01)			275
IEC Electrical			
Nominal AC Voltage (50/60 Hz)		U_o	230 V
Maximum Continuous Operating Voltage (AC)	(L-N)	U_c	275 V
	(N-PE)	U_c	255 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	5 kA/10 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	10 kA/10 kA
Open Circuit Voltage of the Combination Wave Generator (1.2/50 µs)	(L-N)/(N-PE)	U_{oc}	6 kV/6 kV
Short-Circuit Current of the Combination Wave Generator (8/20 µs)	(L-N)/(N-PE)	I_{cw}	3 kA/3 kA
Total Discharge Current (8/20 µs)		I_{Total}	15 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1.3 kV/1.4 kV
Follow Current Interrupt Rating	(N-PE)	I_{fi}	100 A
Maximum Load Current		I_L	10 A
Response Time	(L-N)/(N-PE)	t_A	< 25 ns/< 100 ns
Overvoltage Category			III
Maximum Backup fuse, if required			MCB/B 10A
Short-Circuit Current Rating (AC)		I_{SCCR}	1.5 kA
TOV Withstand 5 s	(L-N)	U_T	335 V
TOV Safe Fail 120 min	(L-N)	U_T	442 V
TOV Withstand 200 ms	(N-PE)	U_T	1200 V/300 A
Number of Ports			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]
Pollution Degree			2
Connector			Hirschmann STAK 3/STAS 3
Degree of Protection			IP 54
Housing Material			Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection			Yes
Fault Indication			Acoustic Fault Indication

Internal Configuration



Legend

L	*Line Conductor*
N	*Neutral Conductor*
⏚	*PE Conductor Terminal*
TD	*Thermal Disconnector Fuse*

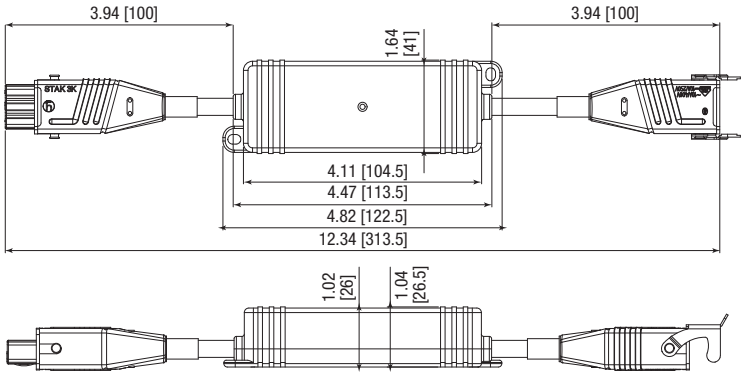
ProTec BLD T2-275(-01)

Order Information	
Order Code	**275**
ProTec BLD T2-275 *(with connectors)*	515 644
ProTec BLD T2-275-01 *(without connectors)*	515 A32

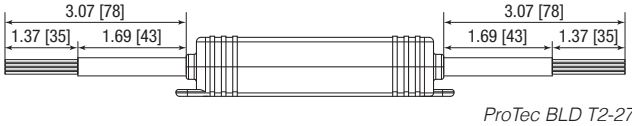
Dimensions & Packaging

inches [mm]

Complete Unit		
ProTec BLD T2-275		**275**
Weight	pounds [grams]	.441 [200]
ProTec BLD T2-275-01		
Weight	pounds [grams]	.265 [120]
Packaging Dimensions (H × W × L)		1.8 × 2 × 13.2" [30 × 50 × 335 mm]
Minimum Order Quantity		1 Unit



ProTec BLD T2-275



ProTec BLD T2-275-01

Notes

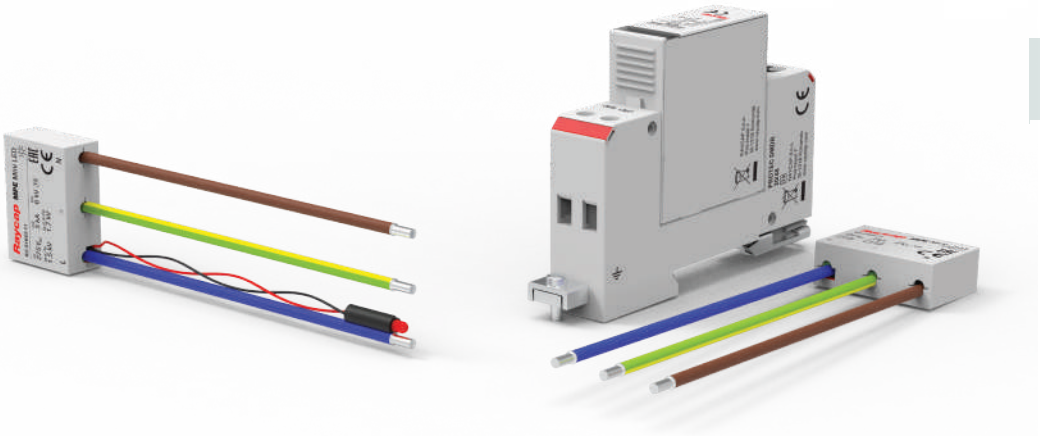
Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

Lightning and Overvoltage Protection

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, reoccuring 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.



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

ProTec DMDR

MPE Mini & MPE Mini LED

More Product Information

RoHS COMPLIANT

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

CE cULus RoHS COMPLIANT

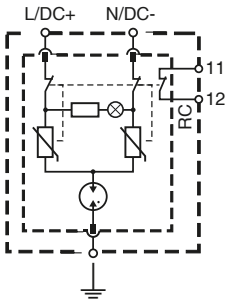
Technical Data

ProTec DMDR 20 Series			24
IEC Electrical			
Nominal AC/DC Voltage		U_o	17V/17V
Maximum Continuous Operating Voltage (AC/DC)		U_c	24V/34V
Open Circuit Voltage of the Combination Wave Generator (1.2/50µs)		U_{oc}	2.4kV
Short Circuit Current of the Combination Wave Generator (8/20µs)		I_{cw}	1.2kA
Maximum Discharge Current (8/20µs)		I_{max}	2kA
Voltage Protection Level	(L-N)	U_p	< 250V
	(L-PE)/(N-PE)		< 700V
Response Time of Overvoltage Protection	(L-N)	t_A	< 25ns
	(L-PE)/(N-PE)		< 100ns
Overvoltage Category			III
Maximum Backup fuse, if required			32A gG
Short-Circuit Current Rating (AC)		I_{SCCR}	2kA
TOV Withstand 5s (AC)		U_T	115V
Number of Ports			1
UL Electrical			
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 (8/20µs)		I_n	1kA
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*			
Minimum Backup fuse, if required			8A gG
Mechanical & Environmental			
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Humidity		RH	5%...95%
Pollution Degree			2
Terminal Screw Torque		M_{max}	4.5 lbf·in [0.5 Nm]
Conductor Cross Section (max.)			10 AWG (Solid, Stranded) / 12 AWG (Flexible)
			6mm² (Solid, Stranded) / 4mm² (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 Status Indication			Green LED

Internal Configuration

Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal*

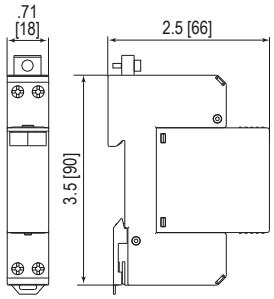


ProTec DMDR 20 Series

Order Information	
Order Code	**24**
ProTec DMDR 20/xxx	510 783
ProTec DMDR 20/xxxM (module)	510 784

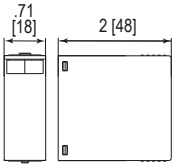
Dimensions & Packaging

inches [mm]



Complete Unit		
ProTec DMDR 20/xxx		**24**
Weight	pounds [grams]	.211 [96]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.1 × 4.4 × 11.7" [79 × 112 × 298 mm]
Standard Order Quantity		12 Units

Spare Plug



Single Unit		
Plug ProTec DMDR 20/xxx		**24**
Weight	pounds [grams]	.070 [32]
DIN 43880 Dimension		1 TE / .71" [18 mm]
Packaging Dimensions (H × W × L)		3.8 × 3 × 4.3" [98 × 77 × 110 mm]
Standard Order Quantity		12 Units

Pluggable Multi-pole SPD

ProTec DMDR 20 Series

Class III • Type 3 • DC SPD Type 4CA

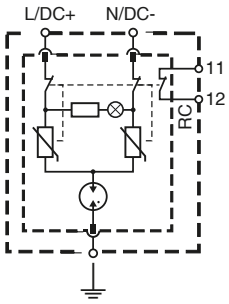
Location of Use: Sub-distribution Boards
Network Systems: TN-S
Mode of Protection: L-PE, N-PE, L-N
IEC/EN/UL Category: Class III/Type 3/DC SPD Type 4CA
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012+A11:2018
UL 1449 5th Edition

CE RoHS COMPLIANT

Technical Data

ProTec DMDR 20 Series			48	60	120
IEC Electrical					
Nominal AC/DC Voltage		U_o	34V/48V	43V/60V	85V/120V
Maximum Continuous Operating Voltage (AC/DC)		U_c	48V/60V	60V/75V	120V/150V
Open Circuit Voltage of the Combination Wave Generator (1.2/50µs)		U_{oc}	2.4kV	6kV	6kV
Short Circuit Current of the Combination Wave Generator (8/20µs)		I_{cw}	1.2kA	3kA	3kA
Maximum Discharge Current (8/20µs)		I_{max}	2kA	4kA	4kA
Voltage Protection Level	(L-N)	U_p	< 500V	< 600V	< 1100V
	(L-PE)/(N-PE)		< 800V	< 850V	< 1200V
Response Time of Overvoltage Protection	(L-N)	t_A		< 25ns	
	(L-PE)/(N-PE)			< 100ns	
Overvoltage Category				III	
Maximum Backup fuse, if required				32A gG	
Short-Circuit Current Rating (AC)		I_{SCCR}		2kA	
TOV Withstand 5s (AC)		U_T	148V	163V	225V
Number of Ports				1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*					
Minimum Backup fuse, if required			8A gG	16A gG	16A gG
Mechanical & Environmental					
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]		
Permissible Humidity		RH	5%...95%		
Pollution Degree			2		
Terminal Screw Torque		M_{max}	4.5 lbf·in [0.5Nm]		
Conductor Cross Section (max.)			10 AWG (Solid, Stranded) / 12 AWG (Flexible)		
			6mm² (Solid, Stranded) / 4mm² (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 Status Indication			Green LED		

Internal Configuration



Legend

L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE/G Conductor Terminal*
RC	*Remote Contacts Terminal*

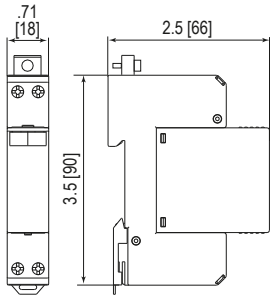
ProTec DMDR 20 Series

Order Information

Order Code	48	60	120
ProTec DMDR 20/xxx	510 833	510 834	510 835
ProTec DMDR 20/xxxM (module)	510 836	510 837	510 838

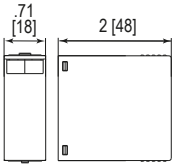
Dimensions & Packaging

inches [mm]



Complete Unit				
ProTec DMDR 20/xxx		**48**	**60**	**120**
Weight	pounds [grams]		.211 [96]	
DIN 43880 Dimension			1 TE / .71" [18 mm]	
Packaging Dimensions (H × W × L)			3.1 × 4.4 × 11.7" [79 × 112 × 298 mm]	
Standard Order Quantity			12 Units	

Spare Plug

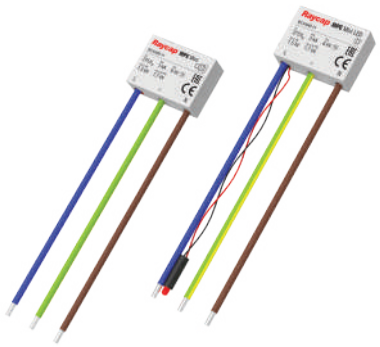


Single Unit				
Plug ProTec DMDR 20/xxx		**48**	**60**	**120**
Weight	pounds [grams]		.070 [32]	
DIN 43880 Dimension			1 TE / .71" [18 mm]	
Packaging Dimensions (H × W × L)			3.8 × 3 × 4.3" [98 × 77 × 110 mm]	
Standard Order Quantity			12 Units	

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

CE RoHS COMPLIANT

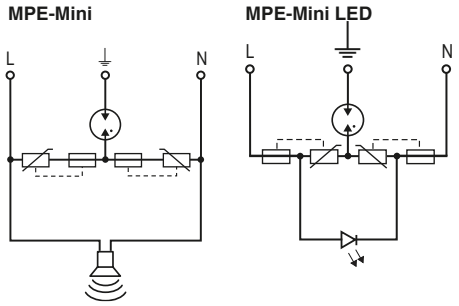
Technical Data

			MPE-Mini	MPE-Mini LED
IEC Electrical				
Nominal AC Voltage (50/60 Hz)		U_o	230 V	
Maximum Continuous Operating Voltage (AC)		U_c	275 V	
Open Circuit Voltage of the Combination Wave Generator (1.2/50 µs)		U_{oc}	6 kV	
	(L+N-PE)	$U_{oc\ total}$	10 kV	
Short-Circuit Current of the Combination Wave Generator (8/20 µs)		I_{cw}	3 kA	
Voltage Protection Level	(L-N)	U_p	1.5 kV	
	(L-PE)/(N-PE)	U_p	1.7 kV	
Response Time		t_A	< 100 ns	
Overvoltage Category			III	
Maximum Backup fuse, if required			MCB/B 16 A	
Short-Circuit Current Rating		I_{SCCR}	1 kA	
TOV Withstand 5s		U_T	337 V	
Number of Ports			1	
Additional Electrical Parameters *(Tests performed within Raycap testing laboratory only)*				
Minimum Backup fuse, if required			MCB/B 16 A	
Mechanical & Environmental				
Temperature Range		T_a	-40 °F to +185 °F [-40 °C to +85 °C]	
Permissible Humidity		RH	5%...95%	
Pollution Degree			2	
Conductor Cross Section			17 AWG (Stranded) / 1.0 mm² (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

Internal Configuration

Legend

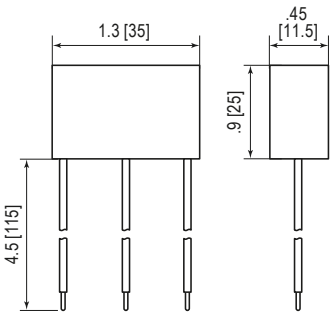
L *Line Conductor*
N *Neutral Conductor*
⏚ *PE/G Conductor*



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]	.114 [52]
Packaging Dimensions (H × W × L)		12 × 4.5 × 3.2" [305 × 116 × 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.

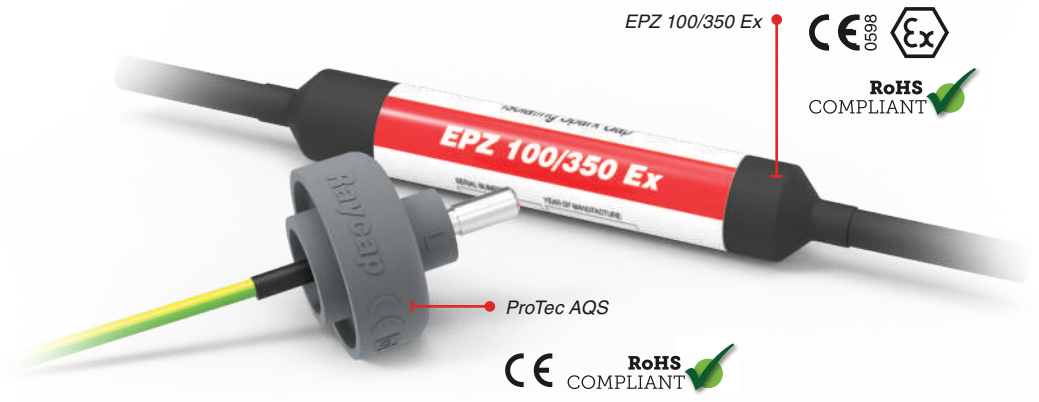
The EPZ 100/350 Ex is recommended for use in applications such as lightning protection grounding, where circumstances may dictate that a "clean" signal ground cannot be directly connected to a "dirty" power system ground. It has wide application in the petrochemical industry for the protection of oil 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 IEC 60679-0-2011, IEC 60079-15:2010 and EN 62561-3:2017, Edition 2.0 – Lightning Protection System Components (LPSC) – Part 3: Requirement for Isolating Spark Gaps (ISG). Product also 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

Notes

ProGRID Series

Surge currents can cause loss of data transmission, switch tripping, disturbance of machine control systems and a slow but noticeable degradation of circuit elements. In addition, a surge can be an indicator of a short circuit which causes currents of power to travel along unintended paths with little or no electrical impedance, for example after a blackout or wiring insulation damage. 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 preventive measures and plan appropriate maintenance.

ProSEC II+		• Used in main or sub-distribution board • Installed on SPD ground conductor
ProLEC Basic		• Senses and logs lightning discharges flowing through the down-conductor • Installed directly on down-conductor
ProSLS		• Monitors leakage current of an SPD • Fixed leakage current sensor for SPD line conductors
ProAlarm II		• Audio and visual SPD failure indication • Easy installation on 35 mm DIN Rail
ProSCT		• Tests the components commonly used in surge protective devices • Auto-detects type of component connected
ProSCT SPD Adapter		• Used to interface a DIN rail base assembly to the ProSCT instrument

Download the catalog

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Notes

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: 2020	Low-voltage surge protective devices – Part 32: Surge protective devices connected to the DC side of photovoltaic installations - Selection and application principles.
	European Standards (EN)	
2	EN 50122-1: 2022	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 61643-31:2019	Low-voltage surge protective devices - Part 31: Requirements and test methods for SPDs for photovoltaic installations
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: 2023	Lightning protection system components (LPSC) – Part 3: Requirements for isolating spark gaps (ISG)
	International Electrotechnical Commission (IEC)	
9	IEC 61643-01:2024	Low-voltage surge protective devices - Part 01: General Requirements and test methods
10	IEC 61326-1: 2020	Electrical equipment for measurement, control and laboratory use–EMC requirements– Part 1: General requirements
11	IEC 60038: 2009+ AMD1: 2021	IEC standard voltages
12	IEC 60099-4: 2014	Surge arresters – Part 4: Metal-oxide surge arresters without gaps for AC systems
13	IEC 60099-5: 2018	Surge arresters – Part 5: Selection and application recommendations
14	IEC 60364-5-53: 2019+ AMD2: 2024	Electrical installation of buildings – Part 5-53: Selection and erection of electrical equipment-isolation, switching and control
15	IEC 60364-7-712: 2017	Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems
16	IEC 61000-4-5: 2014+ AMD1: 2017	Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
17	IEC 61400-24: 2019+AMD1:2024	Wind turbine generator systems – Part 24: Lightning protection
18	IEC 61643-11: 2011+A11:2018	Surge protective devices connected to low voltage power distribution systems – Requirements and test methods
19	IEC 61643-12: 2020	Surge protective devices connected to low voltage power distribution systems – Selection and application principles
20	IEC 61643-41:2025	Low-voltage surge protective devices - Part 41: Surge protective devices connected to DC low-voltage power systems – Requirements and test methods

	Regulations	Description
21	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
22	IEC 61643-22: 2015	Low voltage surge protective devices – Part 22: Surge protection devices connected to telecommunications and signaling networks – Selection and application principles
23	IEC 61643-31: 2018	Low voltage surge protective devices – Part 31: Requirements and test methods of SPDs for photovoltaic installations
24	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
25	IEC 61851-23:2023	Electric vehicle conductive charging system - Part 23: DC electric vehicle supply equipment
26	IEC 62305-1: 2014	Protection against lightning – Part 1: General principles
27	IEC 62305-2: 2014	Protection against lightning – Part 2: Risk management
28	IEC 62305-3: 2014	Protection against lightning – Part 3: Physical damage to structures and life hazard
29	IEC 62305-4: 2014	Protection against lightning – Part 4: Electrical and electronic systems within structures
30	IEC 62497-2: 2010	Railway applications – Insulation coordination – Part 2: Overvoltages and related protection
31	IEC 62561-6: 2023	Lightning protection system components (LPSC) – Part 6: Requirements for lightning strike counters (LSC)
	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 µs Voltage Impulse

Voltage impulse with a nominal virtual front time of 1.2 µs and a nominal time to half-value of 50 µs.

8/20 µs Current Impulse

Current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20 µs.

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 µs voltage impulse across an open circuit and an 8/20 µs 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 disconnector.

Impulse Discharge Current I_{imp} (10/350 µs 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 µs 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 µs.

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 Disconnector

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 disconnector 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 on 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

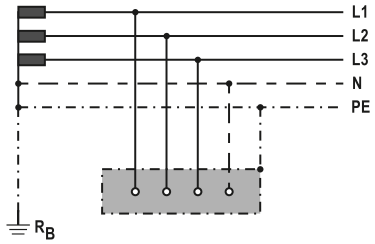
Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and impulse stress with a discharge current, given amplitude and waveshape.

Low Voltage Power Distribution System Types

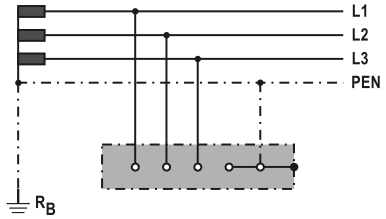
Earthing Systems

System Configuration

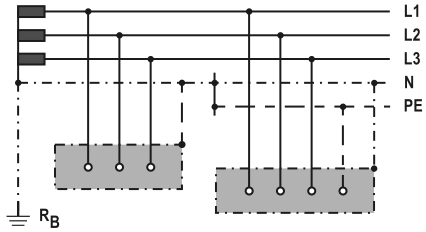
TN-S System



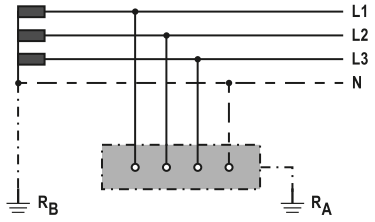
TN-C System



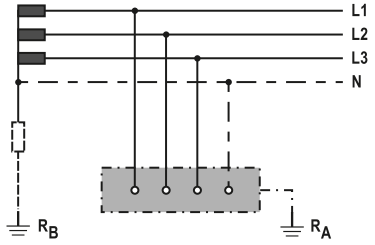
TN-C-S System



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:

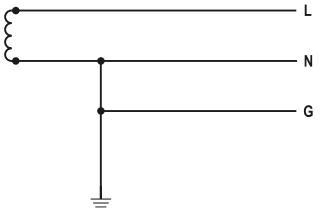
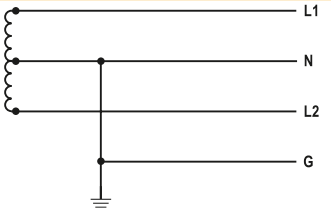
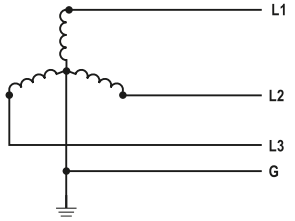
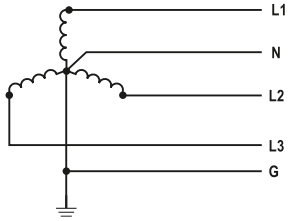
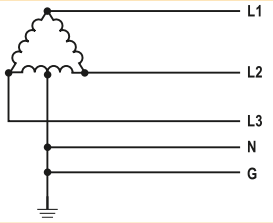
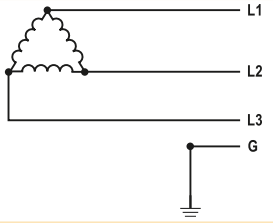
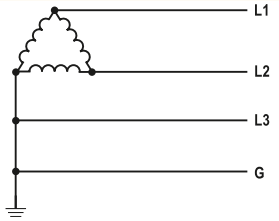
- T Exposed conductive parts are directly grounded independent of the earthing of any point of the power system
- N Exposed conductive parts are directly connected to the earthed point of the power system

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
	**Single Phase** System Voltage: 110 V • 120 V • 220 V • 240 V • 277 V Circuit Type: 1 φ, 2 W + G Protection Modes: Line-Neutral
	**Single Phase (Split Phase)** System Voltage: 120 V/240 V • 240 V/480 V Circuit Type: 1 φ, 3 W + G Protection Modes: Line-Neutral/Line-Line
	**Three Phase WYE without Neutral** System Voltage: 480 V Circuit Type: 3 φWYE, 3 W + G Protection Modes: Line-Line
	**Three Phase WYE with Neutral** 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 φ WYE, 4 W + G Protection Modes: Line-Neutral/Line-Line
	**Delta High Leg** System Voltage: 120 V/240 V Circuit Type: 3 φ Δ, 4 W + G Protection Modes: Line-Neutral/Line-Line
	**Delta Ungrounded** System Voltage: 120 V • 240 V • 480 V Circuit Type: 3 φ Δ, 3 W + G Protection Modes: Line-Line
	**Delta Grounded Corner** System Voltage: 120 V • 240 V • 480 V • 600 V Circuit Type: 3 φ Δ, 3 W + G Protection Modes: Line-Line

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G29-01-348 250805