

Pluggable Single Pole Surge Protective Devices (SPDs)



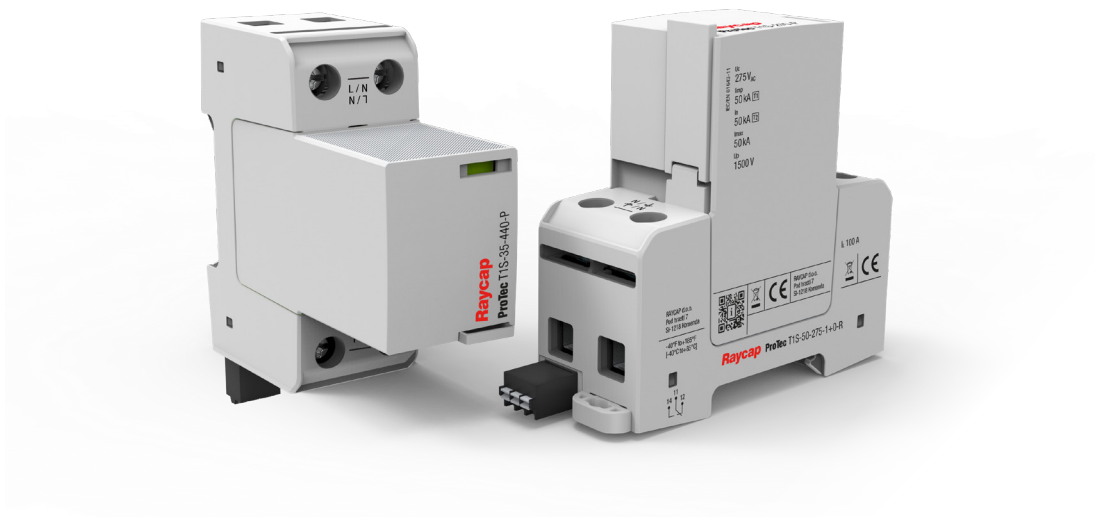
Overvoltage Protection (PGDT Technology)

ProTec T1S 35kA & 50kA Series



Special features:

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



IEC 61643-11:2011

EN 61643-11:2012+A11:2018

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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 100kA, 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



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



Technical Data

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

275

IEC Electrical

Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V
Nominal Discharge Current (8/20 μ s)	I_n	50 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	50 kA
Impulse Discharge Current (10/350 μ s)	I_{imp}	50 kA
Specific Energy	W/R	625 kJ/ Ω
Charge	Q	25 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		500 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	100 kA
TOV Withstand 120min	U_T	442 V
Number of Ports		1

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

Residual Voltage at 5 kA (8/20 μ s)	U_{res}	1000 V
Minimum Backup fuse, if required		500 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

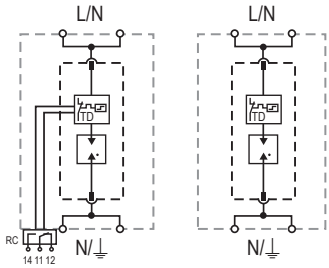
Mechanical & Environmental

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 mm ² (Solid, Stranded) / 25 mm ² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm ² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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



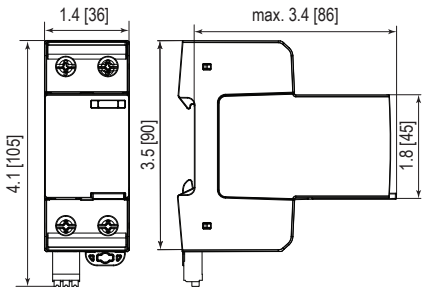
ProTec T1S-50-xxx-1+0(-R)

Order Information

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

Dimensions & Packaging

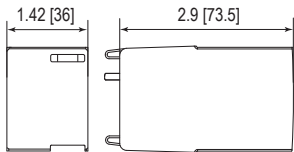
inches [mm]



Complete Unit

ProTec T1S-50-xxx-1+0		275
Weight	pounds [grams]	.623 [283]
ProTec T1S-50-xxx-1+0-R		275
Weight	pounds [grams]	.643 [292]
DIN 43880 Dimension		2 TE / 1.42" [36 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 T1S-50-xxx-P		275
Weight	pounds [grams]	.412 [187]
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

ProTec T1S-35 1+0

Class I • Class II • Type 1 • Type 2



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

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

Housing: Pluggable Design

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



Technical Data

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

275

440

IEC Electrical

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 μ s)	I_n	35 kA	35 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	50 kA	50 kA
Impulse Discharge Current (10/350 μ s)	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 μ s)	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

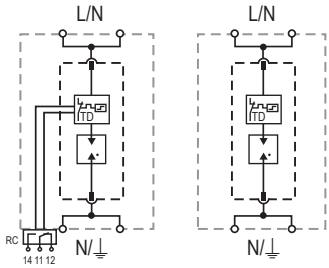
Mechanical & Environmental

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 mm ² (Solid, Stranded) / 25 mm ² (Flexible)
Mounting		35 mm DIN Rail, EN 60715
Degree of Protection		IP 20 (built-in)
Housing Material		Thermoplastic: Extinguishing Degree UL 94 V-0
Thermal Protection		Yes
Operating State / Fault Indication		Green Flag / Not Green Flag
Remote Contacts (RC)		Optional
RC Switching Capacity		AC: 250V/1A, 125V/1A; DC: 48V/0.5A, 24V/0.5A, 12V/0.5A
RC Conductor Cross Section (max)		16 AWG (Solid) / 1.5 mm ² (Solid)
Overvoltage Category		III

Internal Configuration

Legend

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



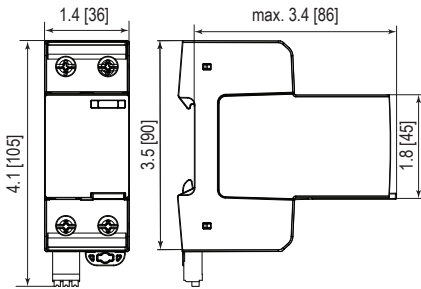
ProTec T1S-35-xxx-1+0(-R)

Order Information

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

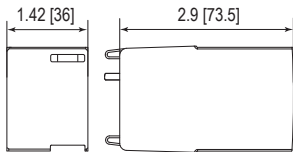
Dimensions & Packaging

inches [mm]



Complete Unit			
ProTec T1S-35-xxx-1+0		275	440
Weight	pounds [grams]	.623 [283]	.656 [298]
ProTec T1S-35-xxx-1+0-R		275	440
Weight	pounds [grams]	.643 [292]	.676 [307]
DIN 43880 Dimension	2 TE / 1.42" [36 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



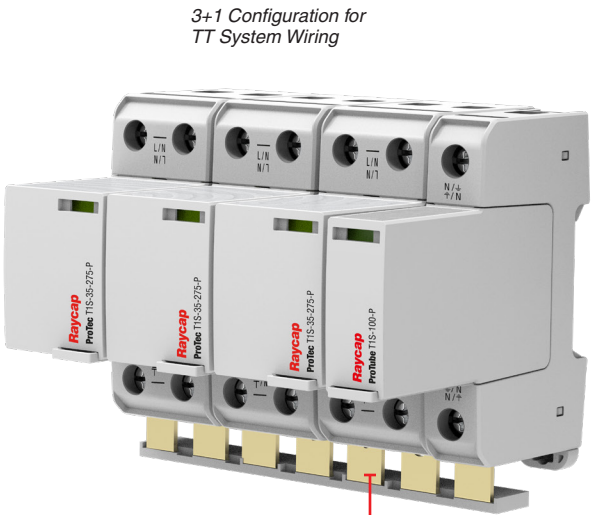
Single Unit			
ProTec T1S-35-xxx-P		275	440
Weight	pounds [grams]	.412 [187]	.445 [202]
DIN 43880 Dimension	2 TE / 1.42" [36 mm]		
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity	16 Units		



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.