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

More Product Information

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

DATASHEET

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 VDE 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
Overcurrent Protection (max)		315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	50 kA	50 kA/100 kA
TOV 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	
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.*

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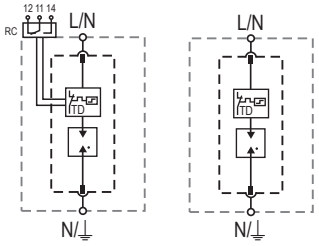
Internal Configuration

Legend

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

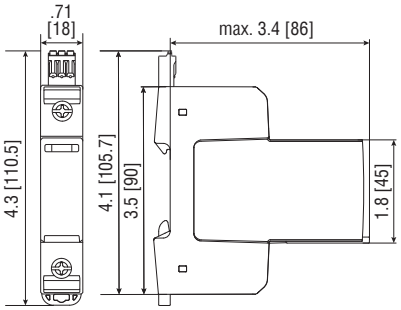


Order Information		
Order Code	**275**	**440***
ProTec T1S-xxx-1+0	59.0738	59.A517
ProTec T1S-xxx-1+0-R (with remote contacts)	59.0739	59.A518
ProTec T1S-xxx-P (plug)	59.0384	59.A515

**No VDE Certification.*

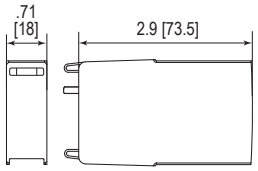
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		12 Units	

Spare Plug



Single Unit			
ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
DIN 43880 Dimension		1 TE / .71" [18 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	

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DATASHEET

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

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
Overcurrent Protection (max)		315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	50 kA	50 kA/100 kA
TOV 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	
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.*

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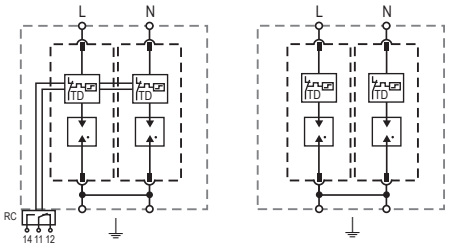
Internal Configuration

Legend

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

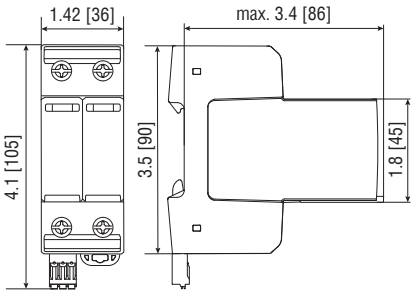


Order Information		
Order Code	**275**	**440***
ProTec T1S-xxx-2+0	59.0740	59.A519
ProTec T1S-xxx-2+0-R (with remote contacts)	59.0741	59.A520
ProTec T1S-xxx-P (plug)	59.0384	59.A515

**No VDE Certification.*

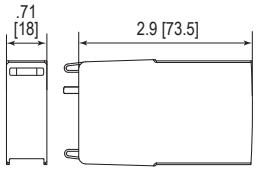
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		7 Units	

Spare Plug



Single Unit			
ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
DIN 43880 Dimension		1 TE / .71" [18 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	

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DATASHEET

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
Overcurrent Protection (max)		315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	50 kA	50 kA/100 kA
TOV 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	
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.*

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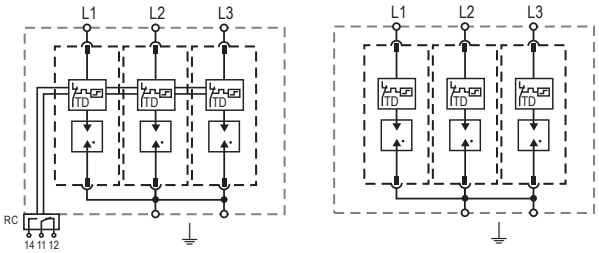
Internal Configuration

Legend

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



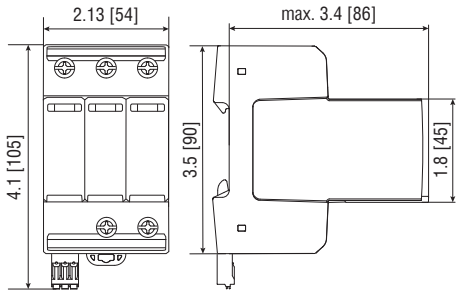
Order Information

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

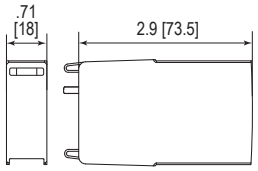
inches [mm]



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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		5 Units	

Spare Plug



Single Unit

ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
DIN 43880 Dimension		1 TE/.71" [18 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	

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DATASHEET

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

CE VDE 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
Overcurrent Protection (max)		315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	I_{fi}	50 kA	50 kA/100 kA
TOV 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	
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.*

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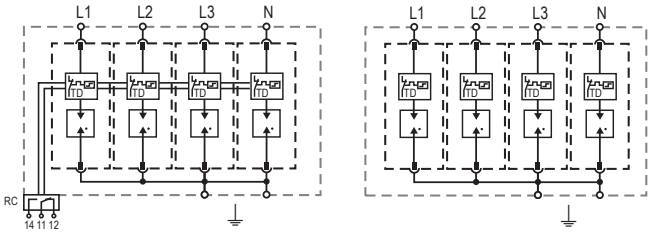
Internal Configuration

Legend

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

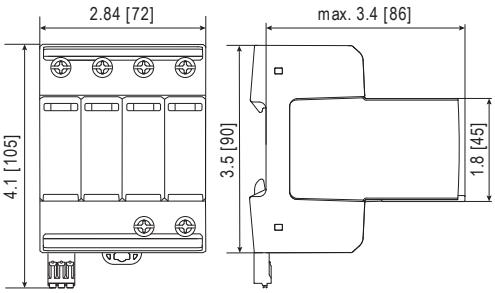


Order Information		
Order Code	**275**	**440***
ProTec T1S-xxx-4+0	59.0744	59.A523
ProTec T1S-xxx-4+0-R (with remote contacts)	59.0745	59.A524
ProTec T1S-xxx-P (plug)	59.0384	59.A515

**No VDE Certification.*

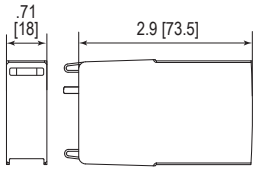
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		4 Units	

Spare Plug



Single Unit			
ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
DIN 43880 Dimension		1 TE / .71" [18 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	

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DATASHEET

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

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/440 V
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
Overcurrent Protection (max)			315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	(L-N)	I_{fi}	50 kA	50 kA/100 A
	(N-PE)		100 A	100 A
TOV 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	
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.*

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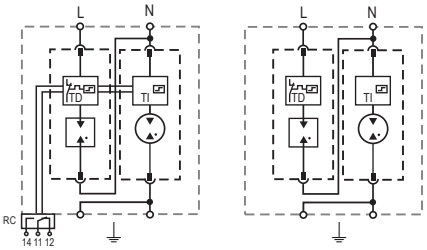
Internal Configuration

Legend

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



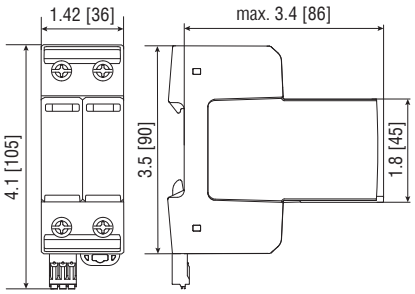
Order Information

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.*

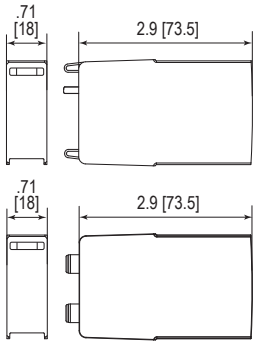
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		7 Units	

Spare Plug



Single Unit			
ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
ProTube T1S-100-P		**100**	
Weight	pounds [grams]	.253 [115]	
DIN 43880 Dimension		1 TE / .71" [18 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	

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DATASHEET

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
Overcurrent Protection (max)			315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	(L-N)	I_{fi}	50 kA	50 kA/100 A
	(N-PE)		100 A	100 A
TOV 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	
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.*

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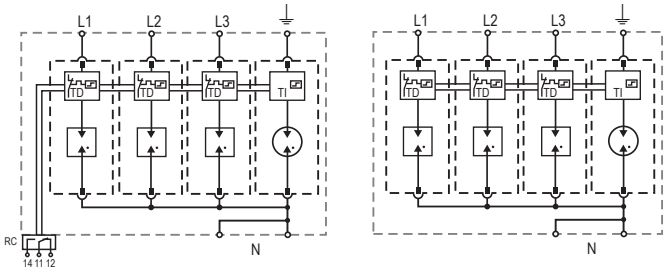
Internal Configuration

Legend

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

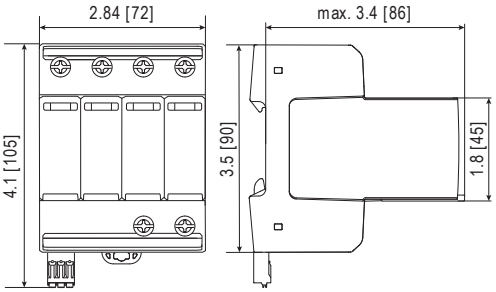


Order Information		
Order Code	**275**	**440***
ProTec T1S-xxx-3+1	59.0748	59.A527
ProTec T1S-xxx-3+1-R (with remote contacts)	59.0749	59.A528
ProTec T1S-xxx-P (plug L-N)	59.0384	59.A515
ProTube T1S-100-P (plug N-PE)	59.0386	-
ProTube T1S-440-100-P (plug N-PE)	-	59.A516

**No VDE Certification.*

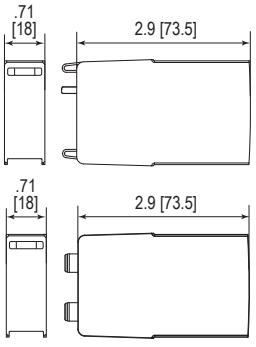
Dimensions & Packaging

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



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	

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DATASHEET

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
Overcurrent Protection (max)			315 A gG	315 A gG/250 A gG
Short-Circuit Current Rating (AC)	(L-N)	I_{SCCR}	50 kA	50 kA/100 kA
Follow Current Interrupt Rating (AC)	(L-N)	I_{fi}	50 kA	50 kA/100 A
	(N-PE)		100 A	100 A
TOV 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	
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.*

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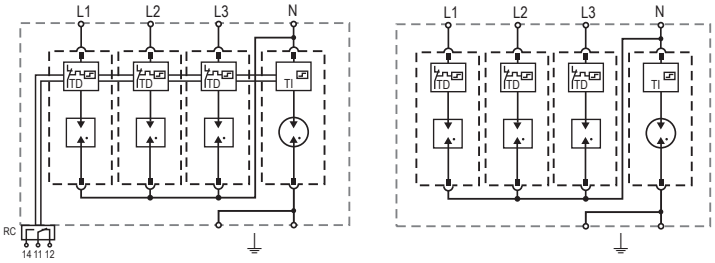
Internal Configuration

Legend

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



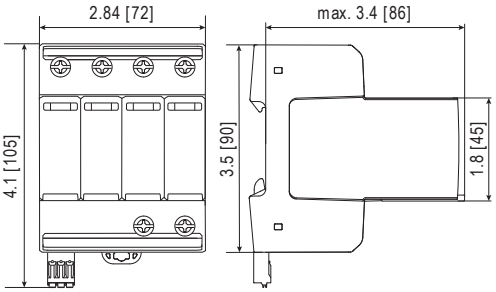
Order Information

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.*

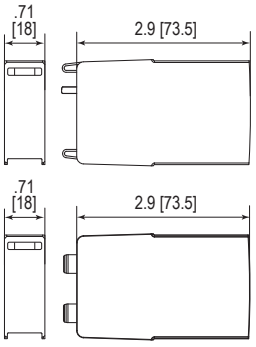
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity		4 Units	

Spare Plug



Single Unit			
ProTec T1S-xxx-P		**275**	**440***
Weight	pounds [grams]	.231 [105]	.242 [110]
ProTube T1S-100-P		**100**	
Weight	pounds [grams]	.253 [115]	
DIN 43880 Dimension		1 TE / .71" [18 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	

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DATASHEET

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

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
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

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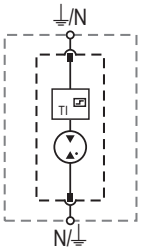
Internal Configuration

Legend

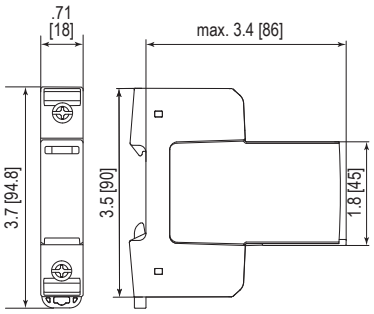
N *Neutral Conductor Terminal*
⏚ *PE Conductor Terminal*
TI *Thermal Indication*



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

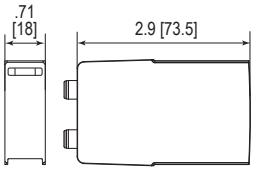
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity		12 Units

Spare Plug



Single Unit		
ProTube T1S-100-P		**100**
Weight	pounds [grams]	.227 [103]
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

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DATASHEET

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
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

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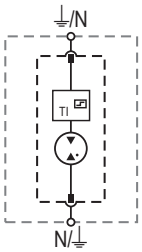
Internal Configuration

Legend

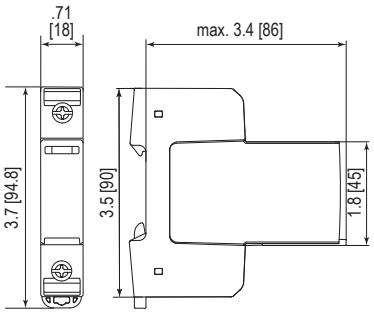
N *Neutral Conductor Terminal*
⏚ *PE Conductor Terminal*
TI *Thermal Indication*



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

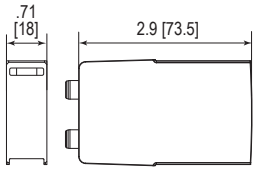
Dimensions & Packaging

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

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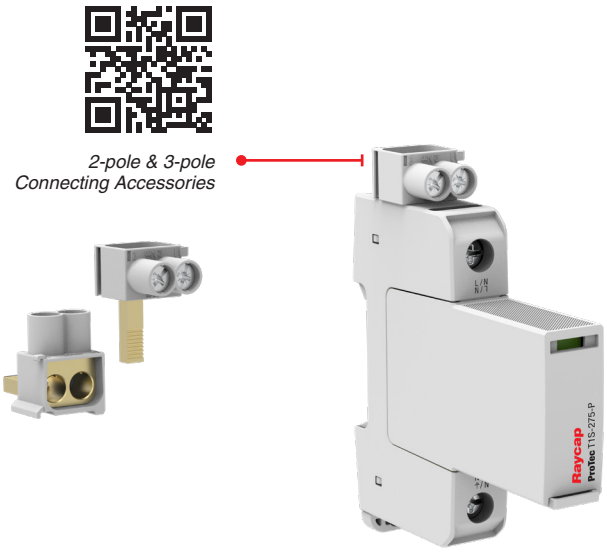
Accessories

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