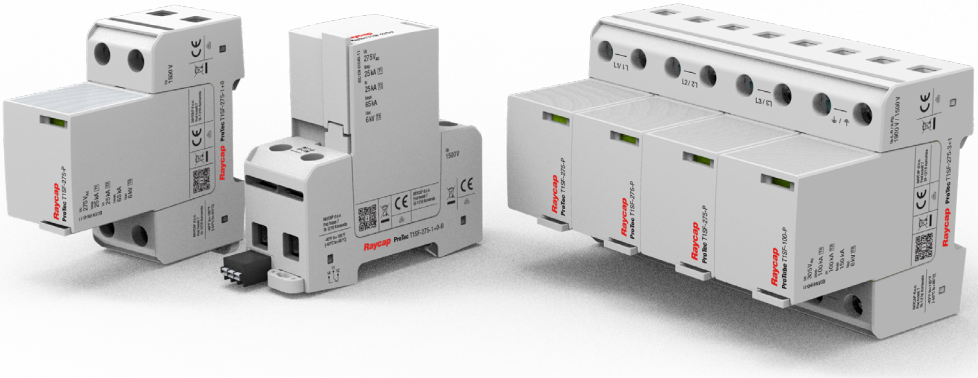
Pluggable Single Pole & Multi-pole Surge Protective Devices (SPDs)

Overvoltage Protection with Integrated Fuse

ProTec T1SF Series

Special features:

- Integrated overcurrent protection
- 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

DATASHEET

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
Overcurrent Protection (max)		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 *(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
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

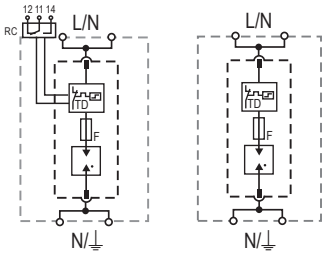
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Internal Configuration

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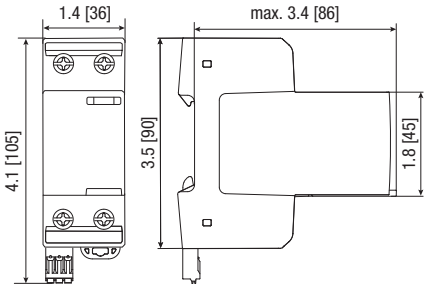
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
F	*Integrated Surge Adapted Backup Fuse*



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

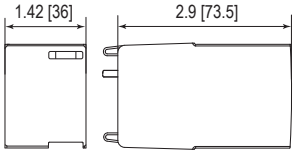
Dimensions & Packaging

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		2TE/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 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

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DATASHEET

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

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)		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	(L-PE)/(N-PE)	U_p	1900 V/1500 V
Response Time		t_A	< 100 ns
Overvoltage Category			III
Overcurrent Protection (max)			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 *(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
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

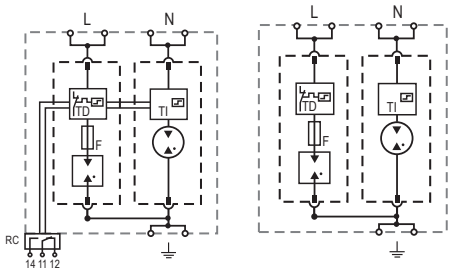
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Internal Configuration

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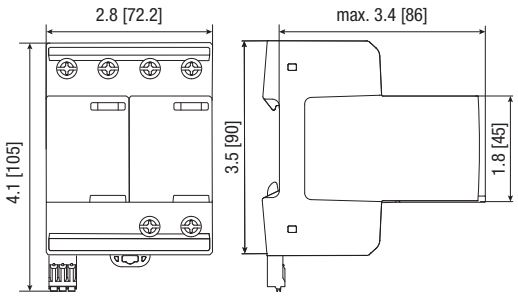
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*



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

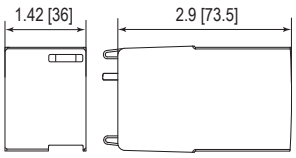
Dimensions & Packaging

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 (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 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 (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

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DATASHEET

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

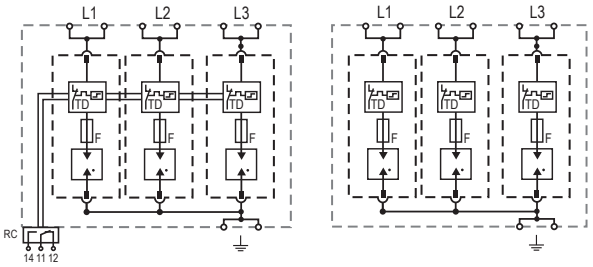
ProTec T1SF-xxx-3+0(-R)		275
IEC Electrical		
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	U_c	275 V
Nominal Discharge Current (8/20 µs)	I_n	25 kA
Maximum Discharge Current (8/20 µs)	I_{max}	65 kA
Impulse Discharge Current (10/350 µs)	I_{imp}	25 kA
Specific Energy	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
Overcurrent Protection (max)		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 *(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
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

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Internal Configuration

Legend

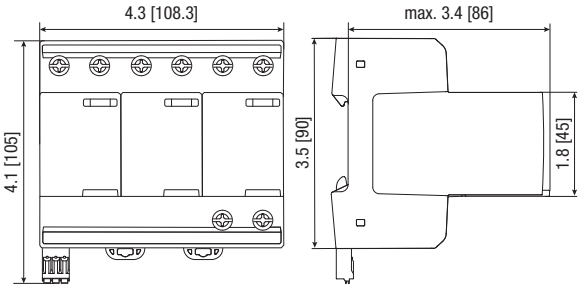
L	*Line Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
F	*Integrated Surge Adapted Backup Fuse*



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

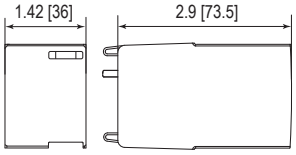
Dimensions & Packaging

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 (H x W x L)		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 (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

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DATASHEET

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)		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	(L-N)/(N-PE)	U_p	1900 V/1500 V
Response Time		t_A	< 100 ns
Overvoltage Category			III
Overcurrent Protection (max)			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 *(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
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

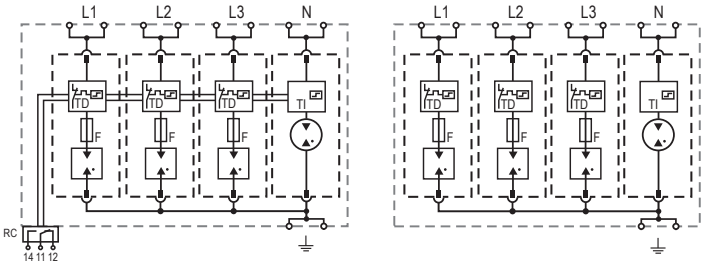
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Internal Configuration

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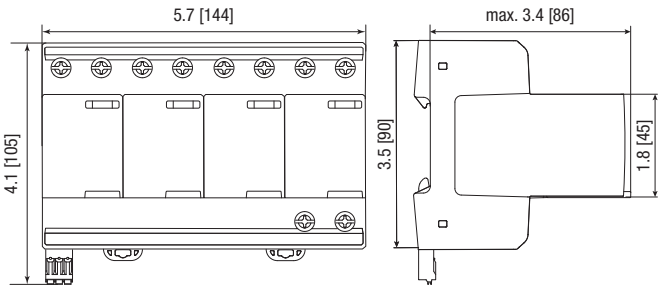
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*



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

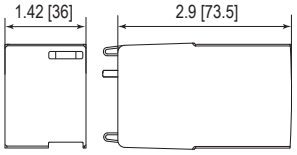
Dimensions & Packaging

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 (H x W x L)		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 (H x W x L)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]
Standard Order Quantity		14 Units

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DATASHEET

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

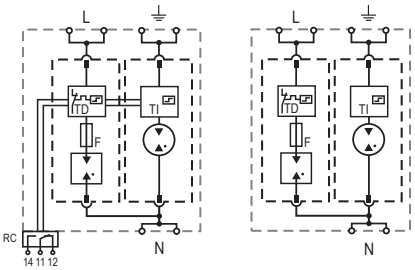
ProTec T1SF-xxx-1+1(-R)			275
IEC Electrical			
Nominal AC Voltage (50/60Hz)		U_o/U_n	240 V
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE)	U_c	275 V/305 V
Nominal Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_n	25 kA/100 kA
Maximum Discharge Current (8/20 µs)	(L-N)/(N-PE)	I_{max}	65 kA/150 kA
Impulse 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)		U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 µs)		I_{cw}	3 kA
Voltage Protection Level	(L-N)/(N-PE)	U_p	1900 V/1500 V
Response Time		t_A	< 100 ns
Overvoltage Category			III
Overcurrent Protection (max)			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 *(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
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

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Internal Configuration

Legend

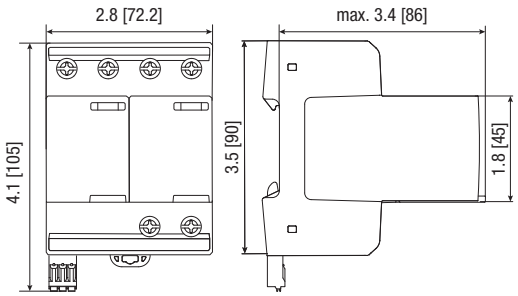
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Overcurrent Protection*



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

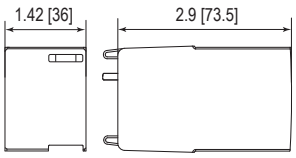
Dimensions & Packaging

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" [72.2mm]
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 T1SF-xxx-P		**275**
Weight	pounds [grams]	.427 [194]
ProTube T1SF-xx-P		**100**
Weight	pounds [grams]	.209 [95]
DIN 43880 Dimension		2TE/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

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DATASHEET

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
Overcurrent Protection (max)			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 *(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
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

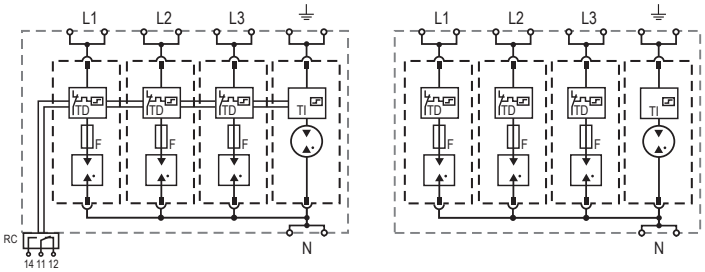
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Internal Configuration

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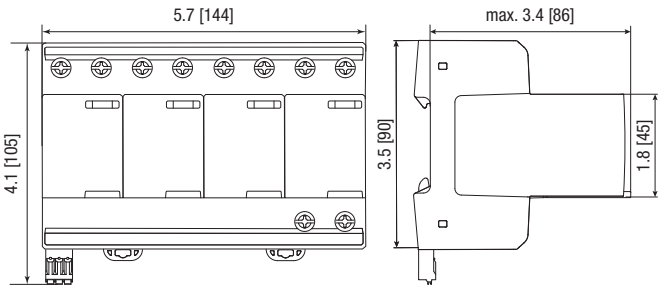
L	*Line Conductor Terminal*
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TD	*Thermal Disconnector*
TI	*Thermal Indication*
F	*Integrated Surge Adapted Backup Fuse*



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

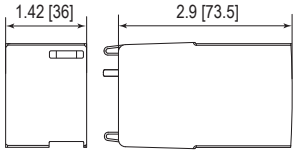
Dimensions & Packaging

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 (H x W x L)		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-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

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DATASHEET

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
Overcurrent Protection (max)		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 *(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
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

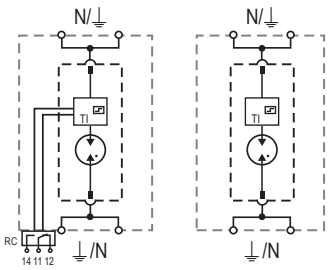
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Legend

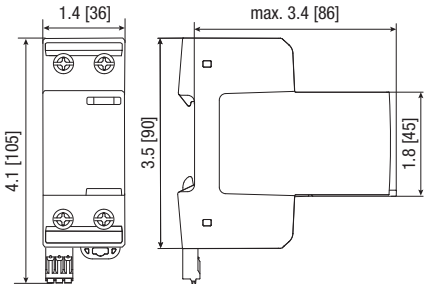
N	*Neutral Conductor Terminal*
⏚	*PE Conductor Terminal*
RC	*Remote Contacts Terminal (Optional)*
TI	*Thermal Indication*



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

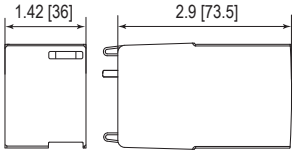
Dimensions & Packaging

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		2TE/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		
ProTube T1SF-xxx-P		**100**
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

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