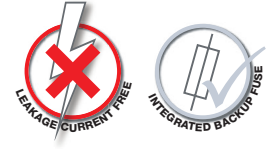


Pluggable Single Pole Surge Protective Devices (SPDs)

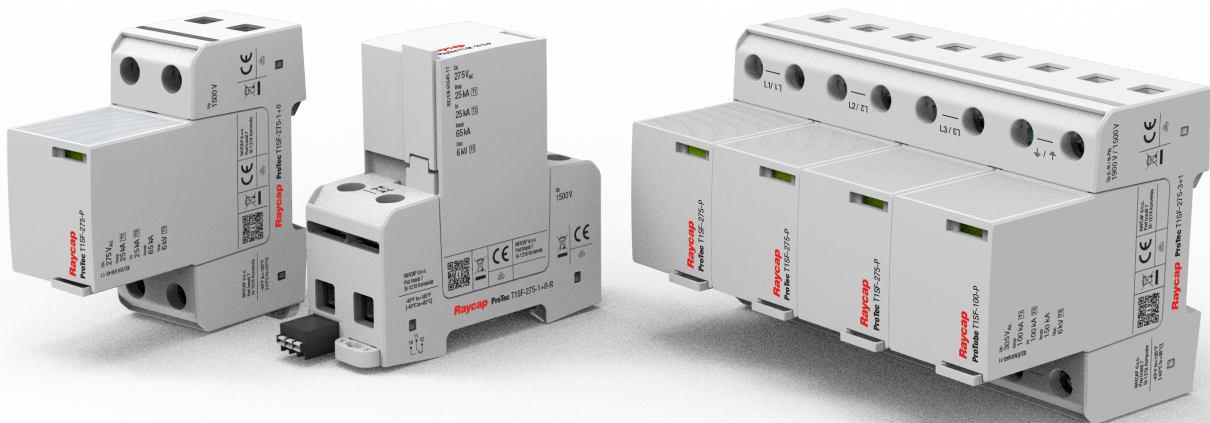


Overvoltage Protection with Integrated Fuse **ProTec T1SF Series**



Special features:

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



IEC 61643-11:2011

EN 61643-11:2012+A11:2018



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



More Product Information



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



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 μ s)	I_n	25 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	65 kA
Impulse Discharge Current (10/350 μ s)	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 μ s)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	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 μ s)	U_{res}	1200 V
Minimum Backup fuse, if required		Not required

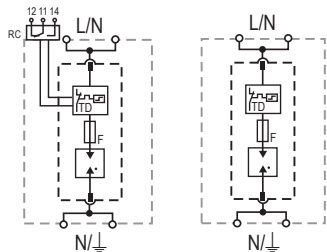
Mechanical & Environmental

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 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 Disconnecter
- F Integrated Surge Adapted Backup Fuse

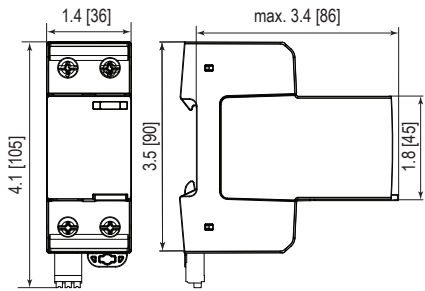


ProTec T1SF-xxx-1+0(-R)

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

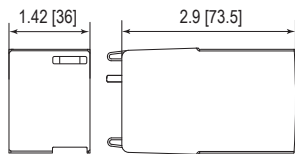
Dimensions & Packaging

inches [mm]



Complete Unit Dimensions & Packaging		
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 (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 T1SF-xxx-P	
275	
Weight	pounds [grams]
.427 [194]	
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

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



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 μ s)	(L-PE) / (N-PE) I_n	25 kA / 25 kA
Maximum Discharge Current (8/20 μ s)	(L-PE) / (N-PE) I_{max}	65 kA / 65 kA
Impulse Discharge Current (10/350 μ s)	(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 μ s)	(L-PE) / (N-PE) U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	(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 μ s)	(L-PE) / (N-PE) U_{res}	1200 V / 305 V
Minimum Backup fuse, if required		Not required

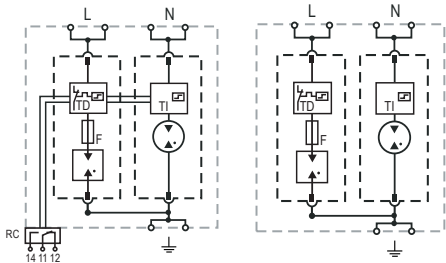
Mechanical & Environmental

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 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
- TI Thermal Indication
- F Integrated Surge Adapted Backup Fuse



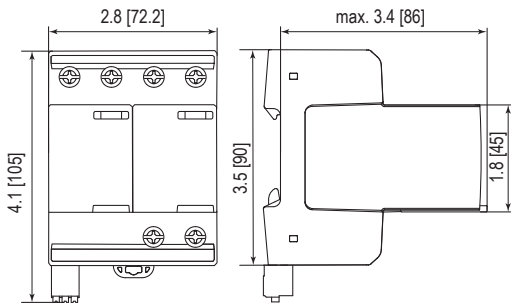
ProTec T1SF-xxx-2+0(-R)

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

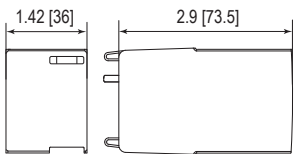
inches [mm]



Complete Unit Dimensions & Packaging

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 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		25
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

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



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 μ s)	I_n	25 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	65 kA
Impulse Discharge Current (10/350 μ s)	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 μ s)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	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 μ s)	U_{res}	1200 V
Minimum Backup fuse, if required		Not required

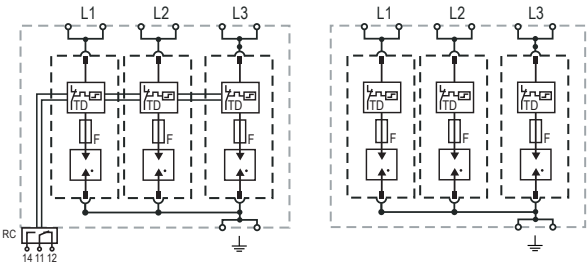
Mechanical & Environmental

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 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
- ⏏ PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnecter
- F Integrated Surge Adapted Backup Fuse

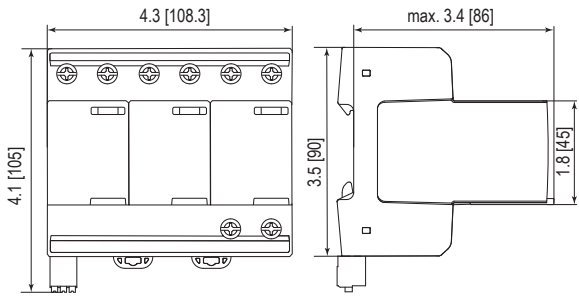


ProTec T1SF-xxx-3+0(-R)

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

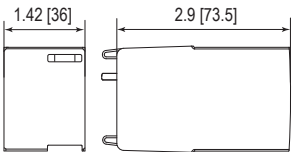
Dimensions & Packaging

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 x 4.5 x 13.8" [109 x 115 x 352 mm]
Standard Order Quantity	3 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 (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

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



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-PE) / (N-PE) U_c	275 V / 305 V
Nominal Discharge Current (8/20 μ s)	(L-PE) / (N-PE) I_n	25 kA / 25 kA
Maximum Discharge Current (8/20 μ s)	(L-PE) / (N-PE) I_{max}	65 kA / 65 kA
Impulse Discharge Current (10/350 μ s)	(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 μ s)	(L-PE) / (N-PE) U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	(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 μ s)	(L-PE) / (N-PE) U_{res}	1200 V / 305 V
Minimum Backup fuse, if required		Not required

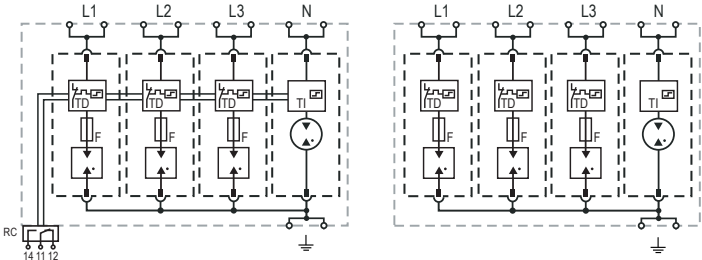
Mechanical & Environmental

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 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/1 A; 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
- TI Thermal Indication
- F Integrated Surge Adapted Backup Fuse



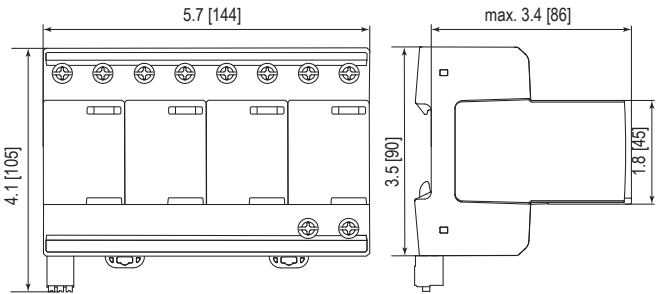
ProTec T1SF-xxx-4+0(R)

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

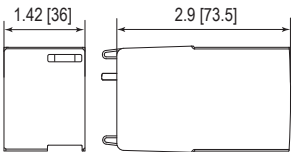
Dimensions & Packaging

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 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-xx-P		25
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

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



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 μ s)	(L-N) / (N-PE) I_n	25 kA / 100 kA
Maximum Discharge Current (8/20 μ s)	(L-N) / (N-PE) I_{max}	65 kA / 150 kA
Impulse Discharge Current (10/350 μ s)	(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 μ s)	(L-N) / (N-PE) U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	(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 μ s)	(L-N) / (N-PE) U_{res}	1200 V / 305 V
Minimum Backup fuse, if required		Not required

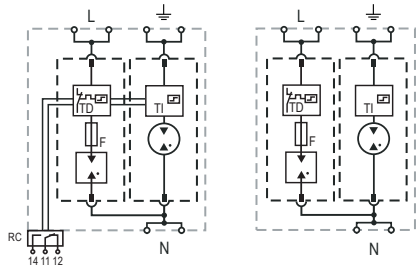
Mechanical & Environmental

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 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 PE Conductor Terminal
- RC Remote Contacts Terminal (Optional)
- TD Thermal Disconnecter
- TI Thermal Indication
- F Integrated Surge Adapted Backup Fuse



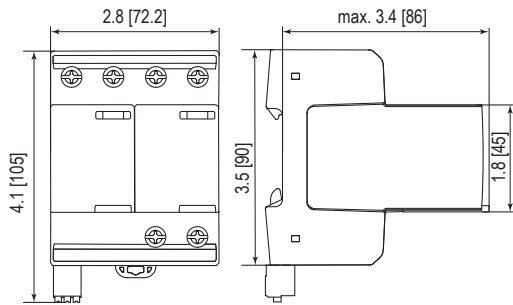
ProTec T1SF-xxx-1+1(-R)

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

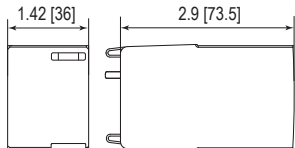
inches [mm]



Complete Unit Dimensions & Packaging

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

Spare Plug



Single Unit Dimensions & Packaging

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

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



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 μ s)	(L-N) / (N-PE) I_n	25 kA / 100 kA
Maximum Discharge Current (8/20 μ s)	(L-N) / (N-PE) I_{max}	65 kA / 150 kA
Impulse Discharge Current (10/350 μ s)	(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 μ s) (L-N) / (N-PE)	U_{oc}	6 kV / 6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s) (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 μ s)	(L-N) / (N-PE) U_{res}	1200 V / 305 V
Minimum Backup fuse, if required		Not required

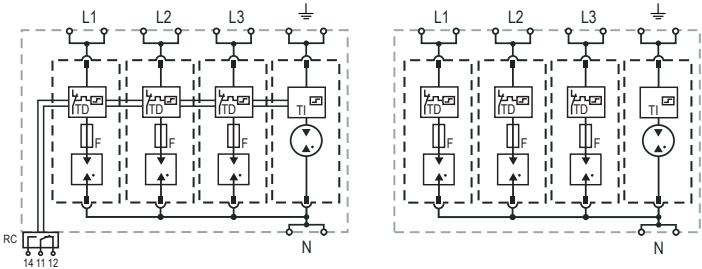
Mechanical & Environmental

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 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
- TI Thermal Indication
- F Integrated Surge Adapted Backup Fuse



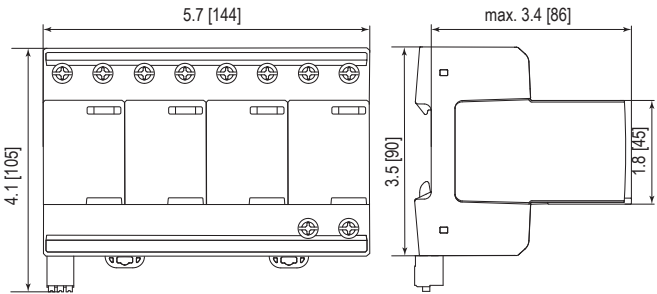
ProTec T1SF-xxx-3+1(-R)

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

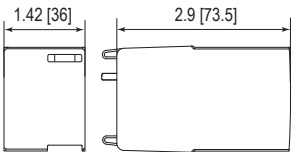
inches [mm]



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



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 μ s)	I_n	100 kA
Maximum Discharge Current (8/20 μ s)	I_{max}	150 kA
Impulse Discharge Current (10/350 μ s)	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 μ s)	U_{oc}	6 kV
Short Circuit Current of Combination Wave Generator (8/20 μ s)	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 μ s)	U_{res}	305 V
Minimum Backup fuse, if required		Not required

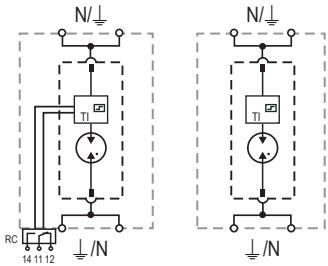
Mechanical & Environmental

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 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

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



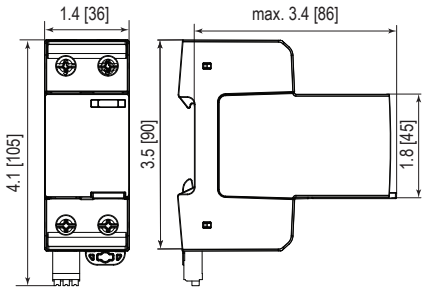
ProTube T1SF-xxx-0+1(-R)

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

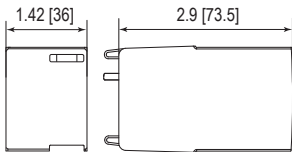
inches [mm]



Complete Unit Dimensions & Packaging

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 (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity	7 Units	

Spare Plug



Single Unit

ProTube 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