

# 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 $\mu$ s)                            | (L-N) / (N-PE) $I_n$     | 25 kA / 100 kA                         |
| Maximum Discharge Current (8/20 $\mu$ s)                            | (L-N) / (N-PE) $I_{max}$ | 65 kA / 150 kA                         |
| Impulse Discharge Current (10/350 $\mu$ s)                          | (L-N) / (N-PE) $I_{imp}$ | 25 kA / 100 kA                         |
| Specific Energy                                                     | (L-N) / (N-PE) W/R       | 156.2 kJ/ $\Omega$ / 2500 kJ/ $\Omega$ |
| Charge                                                              | (L-N) / (N-PE) Q         | 12.5 As / 50 As                        |
| Open Circuit Voltage of Combination Wave Generator (1.2/50 $\mu$ s) | (L-N) / (N-PE) $U_{oc}$  | 6 kV / 6 kV                            |
| Short Circuit Current of Combination Wave Generator (8/20 $\mu$ 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                                    |
| 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 - Standard (Tests performed within Raycap testing laboratory only)

|                                             |                          |                |
|---------------------------------------------|--------------------------|----------------|
| Residual Voltage at 5 kA (8/20 $\mu$ s)     | (L-N) / (N-PE) $U_{res}$ | 1200 V / 305 V |
| Minimum Overcurrent Protection, if required |                          | Not required   |

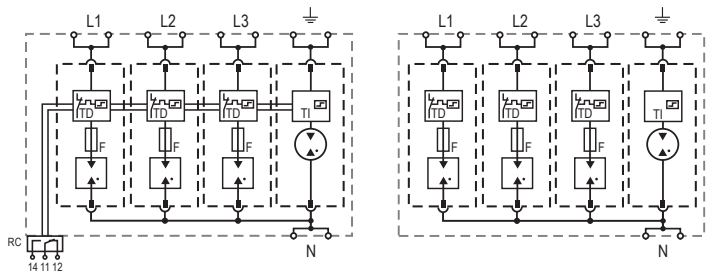
#### Mechanical & Environmental

|                                    |           |                                                                                                                    |
|------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------|
| 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)<br>35 mm <sup>2</sup> (Solid, Stranded) / 25 mm <sup>2</sup> (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 <sup>2</sup> (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

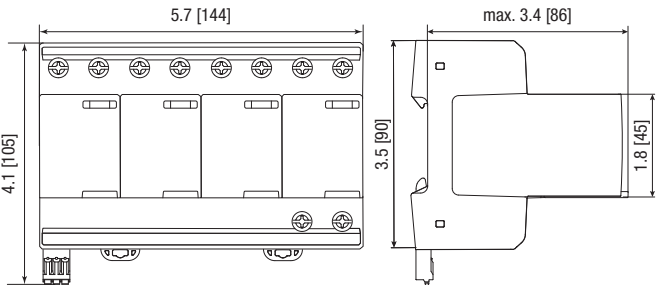


ProTec T1SF-xxx-3+1(-R)

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

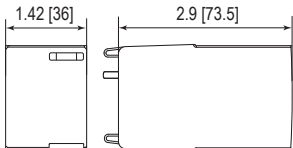


inches [mm]

Complete Unit

|                              |                                        |
|------------------------------|----------------------------------------|
| <b>ProTec T1SF-xxx-3+1</b>   | <b>275</b>                             |
| Weight                       | pounds [grams] 2.348 [1065]            |
| <b>ProTec T1SF-xxx-3+1-R</b> |                                        |
| 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

|                              |                                        |
|------------------------------|----------------------------------------|
| <b>ProTec T1SF-xxx-P</b>     | <b>275</b>                             |
| Weight                       | pounds [grams] .427 [194]              |
| <b>ProTube T1SF-xxx-P</b>    | <b>100</b>                             |
| 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                               |