

Advanced Pluggable Multi-Pole SPD
SafeTec T2 3+1
 Class II • Type 2 • Type 1CA

Increased Discharge Current due to customized High Energy MOV

Discharge Current Capacity (8/20µs) 1 shot 60kA
 Discharge Current Capacity (8/20µs) 15 shots 25kA

I_{SCCR} up to 100kA*

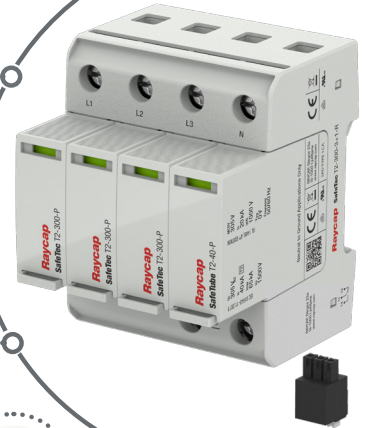
Short-Circuit Current Rating (AC)
 at 160 A gG Back-up Fuse

**IEC: If Main Fuse ≤ 315 A gG
 no Back-up Fuse needed**

UL: No Back-up Fuse needed

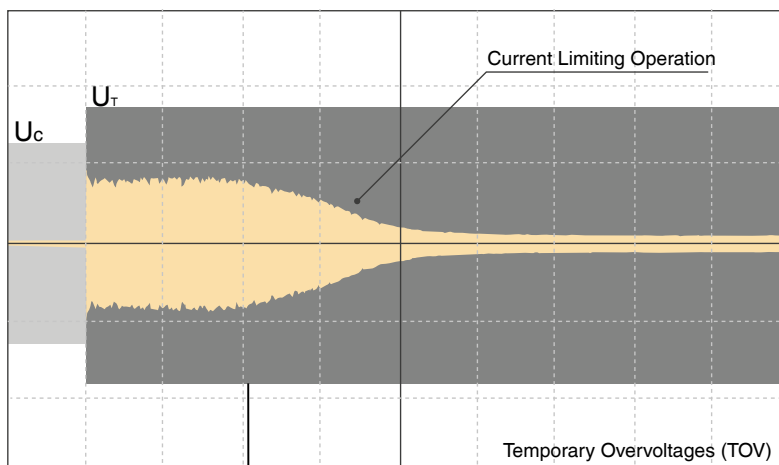
**TOV Immunity*
 5 Year Warranty
 Improved Up Level**

Immune to Vibration & Schock
 Module Locking Mechanism



* Tests performed within Raycap testing laboratory only.

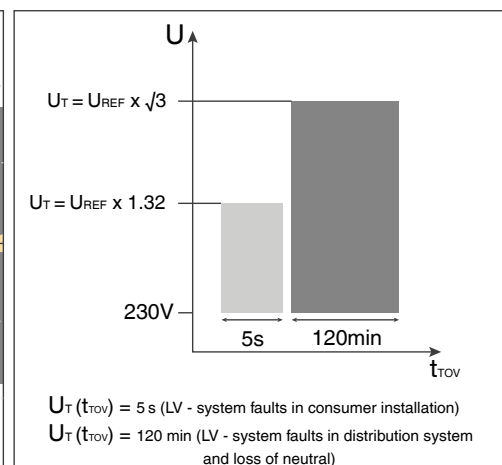
Principle of SafeTec's current limiting function



$U_T = U_{REF} \times \sqrt{3}$ ($U_{REF} = U_N + 10\%$)
 An example case: At $U_N = 230V_{AC}$ $U_T = 440V_{AC}$

- U_c - Maximum Continuous Operating Voltage
- U_T - Temporary Overvoltage (TOV)
- IPE - Current Through SPD

TOV Withstand Performance



$U_T(t_{TOV}) = 5\text{ s}$ (LV - system faults in consumer installation)
 $U_T(t_{TOV}) = 120\text{ min}$ (LV - system faults in distribution system and loss of neutral)

- SafeTec TC Technology
- Conventional Technology

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Location of Use: Sub-distribution Boards
 Network Systems: TT, TN-S
 Mode of Protection: L-N, N-PE
 Surge Ratings: $I_n = 20\text{ kA}/40\text{ kA}$ (L-N/N-PE)
 $I_{max} = 50\text{ kA}/65\text{ kA}$ (L-N/N-PE)
 IEC/EN/UL Category: Class II / Type 2 / Type 1CA
 Protective Elements: High Energy MOV in series with GDT and PTC (L-N) and GDT (N-PE)
Safety: Patented Current Limiting Technology (Long Lifetime)
 Housing: Pluggable Design
 Humidity Range: Extended
 Compliance: IEC 61643-11:2011
 EN 61643-11:2012
 UL 1449 4th Edition
 Recognized: UL 1449 4th Edition
 Back-up Fuse: Not needed (acc. to UL 1449 4th Edition)

Technical Data

SafeTec T2-xxx-3+1(-R)

300

350

IEC Electrical

Parameter	Symbol	300	350
Nominal AC Voltage (50/60Hz)	U_o/U_n	240 V	277 V
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE) U_c	300 V/305 V	350 V/305 V
Nominal Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_n	20 kA/40 kA	20 kA/40 kA
Maximum Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_{max}	50 kA/65 kA	50 kA/65 kA
Voltage Protection Level ($I_n = 20\text{ kA}$)	(L-N)/(N-PE) U_p	1650 V/1500 V	1750 V/1500 V
Follow Current Interrupt Rating	(N-PE) I_{fi}	100 A _{RMS}	
Response Time	(L-N)/(N-PE) t_A	< 25 ns / < 100 ns	
Back-Up Fuse (max)		315 A/250 A gG	
Short-Circuit Current Rating (AC)	(L-N) I_{SCCR}	25 kA/50 kA	
TOV Withstand 120min	(L-N) U_T	442 V	529 V
TOV Withstand 200ms	(N-PE) U_T	1200 V	
Number of Ports		1	

UL Electrical

Parameter	Symbol	300	350
Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE) MCOV	300 V/305 V	350 V/305 V
Voltage Protection Rating	(L-N)/(N-PE) VPR	1200 V/1000 V	1200 V/1000 V
Nominal Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_n	20 kA/20 kA	
Short-Circuit Current Rating (AC)	(L-N) SCCR	150 kA	200 kA

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

Parameter	Symbol	300	350
Residual Voltage at 5 kA (8/20 μ s)	(L-N)/(N-PE) U_{RES}	1000 V/200 V	1300 V/200 V
Discharge Current Capacity (15 shots; 8/20 μ s)		25 kA	25 kA
Discharge Current Capacity (1 shot; 8/20 μ s)		60 kA	60 kA
TOV Withstand (300min)	U_T	442 V	529 V
Back-Up Fuse (max)/Short-Circuit Current Rating (AC)	I_{SCCR}	160 A gG/100 kA	

Mechanical & Environmental

Parameter	Symbol	Value
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude (max)		13123 ft [4000 m]
Terminal Screw Torque	M_{max}	39.9 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)

Order Information

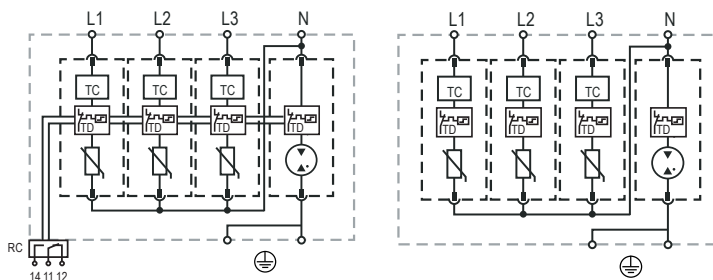
Order Code	300	350
SafeTec T2-xxx-3+1	59.0198	59.0200
SafeTec T2-xxx-3+1-R (with remote contacts)	59.0199	59.0201
SafeTec T2-xxx-P	59.0127	59.0128
SafeTube T2-40-P	59.0274	59.0274

SafeTec T2 3+1

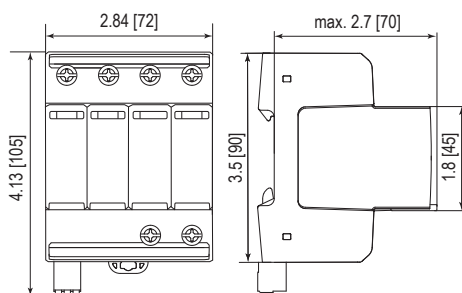
Internal Configuration

Legend

- L Terminal for Line Conductor
- N Terminal for Neutral Conductor
- ⊕ Terminal for PE/G Conductor
- RC Terminal for Remote Contacts (Optional)
- TC Thermal Control (TC) Function
- TD Thermal Disconnect



Dimensions & Packaging



Dimensions & Packaging

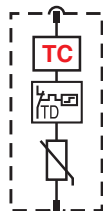
		300	350
SafeTec T2-xxx-3+1	Single Unit Weight	pounds .792	.810
		grams 359	367
SafeTec T2-xxx-3+1-R	Single Unit Weight	pounds .812	.829
		grams 368	376
Single Unit DIN 43880 Dimension			4 TE
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Minimum Order Quantity			4 Units

Plug Internal Configuration

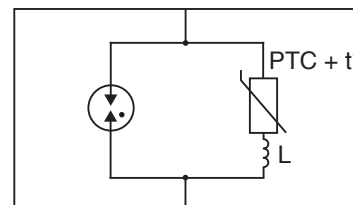
Legend

- TC Thermal Control (TC) Function
- TD Thermal Disconnect
- PTC + t° Positive Thermal Coefficient Resistor
- L Coil

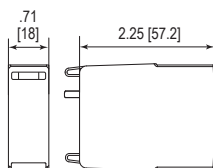
SafeTec T2-xxx-P



Thermal control (TC) schematics



Dimensions & Packaging



Dimensions & Packaging

		300	350
SafeTec T2-xxx-P	Single Unit Weight	pounds .144	.161
		grams 65	73
SafeTube T2-40-P	Single Unit Weight	pounds .093	.100
		grams 42	45
Single Unit DIN 43880 Dimension			1 TE
Packaging Dimensions (HxWxL)			4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]
Minimum Order Quantity			24 Units

inches
[mm]

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Raycap

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