

Advanced Pluggable Multi-Pole SPD
SafeTec T2 1+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

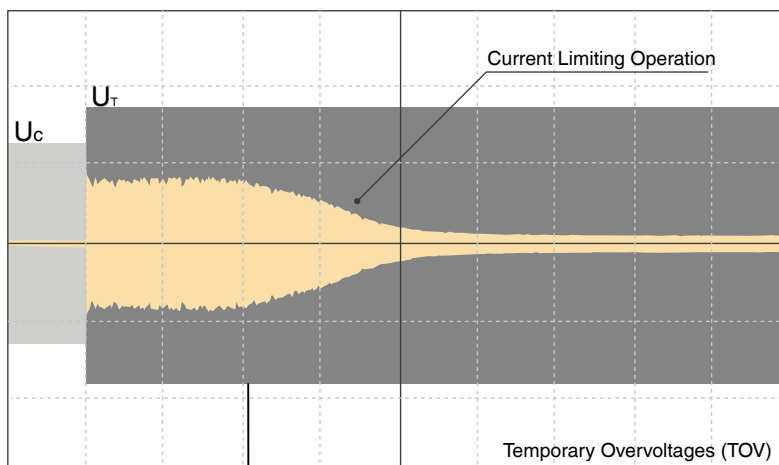
Immune to Vibration & Schock
 Module Locking Mechanism

TOV Immunity*
5 Year Warranty
Improved Up Level



* Tests performed within Raycap testing laboratory only.

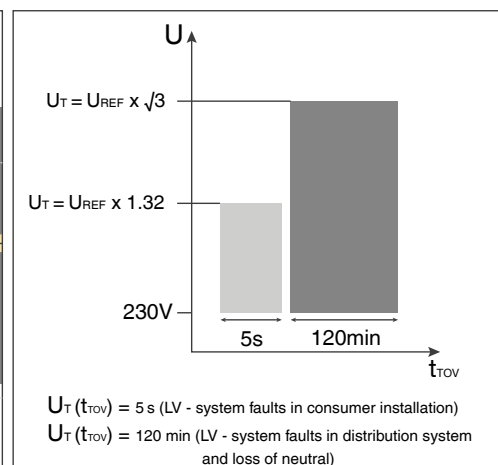
Principle of SafeTec's current limiting function



$U_T = U_{REF} \times \sqrt{3}$ ($U_{REF} = U_N + 10\%$)
 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-1+1(-R)

		75	150	300	350
IEC Electrical					
Nominal AC Voltage (50/60Hz)	U_o/U_n	60V	120V	240V	277V
Maximum Continuous Operating Voltage (AC)	(L-N) U_c	75V	150V	300V	350V
	(N-PE) U_c	305V	305V	305V	305V
Nominal Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_n	20kA/40kA	20kA/40kA	20kA/40kA	20kA/40kA
Maximum Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_{max}	50kA/65kA	50kA/65kA	50kA/65kA	50kA/65kA
Voltage Protection Level ($I_n = 20\text{ kA}$)	(L-N)/(N-PE) U_p	800V/1500V	1250V/1500V	1650V/1500V	1750V/1500V
Follow Current Interrupt Rating	(N-PE) I_{fi}	100A _{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	150V	255V	442V	529V
TOV Withstand 200ms	(N-PE) U_T	1200V			
Number of Ports		1			

UL Electrical

Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE) MCOV	75V/305V	150V/305V	300V/305V	350V/305V
Voltage Protection Rating	(L-N)/(N-PE) VPR	600V/1000V	700V/1000V	1200V/1000V	1200V/1000V
Nominal Discharge Current (8/20 μ s)	(L-N)/(N-PE) I_n	20kA/20kA			
Short-Circuit Current Rating (AC)	(L-N) SCCR	85kA	200kA	150kA	200kA

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

Residual Voltage at 5 kA (8/20 μ s)	(L-N)/(N-PE) U_{RES}	400V/200V	750V/200V	1000V/200V	1300V/200V
Discharge Current Capacity (15 shots; 8/20 μ s)		25 kA	25 kA	25 kA	25 kA
Discharge Current Capacity (1 shot; 8/20 μ s)		60 kA	60 kA	60 kA	60 kA
TOV Withstand (300min)	U_T	-	255V	442V	529V
Back-Up Fuse (max)/Short-Circuit Current Rating (AC)	I_{SCCR}	160 A gG/100 kA			

Mechanical & Environmental

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 [4000m]			
Terminal Screw Torque	M_{max}	39.9 lbf-in [4.5Nm]			
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

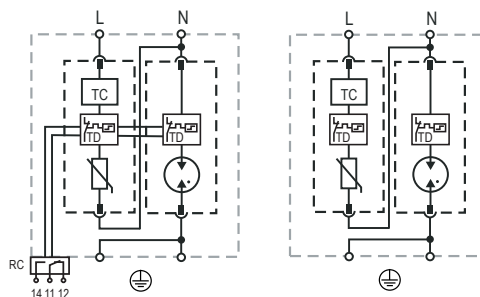
Order Code	75	150	300	350
SafeTec T2-xxx-1+1	59.0186	59.0188	59.0190	59.0192
SafeTec T2-xxx-1+1-R (with remote contacts)	59.0187	59.0189	59.0191	59.0193
SafeTec T2-xxx-P	59.0125	59.0126	59.0127	59.0128
SafeTube T2-40-P	59.0274	59.0274	59.0274	59.0274

SafeTec T2 1+1

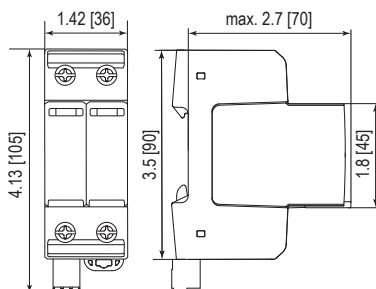
Internal Configuration

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

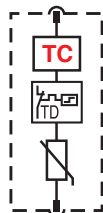
		75	150	300	350
SafeTec T2-xxx-1+1					
Single Unit Weight	pounds	.505	.514	.525	.543
	grams	229	233	238	246
SafeTec T2-xxx-1+1-R					
Single Unit Weight	pounds	.519	.527	.538	.556
	grams	235	239	244	252
Single Unit DIN 43880 Dimension		2 TE			
Packaging Dimensions (HxWxL)		4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]			
Minimum Order Quantity		7 Units			

Plug Internal Configuration

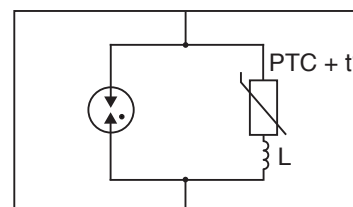
Legend

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

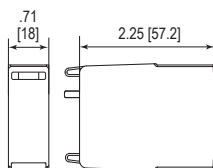
SafeTec T2-xxx-P



Thermal control (TC) schematics



Dimensions & Packaging



Dimensions & Packaging

		75	150	300	350
SafeTec T2-xxx-P					
Single Unit Weight	pounds	.124	.133	.144	.161
	grams	56	60	65	73
SafeTube T2-40-P			40		
Single Unit Weight	pounds		.093		
	grams		42		
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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