

Pluggable Multi-pole Surge Protective Devices (SPDs) for DC Systems

Lightning and Overvoltage Protection for DC Systems

ProTec T2 DCU & ProTec T2 DCB

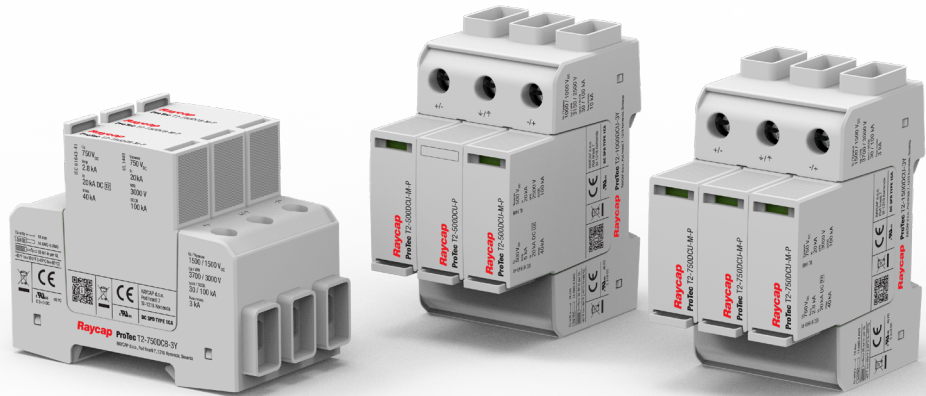
ProTec T2 DCU & DCB:

- For use in various DC systems and EV fast chargers
- Available in Bipolar and Unipolar SPD versions
- Available in operating voltages from 90 V to 1500 V
- Optional remote contact (RC) signaling
- Vibration and shock withstand capability

ProTec T2 DCGU:



- For use in EV fast chargers (DC)
- Available as Unipolar SPD version
- Available in operating voltages 1000 V and 1500 V
- Optional remote contact (RC) signaling
- Vibration and shock withstand capability



IEC 61643-41:2025

UL 1449 5th Edition, Supplement SB

Supplement SB - Direct Current (DC) SPDs



Raycap has developed a DC DIN rail SPD portfolio that meets the requirements of the IEC 61643-41:2025 DC SPD sub-standard under IEC 61643 and is at the same time certified to UL 1449 5th Edition under requirements of SUPPLEMENT SB – DIRECT CURRENT (DC) SPDs. This DC surge protection standard is necessary because existing Power SPDs, compliant with the IEC 61643-31 DC PV SPD supplement or IEC 61643-11 AC SPDs, do not cover requirements present in DC applications.

ProTec T2 DCB & DCU



ProTec T2 DCGU



More Product Information



Pluggable Multi-Pole SPD for DC Systems

ProTec T2 DCB 3Y

Class II • DC SPD Type 1



Location of Use: DC Systems, EV Chargers
 Network Systems: Bipolar grounded, TN-C, TN-C-S, TN-S
 Mode of Protection: (+)-PE/M/G, (-)-PE/M/G, (+)-(-)
 IEC/UL Category: Class II, DC SPD Type 1
 Housing: Pluggable Design
 Compliance: IEC 61643-41:2025
 UL 1449 5th Edition, Supplement SB



Technical Data

ProTec T2-xxxxDCB-3Y(-R)

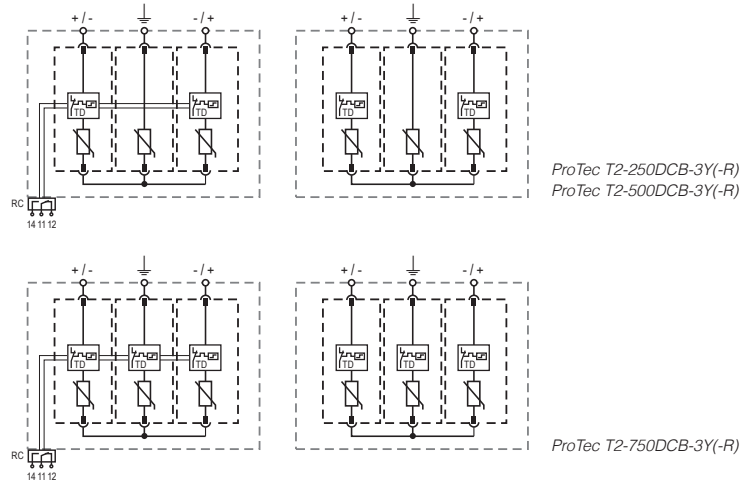
		250	500	750
IEC Electrical				
Nominal DC System Voltage	(+)/(-)-PE/M U_n	250V	500V	750V
Maximum Continuous Operating Voltage (DC)	(+)-(-) U_c	500V	1000V	1500V
	(+)/(-)-PE/M U_c	250V	500V	750V
Nominal Discharge Current (8/20 μ s)	I_n	20 kA	20 kA	20 kA
Maximum Discharge Current	I_{max}	40 kA	40 kA	40 kA
Total Discharge Current (8/20 μ s)	I_{Total}	70 kA	70 kA	55 kA
Voltage Protection Level	U_p	2400V	3150V	3700V
Response Time	t_A		<25 ns	
Overvoltage Category			III	
Overcurrent Protection (max)		200 AgBat*	200 AgBat**	200 AgBat**
Short-Circuit Current Rating (DC)	I_{SCCR}		30 kA (L/R < 3 ms)	
Number of Ports			1	
TN-System Bipolar				
TOV Withstand 5s (DC)	(+)/(-)-PE/M U_T	412V	825V	1238V
TOV Withstand 120min (DC)	(+)/(-)-PE/M U_T	550V	1100V	1650V
TT-System Bipolar				
TOV Withstand 5s (DC)	(+)/(-)-PE U_T	550V	1100V	1650V
TOV Withstand 120min (DC)	(+)/(-)-PE U_T	412V	825V	1238V
TOV Withstand 5s (DC)	(+)/(-)-M U_T	412V	825V	1238V
TOV Withstand 120min (DC)	(+)/(-)-M U_T	550V	1100V	1650V
UL Electrical				
Maximum Permitted DC Voltage	V_{dcmcov}	500V	1000V	1500V
Voltage Protection Rating	VPR	1800V	2500V	3000V
Nominal Discharge Current (8/20 μ s)	I_n		20 kA	
Short-Circuit Current Rating (DC)	SCCR		100 kA	
Additional Electrical Parameters (Tests performed within Raycap testing laboratory only)				
Impulse Discharge Current (10/350 μ s)	I_{imp}	5 kA	5 kA	2.8 kA
Total Discharge Current (10/350 μ s)	I_{Total}	10 kA	10 kA	3 kA
Mechanical & Environmental				
Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]		
Permissible Operating Humidity / Pollution Degree	RH	5%...95% / 2		
Altitude (max)		6562 ft [2000m]		
Terminal Screw Torque	M_{max}	35 lbf-in per UL 1449 [4.5Nm]		
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449		
		35 mm ² (Solid, Stranded) / 25 mm ² (Flexible)		
		Cu Only per UL 1449		
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 / Operating State / Fault Indication		Yes / Green Flag / Not Green Flag		
Remote Contacts (RC)		Optional		
RC Switching Capacity		AC: 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 mm ² (Solid)		
Overvoltage Category		III		

*ETI NH1 BAT 200A/500V DC (004723266), **ETI NH1 BAT 200A/1500V DC (004110656)

Internal Configuration

Legend

-  PE/M/G Conductor Terminal
 RC Remote Contacts Terminal (Optional)
 TD Thermal Disconnecter

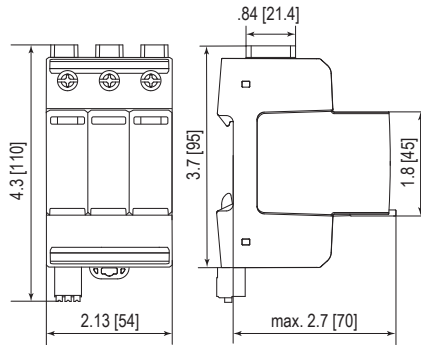


Order Information

Order Code	250	500	750
ProTec T2-xxxDCB-3Y	59.A955	59.A957	59.A959
ProTec T2-xxxDCB-3Y-R (with remote contacts)	59.A956	59.A958	59.A960
ProTec T2-250DCB-M-P (side plug)	59.A961	-	-
ProTec T2-250DCB-P (middle plug)	59.A962	-	-
ProTec T2-500DCB-M-P (side plug)	-	59.A963	-
ProTec T2-500DCB-P (middle plug)	-	59.A964	-
ProTec T2-750DCB-M-P (plug)	-	-	59.A965

Dimensions & Packaging

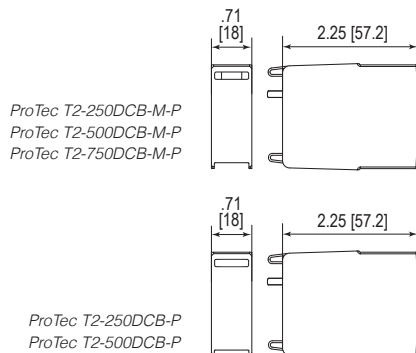
inches [mm]



Complete Unit

ProTec T2-xxxxDCB-3Y	250	500	750
Weight	pounds	.772	.831
	grams	350	377
ProTec T2-xxxxDCB-3Y-R			
Weight	pounds	.789	.849
	grams	358	385
DIN 43880 Dimension	3 TE / 2.13" [54 mm]		
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity	5 Units		

Spare Plug



Single Unit

ProTec T2-xxxDCB-M-P	250	500	750
Weight	pounds	.141	.161
	grams	64	73
ProTec T2-xxxDCB-P			
Weight	pounds	.134	.157
	grams	61	71
DIN 43880 Dimension	1 TE / .70" [18 mm]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

ProTec T2 DCU 3Y**Class II • DC SPD Type 4CA**

Location of Use: DC Systems
 Network Systems: Unipolar grounded / ungrounded, TN, TT*, IT*
 Mode of Protection: (+)-PE/G, (-)-PE/G, (+)-(-)
 IEC/UL Category: Class II, DC SPD Type 4CA
 Housing: Pluggable Design
 Compliance: IEC 61643-41:2025
 UL 1449 5th Edition, Supplement SB

**Technical Data****ProTec T2-xxxDCU-3Y(-R)**

		90	150	250
IEC Electrical				
Nominal DC Voltage	(+)-(-) U_n	75 V	120 V	220 V
Maximum Continuous Operating Voltage (DC)	U_c	90 V	150 V	250 V
Nominal Discharge Current (8/20 μ s)	I_n	20 kA	20 kA	20 kA
Maximum Discharge Current	I_{max}	40 kA	40 kA	40 kA
Total Discharge Current (8/20 μ s)	I_{Total}	40 kA	40 kA	40 kA
Voltage Protection Level	U_p	700 V	700 V	1000 V
Overcurrent Protection (max)		125 AgBat**	125 AgBat**	125 AgBat**
Short-Circuit Current Rating (DC)	I_{SCCR}		10 kA (L/R < 3 ms)	
Response Time			<25 ns	
Overvoltage Category			III	
Number of Ports			1	

UL Electrical

Maximum Permitted DC Voltage	V_{dcmcov}	90 V	150 V	250 V
Measured Limiting Voltage	MLV	800 V	800 V	1100 V
Nominal Discharge Current (8/20 μ s)	I_n		20 kA	

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 (max)		6562 ft [2000 m]		
Terminal Screw Torque	M_{max}	35 lbf-in per UL 1449 [4.5 Nm]		
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449		
		35 mm ² (Solid, Stranded) / 25 mm ² (Flexible)		
		Cu Only per UL 1449		
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		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 mm ² (Solid)		
Overvoltage Category		III		

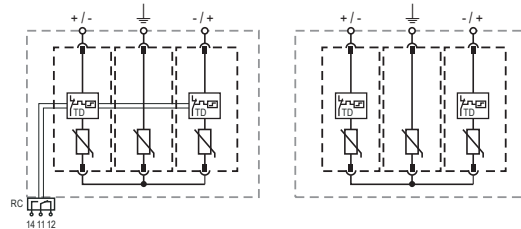
*Only for DC power systems which are electrically separated from AC power systems.

**ETI NH1 BAT 125 A/500 V DC (004723264)

Internal Configuration

Legend

	PE / G Conductor Terminal
	Remote Contacts Terminal (Optional)
	Thermal Disconnect

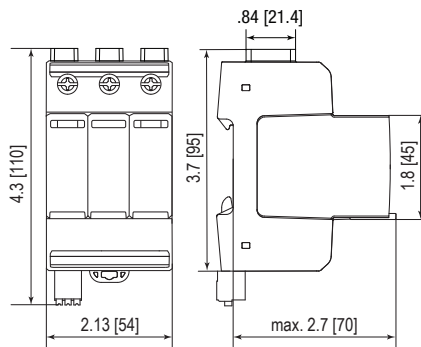


Order Information

Order Code	90	150	250
ProTec T2-xxxDCU-3Y	59.C864	59.C865	59.C866
ProTec T2-xxxDCU-3Y-R (with remote contacts)	59.C829	59.C830	59.C831
ProTec T2-45DCU-M-P (side plug)	59.C869	-	-
ProTec T2-45DCU-P (middle plug)	59.C870	-	-
ProTec T2-75DCU-M-P (side plug)	-	59.C871	-
ProTec T2-75DCU-P (middle plug)	-	59.C872	-
ProTec T2-125DCU-M-P (side plug)	-	-	59.C873
ProTec T2-125DCU-P (middle plug)	-	-	59.C874

Dimensions & Packaging

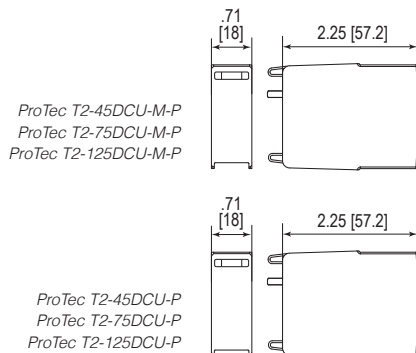
inches [mm]



Complete Unit

ProTec T2-xxxxDCU-3Y		90	150	250
Weight	pounds	.672	.672	.683
	grams	305	305	310
ProTec T2-xxxDCU-3Y-R				
Weight	pounds	.694	.694	.705
	grams	315	315	320
DIN 43880 Dimension		3 TE / 2.13" [54mm]		
Packaging Dimensions (HxWxL)		4.3 × 4.5 × 13.8" [109 × 115 × 352 mm]		
Standard Order Quantity		5 Units		

Spare Plug



Single Unit

ProTec T2-xxxDCU-M-P		45	75	125
Weight	pounds	.093	.093	.095
	grams	42	42	43
ProTec T2-xxxDCU-P		45	75	125
Weight	pounds	.099	.099	.104
	grams	45	45	47
DIN 43880 Dimension		1 TE / .70" [18 mm]		
Packaging Dimensions (HxWxL)		3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity		24 Units		

Pluggable Multi-Pole SPD for DC Systems

ProTec T2 DCU 3Y

Class II • DC SPD Type 1



Location of Use: DC Systems, EV Chargers
 Network Systems: Unipolar grounded / ungrounded, TN, TT*, IT*
 Mode of Protection: (+)-PE/G, (-)-PE/G, (+)-(-)
 IEC/UL Category: Class II, DC SPD Type 1
 Housing: Pluggable Design
 Compliance: IEC 61643-41:2025
 UL 1449 5th Edition, Supplement SB



Technical Data

ProTec T2-xxxxDCU-3Y(-R)

		500	1000	1500
IEC Electrical				
Nominal DC System Voltage	(+)-(-) U_n	500 V	1000 V	1500 V
Maximum Continuous Operating Voltage (DC)	U_c	500 V	1000 V	1500 V
Nominal Discharge Current (8/20 μ s)	I_n	20 kA	20 kA	20 kA
Maximum Discharge Current	I_{max}	40 kA	40 kA	40 kA
Total Discharge Current (8/20 μ s)	I_{Total}	70 kA	70 kA	55 kA
Voltage Protection Level	U_p	2400 V	3150 V	3700 V
Response Time	t_A		<25 ns	
Overvoltage Category			III	
Overcurrent Protection (max)		200 AgBat**	200 AgBat***	200 AgBat***
Short-Circuit Current Rating (DC)	I_{SCCR}		30 kA (L/R < 3 ms)	
Number of Ports			1	
UL Electrical				
Maximum Permitted DC Voltage	V_{dcmcov}	500 V	1000 V	1500 V
Voltage Protection Rating	VPR	1800 V	2500 V	3000 V
Nominal Discharge Current (8/20 μ s)	I_n		20 kA	
Short-Circuit Current Rating (DC)	SCCR		100 kA	
Additional Electrical Parameters (Tests performed within Raycap testing laboratory only)				
Impulse Discharge Current (10/350 μ s)	I_{imp}	5 kA	5 kA	2.8 kA
Total Discharge Current (10/350 μ s)	I_{Total}	10 kA	10 kA	3 kA
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 (max)		6562 ft [2000 m]		
Terminal Screw Torque	M_{max}	35 lbf-in per UL 1449 [4.5 Nm]		
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449		
		35 mm ² (Solid, Stranded) / 25 mm ² (Flexible)		
		Cu Only per UL 1449		
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: 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 mm ² (Solid)		
Overvoltage Category		III		

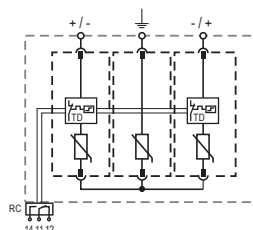
*Only for DC power systems which are electrically separated from AC power systems.

ETI NH1 BAT 200A/500V DC (004723266), *ETI NH1 BAT 200A/1500V DC (004110656)

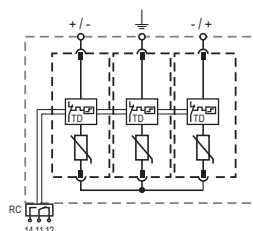
Internal Configuration

Legend

	PE / G Conductor Terminal
	Remote Contacts Terminal (Optional)
	Thermal Disconnecter



ProTec T2-500DCU-3Y(-R)
ProTec T2-1000DCU-3Y(-R)



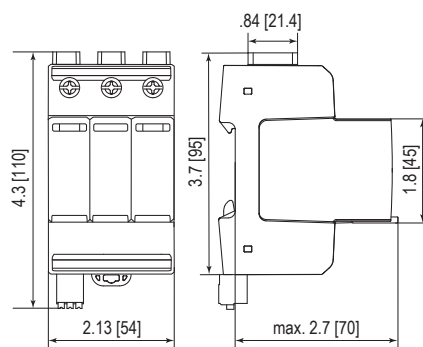
ProTec T2-1500DCU-3Y(-R)

Order Information

Order Code	500	1000	1500
ProTec T2-xxxxDCU-3Y	59.A983	59.A985	59.A987
ProTec T2-xxxxDCU-3Y-R (with remote contacts)	59.A984	59.A986	59.A988
ProTec T2-250DCU-M-P (side plug)	59.A989	-	-
ProTec T2-250DCU-P (middle plug)	59.A990	-	-
ProTec T2-500DCU-M-P (side plug)	-	59.A991	-
ProTec T2-500DCU-P (middle plug)	-	59.A992	-
ProTec T2-750DCU-M-P (plug)	-	-	59.A993

Dimensions & Packaging

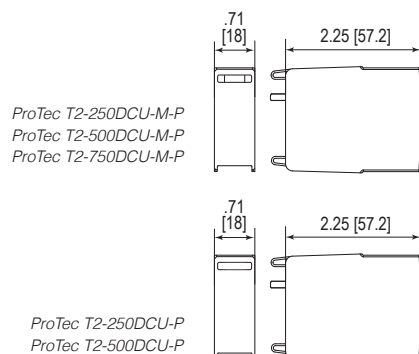
inches [mm]



Complete Unit

ProTec T2-xxxxDCU-3Y	500	1000	1500
Weight	pounds .772	.831	.791
	grams 350	377	359
ProTec T2-xxxxDCU-3Y-R			
Weight	pounds .789	.849	.809
	grams 358	385	367
DIN 43880 Dimension	3 TE / 2.13" [54 mm]		
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]		
Standard Order Quantity	5 Units		

Spare Plug



ProTec T2-250DCU-M-P
ProTec T2-500DCU-M-P
ProTec T2-750DCU-M-P

ProTec T2-250DCU-P
ProTec T2-500DCU-P

Single Unit

ProTec T2-xxxDCU-M-P	250	500	750
Weight	pounds .141	.161	.146
	grams 64	73	66
ProTec T2-xxxDCU-P			
Weight	pounds .134	.157	-
	grams 61	71	-
DIN 43880 Dimension	1 TE / .70" [18 mm]		
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]		
Standard Order Quantity	24 Units		

Pluggable Multi-Pole SPD for EV Chargers

ProTec T2 DCGU 3Y

Class II • DC SPD Type 4CA



Location of Use: EV Chargers
 Network Systems: Unipolar grounded / ungrounded, TN, TT*, IT*
 Mode of Protection: (+) - PE / G, (-) - PE / G, (+) - (-)
 IEC/UL Category: Class II, DC SPD Type 4CA
 Housing: Pluggable Design
 Compliance: IEC 61643-41:2025
 UL 1449 5th Edition, Supplement SB



Technical Data

ProTec T2-xxxxDCGU-3Y(-R)

		1000	1500
IEC Electrical			
Nominal DC System Voltage	(+) - (-) U_n	900 V	1250 V
Maximum Continuous Operating Voltage (DC)	(+) - (-) U_c	1000 V	1500 V
	(+) / (-) - PE U_c	1000 V	1000 V
Nominal Discharge Current (8/20 μ s)	I_n	20 kA	20 kA
Maximum Discharge Current	I_{max}	40 kA	40 kA
Total Discharge Current (8/20 μ s)	I_{Total}	65 kA	65 kA
Voltage Protection Level	(+) - (-) U_p	3900 V	4100 V
	(+) / (-) - PE U_p	2400 V	2500 V
Response Time	(+) - (-) t_A	< 25 ns	< 25 ns
	(+) / (-) - PE t_A	< 100 ns	< 100 ns
Overvoltage Category		III	III
Overcurrent Protection (max)		200 A gBat**	200 A gBat**
Short-Circuit Current Rating (DC)	I_{SCCR}	50 kA (L/R < 3 ms)	100 kA (L/R < 3 ms)
Number of Ports		1	1
UL Electrical			
Maximum Permitted DC Voltage	(+) - (-) V_{dcmcov}	1000 V	1500 V
	(+) / (-) - G V_{dcmcov}	1000 V	1000 V
Measured Limiting Voltage	(+) - (-) MLV	3700 V	3900 V
	(+) / (-) - G MLV	4300 V	4300 V
Nominal Discharge Current (8/20 μ s)	I_n	20 kA	20 kA
Additional Electrical Parameters (Tests performed within Raycap testing laboratory only)			
Rated DC withstand voltage***	U_{WDC}	1200 V	1250 V
Impulse Discharge Current (10/350 μ s)	I_{imp}	2.5 kA	2.5 kA
Total Discharge Current (10/350 μ s)	I_{Total}	-	5 kA
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 (max)		6562 ft [2000 m]	9842 ft [3000 m]
Terminal Screw Torque	M_{max}	35 lbf-in per UL 1449 [4.5 Nm]	
Conductor Cross Section (max)		6 AWG (Solid, Stranded) per UL 1449	
		35 mm ² (Solid, Stranded) / 25 mm ² (Flexible)	
		Cu Only per UL 1449	
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: 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 mm ² (Solid)	
Overvoltage Category		III	

*Only for DC power systems which are electrically separated from AC power systems.

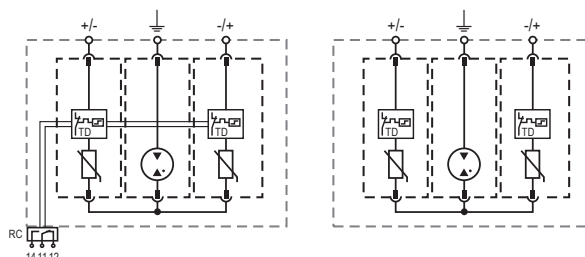
**ETI NH1 BAT 200A/1500V DC (004110656)

***In accordance with IEC 61851-23:2023 and prEN IEC CDV 61851-23-3:2024

Internal Configuration

Legend

	PE / G Conductor Terminal
	Remote Contacts Terminal (Optional)
	Thermal Disconnecter

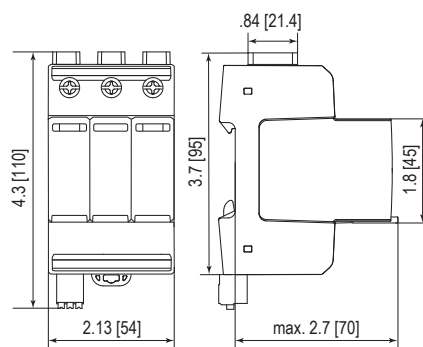


Order Information

Order Code	1000	1500
ProTec T2-xxxxDCGU-3Y	59.C380	59.D040
ProTec T2-xxxxDCGU-3Y-R (with remote contacts)	59.C381	59.D041
ProTec T2-500DCGU-M-P (side plug)	59.C383	-
ProTec T2-750DCGU-M-P (side plug)	-	59.D043
ProTube T2-500DCGU-P (middle plug)	59.C382	59.C382

Dimensions & Packaging

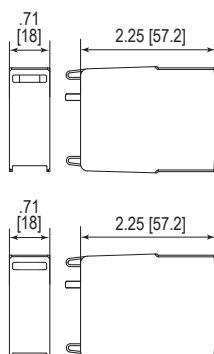
inches [mm]



Complete Unit

ProTec T2-xxxxDCGU-3Y	1000	1500
Weight	pounds .758	.758
	grams 344	344
ProTec T2-xxxxDCGU-3Y-R		
Weight	pounds .778	.778
	grams 353	353
DIN 43880 Dimension	3 TE / 2.13" [54 mm]	
Packaging Dimensions (HxWxL)	4.3 x 4.5 x 13.8" [109 x 115 x 352 mm]	
Standard Order Quantity	5 Units	

Spare Plug



Single Unit

ProTec T2-xxxDCGU-M-P	500	750
Weight	pounds .148	.148
	grams 67	67
ProTube T2-xxxDCGU-P	500	
Weight	pounds .088	
	grams 40	
DIN 43880 Dimension	1 TE / .70" [18 mm]	
Packaging Dimensions (HxWxL)	3.2 x 4.5 x 12" [83 x 116 x 305 mm]	
Standard Order Quantity	24 Units	