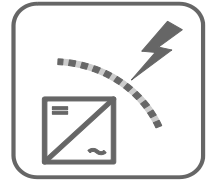


SURGE PROTECTION



- > The CORE1 is prepared for surge protection modules Type 2 – at the PV inputs as well as the AC output.
- > Two new retrofit packs are available AC_SPD_KIT-10
DC_SPD_KIT-4

PV inputs

- > 9 modules (6x PV+, 2x PV-, 1 PV-PE)
- > monitoring via communications board

Surge Ratings: $I_{Total} = 50 \text{ kA (8/20}\mu\text{s)}$

EN/UL Category: Type 2 / Type 1CA

Protective Elements: High Energy MOV

Housing: Pluggable Design

Compliance: EN 50539-11:2013 + A1:2014
UL 1449, 4th edition



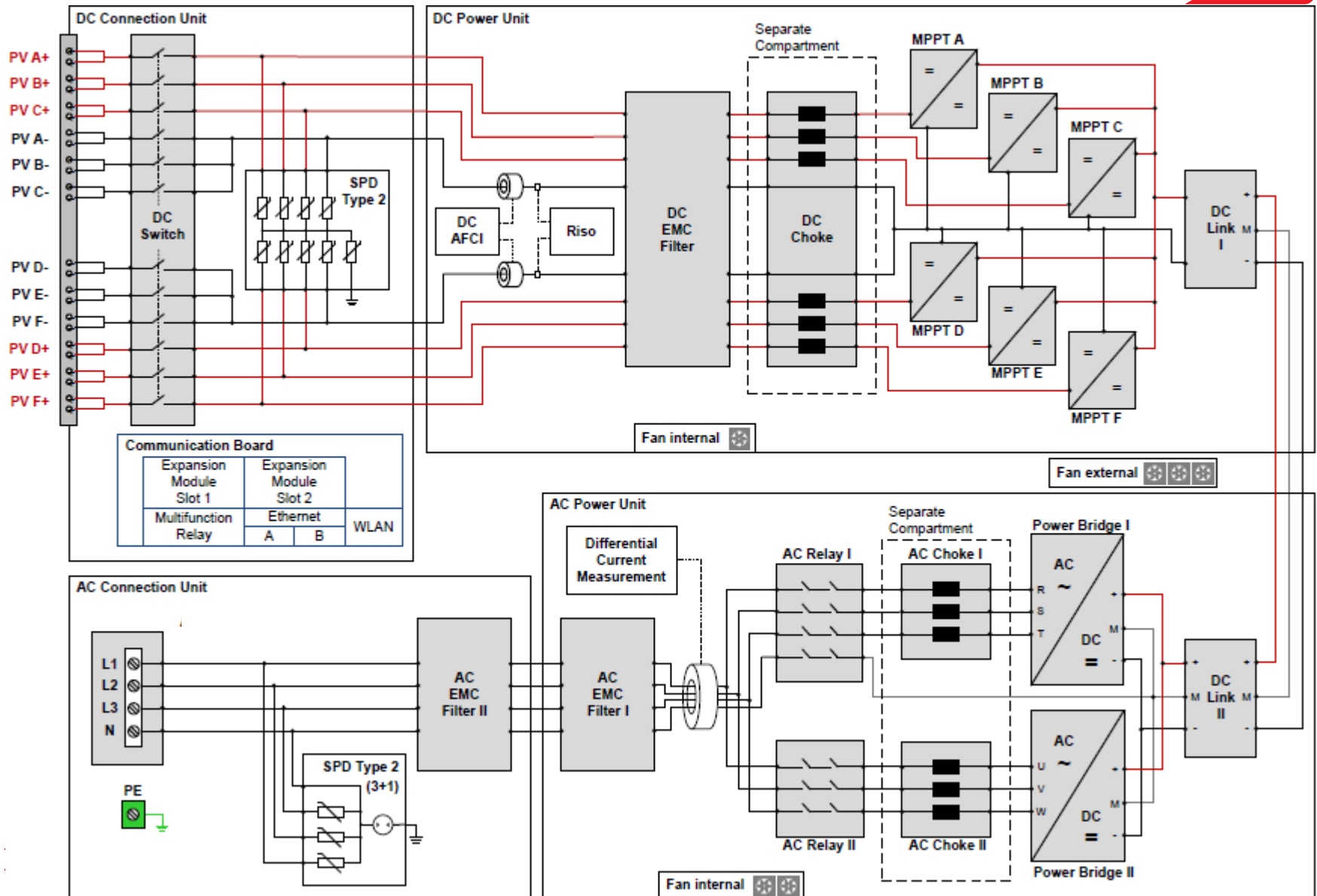
AC output

- > 4 modules (L1/L2/L3/N)
- > not monitored – less likely, central detection at AC mains possible

Network Systems: TT, TN-S
Mode of Protection: L-N, N-PE
Surge Ratings: $I_n = 20 \text{ kA (8/20}\mu\text{s)}$
IEC/EN/UL Category: Class II / Type 2 / Type 1CA
Protective Elements: High Energy MOV and GDT
Housing: Pluggable Design
Compliance: IEC 61643-11:2011
EN 61643-11:2012
UL 1449, 4th edition



SINGLE LINE DIAGRAM



DATA SHEET**Pluggable Multi-Pole SPD for Photovoltaic Systems;
ProTec T2-1100PV-9Y-S01/R****Type 2 • Type 1CA PV SPD**

Location of Use: String box, Inverter
 Mode of Protection: (+) - PE, (-) - PE, (+) - (-)

Surge Ratings: $I_{Total} = 50 \text{ kA (8/20}\mu\text{s)}$

EN/UL Category: Type 2 / Type 1CA

Protective Elements: High Energy MOV

Housing: Pluggable Design

Compliance: EN 50539-11:2013 + A1:2014
 UL 1449, 4th edition

Technical Data**ProTec T2-1100PV-9Y-S01/R****EN Electrical**

Maximum Continuous Operating DC Voltage	U_{CPV}	1100 V
Nominal Discharge Current (8/20 μs)	I_n	20 kA
Total Discharge Current (8/20 μs)	I_{Total}	50 kA
Voltage Protection Level	U_p	4400 V
Response Time	t_A	< 25 ns
Short-Circuit Current Rating	I_{SCP}	11 kA
Number of Ports		1

UL Electrical

Maximum Permitted DC Voltage	V_{pVdc}	1100 V
Voltage Protection Rating	VPR	2500 V
Nominal Discharge Current (8/20 μs)	I_n	20 kA
Short-Circuit Current Rating	SCCR	50 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 [4000 m]
Terminal Screw Torque	M_{max}	39.9 lbf·in [4.5 Nm]
Conductor Cross Section (max)		35 mm ² (Solid) / 25 mm ² (Stranded) 2 AWG (Solid) / 4 AWG (Stranded)
Mounting		35 mm DIN Rail, EN 60715
Degree Of Protection		IP 20
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)		1.5 mm ² (Solid) 16 AWG (Solid)

Ordering Code

ProTec T2-1100PV-9Y-S01-B/R	580.268
ProTec T2-1100PV-9Y-P	58.0267

AWG=American Wire Gauge

Raycap

www.raycap.com

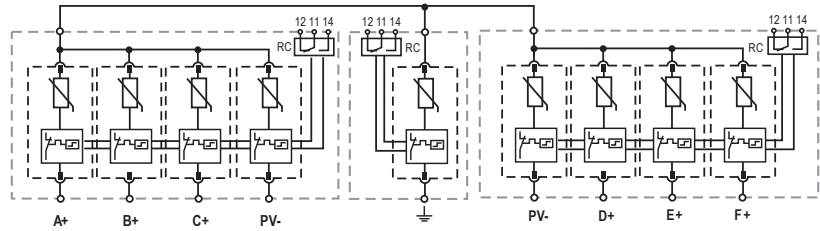
Information contained in this document is subject to
 change at any time without notice.

ProTec T2-1100PV-9Y-S01/R

Internal Configuration

Legend

(A+) - (F+)	L+
PV-	L-
⊕	Protective Earth
RC	Remote Contacts Optional

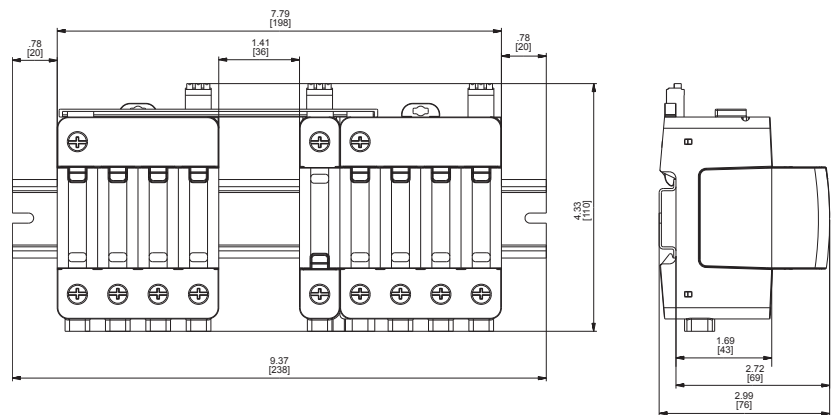


Dimensions & Weights

Weights

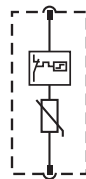
ProTec T2-1100PV-9Y-S01/R

Single Unit Weight	pounds	2.945
	grams	1336



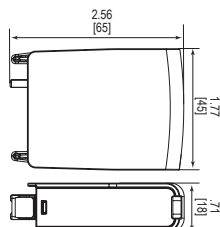
Plug Internal Configuration

ProTec T2-XXXXPV-P



Dimensions & Weights

ProTec T2-550PV-P



Weights

ProTec T2-550PV-P

		550
Single Unit Weight	pounds	.157
	grams	71

inches
[mm]

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Raycap

www.raycap.com

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G29-00-160 170210

Pluggable Multi-Pole SPD

ProTec T2-350-3+1

Class II • Type 2 • Type 1CA



Location of Use: Sub-Distribution Boards

Network Systems: TT, TN-S

Mode of Protection: L-N, N-PE

Surge Ratings: $I_n = 20\text{kA}$ (8/20 μs)

IEC/EN/UL Category: Class II / Type 2 / Type 1CA

Protective Elements: High Energy MOV and GDT

Housing: Pluggable Design

Compliance: IEC 61643-11:2011

EN 61643-11:2012

UL 1449, 4th edition

Technical Data

ProTec T2-xxx-3+1

350

IEC Electrical

Nominal AC Voltage (50/60Hz)	U_o / U_n	277V
Maximum Continuous Operating Voltage (AC)	(L-N) U_c	350V
	(N-PE) U_c	305V
Nominal Discharge Current (8/20 μs)	(L-N)/(N-PE) I_n	20kA / 40kA
Maximum Discharge Current (8/20 μs)	(L-N)/(N-PE) I_{max}	50kA / 65kA
Voltage Protection Level	(L-N)/(N-PE) U_p	1750V / 1500V
Follow Current Interrupt Rating	(N-PE) I_{fi}	100A _{RMS}
Response Time	(L-N)/(N-PE) t_A	< 25ns / < 100ns
Back-Up Fuse (max)		315A gG / 250A gG
Short-Circuit Current Rating (AC)	I_{SCCR}	25kA / 50kA
TOV Withstand 5s	(L-N) U_T	403V
TOV Withstand 200ms	(N-PE) U_T	1200V / 300A
Number of Ports		1

UL Electrical

Maximum Continuous Operating Voltage (AC)	(L-N)/(N-PE) MCOV	350V / 305V
Voltage Protection Rating	(L-N)/(N-PE) VPR	1500V / 1500V
Nominal Discharge Current (8/20)	(L-N)/(N-PE) I_n	20kA / 20kA
Short-Circuit Current Rating (AC)	(L-N) SCCR	200kA

Mechanical

Operating Temperature Range	T_a	-40 °F to +185 °F [-40 °C to +85 °C]
Permissible Operating Humidity	RH	5%...95%
Altitude		13123 ft [4000m]
Terminal Screw Torque	M_{max}	39.9 lbf-in [4.5Nm]
Conductor Cross Section (max)		35mm ² (Solid) / 25mm ² (Stranded)
		2 AWG (Solid) / 4 AWG (Stranded)
Mounting		35mm DIN Rail, EN 60715
Degree Of Protection		IP 20
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)		1.5mm ² (Solid)
		16 AWG (Solid)

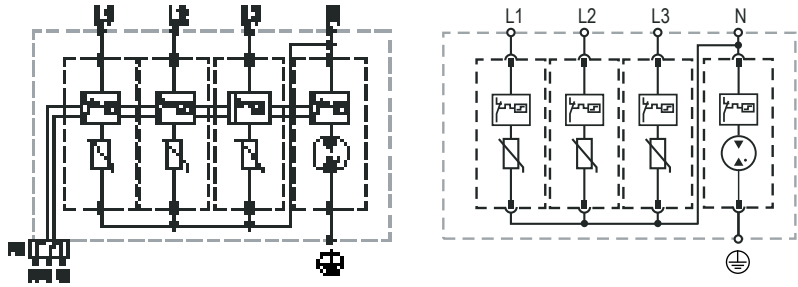
Ordering Code

ProTec T2-350-3+1	58.0270
ProTec T2-350-3+1-R	58.0227
ProTec T2-350-P	58.0052
ProTube T2-40-P	58.0206
ProTec T2-350-3+1-B	580.270
ProTec T2-350-3+1-P	58.0269

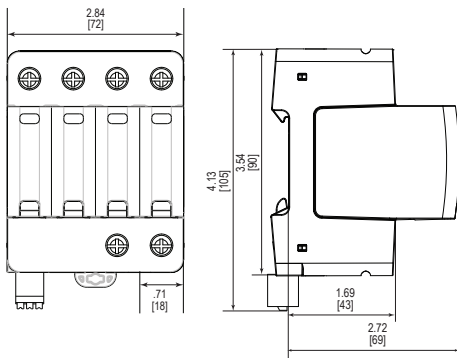
Internal Configuration

Legend

- L Line
- N Neutral
- PE Protective Earth
- RC Remote Contacts Optional



Dimensions & Weights



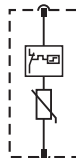
Weights

ProTec T2-xxx-3+1		350
Single Unit Weight	pounds	1.085
	grams	492
ProTec T2-xxx-3+1-R		350
Single Unit Weight	pounds	1.105
	grams	501

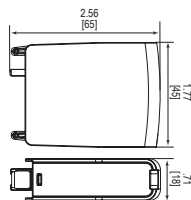
Plug Internal Configuration

ProTec T2-xxx-P

ProTube T2-40-P



Dimensions & Weights



Weights

ProTec T2-xxx-P		350
Single Unit Weight	pounds	.146
	grams	66
ProTube T2-40-P		
Single Unit Weight	pounds	.093
	grams	42

inches
[mm]

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