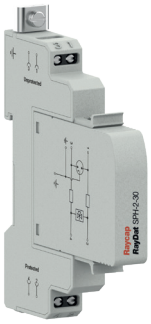
DATA SHEET

Modular SPD for Single Pair

RayDat SPH-2 Series

D1 • C1 • C2 • C3

***UL Listed**



IEC/EN Category: D1/C1/C2/C3
Mode of Protection: Longitudinal, Transverse
Coarse Protection: 3 Terminal GDT
Voltages: 30*, 230 V DC
Frequency Range: 30 MHz, 10 MHz
Surge Discharge Ratings: I_n: 10 kA, I_{max}: 20 kA, I_{imp}: 2.5 kA
Series Load Current: 1 A
Enclosure: DIN 43880 2/3 TE, DIN Rail Mount
Terminals: Stranded to 4 mm²
Housing: Modular Design
Compliance: IEC/EN 61643-21
UL 497B 4th Edition

The RayDAT SPH-2 Series of surge protective devices has been developed to protect a single pair loop, which could be ungrounded onto data, signal and communication circuits.

It is intended for those applications where high ground potential rises may frequently occur, such as in locations close to electric railways.

The circuit topology consists of a multi-stage protector providing both common (longitudinal) mode and differential (transverse) mode protection.

Coarse protection is provided by a three terminal gas discharge tube while fine protection is provided using a high speed silicon avalanche diode or metal oxide varistor stage. Care is taken to ensure coordination between these two stages without voltage or surge current blind spots occurring.

Thermal protection is provided to reduce the hazards of thermal runaway should there be an inadvertent mains incursion fault. Both common (longitudinal) mode and differential (transverse) mode protection is provided.

If the module is unplugged out of the base, the connection lines remain enabled.

Technical Data

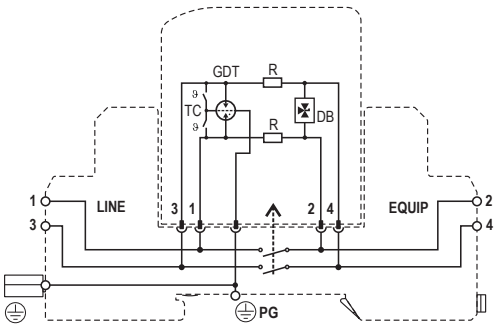
SPH-2 Series			30*	230
Electrical				
Lines Protected			1 (2 Conductors)	
Nominal Operating Voltage (DC)		U_n	30 V	230 V
Maximum Continuous Operating Voltage (DC)		U_c	33 V	320 V
Rated Load Current at 25°C		I_L	1 A	5 A
C2 Nominal Discharge Current (8/20 µs)		I_n	10 kA	
Maximum Discharge Current (8/20 µs)		I_{max}	20 kA	
D1 Impulse Current (10/350 µs)		I_{imp}	2.5 kA	
Residual Voltage at 5 kA (8/20 µs)	(Line-Line)	U_{res}	< 80 V	< 700 V
Rated Spark Overvoltage	(Line-Ground)		184-276 V	350-550 V
	(Line-Line)		36-44 V	350-429 V
Response Time Overvoltage Protection	(Line-Line)	t_A	< 1 ns	< 25 ns
	(Line-Ground)		< 100 ns	
Insulation Resistance of the Protection	(Line-Ground)	R_{iso}	> 1 GΩ / 100 V	
	(Line-Line)		≥ 33 MΩ	≥ 100 MΩ
Serial Resistance per Path		R	1.6-2.0 Ω	0.1 Ω
Transverse Capacitance	(Line-Line)	C	50 pF	100 pF
	(Line-Ground)		5 pF	
Cut-off Frequency		f_G	30 MHz	10 MHz
Mechanical				
Temperature Range			-40 °F to +176 °F [-40 °C to +80 °C]	
Terminal Cross Section Multi-strand (max.)			12 AWG	
			4 mm², 2.5 mm² Q Version	
Terminal Screw Torque			4.5 lbf·in [0.5 Nm]	
Degree of Protection IEC/EN 60529			IP 20 (built-in)	
Housing Material			Thermoplastic; Grey; Extinguishing Degree V-0	
Mounting IEC/EN 60715			35 mm DIN Rail	
Order Information				
Order Code			30*	230
SPH-2-xxx			7082.84	7081.06
SPH-2-xxxQ (Quick Connect Terminals)			7085.25	7085.26
SPH-2-xxxM (module)			7082.85	7081.08

RayDat SPH-2 Series

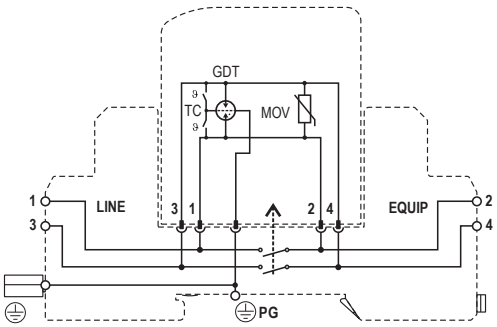
Internal Configuration

Legend

DB	*Diode Block*
GDT	*Gas Discharge Tube*
MOV	*Metal Oxide Varistor*
PG	*Protective Grounding*
R	*Resistor*
TC	*Thermo-clip*

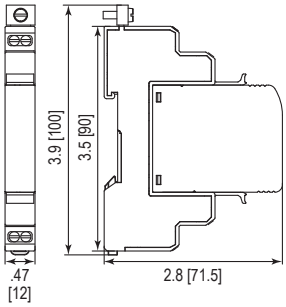


SPH-2-30

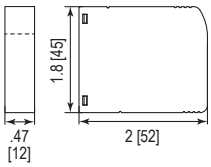


SPH-2-230

Dimensions & Packaging

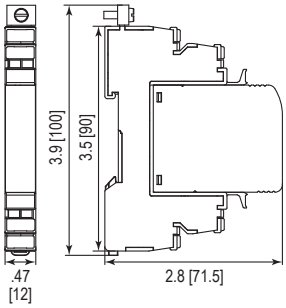


SPH-2 Series	30	230
Dimensions		
Weight per Unit	2.11 oz [60 g]	
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	3.4 × .59 × 4" [87 × 15 × 102 mm]	
Minimum Package Quantity	15 pieces	

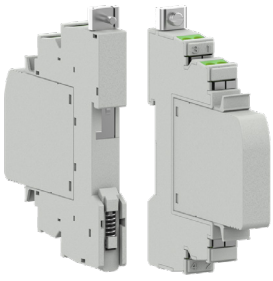


SPH-2-xxxM Series	30	230
Dimensions		
Weight per Unit	.91 oz [26 g]	
Packaging Dimensions (Single Unit)	3.4 × .59 × 4" [87 × 15 × 102 mm]	
Minimum Package Quantity	15 pieces	

Quick Connect Terminals



SPH-2-xxxQ Series	30	230
Dimensions		
Weight per Unit	2.18 oz [62 g]	
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	3.4 × .59 × 4" [87 × 15 × 102 mm]	
Minimum Package Quantity	15 pieces	



Bases with Quick Connect Terminals enable faster installation and have built-in contacts to enhance vibration resistance.

inches
[mm]

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

RoHS COMPLIANT

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