

Modular SPD for Single Pair
RayDat SPH-2 Series
D1 • C1 • C2 • C3



IEC/EN Category: D1/C1/C2/C3
 Mode of Protection: Longitudinal, Transverse
 Coarse Protection: 3 Terminal GDT
 Voltages: 30, 230V DC
 Frequency Range: 30 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

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

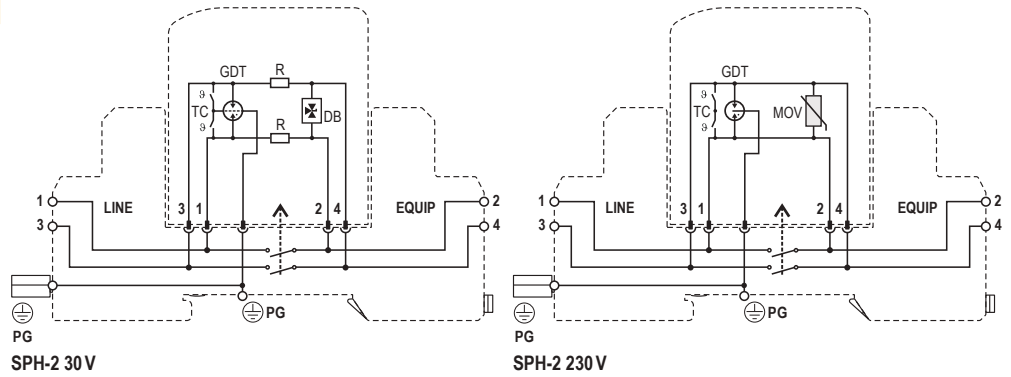
SPH-2 Series		30V	230V
Electrical			
Lines Protected		1 (2 Conductors)	
Nominal Operating Voltage (DC)	U_n	30V	230V
Maximum Continuous Operating Voltage (DC)	U_c	33V	230V
Rated Load Current at 25°C	I_L	1 A	5 A
C2 Nominal Discharge Current (8/20 μs)	I_n	10 kA	
Maximum Discharge Current (8/20 μs)	I_{max}	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}	<80V	<450V
Rated Spark Overvoltage	(Line-Ground)	184-276V	350-429V
	(Line-Line)	36-44V	350-504V
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/100V	
	(Line-Line)	≥ 33 MΩ	≥ 100 MΩ
Serial Resistance per Path	R	1.6-2.0 Ω	
Transverse Capacitance	(Line-Line) C	50 pF	
	(Line-Ground)	50 pF	
Cut-off Frequency	f_G	10 MHz	
Mechanical			
Temperature Range		-40 °C to +80 °C	
Terminal Cross Section Multi-strand		4 mm ² , 2.5 mm ² Q Version	
Terminal Screw Torque		0.5 Nm	
Degree of Protection IEC/EN 60529		IP 20	
Housing Material		Thermoplastic; Grey; Extinguishing Degree V-0	
Mounting IEC/EN 60715		35 mm DIN Rail	
Order Information			
Order Code		30V	230V
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

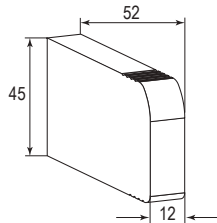
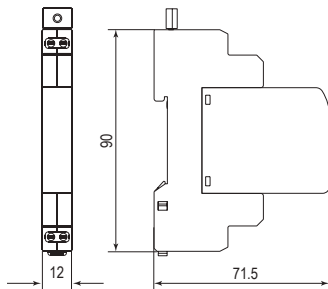
Internal Configuration

Legend

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



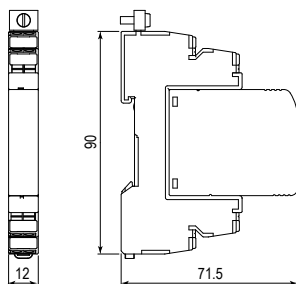
Dimensions & Packaging



SPH-2 Series	30V	230V
Dimensions		
Weight per Unit	60 g	
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	87 × 15 × 102 mm	
Minimum Package Quantity	15 pieces	

SPH-2-xxxM Series	30V	230V
Dimensions		
Weight per Unit	26g	
Packaging Dimensions (Single Unit)	87 × 15 × 102 mm	
Minimum Package Quantity	15 pieces	

Quick Connect Terminals



SPH-2-xxxQ Series	30V	230V
Dimensions		
Weight per Unit	62 g	
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	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.

