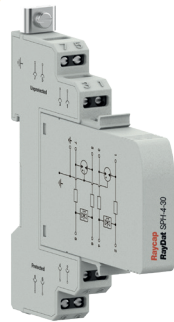


Modular SPD for Two Pair  
**RayDat SPH-4 Series**  
**D1 • C1 • C2 • C3**

**UL Listed**



IEC/EN Category: D1/C1/C2/C3  
 Mode of Protection: Longitudinal, Transverse  
 Coarse Protection: 3 Terminal GDT  
 Voltages: 30V DC  
 Frequency Range: 30 MHz  
 Surge Discharge Ratings:  $I_n$ : 10 kA,  $I_{max}$ : 20 kA,  $I_{imp}$ : 5 kA  
 Series Load Current: 1 A, 10 A  
 Enclosure: DIN 43880 2/3 TE, DIN Rail Mount  
 Terminals: Stranded to 4 mm<sup>2</sup>  
 Housing: Modular Design  
 Compliance: IEC/EN 61643-21  
 UL 497B 4th Edition

The RayDAT SPH-4 Series of surge protective devices has been developed to protect two pair loops, 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**

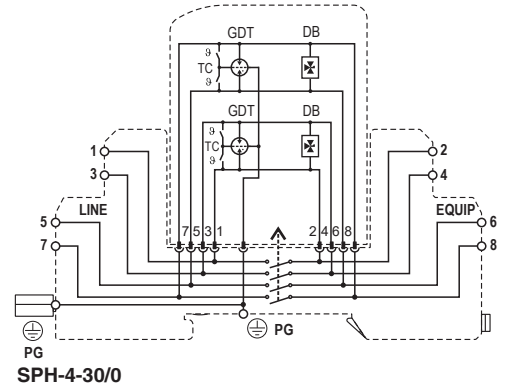
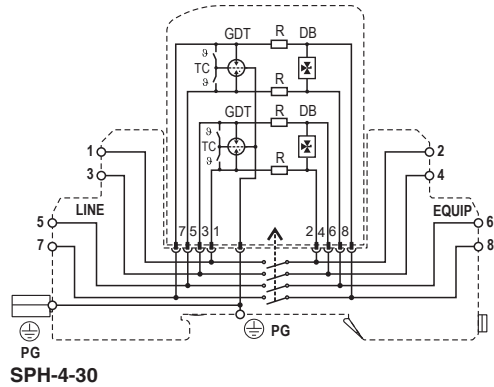
SPH-4 Series	30	30/0
<b>Electrical</b>		
Lines Protected	2 (4 Conductors)	
Nominal Operating Voltage (DC)	$U_n$	30V
Maximum Continuous Operating Voltage (DC)	$U_c$	33V
Rated Load Current at 25°C	$I_L$	1 A      10 A
C2 Nominal Discharge Current (8/20 μs)	$I_n$	10 kA
Maximum Discharge Current (8/20 μs)	$I_{max}$	20 kA
D1 Impulse Current (10/350 μs)	$I_{imp}$	5 kA
Residual Voltage at 5 kA (8/20 μs)	(Line-Line) $U_{res}$	< 80V
Rated Spark Overvoltage	(Line-Ground)	184-276V
	(Line-Line)	36-44V
Response Time Overvoltage Protection	(Line-Line) $t_A$	< 1 ns
	(Line-Ground)	< 100 ns
Insulation Resistance of the Protection	(Line-Ground) $R_{iso}$	> 1 GΩ/100V
	(Line-Line)	≥ 33 MΩ
Serial Resistance per Path	$R$	1.6-2.0Ω      0.1Ω
Transverse Capacitance	(Line-Line) $C$	50 pF
	(Line-Ground)	5 pF
Cut-off Frequency	$f_G$	30 MHz
<b>Mechanical</b>		
Temperature Range	-40 °F to +176 °F [-40 °C to +80 °C]	
Terminal Cross Section Multi-strand (max.)	12 AWG	
	4 mm <sup>2</sup> , 2.5 mm <sup>2</sup> Q Version	
Terminal Screw Torque	4.5 lbf-in [0.5 Nm]	
Degree of Protection IEC/EN 60529	IP20 (built-in)	
Housing Material	Thermoplastic; Grey; Extinguishing Degree V-0	
Mounting IEC/EN 60715	35 mm DIN Rail	
<b>Order Information</b>		
Order Code	30	30/0
SPH-4-xx	7082.82	7086.89
SPH-4-xxQ (Quick Connect Terminals)	7085.24	7085.28
SPH-4-xxM (module)	7082.83	7085.29

# RayDat SPH-4 Series

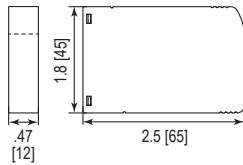
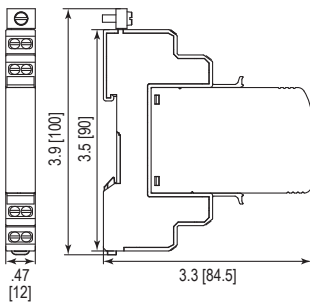
## Internal Configuration

### Legend

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



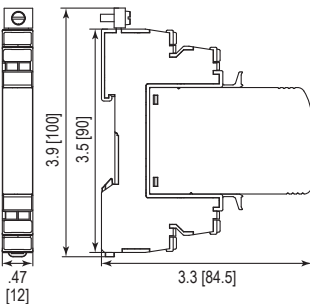
## Dimensions & Packaging



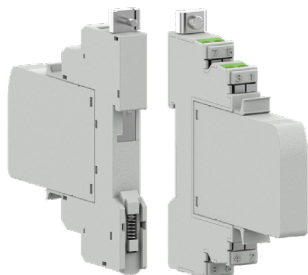
SPH-4 Series	30	30/0
<b>Dimensions</b>		
Weight per Unit	2.11 oz [60 g]	2.04 oz [58 g]
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	3.4 x .59 x 4" [87 x 15 x 102 mm]	
Minimum Package Quantity	15 pieces	

SPH-4-xxM Series	30	30/0
<b>Dimensions</b>		
Weight per Unit	.91 oz [26 g]	.84 oz [24 g]
Packaging Dimensions (Single Unit)	3.4 x .59 x 4" [87 x 15 x 102 mm]	
Minimum Package Quantity	15 pieces	

## Quick Connect Terminals



SPH-4-xxQ Series	30	30/0
<b>Dimensions</b>		
Weight per Unit	2.18 oz [62 g]	2.11 oz [60 g]
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	3.4 x .59 x 4" [87 x 15 x 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.

