

Modular SPD for Industrial Fieldbus Systems

RayDat SBH-3 Series

D1 • C1 • C2 • C3



IEC/EN Category: D1/C1/C2/C3
 Mode of Protection: Longitudinal, Transverse
 Coarse Protection: 3 Terminal GDT
 Voltages: 5, 12, 30V DC
 Frequency Range: 30MHz
 Surge Discharge Ratings: I_n : 10kA, I_{max} : 20kA, I_{imp} : 2.5kA
 Series Load Current: 1A
 Enclosure: DIN 43880 2/3TE, DIN Rail Mount
 Terminals: Stranded to 4 mm²
 Housing: Modular Design
 Compliance: IEC/EN 61643-21

The RayDAT SBH-3 Series of surge protective devices has been developed to protect fieldbus systems (CAN Bus, Profibus DP, RS 232/V.24m, RS 485, Sinec L2).

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

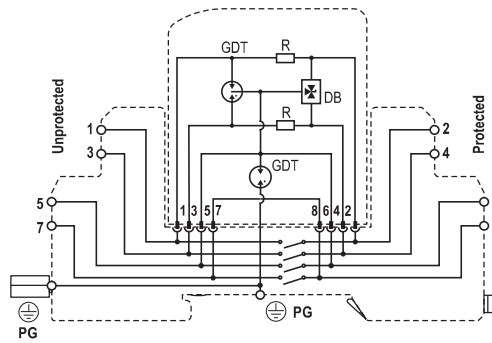
SBH-3 Series		5V	12V	30V
Electrical				
Lines Protected		1 (2 Conductors)		
Nominal Operating Voltage (DC)	U_n	5V	12V	30V
Maximum Continuous Operating Voltage (DC)	U_c	6V	15V	33V
Rated Load Current at 25°C	I_L	1A		
C2 Nominal Discharge Current (8/20µs)	I_n	10kA		
Maximum Discharge Current (8/20µs)	I_{max}	20kA		
D1 Impulse Current (10/350µs)	I_{imp}	2.5kA		
Residual Voltage at 5kA (8/20µs)	(Line-Line) U_{res}	<22V	<42V	<80V
Rated Spark Overvoltage	(SG-Ground)	184-276V		
	(Line-Line)	7-10V	16-19V	35-43V
Response Time Overvoltage Protection	(Line-Line) t_A	<1 ns		
	(Line-Ground)	<100 ns		
Insulation Resistance of the Protection	(Line-Ground) R_{iso}	> 1GΩ/100V		
	(Line-Line)	≥ 6KΩ	≥ 15MΩ	≥ 33MΩ
Serial Resistance per Path	R	1.6-2.0Ω		
Transverse Capacitance	(Line-Line) C	50pF		
	(Line-Ground)	5pF		
Cut-off Frequency	f_G	30MHz		
Mechanical				
Temperature Range		-40 °C to +80 °C		
Terminal Cross Section Multi-Strand		4 mm ² , 2.5mm ² Q Version		
Terminal Screw Torque		0.5Nm		
Degree of Protection IEC/EN 60529		IP 20		
Housing Material		Thermoplastic; Grey; Extinguishing Degree V-0		
Mounting IEC/EN 60715		35mm DIN Rail		
Order Information				
Order Code		5V	12V	30V
SBH-3-xx		7082,86	7082,88	7082,90
SBH-3-xxQ (Quick Connect Terminals)		7085,21	7085,22	7085,23
SBH-3-xxM (module)		7082,87	7082,89	7082,91

RayDat SBH-3 Series

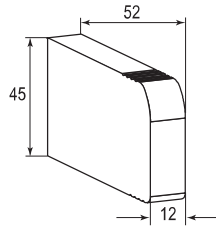
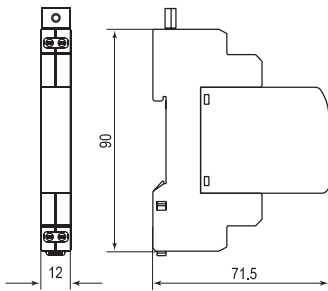
Internal Configuration

Legend

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



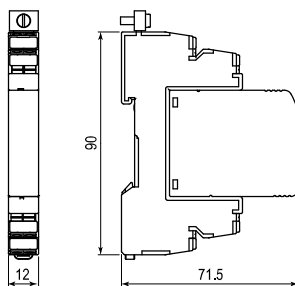
Dimensions & Packaging



SBH-3 Series	5V	12V	30V
Dimensions			
Weight per Unit	60g		
Dimensions DIN 43880	2/3 TE		
Packaging Dimensions (Single Unit)	87 × 15 × 102mm		
Minimum Package Quantity	15 pieces		

SBH-3-xxM Series	5V	12V	30V
Dimensions			
Weight per Unit	26g		
Packaging Dimensions (Single Unit)	87 × 15 × 102mm		
Minimum Package Quantity	15 pieces		

Quick Connect Terminals



SBH-3-xxQ Series	5V	12V	30V
Dimensions			
Weight per Unit	62g		
Dimensions DIN 43880	2/3 TE		
Packaging Dimensions (Single Unit)	87 × 15 × 102mm		
Minimum Package Quantity	15 pieces		



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