**DATA SHEET**

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

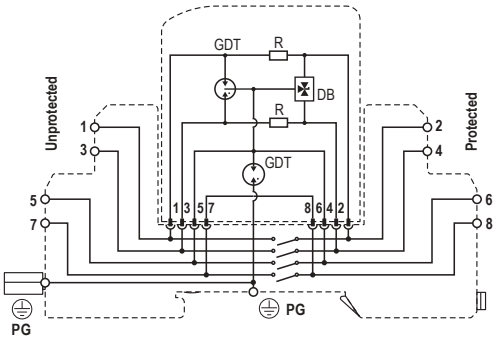
If the module is unplugged out of the base, the connection lines remain enabled.

## 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 | | $I_L$ | | 1 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) | $U_{res}$ | <22V | <42V | <80V |
| Rated Spark Overvoltage | (SG-Ground) | | | 280-420V | |
| | (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) | $R_{iso}$ | | > 1 GΩ / 100V | |
| | (Line-Line) | | ≥ 6 KΩ | ≥ 15 MΩ | ≥ 33 MΩ |
| Serial Resistance per Path | | R | | 1.6-2.0 Ω | |
| Transverse Capacitance | (Line-Line) | C | | 50 pF | |
| | (Line-Ground) | | | 5 pF | |
| Cut-off Frequency | | $f_G$ | | 30 MHz | |
| **Mechanical** | | | | | |
| Temperature Range | | | | -40 °C to +80 °C | |
| Terminal Cross Section Multi-Strand | | | | 4 mm², 2.5 mm² 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 | | | 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

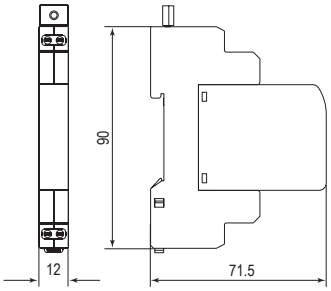
### Internal Configuration



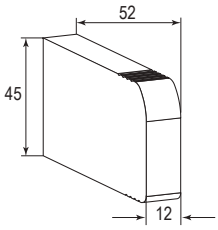

**Legend**

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

### Dimensions & Packaging

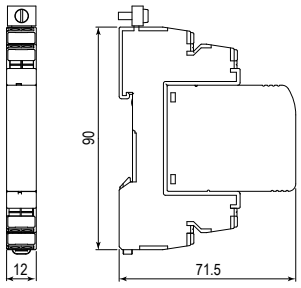



| SBH-3 Series | 5V | 12V | 30V |
|---|---|---|---|
| **Dimensions** | | | |
| Weight per Unit | | 60 g | |
| Dimensions DIN 43880 | | 2/3 TE | |
| Packaging Dimensions (Single Unit) | | 87 × 15 × 102 mm | |
| Minimum Package Quantity | | 15 pieces | |




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

**Quick Connect Terminals**




| SBH-3-xxQ Series | 5V | 12V | 30V |
|---|---|---|---|
| **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.*

RoHS COMPLIANT CE

Raycap www.raycap.com