

SPD for Shielded Cable
RayDat SSH-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, 15, 24, 30, 48, 60, 110V 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 SSH-3 Series of surge protective devices has been developed to protect against the effects of induced voltages onto data, signal and communication circuits.

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

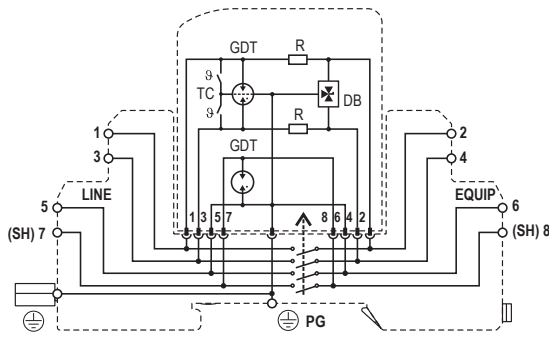
| SSH-3 Series | | 5V | 12V | 15V | 24V | 30V | 48V | 60V | 110V |
|---|----------------------------|---|---------|---------|---------|---------|---------|---------|----------|
| Electrical | | | | | | | | | |
| Lines Protected | | 1 (2 Conductors) | | | | | | | |
| Nominal Operating Voltage (DC) | U_n | 5V | 12V | 15V | 24V | 30V | 48V | 60V | 110V |
| Maximum Continuous Operating Voltage (DC) | U_c | 6V | 15V | 18V | 28V | 33V | 52V | 64V | 170V |
| Rated Load Current at 25°C | I_L | 1 A | | | | | | | |
| C2 Nominal Discharge Current (8/20µs) | I_n | 10 kA | | | | | | | |
| Maximum Discharge Current (8/20µs) | I_{max} | 20 kA | | | | | | | |
| D1 Impulse Current (10/350µs) | I_{imp} | 2.5 kA | | | | | | | |
| Residual Voltage at 5 kA (8/20µs) | (Line-Line) U_{res} | <22V | <42V | <48V | <70V | <80V | <140V | <160V | <450V |
| Rated Spark Overvoltage | (Shield-Ground) | 184-276V | | | | | | | |
| | (Line-Line), (Line-Ground) | 7-10V | 16-21V | 20-24V | 30-36V | 35-43V | 55-68V | 67-85V | 184-264V |
| Response Time Overvoltage Protection (Shield-Ground) | t_A | < 100 ns | | | | | | | |
| | (Line-Line), (Line-Ground) | < 1 ns | | | | | | | |
| Insulation Resistance of the Protection (Shield-Ground) | R_{iso} | > 1 GΩ/100V | | | | | | | |
| | (Line-Line), (Line-Ground) | ≥ 6 KΩ | ≥ 15 MΩ | ≥ 18 MΩ | ≥ 28 MΩ | ≥ 33 MΩ | ≥ 52 MΩ | ≥ 64 MΩ | ≥ 170 MΩ |
| Serial Resistance per Path | R | 1.6-2.0Ω | | | | | | | |
| Transverse Capacitance | (Shield-Ground) C | 5 pF | | | | | | | |
| | (Line-Line), (Line-Ground) | 50 pF | | | | | | | |
| Cut-off Frequency | f_G | 30 MHz | | | | | | | |
| Mechanical | | | | | | | | | |
| Temperature Range | | -40 °C to +80 °C | | | | | | | |
| Terminal Cross Section Multi-strand | | 4 mm ² | | | | | | | |
| 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 | 15V | 24V | 30V | 48V | 60V | 110V |
| SSH-3-xxx | | 7086.01 | 7086.02 | 7086.03 | 7086.04 | 7086.05 | 7086.06 | 7086.07 | 7086.08 |
| SSH-3-xxxQ (Quick Connect Terminals) | | 7086.90 | 7086.91 | 7086.92 | 7086.93 | 7086.94 | 7086.95 | 7086.96 | 7086.97 |
| SSH-3-xxxM (module) | | 7086.09 | 7086.10 | 7086.11 | 7086.12 | 7086.13 | 7086.14 | 7086.15 | 7086.16 |

RayDat SSH-3 Series

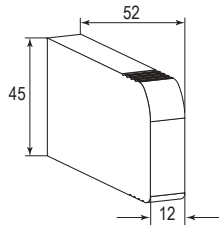
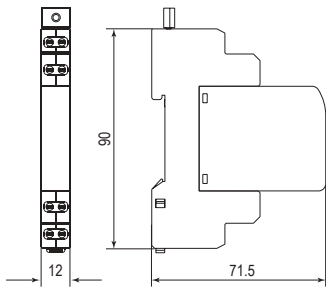
Internal Configuration

Legend

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



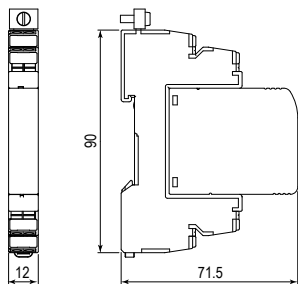
Dimensions & Packaging



| SSH-3 Series | 5V | 12V | 15V | 24V | 30V | 48V | 60V | 110V |
|------------------------------------|------------------|-----|-----|-----|-----|-----|-----|------|
| 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 | | | | | | | |

| SSH-3-xxxM Series | 5V | 12V | 15V | 24V | 30V | 48V | 60V | 110V |
|------------------------------------|------------------|-----|-----|-----|-----|-----|-----|------|
| Dimensions | | | | | | | | |
| Weight per Unit | 26 g | | | | | | | |
| Packaging Dimensions (Single Unit) | 87 × 15 × 102 mm | | | | | | | |
| Minimum Package Quantity | 15 pieces | | | | | | | |

Quick Connect Terminals



| SSH-3-xxxQ Series | 5V | 12V | 15V | 24V | 30V | 48V | 60V | 110V |
|------------------------------------|------------------|-----|-----|-----|-----|-----|-----|------|
| 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.