

SPD for Data Protocols  
**RayDat RS 485**  
**D1 • C1 • C2 • C3**



The RayDat RS 485 has been developed to protect 2 pair data transmission circuits using the RS 485, RS 422 and V.11 protocol.

The circuit consists of two balanced pairs with equipotential equalization between them. Equipotential equalization is also provided between signal ground and protective ground to avoid equipment damage from ground potential rises during surge activity.

- IEC/EN Category: D1/C1/C2/C3
- Protection: Longitudinal, Transverse
- Coarse Protection: 2 × 2, 2 × 3 terminal GDT
- Voltages: 5VDC
- Maximum Operating Voltage: 6VDC
- Serial Resistance per Path: 1.7–1.90Ω per line
- Frequency Range: 1 MHz
- Surge Discharge Ratings:  $I_n$ : 20 kA,  $I_{imp}$ : 2.5 kA
- Enclosure: DIN 43880 2TE, DIN Rail Mount
- Terminals: Stranded 2 × 2.5 mm<sup>2</sup>
- Housing: 16 Terminal, Compact Design
- Compliance: IEC/EN 61643-21

Coarse protection is provided by a three terminal gas discharge tube while fine protection is provided using a high speed silicon stage, which provides both common (longitudinal) mode protection from each line to protective ground and differential (transverse) mode protection between each pair.

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.

**Technical Data**

**RS 485**

**Electrical**

|  |                     |                 |
|--|---------------------|-----------------|
| Number of Protected Pairs                          |                     | 2(4 Conductors) |
| Nominal Operating Voltage (DC)                     | $U_n$               | 5V              |
| Maximum Continuous Operating Voltage (DC)          | $U_c$               | 6V              |
| Rated Load Current at 25°C                         | $I_L$               | 500 mA          |
| C2 Nominal Discharge Current (8/20 μs) (Line-Line) | $I_n$               | 20 kA           |
| D1 Impulse Current (10/350 μs)                     | $I_{imp}$           | 2.5 kA          |
| Residual Voltage at 5 kA (8/20 μs) (Line-Line)     | $U_{res}$           | 20V             |
| Rated Spark Overvoltage                            | (5, 6, 7 & 8-4, SG) | 6.5V–8.5V       |
|  | (5-6 & 7-8)         | 6.5V–8.5V       |
|  | (5,6,7 & 8-2, PG)   | 78V–116V        |
| Response Time Overvoltage Protection (5,6,7,8,SG)  | $t_A$               | < 1 ns          |
| Thermal Protection (5,6,7,8)                       |                     | Yes             |
| Insulation Resistance of Protection                | $R_{iso}$           | 6 kΩ            |
| Serial Resistance per Path                         | $R$                 | 1.7–1.9 Ω       |
| Transverse Capacitance                             | $C$                 | < 2 nF          |
| Cut-off Frequency                                  | $f_G$               | > 1 MHz         |

**Mechanical**

|                                     |  |   |
|-------------------------------------|--|---|
| Temperature Range                   |  | -40 °C to +80 °C                              |
| Terminal Cross Section Multi-strand |  | 2 × 2.5 mm <sup>2</sup>                       |
| Terminal Screw Torque               |  | 2.0 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**

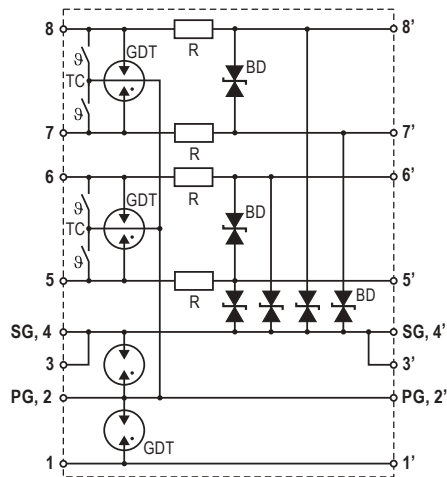
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| Order Code |  |         |
| RS 485     |  | 703 812 |

# RayDat RS 485

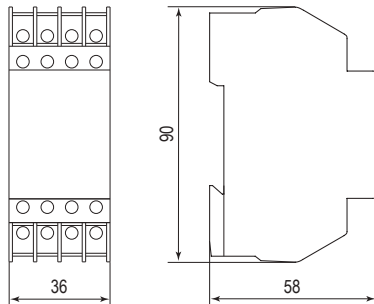
## Internal Configuration

### Legend

- BD Bi-directional TVS Diode
- GDT Gas Discharge Tube
- PG Protective Grounding
- R Resistor
- SG Signal Grounding
- TC Thermo-clip



## Dimensions & Packaging



### RS 485

#### Dimensions

|                                    |                  |
|------------------------------------|------------------|
| Weight per Unit                    | 114 g            |
| Dimensions DIN 43880               | 2TE              |
| Packaging Dimensions (Single Unit) | 39 x 74 x 106 mm |
| Minimum Package Quantity           | 6 pieces         |