

Modular SPD for Single Pair RayDat SCH-2 Series

D1 • C1 • C2 • C3

NMH-TC Series



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: Up to 35 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: Compact Design
 Compliance: IEC/EN 61643-21

These efficient overvoltage barriers contain both coarse and fine protection stages and provide longitudinal and a transverse surge protection.

The initial protection stage comprises a three-pole gas discharge tube and is designed to divert the primary surge energy. The subsequent fine protection stage is carried out using multiple metal oxide varistors or with fast bi-directional silicon avalanche diodes. Care is taken in the design of this fine protection stage to avoid

capacitive line loading and thereby ensuring a low insertion loss and wide operating frequency range.

Care is taken to ensure energy coordination between the coarse and a fine protection stages at all levels of the incident surge. When power frequency contact occurs between power and communication lines, the hazard of electric shock and fire is increased. To prevent such risk, a thermo-clip is included in the primary protection stage of this device to divert the power frequency current to ground.

Technical Data

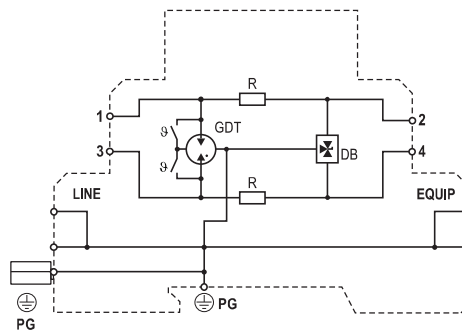
SCH-2 Series		5V	12V	15V	24V	30V	48V	60V	110V
Electrical									
Lines Protected		1 (2 Conductors)							
Nominal Operating Voltage (DC)	U_n	5V	12V	15V	24V	30V	48V	60V	110V
Maximum Continuous Operating Voltage (DC)	U_c	6V	15V	18V	28V	33V	52V	64V	170V
Rated Load Current at 25°C	I_L	1 A							
C2 Nominal Discharge Current (8/20 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)	U_{res}	<22V	<42V	<48V	<70V	<80V	<140V	<160V	<450V
Rated Spark Overvoltage	(Line-Ground)	7-10V	16-21V	20-24V	30-36V	35-43V	55-68V	67-86V	184-264V
	(Line-Line)	7-10V	16-21V	20-24V	30-36V	35-43V	55-68V	67-86V	184-264V
Response Time Overvoltage Protection	t_A	< 1 ns							<25 ns
Thermal Protection		Yes							
Insulation Resistance of the Protection	R_{iso}	≥ 6 KΩ	≥ 15 MΩ	≥ 18 MΩ	≥ 28 MΩ	≥ 33 MΩ	≥ 52 MΩ	≥ 64 MΩ	≥ 170 MΩ
Serial Resistance per Path	R	1cca. 1.0 Ω							
Transverse Capacitance	C	30 pF							150 pF
Cut-off Frequency	f_G	35 MHz							10 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		IP20							
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
SCH-2-xxx		7070.09	7070.10	7070.11	7070.12	7070.13	7070.14	7070.15	7070.16

RayDat SCH-2 Series

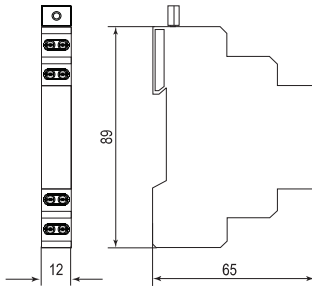
Internal Configuration

Legend

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



Dimensions & Packaging



SCH-2 Series	5V	12V	15V	24V	30V	48V	60V	110V
Dimensions								
Weight per Unit	54g							
Dimensions DIN 43880	2/3 TE							
Packaging Dimensions (Single Unit)	70 x 16 x 110mm							
Minimum Package Quantity	15 pieces							

Modular SPD for Two Pair RayDat SCH-4 Series

D1 • C1 • C2 • C3

NMH2-TC Series



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: Up to 5MHz
 Surge Discharge Ratings: I_n : 10kA, I_{max} : 20kA, I_{imp} : 5kA
 Series Load Current: 0.8A
 Enclosure: DIN 43880 2/3TE, DIN Rail Mount
 Terminals: Stranded to 4 mm²
 Housing: Compact Design
 Compliance: IEC/EN 61643-21

Like the RayDat SCH-2 Series, the SCH-4 provides the same level of protection but in a compact enclosure which can provide protection to two independent circuits pairs. A number of protection

voltages are available to ensure the user is able to select the closest clamping voltage to the normal signal operation of the equipment being protected.

Technical Data

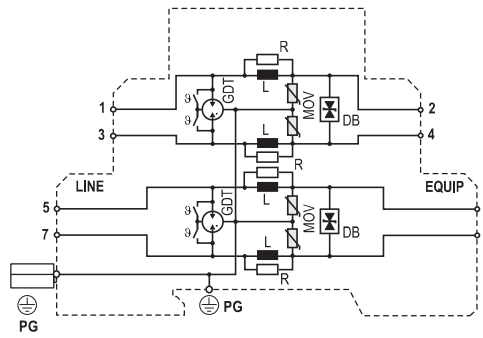
SCH-4 Series		5V	12V	15V	24V	30V	48V	60V	110V
Electrical									
Lines Protected		2 (4 Conductors)							
Nominal Operating Voltage (DC)	U_n	5V	12V	15V	24V	30V	48V	60V	110V
Maximum Continuous Operating Voltage (DC)	U_c	6V	15V	18V	28V	33V	52V	64V	170V
Rated Load Current at 25°C	I_L	1 A							
C2 Nominal Discharge Current (8/20µs)	I_n	10kA							
Maximum Discharge Current (8/20µs)	I_{max}	20kA							
D1 Impulse Current (10/350µs)	I_{imp}	5kA							
Residual Voltage at 5kA (8/20µs)	(Line-Line) U_{res}	<22V	<42V	<48V	<70V	<80V	<140V	<160V	<450V
Rated Spark Overvoltage	(Line-Ground)	7-10V	16-21V	20-24V	30-36V	35-43V	55-68V	67-86V	184-264V
	(Line-Line)	7-10V	16-21V	20-24V	30-36V	35-43V	55-68V	67-86V	184-264V
Response Time Overvoltage Protection	t_A	< 1 ns							
Thermal Protection		Yes							
Insulation Resistance of the Protection	R_{iso}	≥ 6 KΩ	≥ 15 MΩ	≥ 18 MΩ	≥ 28 MΩ	≥ 33 MΩ	≥ 52 MΩ	≥ 64 MΩ	≥ 170 MΩ
Serial Resistance per Path	R	0.5Ω							
Transverse Capacitance	C	500 pF						250 pF	
Cut-off Frequency	f_G	3 MHz						5 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		IP20							
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
SCH-4-xxx		7072.09	7072.10	7072.11	7072.12	7072.13	7072.14	7072.15	7072.16

RayDat SCH-4 Series

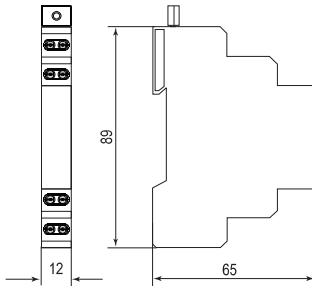
Internal Configuration

Legend

- D Diode
- DB Diode Block
- GDT Gas Discharge Tube
- L Inductor
- MOV Metal Oxide Varistor
- PG Protective Grounding
- R Resistor
- TC Thermo-clip



Dimensions & Packaging



SCH-4 Series	5V	12V	15V	24V	30V	48V	60V	110V
Dimensions								
Weight per Unit	64g							
Dimensions DIN 43880	2/3 TE							
Packaging Dimensions (Single Unit)	70 x 16 x 110mm							
Minimum Package Quantity	15 pieces							