Telecom and Data Surge Protector

FRD2-xxx

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, 110 Vdc
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

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 fast bi-directional silicon avalanche diodes. Care is taken in the design of this fineprotection stage to avoid capacitive Line loading and thereby ensuring a low insertion loss and wide operating frequency range.

Series Line impedances ensure energy coordination between the coarse and a fine protection stages at all levels of the incident surge. To protect against the hazards of electric shock and fire which often results when power frequency contact occurs between power and communication Line, often called mains incursion, a thermo-clip is included on the primary protection stage to divert the power frequency current to ground.

The plug-in module/base design facilitates replacement of a failed module without the need to remove system wiring.If the module is unplugged from the base, the connection Lines will be disconnected.

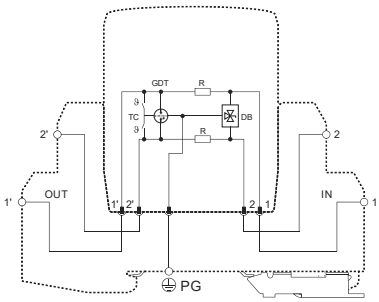
Technical Data

FRD2-xxx		5	12	15	24	30	48	60	110
IEC Electrical									
Line Conductor Terminals Protected		1 (2 Conductors)							
Nominal Operating Voltage (DC)	U_n	5 V	12 V	15 V	24 V	30 V	48 V	60 V	110 V
Maximum Continuous Operating Voltage (DC)	U_C	6 V	15 V	18 V	28 V	33 V	52 V	64 V	170 V
Rated Load Current at 25 ºC	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}	< 22 V	< 42 V	< 48 V	< 70 V	< 80 V	< 140 V	< 160 V	< 450 V
Rated Spark Overvoltage (Line - Ground)		7-10 V	16-21 V	21-25 V	31-37 V	36-44 V	57-69 V	68-84 V	184-264 V
(Line - Line)		7-10 V	16-21 V	21-25 V	31-37 V	36-44 V	57-69 V	68-84 V	184-264 V
Response Time Overvoltage Protection	t_A	< 1 ns							
Thermal Protection		Yes							
Insulation Resistance of the Protection	R_{iso}	≥ 6 kΩ	≥ 15 kΩ	≥ 18 kΩ	≥ 28 kΩ	≥ 33 kΩ	≥ 52 kΩ	≥ 64 kΩ	≥ 170 kΩ
Serial Resistance per Path	R	1.6-2.0 Ω							
Transverse Capacitance	C	50 pF							
Cut-off Frequency	f_G	30 MHz							
Mechanical									
Temperature Range		-40 ºF to +158 ºF [-40 ºC to +70 ºC]							
Terminal Cross Section Multi-Strand (max.)		12 AWG [4 mm²]							
Terminal Screw Torque		4.5 lbf·in [0.5 Nm]							
Degree of Protection IEC/EN 60529		IP20 (built-in)							
Housing Material		Thermoplastic: Extinguishing Degree V-0							
Mounting IEC/EN 60715		35 mm DIN Rail							
Order Information									
Ordering Code		5	12	15	24	30	48	60	110
FRD2-xxx		0250051	0250121	0250151	0250241	0250301	0250481	0250601	0251101

Internal Configuration

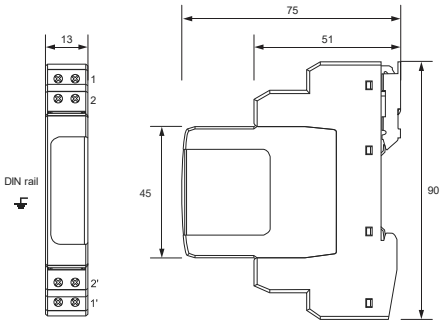
Legend

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



Dimensions & Packaging

[mm]



Complete Unit								
FRD2-xxx	5	12	15	24	30	48	60	110
DIN 43880 Dimension	1 CTN							
Packaging Dimensions (H x W x L)	[260 × 220 × 330 mm]							
Standards Order Quantity	78 Units							