DATA SHEET

SPD for Explosive Environments

RayDat Ex-2 Series

D1 • C1 • C2 • C3

IEC/EN Category:	D1/C1/C2/C3
Mode of Protection:	Longitudinal, Transverse
Coarse Protection:	3 Terminal GDT
Voltages:	12, 24 V DC
Maximum Operating Voltage:	U_c: 15, 28 V DC
Frequency Range:	3 MHz
Surge Discharge Ratings:	I_n: 5 kA, I_{max}: 10 kA, I_{imp}: 1 kA
Series Load Current:	500 mA
Enclosure:	DIN 43880 1/3 TE, DIN Rail Mount
Terminals:	Stranded to 4 mm²
Housing:	Modular Design
Compliance:	IEC/EN 61643-21

The RayDat Ex-2 Series is intended to provide protection to low voltage signal and data circuits located in potentially explosive environments.

It is intended for use on inherently safe circuits in accordance with ATEX directive. The protection module should be located as close to the end-user equipment being protected, as possible.

The circuit consists of a multi-stage protector providing both common (longitudinal) mode and differential (transverse) mode protection.

Coarse protection is provided using a three terminal gas discharge tube while fine protection is provided using a high speed bi-directional silicon stage. Care is taken to ensure coordination between these two stages without voltage or surge current blind spots occurring.

Input Power Pi	Temperature Class	Maximum Ambient
Pi=1W	T6	50 °C
Pi=1.3W	T5	55 °C
Pi=2W	T4	60 °C

$U_o = U_i$
$I_o = I_i$
$P_o = P_i$

Technical Data

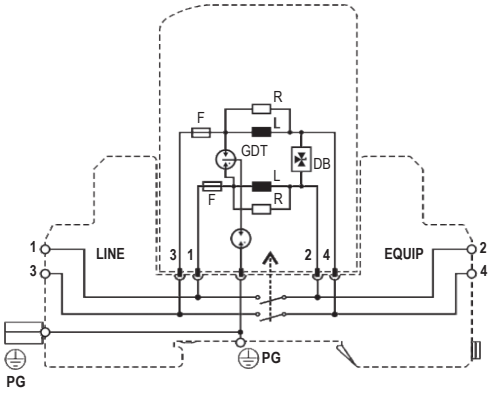
Ex-2 Series			12	24
Type				
Intrinsic Safety Parameters				
Explosion Protected			II 1G Ex ia IIC T* Ga (-40 °C ≤ Ta ≤ *°C)	
Maximum Input Voltage		U_i	16 V	29 V
Maximum Input Current		I_i	500 mA	
Maximum Input Power		P_i	2 W	
Maximum Internal Capacitance		C_i	10 nF	
Maximum Internal Inductance		L_i	0.11 mH	
Number of Protected Pairs			1 (2 Conductors)	
Electrical				
Nominal Operating Voltage (DC)		U_n	12 V	24 V
Maximum Continuous Operating Voltage (DC)		U_c	15 V	28 V
Rated Load Current at 25°C		I_L	500 mA	
Nominal Discharge Current (8/20 µs)		I_n	5 kA	
Maximum Discharge Current (8/20 µs)		I_{max}	10 kA	
D1 Impulse Current (10/350 µs)		I_{imp}	1 kA	
Residual Voltage at 5 kA (8/20 µs)		U_{res}	< 145 V	
Rated Spark Overvoltage	(Line-Line)		16-21 V	31-37 V
	(Line-Ground)		584-876 V	
Response Time Overvoltage Protection		t_A	< 1 ns	
Insulation Resistance at U_c		R_{iso}	≥ 15 MΩ	≥ 28 MΩ
Insulation Resistance at 500 V DC	(Line-Ground)		> 1 GΩ	
Serial Resistance per Path		R	<1 Ω	
Transverse Capacitance		C	<10 pF	
Cut-off Frequency		f_G	3 MHz	
Mechanical				
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; Grey; Extinguishing Degree V-0	
Mounting IEC/EN 60715			35 mm DIN Rail	
Order Information				
Order Code			**12**	**24**
Ex-2-xx			704 120	704 121

RayDat EX-2 Series

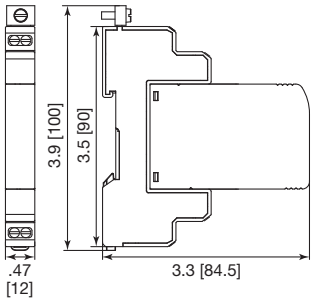
Internal Configuration

Legend

DB	*Diode Block*
F	*Fuse*
GDT	*Gas Discharge Tube*
L	*Inductor*
PG	*Protective Grounding*
R	*Resistor*



Dimensions & Packaging



Ex-2 Series	12	24
Dimensions		
Weight per Unit	3.10 oz [88 g]	
Dimensions DIN 43880	2/3 TE	
Packaging Dimensions (Single Unit)	3.4 × .59 × 4" [87 × 15 × 102 mm]	
Minimum Package Quantity	15 pieces	

inches
[mm]

Information contained in this document is subject to change at any time without notice.

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