



**Industrial 4-Wire RS-422/RS-485 Surge Protector (Passive)**  
**(Part Number: SPD-422-1)**



**■ INTRODUCTION**

The SPD-422-1 is a passive, rugged, industrial-grade, 4-wire RS-422/RS-485 surge protector that can be used to limit the voltage surges and spikes introduced to the RS-422/RS-485 data lines. This product features 3-stage surge protection – Gas Discharge Tubes (GDT), protection resistors, and Transient Voltage Suppressors (TVS) - for maximum protection. The SPD-422-1 is designed to connect in series to the input of the protected equipment; when a high-voltage surge is introduced into the input, the GDT conducts electric current after becoming ionized, which in turn discharges the high-voltage surge to the earth ground. The excessive voltage will be further clamped to a safe range that the equipment can accept by the TVS. The unit features passive circuitry designs and thus requires no external power; it supports data rates up to 10Mbps and can be used for protecting RS-422, RS-485, telephone, facsimile, and other communication equipment. This product comes with a dedicated cable lug for solid earth ground connections and can be mounted directly onto a standard 35mm DIN rail, making it an ideal solution for heavy-duty industrial applications.

**■ FEATURES**

- Rugged industrial grade.
- Protects RS-422, RS-485, telephone, facsimile and other communication lines.
- 3-stage surge protection.
- 5-way self-clamping terminal blocks for data lines and the shield wire.
- Dedicated cable lug for solid earth ground connections.
- Passive circuitry, no power is required.
- Supports data rates up to 10Mbps.
- Direct DIN-Rail mounting.
- Operating temperature: -40°F to 185°F (-40°C to 85°C).
- Surface Mount Technology manufactured to RoHS and ISO-9001 standards.
- Test Standards: IEC61643-21 / EN61643-21.
- 5-year manufacturer's warranty.

**■ SPECIFICATIONS**

Compatibility:	EIA/TIA RS-422/RS-485 standards
Protection:	3-stage surge protection (Gas Discharge Tubes, Protection Resistors, and Transient Voltage Suppressors)
Power Source:	Passive device, no power required
Clamping Voltage (stage 1):	30 V
Series Resistance (stage 2):	2.2 Ohms
Clamping Voltage (stage 3):	6 V
Response Time:	≤1ns
Insertion Loss (10MHz):	≤0.5dB
Data Rates:	Up to 10Mbps
Cable Lug for Earth Ground:	Dedicated cable lug for earth ground connection (cable size: up to 12AWG / 3.3mm <sup>2</sup> )
Terminal Blocks:	5-way self-clamping terminal blocks
Dimensions (H x W x D):	3.0 x 2.4 x 1.0 in (75 x 62 x 25 mm)
Mounting:	Direct 35mm DIN-rail mounting
Weight:	3.9 oz (110 g)
Operating Temperature:	-40°F to 185°F (-40°C to 85°C)
Operating Humidity:	5~95% RH (no condensation)

■ DIMENSIONS

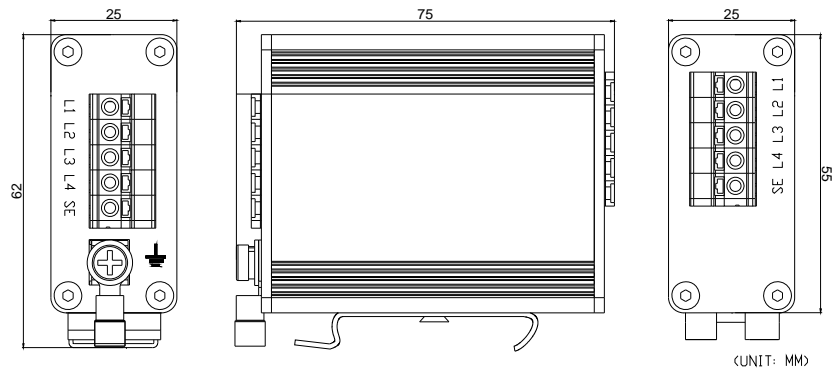


FIGURE 1: DIMENSIONS

■ CONNECTIONS

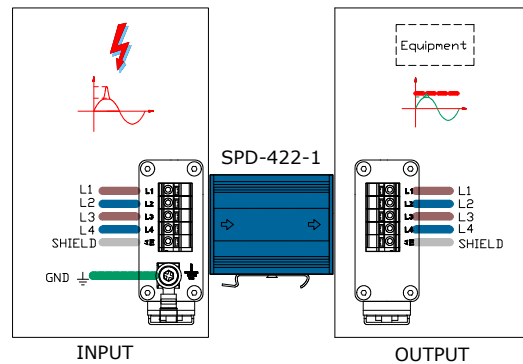



FIGURE 2: CONNECTIONS

■ INSTALLATION NOTES AND TROUBLESHOOTING

- Be sure to connect the input and output wires according to the arrow (  ) signs, the product will not function properly and could be damaged if the input/output direction is reversed.
- The ground wire should be connected to the nearest earth bar or the equipment's metal shell.
- The data and ground wires should be securely fastened for proper protection.
- It is important to note that solely relying on surge protectors could be insufficient or even do more damage than good, as in the cases of improperly installed or poorly selected surge protectors. In many applications, surge protectors are used in conjunction with optical isolators to provide much more effective protection.
- If the system stops working after connecting the surge protector, then the product may be defective. Replace with a new surge protector in such a case.