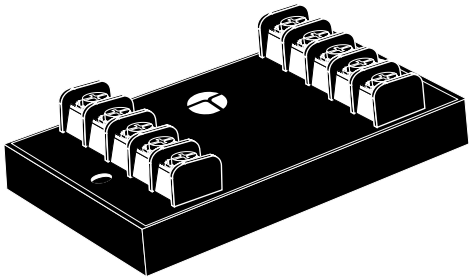
DIGITAL DATA PROCESS DATA LINE PROTECTOR

APPLICATIONS

- **Digital Process Control Loop**
- **Long Line Digital Systems**
- **Digital Transmission**
- **Telemetry Systems**

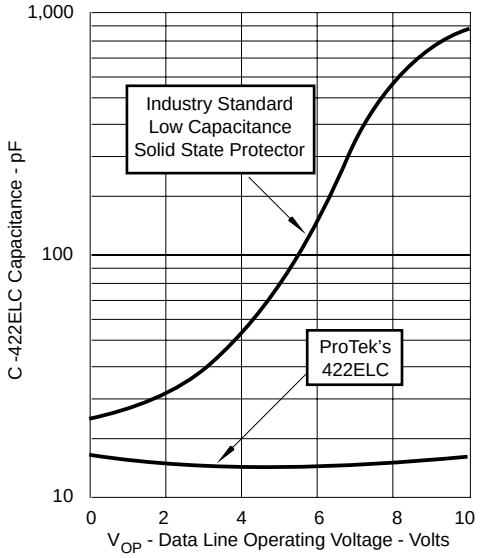


422ELC PACKAGE

FEATURES

- **Meets IEC 1000-4-5 Level 4 & 5 Requirements**
- **Designed for EIA Standard RS-422 Data Lines**
- **Low Capacitance - 25 pF**
- **Automatic Reset - Will Not Interrupt Service**
- **Permanent Two-Stage Line Pair Protection**
- **Line-to-Ground (Common) & Line-to-Line (Differential) Protection**
- **Subnanosecond Response Time**
- **Effective Against Lightning, Inductive Switching & ESD**

FIGURE 1
LINEAR CAPACITANCE VS NON LINEAR CAPACITANCE



DESCRIPTION

The 422ELC is a low capacitance, two-stage transient voltage protector providing primary and secondary protection against lightning, inductive switching and electrostatic discharge (ESD) transient threats. The first stage diverts the transient current through the ground terminal return path and the second stage clamps the voltage to a safe level without interruption of service.

The 422ELC is designed to protect data lines from differential (line-to-line) and common mode (line-to-ground) transients. Terminals 1 & 2 and 3 & 4 for the 422ELC are designated as line pairs. A transient voltage suppressor is connected across each line pair for differential mode protection.

This product can also be used on telephone, signal/data lines, security, timing and control interface circuits. For most applications, the product should be located as close as possilbe to the equipment being protected. A low impedance grounding system is important to maintain a low voltage clamp between the line-to-ground connection. Capacitance over the operating voltage range is important. If capacitance is nonlinear, distortion, loss of data or access to the I/O port can occur (See Fig. 1).

MAXIMUM RATINGS @ 25° C		**ELECTRICAL CHARACTERISTICS** @ 25° C				
Peak Operating Line Voltage (V_{OP})	±12 V	**MAXIMUM CLAMPING VOLTAGE Line-Line 500A, 8/20μs V_C VOLTS**	**MAXIMUM CLAMPING VOLTAGE Line-Ground 500A, 8/20μs V_C VOLTS**	**MAXIMUM LINE THRUPUT RESISTANCE R OHMS**	**MAXIMUM LEAKAGE CURRENT @ 12 V_{OP} I_D μA**	**TYPICAL CAPACITANCE @ 0-12 V, 1 MHz C pF**
Operating Line Current (I_O)	200mA					
Maximum Transient Voltage	20kV					
Maximum Transient Current (8/20μs waveshape)	10kA/ Wire 40kA/ Protector					
Operating & Storage Temperature	-55° to +100°C					
Response Time	< 1 nanosecond					
Approximate Weight	142 grams	30	30	12	1	25

INSTALLATION INSTRUCTIONS

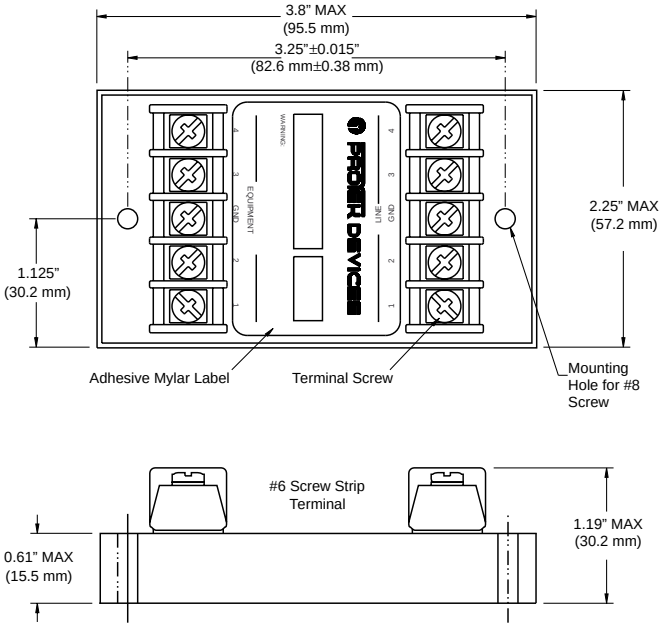
There are five (5) terminals on both the **line** and **equipment** side of the SPD, four data line terminals and one ground terminal. Both ground terminals, shown on the label, are connected internally. A single ground connection is sufficient, however, it is recommended that both ground connections be used for a lower impedance path to earth.

Incoming data lines are to be cut or disconnected from the equipment to insert the 422ELC products. The **line** side of the terminals are to be connected to data lines from the outside world or lines that carry the transient threat into the equipment to be protected. The **equipment** side of the terminals are to be connected to the equipment to be protected. The location of the product should be such that these wires are as short as possible. A #18 or 20 gauge wire can be used for this connection.

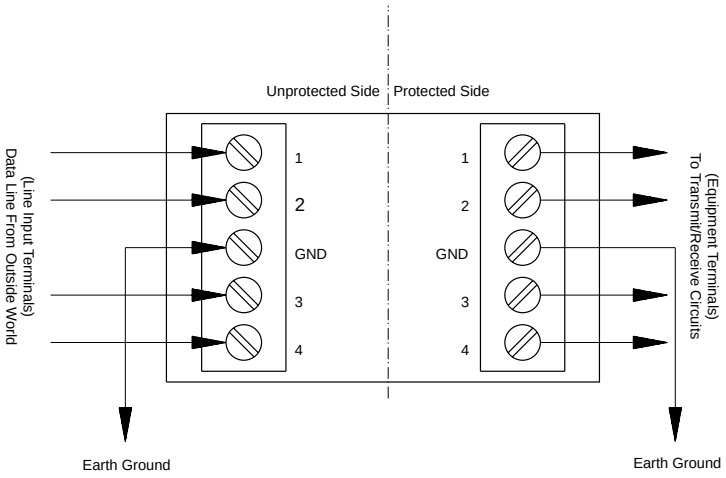
ProTek's data line protector is designed with a short circuit failure mode to give maximum protection. A fuse, fussable link, or circuit breaker is recommended for each data/signal lines on the input (line) side of the protector for those applications that require an open circuit failure mode.

Caution: A low DC resistance ground may not be indicative of a good lightning ground. Lightning contains a broad spectrum of frequencies up to 1 MHz. A low impedance path to ground a the transient frequencies is necessary. A ground strap is recommended or a #6 AWG stranded wire. For wire lengths over 1.5 meters, there may be some excessive line to earth potential under severe thunderstorm conditions.

422ELC CASE OUTLINE



INSTALLATION DIAGRAM



Note: Both ground terminals are common. Use second ground wire to reduce impedance on long runs to earth ground connections