

HIGH SPEED ETHERNET DATA LINE PROTECTOR



DESCRIPTION

The 485ELC is low capacitance, two-stage transient voltage protector the provides 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 485ELC is designed to protect data lines, transmission lines, timing and control interface circuits from common-mode (line-to-ground) or differential (line-line) transients. Terminals 1 & 2 and 3 & 4 are designed as line pairs. A transient voltage suppressor is connected across each line pair for differential mode protection.

Capacitance over the operating voltage range is important. If capacitance is non-linear, distortion, loss of data or access to the I/O port can occur (See Figure 1).

APPLICATIONS

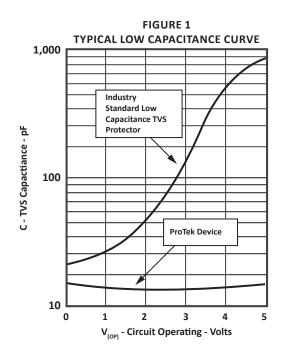
- Ethernet & Catagory 5 Systems
- RS-485 Serial Communication Lines
- ISDN Equipment/Systems
- Video Transmission Systems
- Smoke Detector & Fire Alarm Systems

FEATURES

- Compatible with IEC 61000-4-2 (ESD): Air 15kV, Contact 8kV
- Compatible with IEC 61000-4-4 (EFT): 40A 5/50ns
- Compatible with IEC 61000-4-5 (Surge): 95A, 8/20μs, Level 4 (Line-Gnd) & 48A, Level 4 (Line-Line)
- Low Capacitance 25pF
- Designed for EIA Standard RS-485 Data Lines
- Permanent Two-Stage 2 Line Pair Protector
- Subnanosecond Response Time
- Common & Differential Mode Protection
- Automatic Reset Does Not Interrupt Service
- Effective Against Lightning, Inductive Switching and ESD

MECHANICAL CHARACTERISTICS

- Approximate Weight: 142 grams
- Flammability Rating UL 94V-0



TYPICAL DEVICE CHARACTERISTICS

| MAXIMUM RATINGS @ 25°C Unless Otherwise Specified | | | | | |
|---|------------------|------------|--------------|--|--|
| PARAMETER | SYMBOL | VALUE | UNITS | | |
| Peak Operating Line Voltage | V _{OP} | ±7 | Volts | | |
| Operating Line Current | I _o | 250 | mA | | |
| Transient Voltage | - | 20 | kV/Wire | | |
| Transient Current - 8/20µs waveform | - | 10 | kA/Wire | | |
| Transient Current - 8/20µs waveform | - | 40 | kA/Protector | | |
| Operating Temperature | T _A | -55 to 100 | °C | | |
| Storage Temperature | T _{stg} | -55 to 100 | °C | | |
| Response Time | - | <1 | ns | | |

| ELECTRICAL CHARACTERISTICS PER LINE @ 25°C Unless Otherwise Specified | | | | | |
|---|--|--|--|-------------------------|--|
| PART NUMBER | MAXIMUM CLAMPING VOLTAGE (8/20μs) LINE-LINE/LINE-GND | MAXIMUM LINE THRUPUT RESISTANCE | MAXIMUM LEAKAGE CURRENT | MAXIMUM CAPACITANCE | |
| | @ 500A V _c ±VOLTS | R OHMS | @ 7V _{ορ} Ι _ο μΑ | @ 0-7V, 1MHz C pF | |
| 485ELC | 20.0 | 12 | 10 | 25 | |

PACKAGE INFORMATION

INSTALLATION INSTRUCTIONS & DIAGRAM

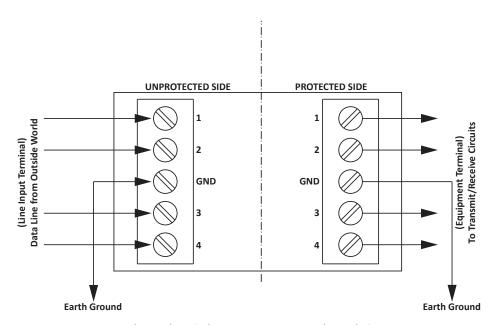
This product should be located as close as possible to the equipment being protected. A low impedance grounding system is important to maintain a low clamping voltage between the line-to-ground connection.

There are five (5) terminals on both the line and equipment side of the 485ELC - four data line terminals and two ground terminals. Both ground terminals, as 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. This connection can be made through the green AC power ground wire or a known earth ground. The ground wire should be #14 stranded wire.

Incoming data lines are cut or disconnected from the equipment to insert the 485ELC product. The line side of the terminals are to be connected to data lines from the outside world or lines that carry the transient threats 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 these connections

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

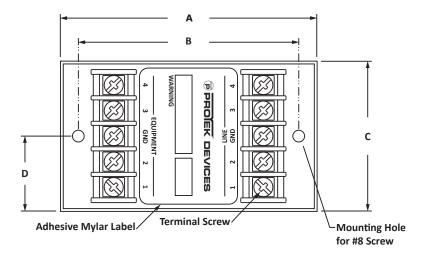
Caution: A low DC resistance ground may not be indicative of a good lightning ground. Lightning contains a broad spectrum of frequencies - up to 1 MHz. A low impedance path to ground at the transient frequencies is necessary. A ground strap is recommended or a #6 AWG stranded wire. For wire lengths over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

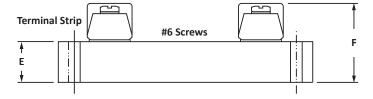


Note: Both ground terminals are common. Use second ground wire to reduce impedance on long runs to earth ground connections.

PACKAGE INFORMATION

| OUTLINE DIMENSIONS | | | | | |
|--------------------|-------------|-------|-------|--------|--|
| DIM | MILLIMETERS | | INC | INCHES | |
| ווועו | MIN | MAX | MIN | MAX | |
| А | - | 95.5 | - | 3.8 | |
| В | 82.22 | 82.98 | 3.235 | 3.265 | |
| С | - | 57.2 | - | 2.25 | |
| D | - | 30.2 | - | 1.125 | |
| Е | - | 15.5 | - | 0.61 | |
| F | - | 30.2 | - | 1.19 | |





| ORDERING INFORMATION | | |
|----------------------|--|--|
| BASE PART NUMBER | MARKING | |
| 485ELC | Logo, Date Code, Terminal Designations and Part Number | |



COMPANY INFORMATION

COMPANY PROFILE

In business more than 25 years, ProTek Devices™ is a privately held semiconductor company. The company offers a product line of overvoltage protection and overcurrent protection components. These include transient voltage suppressor array (TVS arrays) avalanche breakdown diode, steering diode TVS array and electronics SMD chip fuses. These components deliver circuit protection in electronic systems from numerous overvoltage and overcurrent events. They include lightning; electrostatic discharge (ESD); nuclear electromagnetic pulses (NEMP); inductive switching; and electromagnetic interference (EMI) / radio frequency interference (RFI). ProTek Devices also offers LED wafer die for ESD protection and related high frequency products. ProTek Devices is ISO 9001:2015 certified.

CONTACT US

Corporate Headquarters

2929 South Fair Lane Tempe, Arizona 85282 USA

By Telephone

General: 602-431-8101

Sales: & Marketing: 602-414-5109 Customer Service: 602-414-5114 Product Technical Support: 602-414-5107

Bv Fax

General: 602-431-2288

By E-mail:

Asia Sales: asiasales@protekdevices.com
Europe Sales: europesales@protekdevices.com
U.S. Sales: ussales@protekdevices.com
Distributor Sales: distysales@protekdevices.com

Customer Service: service@protekdevices.com
Technical Support: support@protekdevices.com

ProTek Devices (Asia Pacific) Pte. Ltd.

8 Ubi Road 2, #06-19

Zervex

Singapore - 408538 Tel: +65-67488312 Fax: +65-67488313

Web

www.protekdevices.com

COPYRIGHT © ProTek Devices 1998 - This literature is subject to all applicable copyright laws and is not for resale in any manner.

SPECIFICATIONS: ProTek reserves the right to change the electrical and or mechanical characteristics described herein without notice

DESIGN CHANGES: ProTek reserves the right to discontinue product lines without notice and that the final judgement concerning selection and specifications is the buyer's and that in furnishing engineering and technical assistance. ProTek assumes no responsibility with respect to the selection or specifications of such products. ProTek makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ProTek assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability without limitation special, consequential or incidental damages.

LIFE SUPPORT POLICY: ProTek Devices products are not authorized for use in life support systems without written consent from the factory.