

## TWO LINE PAIR 4-20mA CONTROL LOOP PROTECTOR

### APPLICATIONS

- Multiple Process Control Loops
- Fire & Security Systems
- Petro-Chemical Plants
- Refineries & Tank Farms

### FEATURES

- Designed for 4-20mA Current Loops
- Automatic Reset - Will Not Interrupt Service
- Permanent Two-Stage Line Pair Protection
- Line-to-Ground & Line-to-Line Protection (Common & Differential Mode)
- Subnanosecond Response Time
- Effective Against Lightning, Inductive Switching & ESD

### MAXIMUM RATINGS

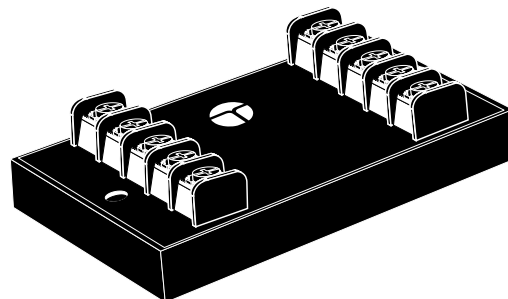
- Operating Line Current: 100mA
- Operating & Storage Temperature: -55°C to +100°C
- Transient Source Voltage: 6kV
- Transient Current (8/20μs): 10kA per Line

### DESCRIPTION

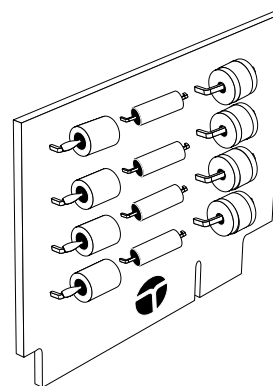
The 420LE/B Series of protection is a two-stage transient voltage protector providing primary and secondary protection against lightning, inductive switching and electrostatic discharge (ESD) transient threats. The first stage diverts the transient current through the ground terminal return path and the second stage clamps the voltage to a safe level without interruption of service.

The 420LE/B series is designed to protect 4-20mA analog control loops from differential and common mode transients. Terminals 1 & 2 and 3 & 4 are designated as line pairs. A transient voltage suppressor is connected across each line pair for differential mode protection. Each line pair is referenced to ground.

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 possible to the equipment being protected. A low impedance grounding system is important to maintain a low voltage clamp between the line-to-ground connection.



**420LE PACKAGE**



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### ELECTRICAL CHARACTERISTICS @ 25° C Ambient Temperature

PROTEK PART NUMBER	MAXIMUM OPERATING LINE VOLTAGE  $V_{OP}$ ±VOLTS	MAXIMUM LEAKAGE CURRENT  @ $V_{OP}$ $I_D$ μA	MAXIMUM CLAMPING VOLTAGE (8/20μs) @ 2,000A $V_C$ VOLTS	MAXIMUM CAPACITANCE  @ 0 V, 1 MHz $C$ pF	MAXIMUM LINE THRUPTUT RESISTANCE  $R$ OHMS
420LE28	28.0	5.0	40	2,800	12
420LE35	35.0	5.0	60	1,500	12
420LE60	60.0	5.0	85	1,000	12
420LB28	28.0	5.0	40	2,800	12
420LB35	35.0	5.0	60	1,500	12
420LB60	60.0	5.0	85	1,000	12

There are five (5) terminals on both the **line** and **equipment** side of the 420LE series, 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.

ProTek's data line protector is designed with a short circuit failure mode to give maximum protection. A fuse, fusable 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 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.

## 420LB BOARD OUTLINE

