

# BOURNS Gas Discharge Tubes

**BOURNS**

## BOURNS 1669 SERIES TRANSIENT PROTECTOR

DIMENSIONS: mm (in.)

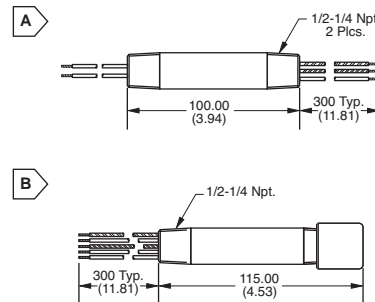
Used for full weather protection of field transmitters and instrumentation operating on 24-28V systems, the 1669 Series protects sensitive I/O circuitry from surges of any polarity or magnitude. Principal use is on 4-20 mA control loops and can be used on grounded (+ or -) or ungrounded circuits. Able to survive and protect even from direct lightning strikes to the transmitter ground or field wiring. Automatic recovery after passage of the surge. Construction is hybrid 3-stage design, using a high surge capacity Balanced Trigard® Gas Tube protector, coordination impedance and silicon suppressors to provide differential and common mode protection with very low clamping levels for delicate loads. The housing is thick walled schedule 40, type 303 stainless steel. Wiring is #20 (.5 mm<sup>2</sup>) 1000V, PVC insulated. Solid red and black colors are used for the input; striped colors signify the protected output. The protector ground wire (green) is electrically bonded to the metallic housing; it is for connection to the grounding screw within the field device. Intrinsically Safe (IS) and Flame Proof (FP) versions available conforming to EU Atex Directive 94/9/EC IS version II 1 G Certificate No. SIRA99ATEX2154X, EEx ia IIC T4 (P1=1.13W) T5 (P1=0.73W) FP version II 2 G Certificate No. SIRA99ATEX1143X, EEx d IIC T6 Ta=55C Use Model 1669-02/06 for standard ground resistance conditions. Use Model 1669-01 / 05 with higher voltage isolation to ground for sites with high resistance soil conditions or where significant ground potential differences are known to exist.

**Characteristics:**

- Ambient Temperature Range, Storage: -65°C to +130°C
- Operating Temperature: Non-hazardous areas: -40°C to +100°C; Hazardous areas: -20°C to +55°C
- Maximum Load Current: 150mA Except when limited for T5 conditions (.73W) 129mA
- Component Response Time: <1 nsec
- Surge Life (L-L)-G: 20 kA 8/20 μs: 20 times; 1 kA 10/1000μs: 1000 times

**Features:**

- Fits single or dual conduit ports
- Intrinsically Safe (IS) and Flameproof (FP) models available
- Weatherproof
- Long life, high operational reliability
- Stainless steel construction



For quantities greater than listed, call for quote.

| MOUSER STOCK NO. | Bourns Part No. | Fig. | DC Clamping Voltage |      | Capacitance 1MHz Max. |        | Price Each |        |        |       |       |
|------------------|-----------------|------|---------------------|------|-----------------------|--------|------------|--------|--------|-------|-------|
|                  |                 |      | L-L                 | L-G  | L-L                   | L-G    | 1          | 2      | 5      | 10    | 25    |
| 652-1669-01      | 1669-01         | A    | 36V                 | 250V | 1200pF                | 40pF   | 117.55     | 104.66 | 97.63  | 91.30 | 85.75 |
| 652-1669-02      | 1669-02         | A    | 36V                 | 36V  | 2000pF                | 2000pF | 79.14      | 76.87  | 74.61  | 67.83 | 65.56 |
| 652-1669-06      | 1669-06         | B    | 36V                 | 36V  | 2000pF                | 2000pF | 139.02     | 112.39 | 105.70 | 97.81 | 91.74 |

## BOURNS 1800 SERIES SIGNAL AND DATALINE PROTECTOR

DIMENSIONS: mm (in.)

Bourns 1800 Series Signal and Dataline Protectors are designed to protect sensitive electronic circuits and components from damaging surge voltages and currents. Their extremely fast response and low clamping voltages make them particularly suitable for the protection of signal and data lines associated with computer, data communication, instrumentation, broadcasting and industrial controls. They may be used directly with EIA standard interfaces RS-232, RS-422, RS-423, RS-485 and with 20mA and 50mA instrumentation loops. Model 1800 Series Signal and Dataline Protectors are fast, rugged and capable of protecting against fast rising voltage transients as well as the severe current surges associated with lightning discharges. Method of Operation: Bourns 1800 Series are heavy-duty, multi-staged protectors. A solid-state section intercepts the leading edge of the surge with subnanosecond response time. Within microseconds a 3-pole common chambered Gas Tube capable of handling 200,000 ampere lightning currents operates and crowbars the surge to ground. The protector remains in the crowbar state until the surge has passed and line voltages return to safe levels, then automatically restores the line to normal operation. There is no need for resetting a breaker or replacing a fuse. Application: Protectors are generally placed at each end of a signal or data line or current loop. In the case of daisy-chain configurations (such as RS-485), protectors are placed at each node. 1820 models provide both line-to-ground and line-to-line protection and are designed to use on differential signals (such as RS-422 or RS-485) and most current loops. 1810 models provide line-to-ground protection for two separate circuits and are designed for use on ground referenced signals (such as RS-232) and 4-20 mA loops where the return wire is grounded at the protector. The 1811 and 1821 models provide the same protection modes for high frequency applications. Related Bourns Protectors: For outdoor applications with 1/2 inch NPT ports (such as field-mounted 4-20mA transmitters), please refer to Bourns 1669 Series Protector. In this application, the mixed use of an 1800 Series Protector at the controller and a 1669 Series Protector at the field is recommended.

**Characteristics:**

- Surge Life:
  - >100 operations with 200 Amps: 10 x 1000 μsec
  - >10 operations with 10,000 Amps: 8 x 20 μsec
- DC Leakage Current at Rated L/G Voltage: >10 μAmps
- Signal/Data Attenuation at Maximum Data Rate:
  - 3db with 600Ω termination
- Operating Temperature: -40°C to +60°C
- Response Time: 50 pico-seconds
- Wire Size: 22-14 AWG

**Features:**

- Low peak clamping voltage even during severe current surges
- Ability to repeatedly protect against surge currents in excess of 10,000 amperes
- Convenient mounting and grounding to any flat surface or to Din 1 (TS-32) or DIN-3 (TS-35) rail
- Cable shields are passed through and may be either grounded or not grounded at the protector
- Vibration-proof screw-type clamp terminals
- Flame-resistant epoxy-filled housing

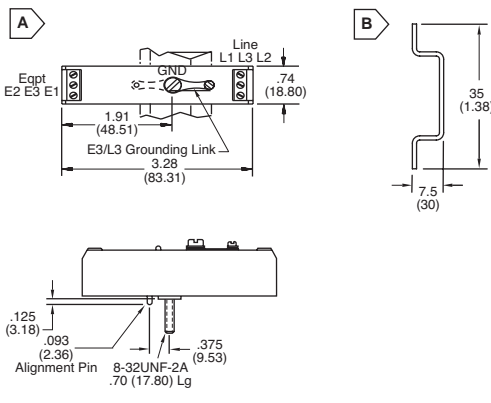
For quantities greater than listed, call for quote.

| MOUSER STOCK NO. | Bourns Part No. | Fig. | Price Each |        |        |       |       |
|------------------|-----------------|------|------------|--------|--------|-------|-------|
|                  |                 |      | 1          | 2      | 5      | 10    | 25    |
| 652-1810-28-A1   | 1810-28-A1      | A    | 96.00      | 77.60  | 66.80  | 62.80 | 58.00 |
| 652-1810-28-A3   | 1810-28-A3      | A    | 106.90     | 86.36  | 74.25  | 70.04 | 64.77 |
| 652-1820-28-A1   | 1820-28-A1      | A    | 153.15     | 122.90 | 107.07 | 97.76 | 91.71 |
| 652-1820-28-A3   | 1820-28-A3      | A    | 104.35     | 95.83  | 89.74  | 86.90 | 81.21 |

### Din Rail for 1800 Series

For quantities greater than listed, call for quote.

| MOUSER STOCK NO. | Use with Bourns Part No. | Fig. | Description                      | Price Each |      |      |
|------------------|--------------------------|------|----------------------------------|------------|------|------|
|                  |                          |      |                                  | 1          | 10   | 50   |
| 651-5602100      | 1810-28-A1, 1820-28-A1   | B    | 35mm x 7.5mm x 1m DIN Rail Perf. | 10.72      | 9.83 | 9.09 |



## BOURNS 2027 SERIES - 2-POLE GAS DISCHARGE TUBE

DIMENSIONS: mm (in.)

**Characteristics:**

- DC Holdover Voltage 1: 135 V (52 V for Model 2027-09, 80 V for Model 2027-15)/< 150 ms
- Impulse Discharge Current: 25000 A, 8/20 μs 2/1 operation minimum; 10000 A, 8/20 μs/> 10 operations; 500 A, 10/1000 μs/> 400 operations; 100 A, 10/1000 μs or 10/700 μs/> 1000 operations
- Alternating Discharge Current: 65 Arms, 11 cycles 2; 1 operation minimum
- Operating Temperature: -55°C to +250°C

**Features:**

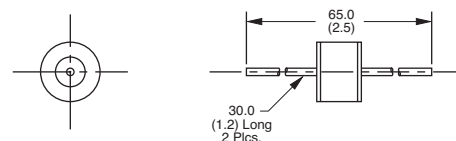
- 8mm diameter, 6mm long
- UL recognized
- Custom configurations available
- High surge current rating
- Stable breakdown throughout life

**Applications:**

- Telecommunications
- Industrial electronics
- Commercial electronics
- Consumer electronics
- Automotive, aircraft, military electronics

For quantities greater than listed, call for quote.

| MOUSER STOCK NO. | Bourns Part No. | DC Sparkover |               | Impulse Sparkover |          | Price Each |      |      |      |     |
|------------------|-----------------|--------------|---------------|-------------------|----------|------------|------|------|------|-----|
|                  |                 | @ 100V/s     | Tolerance (%) | 100V/μs           | 1000V/μs | 1          | 10   | 50   | 100  | 500 |
| 652-2027-09-B    | 2027-09-B       | 90           | 20%           | 300V              | 500V     | 1.43       | 1.33 | 1.23 | 1.03 | .92 |
| 652-2027-15-B    | 2027-15-B       | 150          | 15%           | 350V              | 575V     | 1.43       | 1.33 | 1.23 | 1.03 | .92 |
| 652-2027-35-B    | 2027-35-B       | 350          | 15%           | 600V              | 875V     | 1.43       | 1.33 | 1.23 | 1.03 | .92 |



DIMENSIONS: mm (in.)

## BOURNS SURGE PROTECTOR TEST SET FOR GAS DISCHARGE TUBES

**Features:**

- Lightweight, hand-held design
- Easy to read LCD display
- Simple operation
- High accuracy peak reading circuit
- Wide 10-1000V Test Range
- Precise auto-sensing shutoff

**Applications (Suitable for Testing):**

- Gas Tubes
- Carbon Gaps
- MOVs
- Zener and avalanche diodes
- Thyristor devices
- Finished product

| MOUSER STOCK NO. | Accessories Included                           | Price Each |
|------------------|--|------------|
| 652-4010-01-B    | Nylon Case, 48 inch leads with Alligator Clips | 722.33     |

