

# Surge Protection Modules

## 3 Element Gas - Analog Series



### 3B1E & 4B1E Series

#### Balanced Operation

#### Description:

The 3B1E is a premium 5 pin, 3-element gas tube protector module that is designed to provide excellent transient and power fault protection for most standard telephone line applications. Circa's gas tube modules are perfectly suited to remote location and low pair count applications that require heavy-duty current handling capability. The 3-element gas tube provides superior balanced protection. An overvoltage condition on either side of the circuit will result in the triggering of the gas tube. The ionized gas in the common chamber provides a low impedance path to ground for both sides of the circuit. Most other industry standard gas tube modules employ dual 2-element tubes, which create a scenario where one side of the device could ionize faster than the other, resulting in a late arriving transient passing through and damaging sensitive equipment. Circa's 3-element tube eliminates this potentially costly problem. The 4B1E series features PTC (positive temperature coefficient) technology. These optional self-resetting current limiters provide effective protection from 'sneak current' faults. The PTC is vastly superior to the competition's heat coil solution, which requires that the module be replaced after each 'sneak current' event.



#### Features:

- Heavy duty surge handling capability
- Superior common chamber design
- Balanced operation
- UL and cUL listed, R.U.S. approved
- Integrated test points
- Designed to meet or exceed Telcordia standards

#### Benefits:

- Rugged, dependable operation
- Fewer service calls than the 2 element designs
- Prevents damage by "lagging" or sneak transients
- Fewer service calls than a heat coil design
- Non-radioactive
- ISO9002 certified manufacturer

### 3B1E & 4B1E Series

#### Ordering Information

Model No.	Order No.	DC Voltage Breakover	Pin <sup>1</sup>	Color <sup>2</sup>
3B1E	750001	350VDC	gold	black
4B1E	750003	350VDC (with PTC)	gold	black

<sup>1</sup> pin alloy refers to tip and ring pins. Unless otherwise noted, all ground pins are tin  
<sup>2</sup> red module shells are available upon request



# Surge Protection Modules 3 Element Gas - Analog Series

## 3B1E & 4B1E Series

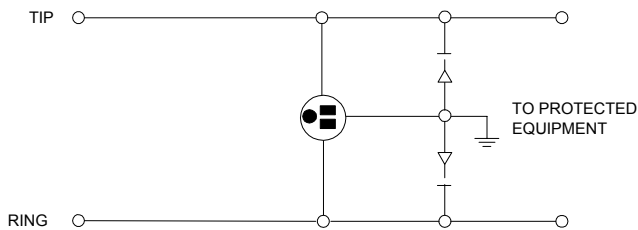


### Specifications:

	3B1E & 4B1E		3B1E & 4B1E
<b>DC Breakover (nominal)</b> @ 2KV/sec	350V	<b>Capacitance</b> 1 Vrms @ 1KHZ, 50VDC	10 pf max
<b>Impulse Breakdown Voltage</b> @ 100V/μsec @ 1KV/μsec	750V 900V	<b>Insulation Resistance</b> @ 50VDC	>100M ohms
<b>DC Holdover Voltage</b> 135V <150ms		<b>Fail-safe Operation</b> @ 1.0 A @ 5.0 A @ 20 A @ 60A	<50 sec <15 sec <10 sec <3 sec
<b>Surge life (min operations)<sup>1, 2</sup></b> @ 10A, 10 x 1000 μsec @ 100A, 10 x 1000 μsec @ 10kA, 8 x 20 μsec @ 20kA, 8 x 20 μsec @ 65Arms, 11 cycles, 130A @ 10 Arms, 1 sec, 20A	>3000 >300 10 1 1 10	<b>Current Limiters (PTC models only)</b> hold current (ma) @ 20 C = R min / max ohms =	145 4/6

- total surge rating is 2x listed with respect to ground during a simultaneous surge
- service life requirement as per Bellcore TR-NWT-000974
- pin alloy refers to tip and ring pins. Unless otherwise noted, all ground pins are tin

3B1E Gas Tube Module  
(Symmetrical)



4B1E Gas Tube Module  
(Symmetrical)

