

# 8B39

## Current Output Modules

### Description

8B modules are an optimal solution for monitoring real-world process signals and providing high-level signals to a data acquisition system. Each 8B39 module accepts an input signal from a non-isolated source, then isolates, filters and converts the signal to an analog process current output.

Signal filtering is accomplished with a three-pole filter optimized for time and frequency response which provides 60dB per decade of normal-mode-rejection above 100Hz. One pole of this filter is on the system side and the other two are on the isolated field side.

A special output circuit in the 8B39 module provides protection against accidental connection of power-line voltages up to 40VAC continuous. Clamp circuits on the I/O and power terminals protect against harmful transients.

The modules are designed for installation in Class I, Division 2 hazardous locations and have a high level of immunity to environmental noise.

### ► Features

- Accepts High Level Voltage or Process Current Input
- Process Current Output
- 1500Vrms Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Output Protected to 40VAC Continuous
- 110dB CMR
- 100Hz Signal Bandwidth
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- UL Listing Pending
- Mix and Match Module Types on Backpanel

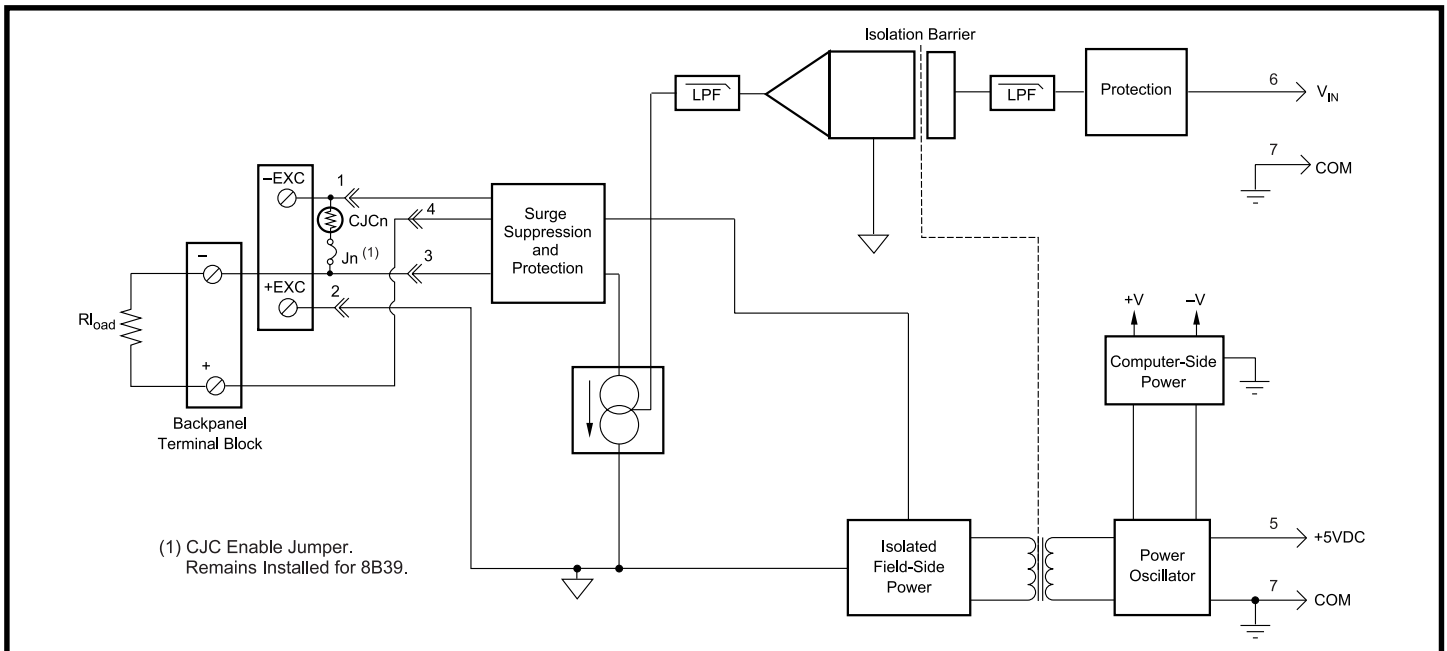


Figure 1: 8B39 Block Diagram

**Specifications** Typical at  $T_A = +25^\circ\text{C}$  and +5V power

| Module                                   | 8B39-01,-02,-03,-04                                 | 8B39-07                            |
|--|---|------------------------------------|
| Input Voltage Range                      | $\pm 5\text{V}$ or $0\text{V}$ to $+5\text{V}$      | $\pm 5\text{V}$                    |
| Input Voltage Maximum                    | $\pm 20\text{V}$ (no damage)                        | *                                  |
| Input Resistance                         | $50\text{M}\Omega$                                  | *                                  |
| Output Current Range                     | 0 to $20\text{mA}$ or 4 to $20\text{mA}$            | $\pm 20\text{mA}$                  |
| Over Range Capability                    | 10%   | *                                  |
| Output Compliance Voltage (Open Circuit) | 15VDC   | $\pm 12\text{VDC}$                 |
| Load Resistance Range                    | 0 to $500\Omega$                                    | 0 to $400\Omega$                   |
| Output I Under Fault, max                | $26\text{mA}$                                       | $\pm 26\text{mA}$                  |
| Output Protection                        |   |                                    |
| Continuous                               | 40VAC   | *                                  |
| Transient                                | ANSI/IEEE C37.90.1                                  | *                                  |
| CMV, Output to Input                     | 1500Vrms max  | *                                  |
| Transient, Output to Input               | ANSI/IEEE C37.90.1                                  | *                                  |
| CMR (50Hz or 60Hz)                       | 110dB   | *                                  |
| NMR (-3dB at 100Hz)                      | 60dB per Decade above 100Hz                         | *                                  |
| Accuracy <sup>(1)</sup>                  | $\pm 0.05\%$ Span                                   | *                                  |
| Nonlinearity                             | $\pm 0.02\%$ Span                                   | *                                  |
| Stability                                |   |                                    |
| Zero                                     | $\pm 10\text{ppm}/^\circ\text{C}$                   | *                                  |
| Span                                     | $\pm 50\text{ppm}/^\circ\text{C}$                   | $\pm 100\text{ppm}/^\circ\text{C}$ |
| Noise                                    |   |                                    |
| Output, 100kHz                           | $2\mu\text{Arms}$                                   | *                                  |
| Bandwidth, -3dB                          | 100Hz   | *                                  |
| Rise Time, 10 to 90% Span                | 5ms   | *                                  |
| Power Supply Voltage                     | +5VDC $\pm 5\%$                                     | *                                  |
| Power Supply Current                     | 100mA   | *                                  |
| Power Supply Sensitivity                 | $\pm 100\text{ppm}/\%$                              | *                                  |
| Mechanical Dimensions (h)(w)(d)          | 1.11" x 1.65" x 0.40"<br>(28.1mm x 41.9mm x 10.2mm) | *                                  |
| Environmental                            |   |                                    |
| Operating Temp. Range                    | $-40^\circ\text{C}$ to $+85^\circ\text{C}$          | *                                  |
| Storage Temp. Range                      | $-40^\circ\text{C}$ to $+85^\circ\text{C}$          | *                                  |
| Relative Humidity                        | 0 to 95% Noncondensing                              | *                                  |
| Emissions EN61000-6-4                    | ISM, Group 1  | *                                  |
| Radiated, Conducted                      | Class A   | *                                  |
| Immunity EN61000-6-2                     | ISM, Group 1  | *                                  |
| RF                                       | Performance A $\pm 0.5\%$ Span Error                | *                                  |
| ESD, EFT, Surge, Voltage Dips            | Performance B                                       | *                                  |

## NOTES:

\* Same specification as -01, -02, -03, -04 models.

(1) Includes nonlinearity, hysteresis and repeatability.

**Ordering Information**

| Model   | Input Range     | Output Range   |
|---------|-----------------|----------------|
| 8B39-01 | 0V to +5V       | 4mA to 20mA    |
| 8B39-02 | -5V to +5V      | 4mA to 20mA    |
| 8B39-03 | 0V to +5V       | 0mA to 20mA    |
| 8B39-04 | -5V to +5V      | 0mA to 20mA    |
| 8B39-07 | $\pm 5\text{V}$ | -20mA to +20mA |