API 4051 G

Strain Gauge (Bridge) to DC Transmitter

Non-Isolated

Input: 1 mV/V to 200 mV/V, 4-10 VDC Excitation
Output: 0-1 V to ±10 VDC or 0-1 mA to 4-20 mADC

- ***Internal Bridge Excitation Source***
- ***Input and Output LoopTracker® LEDs***
- ***Functional Test Pushbutton***
- ***Voltage or Currents Outputs***

Applications

- **Transmitter for Load Cells, Pressure Sensors**
- **Use with Strain Gauge Type Sensors**
- **Monitor Tanks, Hoppers, Scales, Etc.**

Specifications

Input Range
Factory Configured—Please specify input range
Minimum: 1 mV/V
Maximum: 200 mV/V

Input Impedance
1 MΩ minimum

Input Protection, Common Mode
600 VDC or 600 VAC_p

Excitation Voltage
10 VDC maximum at 30 mA
Internal adjustment 4 to 10 VDC

Excitation Stability
±0.01% per °C

LoopTracker®
Variable brightness LEDs indicate input/output loop level and status

Output Range
Factory Configured—Please specify output range

	Minimum	Maximum
Voltage (±10 mA max.):	0-1 VDC	±10 VDC
Current (12 V compliance):	0-1 mADC	0-20 mADC

Output Linearity
Better than ±0.1% of span

Output Zero and Span
Multiturn potentiometers to compensate for load and lead variations, ±15% of span adjustment range typical

Functional Test Button
Sets output to test level when pressed
Potentiometer factory set to approximately 50% of span
Adjustable 0-100% of span

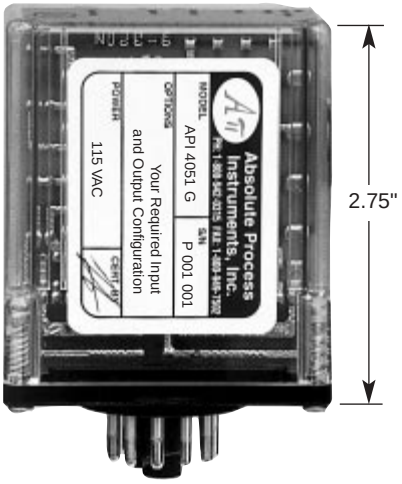
Response Time
70 milliseconds typical, faster response times are available

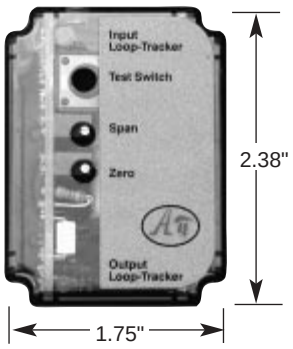
Common Mode Rejection
100 dB minimum

Ambient Temperature Range
–10°C to +60°C operating

Temperature Stability
Better than ±0.02% of span per °C

Power
Standard: 115 VAC ±10%, 50/60 Hz, 2.5 W max.
A230 option: 230 VAC ±10%, 50/60 Hz, 2.5 W max.
D option: 9-30 VDC, 2.5 W typical





Free Factory Input & Output Calibration!

Models and Options

Factory Configured—Specify input/output ranges and options

API 4051 G Strain gauge to DC transmitter, non-isolated, 115 VAC

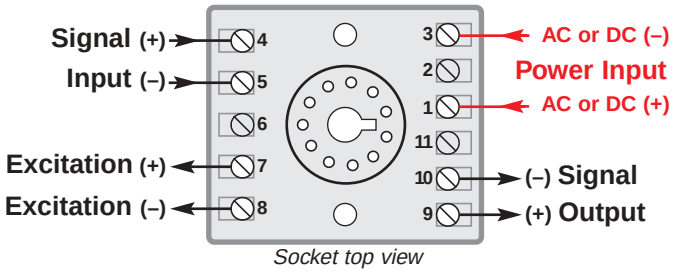
Options—Specify on Order

A230	Powered by 230 VAC, 50/60 Hz
D	Powered by 9-30 VDC
M01	Toggle switch with internal shunt calibration resistor
DF	Fast response, 1 millisecond nominal response time
U	Conformal coating for moisture resistance

Accessories—See other side

Electrical Connections & Dimensions

*Order **API 011** or **API 011 FS** socket separately*



Socket top view

ABSOLUTE PROCESS INSTRUMENTS, Inc.
1220 American Way
Libertyville, IL 60048
USA
www.api-usa.com
Phone: 800-942-0315
847-918-3510
Fax: 800-949-7502
847-968-4891

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API 4051 G Strain Gauge to DC Transmitter

FUNCTIONAL DESCRIPTION

The API 4051 G accepts a strain gauge (bridge) input and provides a proportional, non-isolated DC voltage or current output.

The API 4051 G generates a stable source of excitation voltage to bridge type sensors such as load cells, pressure transducers and strain gauges and amplifies and converts the resulting millivolt signal into the configured output. It includes filtering and processing to allow effective use of low-level transducers in the noisy environments common in industrial applications.

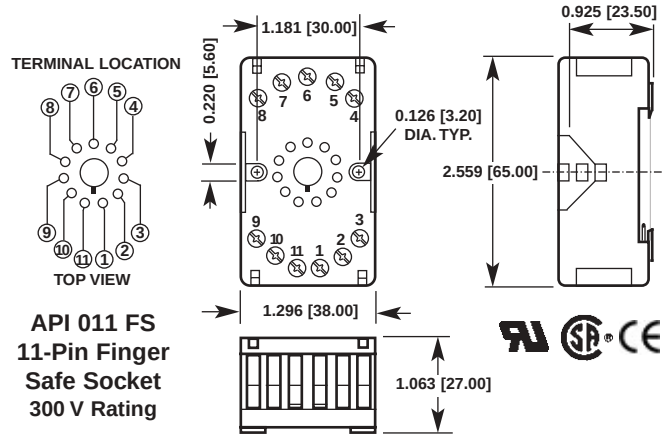
The API 4051 G requires factory configuration to a specific excitation voltage, millivolt input (mV/V rating of the sensor times excitation voltage), DC voltage or DC current output, and power.

Inputs from most bridge type sensors are accepted and can be configured as zero-based (i.e., 0 to 20 mV), bi-polar (i.e., –30 to +30 mV) for push-pull applications, or offset (i.e., 5 to 33 mV) to electronically compensate for deadweights (tare).

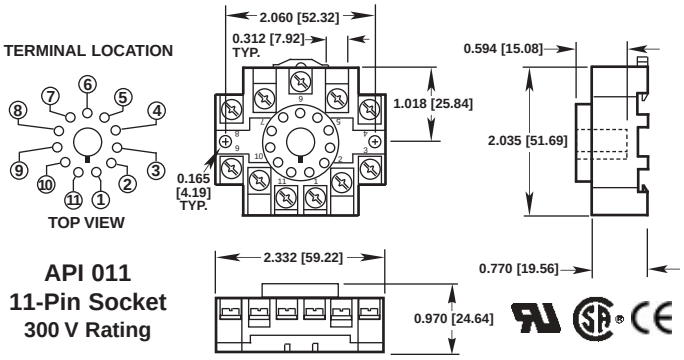
Outputs can also be configured as zero-based, bi-polar, or offset. In addition to the standard process ranges (i.e., 0-10 VDC, 4-20 mADC, etc.), the API 4051 G output can be configured meet most non-standard requirements. Contact the factory for assistance.

Standard module power is 115 VAC. Options include 230 VAC or 9 to 30 VDC.

The API 4051 G plugs into an industry standard 11-pin socket sold separately. Sockets API 011 and finger-safe API 011 FS allow either DIN rail or panel mounting.



API 011 FS
11-Pin Finger Safe Socket
300 V Rating



API 011
11-Pin Socket
300 V Rating

UNIQUE FEATURES

API exclusive features include two ***LoopTracker***® LEDs and a **Functional Test Pushbutton**. The LoopTracker LEDs (Green for input, Red for output) vary in intensity with changes in the input and output signals. Monitoring the state of these LEDs can provide a quick visual picture of your system at all times.

The functional test pushbutton provides a fixed output, independent of the input, when held depressed. The test output level can be field-adjusted via a multiturn potentiometer.

Both the LoopTracker LEDs and functional test pushbutton greatly aid in saving time during initial startup and/or troubleshooting.

A bridge excitation power supply is standard and can be used to drive from one to four 350 Ω (or greater) bridges.

OPERATION

Strain gauges and load cells are normally passive devices that are commonly referred to as “bridges” due to the four-resistor Wheatstone bridge configuration used in their design. These sensors require a precise excitation source to produce an output that is directly proportional to the load, pressure, etc. that is applied to the sensor.

The exact output of the sensor (measured in millivolts) is determined by the sensitivity of the sensor (mV/V) and the excitation voltage applied. For example, a load cell rated for 3 mV/V sensitivity and 10 VDC excitation will produce an output of 0 to 30 mV for load variations from 0 to 100%.

3 mV/V sensitivity x **10** VDC excitation = **30** mV range

The Api 4051 G provides the excitation voltage to the sensors and receives the resulting millivolt signal in return. This input signal is filtered and amplified, offset, if required, then passed to the output stage where it is scaled to the desired output range.

RELATED PRODUCTS

The following products are also available for use with a strain gauge (bridge) input. Refer to the appropriate data sheets for details.

API 4059 G
Strain gauge (bridge) to DC isolator. Field selectable excitation voltage capable of driving up to four 350 Ω sensors, input spans, output voltage or current and offset (±100% of span). Optically isolated input to output, non-interactive zero and span adjustments

API 1500 G
Single setpoint alarm

API 1520 G
Dual setpoint alarm

ACCESSORIES

API 011	11-pin socket
API 011 FS	11-pin finger-safe socket
API TK36	DIN rail, 35 mm W x 39" L, aluminum

API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.

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Phone: 800-942-0315 Fax: 800-949-7502
www.api-usa.com