AC to DC Isolator & Transmitter

API 6010 G

Input: ***0-50 mVAC to 0-300 VAC, 0-1 mAAC to 900 mAAC***

Output: ***0-1 V to ±10 VDC or 0-1 mA to 4-20 mA Isolated***

- ***Precision Internal AC/DC Converter***
- ***Input and Output LoopTracker® LEDs***
- ***Full 2000 V Input/Output/Power Isolation***
- ***Functional Test Pushbutton***

Applications

- **Convert AC Signals to DC Process Signal**
- **Monitor For Abnormal Voltage Drops**
- **Detect Overloads, Monitor AC Tach Signals**

Specifications

Input Range

Factory Configured—Please specify input range

	Minimum	Maximum
Voltage:	50 mVAC	300 VAC
Current:	1 mAAC	900 mAAC

System voltages must not exceed socket voltage rating
See 6010 G 5A & 6010 G 20A data sheet for higher current inputs

Input Impedance (Voltage)

200 kΩ minimum

Input Voltage Burden (Current)

1.0 V_{RMS} maximum

Input Protection, Common Mode

750 VDC or 750 VAC_p

LoopTracker

Variable brightness LEDs indicate input/output loop level and status

Output Range

Factory Configured—Please specify output range

	Minimum	Maximum	Load Factor
Voltage:	0-1 VDC	0-10 VDC	
Bipolar Voltage:	±1 VDC	±10 VDC	
Current (20 V compliance):	0-1 mADC	0-20 mADC	1000 Ω at 20 mA

Consult factory for other ranges

Output Zero and Span

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

Output Linearity

Better than ±0.1% of span

Output Ripple and Noise

Less than 10 mV_{RMS} at 40 Hz and above

Functional Test Button

Sets output to test level when pressed.
Potentiometer factory set to approx. 50% of span, adjustable 0-100% of span

Response Time

150 milliseconds typical

Isolation

2000 V_{RMS} minimum
Full isolation: power to input, power to output, input to output

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







Description and Features

The **API 6010 G** accepts an AC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input. Typical applications include monitoring line voltage or current (either directly or with a CT) for speed control, preventive maintenance, load shedding, etc.

The full 3-way (input, output, power) isolation makes this module useful for ground loop elimination or noise pickup reduction. The **API 6010 G** is factory configured to customer requirements. Consult the factory for assistance with special ranges.

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 process input and output signals. Monitoring the state of these LEDs can provide a quick visual picture of your process loop 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.

The **API 6010 G** plugs into an industry standard 8-pin octal socket sold separately. Sockets **API 008** and finger-safe **API 008 FS** allow either DIN rail or panel mounting.

Models & Options

Factory Configured—Please specify input/output ranges and options

API 6010 G	AC to DC isolated transmitter, 115 VAC

Options—Add to end of model number

A230	Powered by 230 VAC, 50/60 Hz
D	Powered by 9-30 VDC
HC	High current output, >20 mA to 50 mADC
EXTSUP	Open collector output when a “sinking” output is required
U	Conformal coating for moisture resistance

Accessories—Order as separate line item

API 008	8-pin socket
API 008 FS	8-pin finger-safe socket
API TK36	DIN rail, 35 mm W x 39" L, aluminum
CT	See Current Sensor data sheets for current transformers

MOD-TRONIC INSTRUMENTS LIMITED

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AC Input

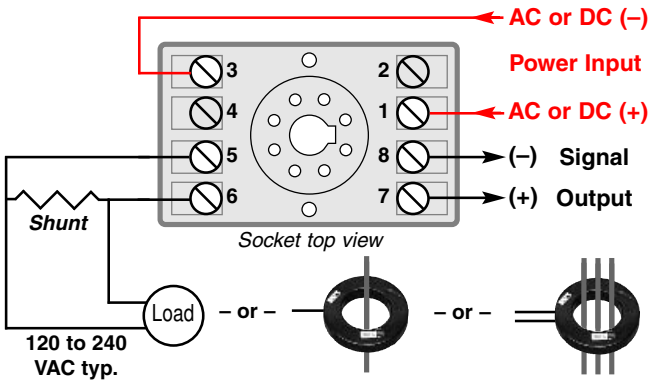
AC Input

ELECTRICAL CONNECTIONS

WARNING! All wiring must be performed by qualified personnel only. This module uses an industry-standard 8-pin socket. Order API 008 or finger-safe API 008 FS socket. Input voltages must not exceed socket voltage rating.

Power Input Terminals – The white label on the side of the API module will indicate the power requirements. AC power is connected to terminals 1 and 3. For DC powered modules, polarity **MUST** be observed. Positive (+) is wired to terminal 1 and negative (–) is wired to terminal 3.

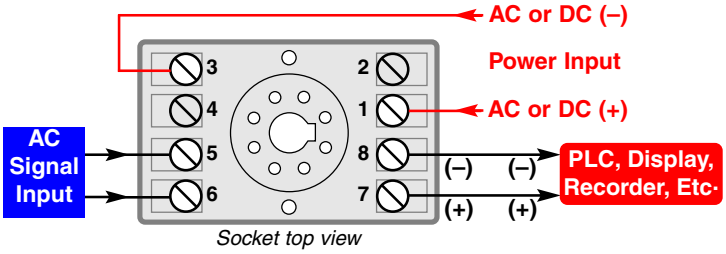
Signal Input – The AC signal input is applied to terminal 5 and terminal 6. The module is factory configured for the input range listed on the module label. Input voltages must not exceed socket voltage rating.



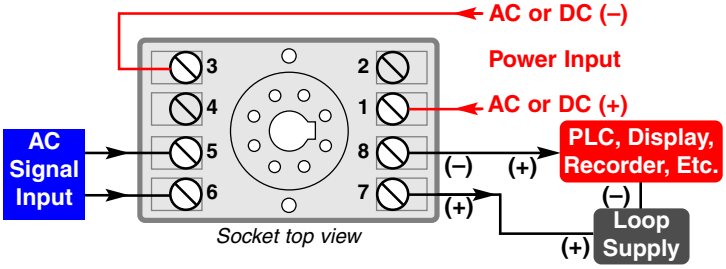
Typical wiring using a direct voltage or current transformer input
Order 2RL, 5RL, 7RL, 8RL series current transformers separately

Signal Output Terminals – Polarity must be observed when connecting the signal output to the load. The positive connection (+) is connected to terminal 7 and the negative (–) is connected to terminal 8. The module provides power to the output current loop.

When a current output is ordered, it provides power to the output current loop (sourcing). If an unpowered (sinking) current output is required, order the API 6010 G EXTSUP with open collector output.



API 6010 G typical output wiring



Typical output wiring with EXTSUP option

CALIBRATION

Input and output ranges are pre-configured at the factory as specified on your order. Top-mounted, Zero and Span potentiometers can be used should fine-tuning be necessary. Custom ranges may require factory modification.

1. Apply power to the module and allow a minimum 20 minute warm up time.
2. Using an accurate calibration source, provide an input to the module equal to the minimum input required for the application.
3. Using an accurate measurement device for the output, adjust the Zero potentiometer for the exact minimum output desired. The Zero control should only be adjusted when the input signal is at its minimum. This will produce the corresponding minimum output signal.
4. Set the input at maximum, and adjust the Span pot for the exact maximum output desired. The Span control should only be adjusted when the input signal is at its maximum. This will produce the corresponding maximum output signal.
5. Repeat adjustments for maximum accuracy.

TEST SWITCH

The Test pushbutton may be set to provide the desired output when depressed. This will drive the device on the output side of the loop (a panel meter, chart recorder, etc.) with a known good signal that can be used as a system diagnostic aid during initial start-up or during troubleshooting. It can be adjusted to vary the output signal from 0 to 100% of the calibrated output range. When released, the output will return to normal.

Turn the multi-turn Test Range potentiometer while holding the Test Switch depressed until the desired output test level is reached.

OPERATION

Depending upon the configuration required, the API 6010 G input is either amplified or attenuated, then filtered and processed by a precision full-wave rectification circuit. The resulting signal is passed thru a low pass active filter that provides a DC voltage representing the average value of the input. The module is calibrated assuming a sinusoidal input. This DC voltage is passed through an optical isolation circuit to the output stage where it is converted to the DC voltage or current required in the application.

GREEN *LoopTracker*® Input LED – Provides a visual indication that a signal is being sensed by the input circuitry of the module. It also indicates the input signal strength by changing in intensity as the process changes from minimum to maximum. If the LED fails to illuminate, or fails to change in intensity as the process changes, this may indicate a problem with module power or signal input wiring.

RED *LoopTracker* Output LED – Provides a visual indication that the output signal is functioning. It becomes brighter as the input and the corresponding output change from minimum to maximum. For current outputs, the RED LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring.

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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