AC to DC Transmitters, Isolated, Field Rangable

API 6380 G Series

**Input:**
- 0-50 mVAC to 0-250 VAC, 0-5 mAAC to 0-200 mAAC

**Output:**
- 0-1 VDC to ±10 VDC, 0-2 mADC to 0-20 mADC

- One Minute Setup for Hundreds of I/O Ranges
- External Switches & Tables for Range Selection
- Full 2000 V Input/Output/Power Isolation
- Input and Output LoopTracker LEDs
- Output Test Button
- Built-In Loop Power Supply for mA Output

**AC Input Ranges**
Field selectable ranges via switch settings
System voltages must not exceed socket voltage rating
Voltage: 0-50 mVAC to 0-250 VAC
Current: 0-5 mAAC to 0-200 mAAC
$ S $ option: True RMS input measurement
See API 6380 G 5A for current input ranges up to 0-5 AAC

**Input impedance**
Voltage (0-4 VAC): 1 MΩ minimum
Voltage (>4 VAC): 220 kΩ minimum
Current: 10 Ω typical

**Input Frequency**
40 Hz to 1000 Hz sinusoidal

**Input Protection, Common Mode**
750 VDC or 750 VACp

**LoopTracker**
Variable brightness LEDs indicate I/O loop level and status

**DC Output Ranges**
Field selectable ranges via switch settings
Voltage: 0-1 VDC to 0-10 VDC
Bipolar Voltage: ±1 VDC to ±10 VDC
Current: 0-2 mADC to 0-20 mADC

**Output Logic**
Normal acting, internal jumper for output reversal

**Output Calibration**
Multi-turn zero and span potentiometers for output ±15% of span adjustment range typical

**Output Loop Power Supply**
20 VDC nominal, regulated, 25 mA, max. ripple <10 mV/MHz

**Output Test**
Front button sets output to test level when pressed
Potentiometer adjustable 0-100% of span

**Output Ripple and Noise**
Less than 10 mV/MHz

**Linearity**
Better than ±0.1% of span

**Ambient Temperature Range and Stability**
–10°C to +60°C operating ambient
Better than ±0.02% of span per °C stability

**Response Time**
200 milliseconds typical (0-90%)

**Isolation**
2000 Vrms minimum

**Full isolation: power to input, power to output, input to output**

**Installation Environment**
IP 40, requires installation in panel or enclosure
Use with API 008 or API 008 FS socket
Socket mounts to 35 mm DIN rail or can be surface mounted
UL 508C pollution degree 2 environments or better

**Power**
Standard: 115 VAC ±10%, 50/60 Hz, 2.5 W max.
$ P $ option: 85-265 VAC 50/60 Hz, 60-300 VDC, 2.5 W
$ A230 $ option: 230 VAC ±10%, 50/60 Hz, 2.5 W max.
$ D $ option: 9-30 VDC, 2.5 W typical

**Free Factory Setup**
Specify I/O ranges if factory is to set switches
Option—add to end of model number

**Accessories—order as a separate line item**

- API 008 8-pin socket, DIN rail or surface mount
- API 008 FS 8-pin finger safe socket, DIN rail or surface mount
- API CLP1 100 VAC, 600 VAC, 300 VDC with input up to 100 VAC

**Applications**
- Convert AC Signals to DC Process Signals
- Monitor Line Voltage or Current Levels
- Isolate and Convert AC Signals for Panel Meters, PLCs, Recorders, Data Acquisition, DCS, & SCADA Systems

**Description**
The API 6380 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. Accuracy is maintained over a wide frequency range for maximum flexibility. A true RMS model API 6380 G S is available for distorted AC inputs.

The full 3-way (input, output, power) isolation makes this module useful for ground loop elimination, common mode signal rejection or noise pickup reduction.

20 input and 16 output ranges can be field-configured via external rotary and slide switches. Popular ranges are listed on the module label. Consult the factory for assistance with special ranges.

**LoopTracker**
API exclusive features include two LoopTracker LEDs (green for input, red for output) that vary in intensity with changes in the process input and output signals. These provide a quick visual picture of your process loop at all times and can greatly aid in saving time during initial startup and/or troubleshooting.

**Output Test**
An API exclusive feature includes the test button to provide a fixed output (independent of the input) when held depressed. The test output level is potentiometer adjustable from 0 to 100% of output span.

The output test button greatly aids in saving time during initial startup and/or troubleshooting.
Precautions

WARNING! All wiring must be performed by a qualified electrician or instrument engineer. See diagram for terminal designations and wiring examples. Consult factory for assistance.

WARNING! Avoid shock hazards! Turn signal input, output, and power off before connecting or disconnecting wiring, or removing or installing module.

Precautions

ATTENTION! Tout le câblage doit être effectué par un électricien ou ingénieur en instrumentation qualifié. Voir le diagramme pour désignations des bornes et des exemples de câblage. Consulter l’usine pour assistance.

ATTENTION! Evitez les risques de choc! Fermez le signal d’entrée, le signal de sortie et l’alimentation électrique avant de connecter ou de déconnecter le câble, ou de retirer ou d’installer le module. API maintient un constant effort à upgrade et improve its products. Specifications are subject to change without notice. See api-usa.com for latest product information. Consult factory for your specific requirements.

WARNING: This product can expose you to chemicals including lead and nickel, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Socket and Mounting

The module installation requires a protective panel or enclosure. Use API 008 or finger-safe API 008 FS socket. The socket clips to a standard 35 mm DIN rail or can be attached to a flat surface using the two mounting holes.

Output Reversal Configuration

The default configuration is normal acting output. The output can be reversed by moving an internal jumper.

1. Unplug the module from the socket.
2. Remove 4 screws from the module bottom and lift off plastic case.
3. Note location of circuit board jumper. See diagram below.
4. Place jumper as indicated for desired output operation.
5. Replace cover and screws.

Range Selection

Set I/O ranges before plugging the module in. See the model/serial number label for options or if a custom range was specified. See module label for common ranges or table below to select I/O ranges.

Switch A: Set to “V” for voltage output or “I” for current output.
Switch B: Output range
Switch C: Input range
Switch D: Input range
Switch E: Set to “V” for voltage input or “I” for current input.
Switch E determines the impedance module for the module, typically 10 Ω for current inputs and 220 kΩ or 1 MΩ for voltage inputs.

Signal Output

Polarity must be observed when connecting the signal output to the load. The module provides 20 DC power to the output loop when current output is selected.

Signal Input

For safety, input must be off while connecting wiring. Input voltages must not exceed socket voltage rating. Connect the AC signal input to terminals 5 and 6.

Module Power

Check model/serial number label for module operating voltage to make sure it matches available power. AC power is connected to terminals 1 and 3. For DC powered modules, polarity MUST be observed. Positive (+) is wired to terminal 1 Negative (-) is wired to terminal 3

Calibration

The Zero and Span potentiometers can be used fine-tune the output range. Note: Perform the following calibration procedure any time switch settings are changed.

1. Power 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. For example: 4 mA for a 4-20 mA output or –10 V for a ±10 V output.
4. Set the input at maximum, and adjust the Span pot for the exact maximum output desired. The Span pot 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 Range Adjust – Turn the multi-turn Test Range potentiometer while holding the Test button depressed until the desired output test level is reached. It can be adjusted to vary the output signal from 0 to 100% of the output range.

Operation

Depending on the rotary switch settings, the input is either amplified or attenuated, then filtered and processed by a precision full-wave rectification circuit. The result is passed thru a low pass active filter that provides a DC voltage representing the average value of the input. This DC voltage is passed through an optical isolation circuit to the output stage.

Test Button – Drives a 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. When released, the output will return to normal.

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 LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or fail in a change to intensity as the process changes may indicate a problem with the module power or signal output wiring.

Specifications are subject to change without notice. See api-usa.com for complete. For either current or voltage outputs, failure to illuminate or fail in change to intensity as the process changes may indicate a problem with the module power or signal output wiring.