

Input: 0-1 V to ± 200 VDC
Output: 0-1 V to ± 10 VDC or 0-2 mA to 4-20 mA

Wide Ranging I/O
One Minute Setup!

- One Minute Field 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 Output

Applications

- Convert, Boost, Rescale Process Signals
- One Model Covers Multiple Applications
- Interface Process Signals with Panel Meters, PLCs, Recorders, Data Acquisition, DCS, and SCADA Systems

DC Input Ranges

See table on other side for field selectable ranges
 Consult factory for special ranges
 System voltages must not exceed socket voltage rating
 Voltage: 0-1 VDC to 0-200 VDC
 Bipolar voltage: ± 1 VDC to ± 200 VDC

Input Impedance

Voltage: 1 M Ω minimum

Common Mode Rejection

120 dB minimum

LoopTracker

Variable brightness LEDs indicate I/O loop level and status

DC Output Ranges

See table on other side for field selectable ranges
 Consult factory for special ranges
 Voltage, 10 mA max.: 0-1 VDC to 0-10 VDC
 Bipolar voltage: ± 1 VDC to ± 10 VDC
 Current: 0-2 mADC to 0-20 mADC
 20 V compliance, 1000 Ω at 20 mA

Output Calibration

Multi-turn zero and span potentiometers for output
 $\pm 15\%$ of span adjustment range typical

Output Loop Power Supply

20 VDC nominal, regulated, 25 mADC, max. ripple <10 mV_{RMS}

Output Test

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

Output Ripple and Noise

Less than 10 mV_{RMS}

Linearity

Better than $\pm 0.1\%$ of span

Ambient Temperature Range and Stability

-10°C to +60°C operating ambient
 Better than $\pm 0.02\%$ of span per °C stability

Response Time

100 milliseconds typical
 DF option: 30 milliseconds typical response time

Isolation

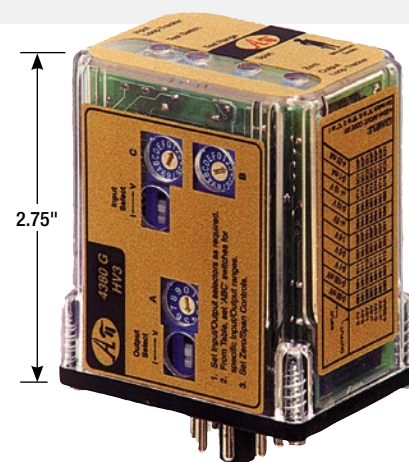
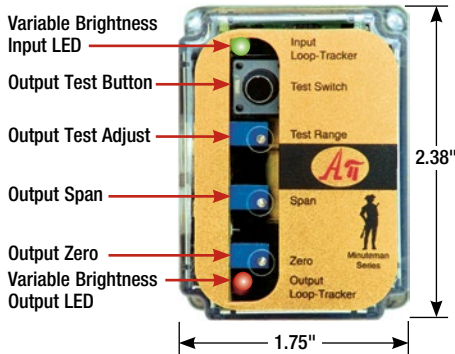
2000 V_{RMS} minimum
 Full isolation: power to input, power to output, input to output

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 $\pm 10\%$, 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 $\pm 10\%$, 50/60 Hz, 2.5 W max.
 D option: 9-30 VDC, 2.5 W typical



Sink or Source mA Input Hot Swappable Plug-In Design Sourcing mA Output



CAUS 115 VAC, 230 VAC models with input up to ± 150 VDC
 E145968



Description

The API 4380 G HV3 accepts a DC voltage input and provides an optically isolated DC voltage or current output that is linearly related to the input. This module is unique because it is field rangeable for voltage inputs to ± 200 VDC. Typical applications include signal isolation and signal conversion.

The optical isolation between input and output makes this module useful for ground loop elimination, common mode signal rejection, and noise pickup reduction. The module power supply is isolated, resulting in full 3-way (input, output, power) isolation.

The API 4380 G HV3 input and output can be field-configured via external rotary and slide switches. Common range settings are on the module label. Most common ranges are built-in, and can be selected from the table on the module, however virtually unlimited combinations are possible. 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 Functional Test Button to provide a fixed output (independent of the input) when held depressed. The test output level can be set via a potentiometer from 0 to 100% of the output span.

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

Installation

The API 4380 G HV3 plug 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.

The plug-in design, 3-way isolation, and robust electronics allows the module to be quickly hot-swapped without removing the power or I/O signals.

Model	Input	Output	Power
API 4380 G HV3	Field configurable Specify input range if factory is to set switches	Field configurable Specify output range if factory is to set switches	115 VAC 
API 4380 G HV3 A230			230 VAC 
API 4380 G HV3 P			85-265 VAC or 60-300 VDC
API 4380 G HV3 D			9-30 VDC

Free Factory Setup

Specify I/O ranges if factory is to set switches

Options—add to end of model number

- DF** 30 millisecond response time, or consult factory
 DF option will cause output noise levels greater than standard specifications.
- 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 CLP1** Module hold-down spring for high vibration or mobile applications



API 008 FS
300 V Rating



API 008
600 V Rating



API CLP1

Precautions

WARNING! All wiring must be performed by a qualified electrician or instrumentation 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.

Précautions

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.

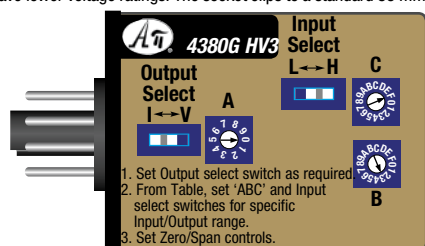
ATTENTION! Éviter les risques de choc! Fermez le signal d'entrée, le signal de sortie et l'alimentation électrique avant de connecter ou de déconnecter le câblage, ou de retirer ou d'installer le module.

API maintains a constant effort to upgrade and 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. See specifications for maximum allowable socket voltages. Note that some relay sockets may have lower voltage ratings. The socket clips to a standard 35 mm DIN



1. Set Output select switch as required.
2. From Table, set 'ABC' and input select switches for specific Input/Output range.
3. Set Zero/Span controls.

rail or can be attached to a flat surface using the two mounting holes.

Range Selection

Two slide switches and three rotary switches located on the side of the module are used to select input and output ranges. Most popular ranges are listed on the module label. See table below. Special ranges will be indicated on the model/serial number module label.

1. Unplug the module from its socket. Do not change ranges while the module is powered.
2. Locate the switch combination for your desired input and output ranges from the table.
3. Set the OUTPUT SELECT slide switch to current (I) or voltage (V) depending on output type.
4. Set the three rotary switches A, B, and C to the values found in the table.

5. Set the INPUT SELECT slide switch to L or H depending on table value.
6. Proceed to Calibration and Output Test Function setup. The Zero, Span and Test Range potentiometers can now be adjusted for the desired output range.

Depending on the rotary switch settings, the input is filtered, either amplified or attenuated as required, then passed through an optical isolation circuit to the output stage.

The input selector switch determines the input impedance for the module, typically 50 Ω for current inputs and 1 MΩ or greater for voltage inputs.

Signal Output

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

Signal Input

For safety, input must be off while connecting wiring. Connect the 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

Top-mounted Zero and Span potentiometers calibrate the output.

Note: Perform the following calibration procedure any time switch settings are changed.

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. For example: 4 mA for a 4-20 mA output or -10 V for a ±10V output.
4. Next, set the input at maximum, then 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. Example: for 4-20 mA output, the Span control will provide adjustment for the 20 mA or high end of the signal.
5. Repeat adjustments for maximum accuracy.

Output Test Function

The Test button may be pushed to provide a fixed 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

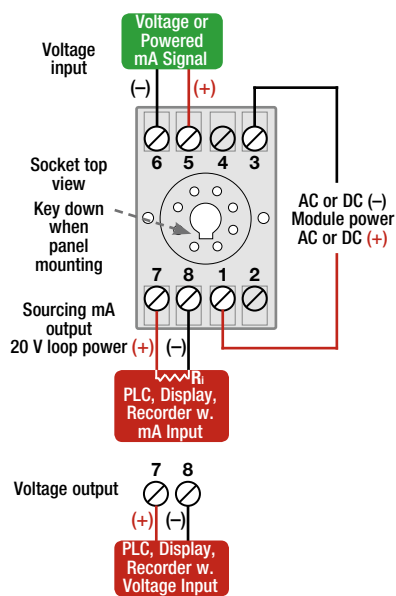
The API 4380 G HV3 input is filtered, either amplified or attenuated as required, then passed through an optical isolation circuit to the output stage.

The 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, check the module power or signal input wiring. Note that it may be difficult to see the LEDs under bright lighting conditions.

The 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 a current output, 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.



Output	0-1 V	0-2 V	0-4 V	0-5 V	1-5 V	0-8 V	2-10 V	0-10 V	±5 V	±10 V	0-2 mA	0-10 mA	2-10 mA	0-16 mA	4-20 mA	0-20 mA
Switches	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO	ABC IO
Input																
0-1 V	081HV	181HV	281HV	381HV	283HV	581HV	583HV	681HV	881HV	981HV	081HI	381HI	283HI	581HI	583HI	681HI
0-2 V	091HV	191HV	291HV	391HV	293HV	591HV	593HV	691HV	891HV	991HV	091HI	391HI	293HI	591HI	593HI	691HI
0-3 V	0A1LV	1A1LV	2A1LV	3A1LV	2A3LV	5A1LV	5A3LV	6A1LV	8A1LV	9A1LV	0A1LI	3A1LI	2A3LI	5A1LI	5A3LI	6A1LI
0-4 V	0A1HV	1A1HV	2A1HV	3A1HV	2A3HV	5A1HV	5A3HV	6A1HV	8A1HV	9A1HV	0A1HI	3A1HI	2A3HI	5A1HI	5A3HI	6A1HI
0-5 V	0C1HV	1C1HV	2C1HV	3C1HV	2C3HV	5C1HV	5C3HV	6C1HV	8C1HV	9C1HV	0C1HI	3C1HI	2C3HI	5C1HI	5C3HI	6C1HI
0-8 V	0B1HV	1B1HV	2B1HV	3B1HV	2B3HV	5B1HV	5B3HV	6B1HV	8B1HV	9B1HV	0B1HI	3B1HI	2B3HI	5B1HI	5B3HI	6B1HI
0-10 V	001HV	101HV	201HV	301HV	203HV	501HV	503HV	601HV	801HV	901HV	001HI	301HI	203HI	501HI	503HI	601HI
0-15 V	011LV	111LV	211LV	311LV	213LV	511LV	513LV	611LV	811LV	911LV	011LI	311LI	213LI	511LI	513LI	611LI
0-20 V	011HV	111HV	211HV	311HV	213HV	511HV	513HV	611HV	811HV	911HV	011HI	311HI	213HI	511HI	513HI	611HI
0-30 V	021LV	121LV	221LV	321LV	223LV	521LV	523LV	621LV	821LV	921LV	021LI	321LI	223LI	521LI	523LI	621LI
0-40 V	021HV	121HV	221HV	321HV	223HV	521HV	523HV	621HV	821HV	921HV	021HI	321HI	223HI	521HI	523HI	621HI
0-50 V	041HV	141HV	241HV	341HV	243HV	541HV	543HV	641HV	841HV	941HV	041HI	341HI	243HI	541HI	543HI	641HI
0-60 V	031LV	131LV	231LV	331LV	233LV	531LV	533LV	631LV	831LV	931LV	031LI	331LI	233LI	531LI	533LI	631LI
0-75 V	051LV	151LV	251LV	351LV	253LV	551LV	553LV	651LV	851LV	951LV	051LI	351LI	253LI	551LI	553LI	651LI
0-80 V	031HV	131HV	231HV	331HV	233HV	531HV	533HV	631HV	831HV	931HV	031HI	331HI	233HI	531HI	533HI	631HI
20-100 V	03FHV	13FHV	23FHV	33FHV	231HV	53FHV	531HV	63FHV	83FHV	93FHV	03FHI	33FHI	231HI	53FHI	531HI	63FHI
0-100 V	051HV	151HV	251HV	351HV	253HV	551HV	553HV	651HV	851HV	951HV	051HI	351HI	253HI	551HI	553HI	651HI
0-150 V	061LV	161LV	261LV	361LV	263LV	561LV	563LV	661LV	861LV	961LV	061LI	361LI	263LI	561LI	563LI	661LI
0-200 V	061HV	161HV	261HV	361HV	263HV	561HV	563HV	661HV	861HV	961HV	061HI	361HI	263HI	561HI	563HI	661HI
±75 V	064LV	164LV	264LV	364LV	266LV	564LV	566LV	664LV	864LV	964LV	064LI	364LI	266LI	564LI	566LI	664LI
±100 V	064HV	164HV	264HV	364HV	266HV	564HV	566HV	664HV	864HV	964HV	064HI	364HI	266HI	564HI	566HI	664HI
±150 V	074LV	174LV	274LV	374LV	276LV	5743V	576LV	674LV	874LV	974LV	074LI	374LI	276LI	574LI	576LI	674LI
±200 V	074HV	174HV	274HV	374HV	276HV	574HV	576HV	674HV	874HV	974HV	074HI	374HI	276HI	574HI	576HI	674HI