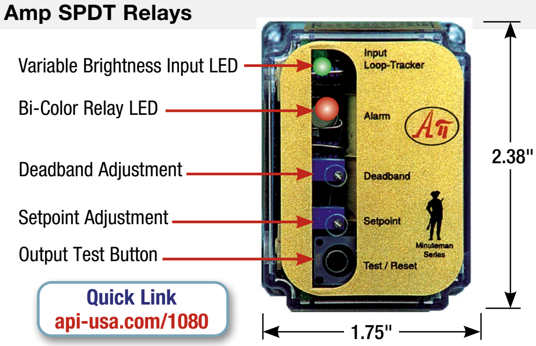
Input: 0-50 mV to ±10 VDC, 0-1 mA to 4-20 mADC
Output: One 8 Amp DPDT Relay or Two 8 Amp SPDT Relays

- *One Minute Setup for 24 Input Ranges*
- *Switch Selectable Relay Configuration*
- *Adjustable Setpoint and Deadband*
- *Input LoopTracker® and Alarm Status LEDs*
- *Hot Swappable Plug In Design*
- *Alarm Test / Reset Button*
- *Built-In Loop Power Supply for Sink/Source Input*

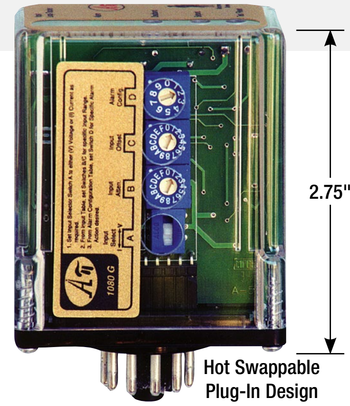
Applications

- *Process Limit Backup Alarm*
- *Tank Level Alarm*
- *Process Signal Over, Under, Out-of-Range Alarm*



Quick Link api-usa.com/1080

API 1080 G

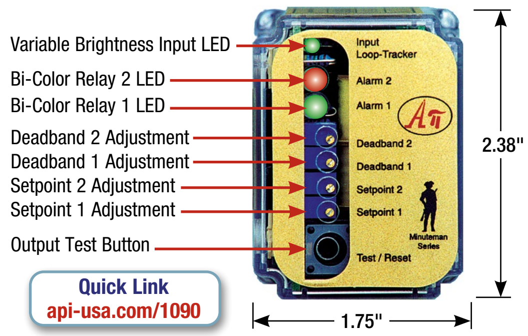


6 YEAR WARRANTY

MADE IN USA

1 Minute Setup!

Free Factory I/O Setup!



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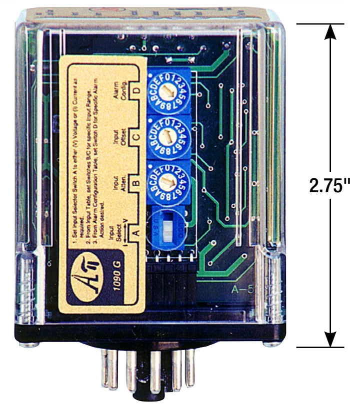
API 1090 G



DC Input Ranges
24 switch selectable ranges. See table on other side.
Voltage: 0-50 mVDC to 0-10 VDC
Bipolar voltage: ±5 VDC or ±10 VDC
Current: 0-1 mADC to 0-20 mADC, 4-20 mADC

Input Impedance, Burden, Protection
Voltage: 250 kΩ minimum
Current: 50 Ω typical (1 VDC burden at 20 mA)
Common mode protection: 750 VACp or 750 VDC

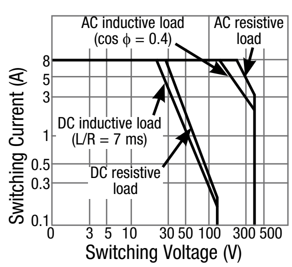
Input Loop Power Supply
18 VDC unregulated, 25 mADC, <1.5 Vp-p ripple
May be selectively wired for sinking or sourcing mA input

LoopTracker
Variable brightness LED indicates input loop level and status

API 1080 G Relay Output
Two SPDT form C contact sets operating in unison as one DPDT contact set
One 12 turn setpoint potentiometer, 0-100% of span
One 12 turn deadband potentiometer, 1-100% of span
Field configurable alarm type, action, and latching

API 1090 G Relay Output
Two independent SPDT form C contact sets
Two 12 turn setpoint potentiometers, 0-100% of span
Two 12 turn deadband potentiometers, 1-100% of span
Field configurable alarm type, action, and latching

Relay Contact Rating
8 A @ 240 VAC resistive load or 30 VDC resistive load max.
Caution: Do not exceed socket voltage rating
Use an RC snubber for inductive loads



Relay Contact Ratings

Output Test/Reset Button
Toggles relay to opposite state when pressed
Resets latching relay if latching relay mode is selected

Response Time
70 milliseconds typical

Ambient Temperature Range and Stability
–10°C to +60°C operating ambient
Better than ±0.02% of span per °C stability, calculated, not tested

Housing and Sockets
IP 40, requires installation in panel or enclosure
API 011 or API 011 FS socket
Socket mounts to 35 mm DIN rail or can be surface mounted

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

Description
The API 1080 G and API 1090 G accept a DC voltage or current input and provide visual alarm indication and alarm relay contact outputs. Voltage and current input ranges can be field-configured via external rotary and slide switches. Offset ranges such as 1-5 VDC and 4-20 mADC are also included. Heavy-duty relay contacts allow the module to directly control high capacity loads. Top-accessible potentiometers are used to adjust the alarm setpoint from 0 to 100% and the deadband from 1 to 100%.

The API 1080 G provides a single setpoint adjustment of the two DPST relay contacts. The alarm output can be field configured for HI or LO operation, latching or non-latching, and normal or reverse acting. The deadband and alarm setpoint are adjustable.

The API 1090 G provides two setpoint adjustments of the two SPDT relay contacts. The alarm outputs can be configured in the field for HI/HI, LO/LO, HI/LO or LO/HI operation, latching or non-latching, and normal or reverse acting. Deadband and alarm setpoints are independently adjustable for each alarm.

Sink/Source Input and Loop Supply
For maximum versatility, a current input can be selectively wired for sinking or sourcing. This allows the API 1080 G and API 1090 G to work with powered or unpowered mA inputs. An unregulated 18 VDC loop excitation supply can be used to power passive input devices eliminating the need for an additional DC loop supply.

LoopTracker and Alarm Status LEDs
API exclusive features include a LoopTracker LED that varies in intensity with changes in the process input signal. A red/green bi-color alarm status LED (two on the API 1090) visually indicate alarm status. These LEDs provide a quick visual status of your process at all times.

Output Test / Unlatch
API's exclusive functional test button can be used to verify the alarm and system operation. The output test button greatly aids in saving time during initial startup and/or troubleshooting.

The HT latching option provides the additional function of unlatching the alarm when the reset button is pressed. The alarm will reset if the alarm condition not longer exists.

Model	Input	Output	Power
API 1080 G	Field configurable specify range if factory is to set switches	Single setpoint field configurable DPDT relay configuration, specify configuration for factory setup	115 VAC
API 1080 G A230			230 VAC
API 1080 G P			85-265 VAC or 60-300 VDC
API 1080 G D			9-30 VDC
API 1090 G	Field configurable specify range if factory is to set switches	2 setpoint field configurable 2 SPDT relays, specify configuration for factory setup	115 VAC
API 1090 G A230			230 VAC
API 1090 G P			85-265 VAC or 60-300 VDC
API 1090 G D			9-30 VDC

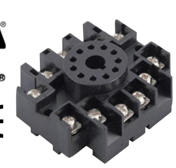
Option—add to end of model number

U Conformal coating for moisture resistance

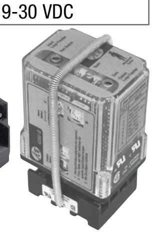
Accessories—order as separate line item

API 011 11-pin socket, DIN rail or surface mount
API 011 FS 11-pin finger safe socket, DIN rail or surface mount
API CLP1 Module hold-down spring for high vibration or mobile applications

API 011 FS
300 V Rating



API 011
300 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, which is 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

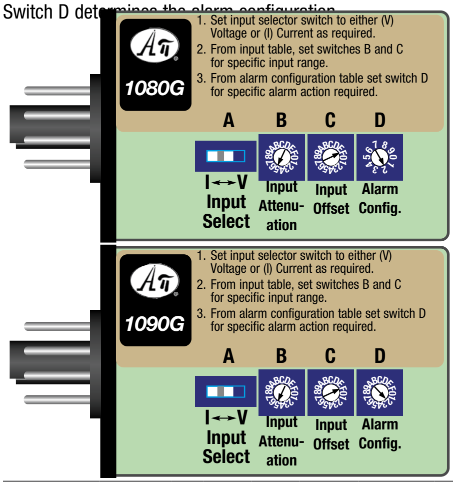
Range Selection

Input ranges are factory calibrated (at 24°C ±1°C) and do not require adjustment. Select ranges before installation. See the model/serial number label for module information, options, or if a custom range was specified.

Set input selector switch A to "I" for a current input or to "V" for a voltage input.

Switch settings B and C determine the input range.

Switch D determines the alarm configuration.



Input Range	Switch A B C
0-50 mV	V 8 1
0-100 mV	V 9 1
0-200 mV	V A 1
0-250 mV	V C 1
0-400 mV	V B 1
0-500 mV	V 0 1
±50 mV*	V A 4
±100 mV*	V B 4
0-1 V	V 1 1
0-2 V	V 2 1
0-2.5 V	V 4 1
0-4 V	V 3 1
1-5 V	V 5 F
0-5 V	V 5 1
0-10 V	V 6 1
±5 V	V 6 4
±10 V	V 7 4
0-1 mA	I C 1
0-2 mA	I 0 1
0-4 mA	I 1 1
0-8 mA	I 2 1
2-10 mA	I 2 F
0-10 mA	I 4 1
0-16 mA	I 3 1
0-20 mA	I 5 1
4-20 mA	I 5 F

* AP1090 G only

API 1080 G Alarm Settings

SP1	Latch	Action	D
HI	No	Normal	2
HI	No	Reverse	6
HI	Yes	Normal	0
HI	Yes	Reverse	4
LO	No	Normal	3
LO	No	Reverse	7
LO	Yes	Normal	1
LO	Yes	Reverse	5

API 1090 G Alarm Settings

SP1	SP2	Latch	Action	D
HI	LO	No	Normal	6
HI	LO	No	Reverse	E
HI	LO	Yes	Normal	2
HI	LO	Yes	Reverse	A
HI	HI	No	Normal	4
HI	HI	No	Reverse	C
HI	HI	Yes	Normal	0
HI	HI	Yes	Reverse	8
LO	LO	No	Normal	7
LO	LO	No	Reverse	F
LO	LO	Yes	Normal	3
LO	LO	Yes	Reverse	B
LO	HI	No	Normal	5
LO	HI	No	Reverse	D
LO	HI	Yes	Normal	1
LO	HI	Yes	Reverse	9

Socket and Mounting

Install module in a protective panel or enclosure. Allow space around module for air flow. Use API 011 or API 011 FS socket. See specifications for maximum allowable socket voltages. The socket clips to a standard 35 mm DIN rail or can be mounted to a flat surface.

Signal Input Terminals

See wiring diagrams below. Polarity must be observed for input wiring connections. If the input does not function, check switch settings and wiring polarity.

The milliamp input can be used with either sinking or sourcing mA transmitters. Determine if your transmitter provides power to the current loop or if it must be powered by the API module. Only one device must provide power to the current loop. Use a multi-meter to check for voltage at the transmitter's output terminals. Typical voltage may be in the range of 9 to 24 VDC. In this case, wire the device to terminals 4 and 5.

Relay Output Terminals

See wiring diagrams below. API modules do not provide power to the relay contacts. Inductive loads (motors, solenoids, contactors, etc.) will greatly shorten relay contact life unless an appropriate RC snubber is installed.

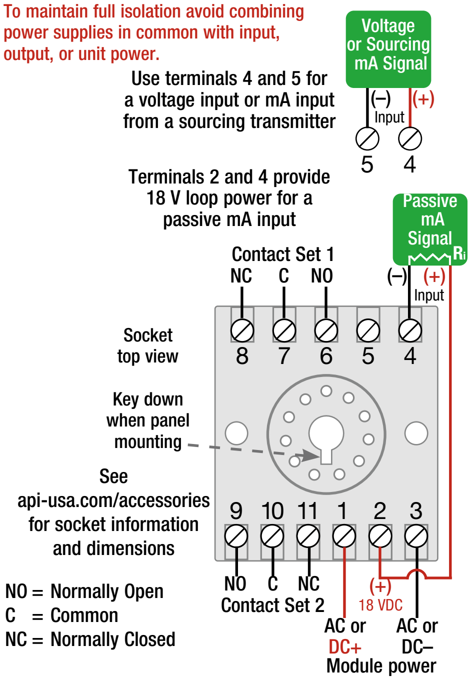
Module Power Terminals

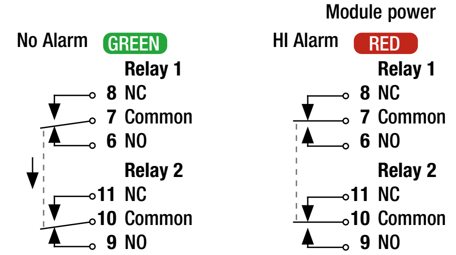
Check model/serial number label for module operating voltage to make sure it matches available power.

When using DC power, polarity must be observed. Wire (+) to terminal 1 and negative (–) to terminal 3.

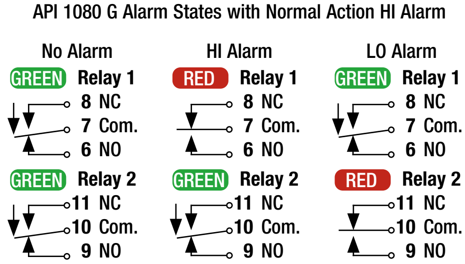
* Do not make connections to unused terminals!

To maintain full isolation avoid combining power supplies in common with input, output, or unit power.





API 1080 G Alarm States with Normal Action HI Alarm



API 1090 G Alarm States with Normal Action HI/LO Alarms

Setpoint

This multi-turn potentiometer (one for each setpoint on the API 1090 G) allows the operator to adjust the level at which the alarm is activated. This control is adjustable from 0 to 100% of the input range.

Deadband

The deadband potentiometer (one for each setpoint on the API 1090 G) allows the alarm trip/reset window to be adjusted symmetrically about the setpoint from 1 to 100% of the span.

Deadband allows the operator to fine tune the point at which the alarm trips and resets. The deadband is typically used to prevent chattering of the relays or false trips when the process signal is unstable or changes rapidly.

Adjustments

To calibrate the alarm section, set the deadband control to the minimum (counterclockwise). The deadband will be 1% of input span in this case.

Set the signal source to a reference that represents the desired trip point.

Adjust the setpoint control to the point at which the relay changes state from a non-alarm to an alarm condition.

If a larger amount of deadband is desired turn the deadband potentiometer clockwise. The deadband is symmetrical about the setpoint; both transition points will change as deadband is increased.

Alternately set the setpoint and deadband until the desired trip/reset points are set.

The adjustment procedure needs to be repeated any time switch settings are changed.

Output Test / Latching Function

When the test button is depressed it will drive the relays to their opposite state. This can be used as a diagnostic aid during initial start-up or troubleshooting. When released, the relays will return to their prior states.

When the latching mode is selected, it will be necessary to push the output test button or remove power from the module to reset the alarm. The alarm will only reset if the alarm condition no longer exists.

Operation

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 bi-color alarm LED provides a visual indication of the alarm status. In all configurations, a green LED indicates a non-alarm condition and a red LED indicates an alarm condition.

High Alarm

The alarm relay changes state when the input exceeds the deadband trip point. The relay resets when the input drops below the deadband reset point unless latching is enabled. For a high alarm, the trip point is above the reset point.

Low Alarm

The alarm relay changes state when the input goes below the deadband trip point. The relay resets when the input exceeds the deadband reset point unless latching is enabled. For a low alarm, the trip point is below the reset point.

Latching

In this mode the alarm latches when an alarm occurs. The Test button or powering the module off can be used to reset the alarm provided the alarm condition no longer exists.

Normal Acting Alarms

Normal acting alarms energize the relay coils in a non-alarm condition and de-energize them in an alarm condition. This will create an alarm condition if the module loses power.

Reverse Acting Alarms

Reverse-acting alarms energize the relay coils in an alarm condition and de-energize them in a non-alarm condition. There is no alarm condition with module power off.

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