

Input: Most Thermocouple Types

Output: One 8 Amp DPDT Relay or Two 8 Amp SPDT Relays

- Automatic Cold Junction Compensation
- Field Adjustable Set and Reset Potentiometers
- Plug-In Design for Fast Installation
- Input LoopTracker® and Alarm Status LEDs
- Alarm Test Button

Applications

- Process Limit Backup Alarm
- Temperature Alarm
- Over, Under, Out-of-Range Alarm

Thermocouple Input Types, Factory Set

Specify thermocouple type and temperature range in °F or °C

J, K, T, E, R, S, N, B, C, D, G, M, P

Full ANSI temperature ranges

Linearization: 41-55 segment or up to 14th order polynomial

Note: 100°F (55°C) is the recommended minimum span

Consult factory if a smaller span is required

Cold Junction Compensation

Automatic for specified thermocouple

T/C Burnout Protection

Upscale burnout protection standard

B option: Downscale burnout protection

N option: None, last valid value

T/C Current

Less than 1.0 µA, including burnout sense

LoopTracker

Variable brightness LED indicates input level and status

API 1200 G Relay Output

Two SPDT form C contact sets operating in unison as one DPDT contact set

One set point, 12 turn potentiometer, 0-100% of span

One reset point, 12 turn potentiometer, 0-100% of span

Factory configured alarm type

Standard: HI alarm, non-latching, normal acting

Options: LO alarm, latching, reverse acting

API 1220 G Relay Output

Two independent SPDT form C contact sets

Two set points, two 12 turn potentiometers, 0-100% span

Two reset points, two 12 turn potentiometers, 0-100% span

Factory configured alarm action

Standard: HI/LO alarm, non-latching, normal acting

Options: LO/LO, HI/HI, LO/HI alarms, latching, reverse acting

Relay Contact Rating

8 A @ 240 VAC resistive load or 30 VDC resistive load

5 A @ 240 VAC inductive load (cos φ = 0.4)

3.5 A @ 30 VDC inductive load (L/R = 7ms)

See graph on other side for relay load ratings

Caution: Do not exceed socket voltage rating

Use an RC snubber for inductive loads

Output Test/Reset Button

Toggles relay(s) to opposite state when pressed

Resets latching relay with HT option

Response Time

300 milliseconds typical

Ambient Temperature Range and Stability

-10°C to +60°C operating ambient

Better than ±0.04% 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

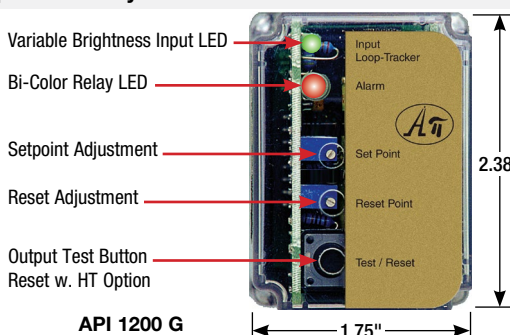
Standard: 115 VAC ±10%, 50/60 Hz, 2.5 W max.

P option: 85-265 VAC 50/60 Hz, 60-300 VDC, 2.5 W typ.

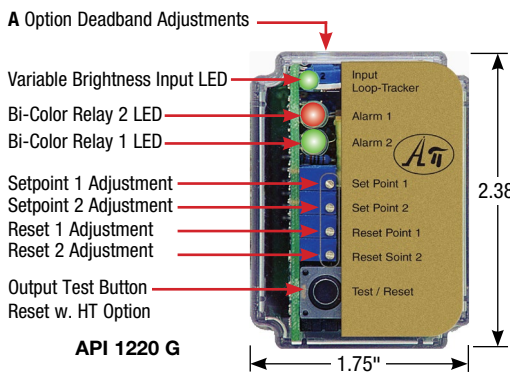
A230 option: 230 VAC ±10%, 50/60 Hz, 2.5 W max.

D option: 9-30 VDC, 2.5 W typical

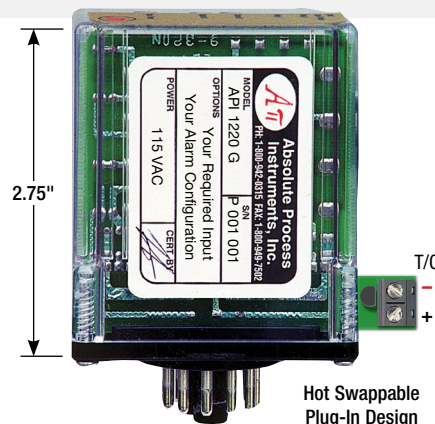
New Microprocessor-Based Version



API 1200 G



API 1220 G



Hot Swappable Plug-In Design



A Option Deadband Adjustments

Description

The API 1200 G and API 1220 G are factory configured for a thermocouple input and provide alarm contact outputs. Heavy duty relay contacts allow the module to directly control high capacity loads.

The API 1200 G provides a single set point and reset point adjustment and DPDT relay contacts. The alarm output can be factory configured for HI or LO operation, non-latching or latching, normal or reverse acting. Top-accessible potentiometers are used to adjust the alarm trip and reset points.

The API 1220 G contains two independent set and reset adjustments with two SPDT relay contact outputs. The alarm output can be factory configured for HI/HI, HI/LO, LO/HI or LO/LO operation, normal acting or reverse acting. Top-accessible potentiometers are used to adjust each alarm trip and reset points.

LoopTracker and Alarm Status LEDs

API exclusive features include a LoopTracker LED that varies in intensity with changes in the thermocouple input signal.

A red/green bi-color alarm status LED (two on the API 1220 G) visually indicate alarm status. These LEDs provide a quick visual picture of your process at all times.

Output Test/Reset

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 no longer exists.

Model	Input	Standard Alarm Configuration	Power
API 1200 G	Factory ranged, specify thermocouple type temperature range °F or °C	Single setpoint one DPDT relay HI alarm, non-latching, normal acting	115 VAC
API 1200 G A230			230 VAC
API 1200 G P			85-265 VAC or 60-300 VDC
API 1200 G D			9-30 VDC
API 1220 G	Factory ranged, specify thermocouple type temperature range °F or °C	2 setpoints, 2 SPDT relays HI/LO alarms, non-latching, normal acting	115 VAC
API 1220 G A230			230 VAC
API 1220 G P			85-265 VAC or 60-300 VDC
API 1220 G D			9-30 VDC

Options—add to end of model number

- L** 1200 G with LO trip. Alarm trips on decreasing signal.
- HT** Latching alarm with push button reset
- HP** Latching alarm with power-off reset. Module power must be turned off to reset alarms
- HH** 1220 G with HI/HI trip. Alarms trip at their respective trip points on increasing signal.
- LL** 1220 G with LO/LO trip. Alarms trip at their respective trip points on decreasing signal.
- LH** 1220 G with LO/HI trip instead of HI/LO.
- B** Downscale burnout protection
- N** No burnout protection, last valid reading
- RA** Reverse-acting alarms. Relay coils energized in an alarm condition. No alarm condition with module power off.
- U** Conformal coating for moisture resistance

Accessories—order as a 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

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.

Input

The input is factory configured (at 24°C ±1°C). See the model/serial number label for input type, range, and options.

The thermocouple connection is made to the block on the side of the module. Polarity must be observed. ANSI/ASTM thermocouples use red for negative. IEC thermocouples use white for negative. Other countries may use other color coding.

Relay Output

See wiring diagram for connections. The module does 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

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

When using DC power, polarity must be observed. The positive (+) must be wired to terminal 1 and negative (-) must be wired to terminal 3.

Set Point

The multi-turn potentiometer (one for each alarm on the API 1220 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.

Reset Point

The multi-turn potentiometer (one for each alarm on the API 1220 G) allows the operator to adjust the level at which the alarm resets. This control is adjustable from 0 to 100% of the input range.

Sufficient deadband (difference between trip and reset point) should be used to prevent chattering of the relays or false trips when the process signal is unstable or changes rapidly.

Adjustments

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

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

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

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

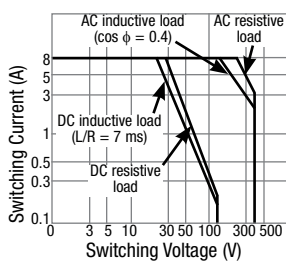
Operate the signal source through the set and reset points to confirm desired operation and adjust if necessary.

For the API 1220, repeat the above procedure for the second alarm.

Output Test Function

The functional test button toggles the alarm status independent of the input when depressed. It verifies the alarm and system operation. When released, the relays will return to their prior states. This can be used as a diagnostic aid during initial start-up or troubleshooting.

With the HT latching alarm option, the test button provides the additional function of unlatching the alarm relays provide the alarm condition no longer exists.



Relay Contact Ratings

* Do not make connections to unused terminals!

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

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.

NOTE: Although the API 1200 G has a pair of relays, these relays will energize and de-energize in unison.

The API 1220 G will accommodate independent relay operations.

High Alarm (Default, H, or HH)

The alarm relay changes state when the input exceeds the set point. The relay resets when the input drops below the reset point unless the module has a latching relay option. For a high alarm, the set point is above the reset point.

Low Alarm (L or LL)

The alarm relay changes state when the input goes below the set point. The relay resets when the input exceeds the reset point unless the module has a latching relay option. For a low alarm, the set point is below the reset point.

HT Option

The module has a latching alarm with a push button reset. The Test button or powering the module off can be used to reset the alarm provided the alarm condition no longer exists.

HP Option

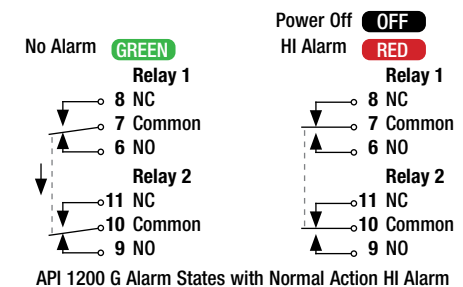
The module has a latching alarm with a power-off reset. Module power must be turned off to reset alarms. The alarm will reset provided the alarm condition no longer exists.

Normal Acting Alarms (Standard)

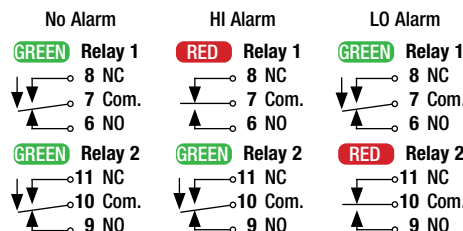
Normal acting alarms energize the relay coils in a non-alarm condition and de-energize them in an alarm condition. This will create an alarm condition if the module loses power.

Reverse Acting Alarms (R or RA Option)

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.



API 1200 G Alarm States with Normal Action HI Alarm



API 1220 G Alarm States with Normal Action HI/LO Alarms

