

Input: 0-10 Hz to 0-30 kHz

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

New Microprocessor-Based Version

- Accepts Most Types of Pulse Signals
- Field Adjustable Trip and Reset
- Plug-In Design for Fast Installation
- Input LoopTracker® and Alarm Status LEDs
- Alarm Test, Optional Reset Button

Applications

- Machinery Speed Alarm
- Redundant or Backup Alarm
- Conveyor or Machine Malfunction Alarm

Frequency Input Range

Factory configured, please specify frequency range
 Minimum: 0-10 Hz Maximum: 0-30 kHz
 Can be zero-based or offset up to 1/3 of maximum range

Input Type

Capacitively coupled, unpowered input
 Accepts sine wave, sawtooth, square wave, or pulses
 Minimum 5 µsec pulse and 100 mV amplitude change

Input Amplitude

100 mVRMS to 150 VRMS

Input Impedance

10 kΩ nominal (at maximum sensitivity)
 100 kΩ nominal (at minimum sensitivity)

Sensitivity/Hysteresis

Single-turn potentiometer for sensitivity adjustment
 Maximum sensitivity: ±25 mV typical
 Minimum sensitivity: ±2.5 V typical

Input Protection

Normal mode: 200% of input rating
 Common mode: 600 VDC or 600 VAC_p input to ground
 System voltages must not exceed socket voltage rating

LoopTracker

Variable brightness LED indicates input level and status
 Will blink at frequencies below 25 Hz.

API 1700 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 action
 Standard: HI alarm, non-latching, normal acting (failsafe)
 Options: LO alarm, latching, reverse acting

API 1720 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 (failsafe)
 Options: LO/LO, HI/LO, LO/LO, band, 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

Deadband

0.02% of input frequency span when reset point adjustment is not in use

Output Test/Reset Button

Toggles relay(s) to opposite state when pressed
 Resets latching relay with HT option

Ambient Temperature Range and Stability

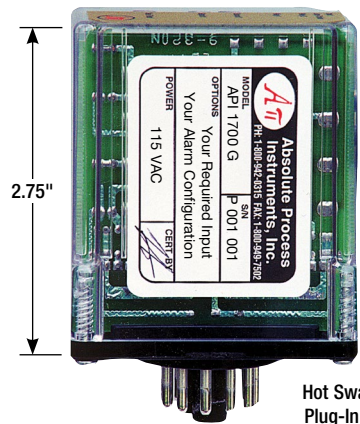
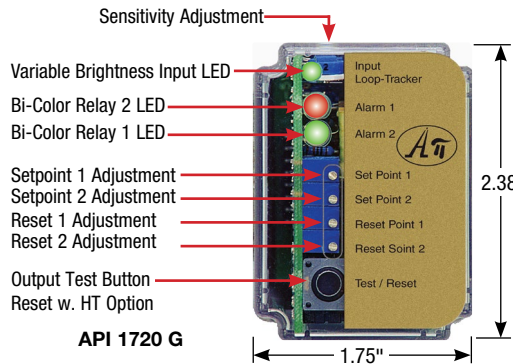
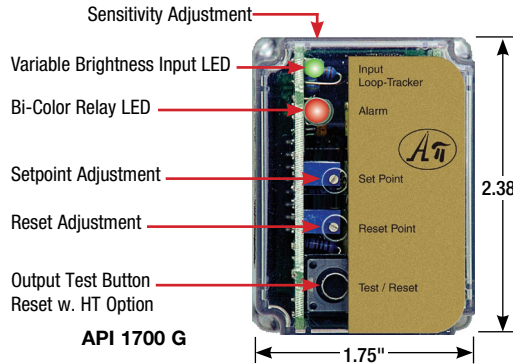
-10°C to +60°C operating ambient
 Better than ±0.04% of span per °C stability, calculated not tested

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



Hot Swappable Plug-In Design



Description

The API 1700 G and API 1720 G are factory configured for a frequency input and provide alarm contact outputs. Heavy duty relay contacts allow the module to directly control high capacity loads.

The API 1700 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 1720 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 both sets of 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 frequency input signal.

A red/green bi-color alarm status LED (two on the API 1720 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	Module Power	Input	Standard Alarm Configuration
API 1700 G	115 VAC	Specify input range ___ - ___ Hz or ___ - ___ kHz 0-based or offset up to 1/3 maximum range	One setpoint, one DPDT relay HI alarm non-latching normal acting (failsafe)
API 1700 G A230	230 VAC		2 setpoints, 2 SPDT relays HI/LO alarms non-latching normal acting (failsafe)
API 1700 G P	85-265 VAC or 60-300 VDC		
API 1700 G D	9-30 VDC		
API 1720 G	115 VAC	Specify input range ___ - ___ Hz or ___ - ___ kHz 0-based or offset up to 1/3 maximum range	One setpoint, one DPDT relay HI alarm non-latching normal acting (failsafe)
API 1720 G A230	230 VAC		2 setpoints, 2 SPDT relays HI/LO alarms non-latching normal acting (failsafe)
API 1720 G P	85-265 VAC or 60-300 VDC		
API 1720 G D	9-30 VDC		

Options—add to end of model number

- L** 1700 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** 1720 G with HI/HI trip. Alarms trip at their respective trip points on increasing signal.
- LL** 1720 G with LO/LO trip. Alarms trip at their respective trip points on decreasing signal.
- LH** 1720 G with LO/HI trip instead of HI/LO.
- BA** 1720 with band alarm. Alarm trips if signal is outside LO and HI trip points.
- IBA** 1720 with inverse band alarm. Alarms trip if signal is between LO and HI trip points.
- 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



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

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.

Install module in a protective panel or enclosure. Allow space around module for air flow. Temperatures inside enclosure must not exceed specifications.

Input

The input range is factory configured and calibrated (at 24°C ±1°C), and does not require adjustment. See the model/serial number label for input range. See wiring diagram for connections.

The sensitivity potentiometer may be adjusted as needed to ensure the entire frequency range is detected by the module.

Relay Output

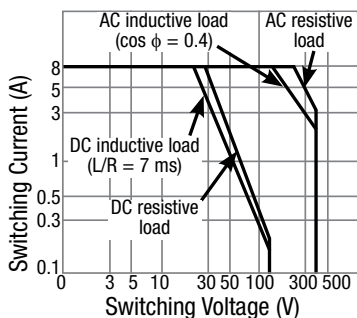
The relay operation is factory configured. See model/serial number label for non-standard relay configuration options.

The API 1700 G default configuration is HI alarm normal acting. The API 1720 G default configuration is HI/LO alarms normal acting.

A normal acting alarm energizes the relay coil in a non-alarm state. This produces an alarm condition if the module loses power. This is also called a failsafe alarm.

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.



Relay Contact Ratings

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.

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

Set Point

The multi-turn potentiometer (one for each alarm on the API 1720 G) allows adjustment of the alarm trip point. 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 1720 G) allows adjustment of the alarm reset point. 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.

If the reset point is set higher than the trip point with a HI alarm or lower than the trip point with a LO alarm, the module will have a deadband of 0.02% of full scale to prevent alarm relay chattering.

Adjustments

Allow at least 20 minutes for all equipment to reach normal operating temperature. Best accuracy is achieved when the module is calibrated in its installation location at normal operating temperature.

Adjust the sensitivity potentiometer if need to make sure the entire frequency range is detected by the module.

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.

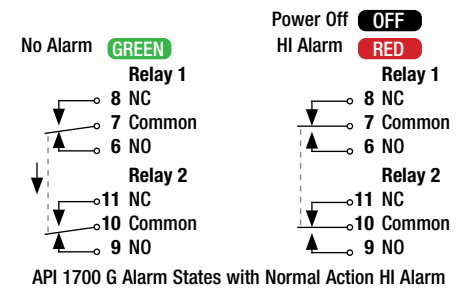
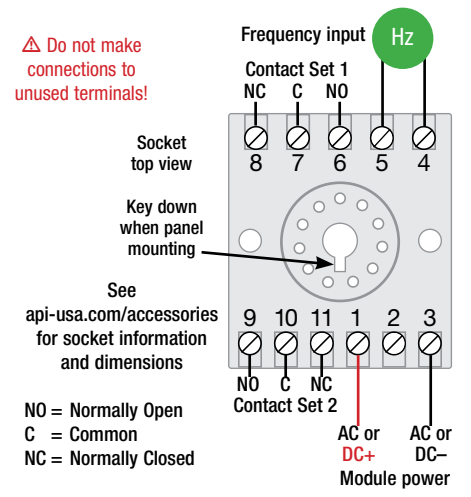
Operate the signal source through the set and reset points to confirm desired operation and adjust if necessary.

For the API 1720, 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.



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. At low frequencies, flickering or blinking of the LED may be apparent.

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.

The API 1700 G has a pair of relays that energize and de-energize in unison. It can be ordered as an H or L alarm.

The API 1720 G has two independent relays that can be ordered as HL, LH, HH, LL, BA, or IBA alarm configurations.

High Alarm (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.

Band Alarm (API 1720 BA)

The two setpoints are adjusted to set a normal operating range or "band". If the input goes outside the band, the appropriate LO or HI alarm relay changes state. The reset points determine when the alarm condition clears unless the module has a latching relay option. This type of alarm can alert if a process is above or below a desired speed range.

Inverse Band Alarm (API 1720 IBA)

The two setpoints are adjusted to set an alarm range or "band". If the input enters the band, the appropriate LO or HI alarm relay changes state. The reset points determine when the alarm condition clears unless the module has a latching relay option. This type of alarm can alert if a process is within a certain speed range.

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 (Failsafe)

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 (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.