**Frequency Input Alarm Trips, Factory Ranged**

**Input:** 0-10 Hz to 0-20 kHz

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

- Accepts Most Types of Pulse Signals
- Field Adjustable Setpoints
- 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: 0-20 kHz

### 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 (Voltage)

100 kΩ minimum

### Input Protection

Normal mode: 200% of input rating

Common mode: 600 VDC or 600 VAC input to ground

System voltages must not exceed socket voltage rating

### LoopTracker

Variable brightness LED indicates input level and status

**API 1700 G Relay Output**

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

One setpoint, 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 1720 G Relay Output**

Two independent SPDT form C contact sets

Two setpoints, two 12 turn potentiometers, 0-100% of span

Factory configured alarm action

Internal jumpers for HI/LO, LO/LO, HI/LO, LO/LO

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

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

### Relay Contact Rating

See graph on other side for relay load ratings

**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 setpoint 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 setpoint and deadband.

The API 1720 G contains two independent setpoints with two SPDT relay contact outputs. The alarm output can be factory configured for HI/LO, HI/LO, LO/LO or LO/LO operation, normal action or reverse acting. Top-accessible potentiometers are used to adjust each alarm setpoint. Deadband is fixed at 1% of span. Adjustable deadbands are optional.

### Power

- **API 1700 G A**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI alarm, non-latching, normal acting
  - 115 VAC

- **API 1700 G A230**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI alarm, non-latching, normal acting
  - 230 VAC

- **API 1700 G D**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI/LO alarm, non-latching, normal acting
  - 85-265 VAC or 60-300 VDC

- **API 1720 G**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI alarm, non-latching, normal acting
  - 115 VAC

- **API 1720 G A230**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI/LO alarm, non-latching, normal acting
  - 230 VAC

- **API 1720 G D**
  - Factory ranged, specify frequency range
  - Single setpoint one DPDT relay
  - HI/LO alarm, non-latching, normal acting
  - 230 VAC

### Options

- **L** 1700 G with LO trip. Alarm trips on decreasing signal.
- **HT** 1700 G latching alarm with push button reset
- **HP** 1700 G latching alarm with power-off reset
- **HH** 1700 G with HI/LO trip. Alarms trip at their respective trip points on increasing signal.
- **LL** 1700 G with LO/LO trip. Alarms trip at their respective trip points on decreasing signal.
- **A** 1720 G with adjustable deadbands.
- **U** Conformal coating for moisture resistance

### Accessories—order as a separate line item

- **API 011 FS** 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 1700 G**
  - 115 VAC
  - 230 VAC
  - 85-265 VAC or 60-300 VDC

- **API 1720 G**
  - 115 VAC
  - 230 VAC
  - 85-265 VAC or 60-300 VDC
Installation and Setup

Electrical Connections
WARNING: All wiring must be performed by a qualified electrician or instrumentation engineer. See diagram below for terminal designations and wiring examples. Consult factory for assistance. Avoid shock hazards! Turn power off to signal input, relay wiring, and module power before connecting or disconnecting wiring.

Mounting
This module requires an industry-standard 11-pin socket. Order API 011 or finger-safe API 011 FS socket separately. The socket mounts to a standard 35 mm DIN rail or flat surface. When plugging the module into the socket, orient the module key with the keyway in the socket. The module is IP40 rated and requires a protective panel or enclosure.

Input Terminals
The input is factory configured. See the model/serial number label for input range and options. See wiring examples below.

The module accepts most types of waveforms that fall within the specifications. The input is capacitively coupled to prevent any DC in the input and does not provide sensor power. If the sensor requires external power or a load resistor, refer to the sensor manufacturer’s data sheet to determine compatibility and proper wiring.

Relay Output Terminals
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 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. Connect the positive (+) power lead to terminal 1 and negative (-) to terminal 3.

Relay Output Terminals
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 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. Connect the positive (+) power lead to terminal 1 and negative (-) to terminal 3.

Alarm Configuration
API 1700 G relay operation is factory configured. The default configuration is HI alarm normal acting. See model/serial number label for non-standard relay configuration options.

API 1720 G relay operation is factory configured, but internal jumpers can be used to modify the alarm type as follows:

1. Unplug the module from the socket.
2. Remove the 4 screws from the module bottom and remove the plastic case.
3. Unplug the circuit board with the test button from the base.
4. Note location of jumper block at top left of circuit board next to test button. See diagram at right.
5. Place jumpers as indicated for desired alarm operation. The standard HI/LO setting is with one jumper across the two top pins or with no jumper at all. Never place a jumper across the two bottom pins!
6. Replace board, cover, and screws.

Input
The input is factory calibrated and does not require adjustment. Check module response to confirm correct wiring.

Setpoint
This multi-turn potentiometer (one for each setpoint on the API 1720 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 API 1700 G deadband potentiometer allows the alarm trip/ reset window to be adjusted symmetrically about the setpoint from 1 to 100% of the span.

Adjustments
To calibrate the alarm section, set the deadband control to the minimum (counterclockwise). The deadband will be 1.0% 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.

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.

The API 1700 G 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.

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 1700 G has a pair of relays, these relays will energize and de-energize in unison.

The API 1720 G will accommodate independent relay operations.

High Alarm (Default, H, or HH)
The alarm relay changes state when the input exceeds the deadband reset point. The relay resets when the input drops below the deadband reset point unless the module has a latching relay option. For a high alarm, the trip point is above the reset point.

Low Alarm (L or LL)
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 the module has a latching relay option. For a low alarm, the trip point is below the reset point.

HT Option (API 1700 G Only)
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 (API 1700 G Only)
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 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.

Specifications
Specifications are subject to change without notice. Contact factory for assistance and see api-usa.com for latest datasheet version.

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