# Valve Positioner/Actuator/Controller — API 3200 G

**Control Input:** 0-1 V to 0-100 VDC or 0-10 mA to 0-1 ADC
**Position Feedback:** Potentiometer, Current, or Voltage
**Output:** 8 A SPDT Relay with Neutral Position

- *Automatic or Manual Valve Control*
- *Test/Manual Positioning Buttons*
- *Input LoopTracker® LED*
- *Relay Status LEDs*
- *High Capacity Relay Contacts*

## Applications

- *Valve Position Controller*
- *Linear Actuator Controller*
- *Damper Controller*

### Control Input and Feedback

Factory configured, please specify input range and feedback
M01 and M420: input and feedback must be the same

| | |
|---|---|
| **API 3200 G:** | **Voltage or mA input / potentiometer or slidewire feedback** |
| Voltage input: | 0-1 V to 0-100 VDC |
| Current input: | 0-10 mA to 0-1000 mADC |
| Pot. feedback: | 0-100 Ω to 0-100 kΩ |
| Pot. excitation: | 1.0 VDC nominal, 10 mA max. |
| **API 3200 G M01:** | **Voltage input / voltage feedback** |
| Input and feedback: | 0-1 V, 0-5 V, 1-5 V, 0-10 VDC |
| **API 3200 G M420:** | **mADC input / mADC feedback** |
| Input and feedback: | 0-20 mA, 4-20 mA, 10-50 mA |

### Control Input Impedance

Voltage: 200 kΩ min.
Current: 50 Ω typical

### Input Voltage Burden (Current)

1.25 VDC maximum

### Common Mode Rejection

100 dB minimum

### Input Calibration

Single-turn zero and span potentiometers
±10% of span adjustment range typical

### Manual Controls

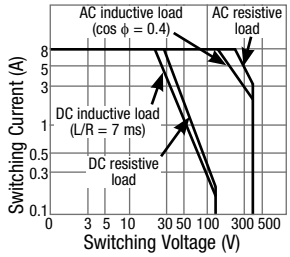
Automatic/manual switch. Manual open and close buttons.

### LoopTracker

Variable brightness LEDs for input level and status

### Relay Output

SPDT relay with neutral contact position
8 A max @ 240 VAC resistive load
Caution: Do not exceed socket voltage rating
Use an RC snubber for inductive loads




### Deadband

12 turn potentiometer adjustable from 1 to 25% of span

### Response Time

100 milliseconds typical

### Ambient Temperature Range and Stability

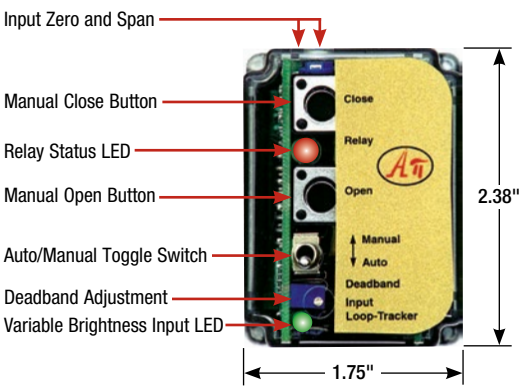
–10°C to +60°C operating ambient
Better than 0.02% of span per °C stability

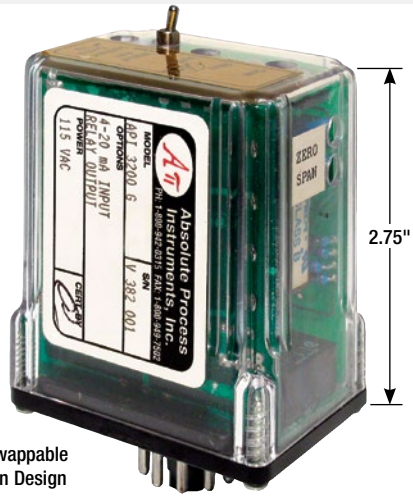
### Housing and Sockets

IP 40, requires installation in panel or enclosure
Plugs into 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

LIFETIME WARRANTY

MADE IN USA

Free Factory I/O Setup!

### Description

The API 3200 G controls the position of a valve or linear actuator by comparing a DC input (control signal) to that of a position feedback potentiometer or slidewire. An SPDT relay provides bi-directional (open-close) signals to drive a motor to open or close a valve.

When the valve position, as indicated by the feedback potentiometer, becomes equal to the position as represented by the control input, the relay will go to the neutral position and the motor will halt. A top-accessible multi-turn deadband control allows precise positioning of the motor without hunting or oscillation.

The API 3200 G M01 controls the position of a valve or linear actuator by comparing a DC voltage control signal to that of a voltage feedback signal.

The API 3200 G M420 controls the position of a valve or linear actuator by comparing a DC milliamp control signal to that of a current feedback signal.

All versions of the API 3200 G have heavy-duty relay contacts allow the modules to directly control high capacity loads without a secondary device.

### Auto/Manual Switch

A top-accessible Auto/Manual switch allows either closed-loop automatic control of valve position or manual positioning via the Open/Close push buttons.

The manual mode is useful for troubleshooting, calibration, system testing or as a manual bypass.

### LoopTracker and Relay Status LEDs

API exclusive features include a LoopTracker LED that varies in intensity with changes in the input signal. Monitoring this LED can provide a quick visual picture of your process at all times and save time during initial startup and/or troubleshooting.

A red/green bi-color LED visually indicates control relay status. The LED indicates green for opening, red for closing and off for neutral position.

| Model | Input | Position Feedback | Control Output | Power |
|---|---|---|---|---|
| **API 3200 G** | Factory ranged: specify DC voltage or milliamp range | Potentiometer feedback 0-100 Ω to 0-100 kΩ | SPDT relay with neutral position | 115 VAC |
| **API 3200 G A230** | | | | 230 VAC |
| **API 3200 G P** | | | | 85-265 VAC or 60-300 VDC |
| **API 3200 G D** | | | | 9-30 VDC |
| **API 3200 G M01** | Factory ranged: specify 0-1 V, 0-5 V, 1-5 V, 0-10 V, or custom | Factory ranged: specify 0-1 V, 0-5 V, 1-5 V, 0-10 V, or custom | SPDT relay with neutral position | 115 VAC |
| **API 3200 G A230 M01** | | | | 230 VAC |
| **API 3200 G P M01** | | | | 85-265 VAC or 60-300 VDC |
| **API 3200 G D M01** | | | | 9-30 VDC |
| **API 3200 G M420** | Factory ranged: specify 0-20 mA, 4-20, mA, 10-50 mA, or custom | Factory ranged: specify 0-20 mA, 4-20, mA, 10-50 mA, or custom | SPDT relay with neutral position | 115 VAC |
| **API 3200 G A230 M420** | | | | 230 VAC |
| **API 3200 G P M420** | | | | 85-265 VAC or 60-300 VDC |
| **API 3200 G D M420** | | | | 9-30 VDC |

**Options—add to end of model number**

**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 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

### 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.

### Control Input
The input range is factory configured. See the model/serial number label for input type, range, and options.

Terminals 4 and 5 provide the appropriate connections for the input signal. Polarity must be observed when connecting the signal input. The positive connection (+) is applied to terminal 4 and the negative (–) is applied to terminal 5.

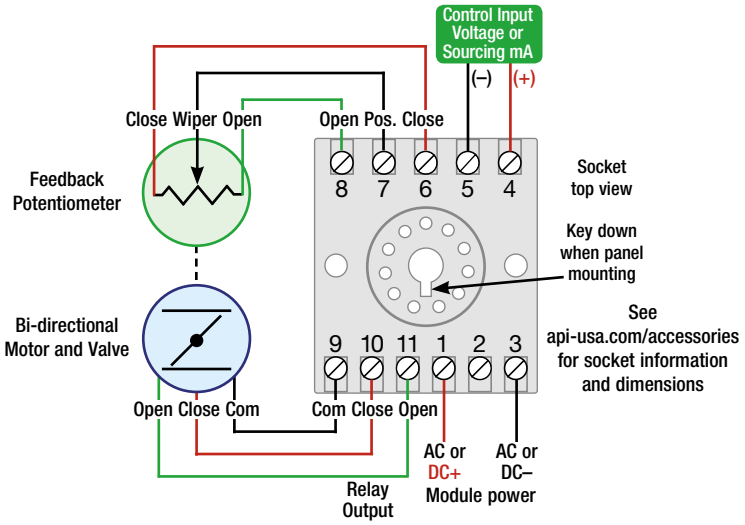
If a 4-20 mA control input is specified the module does not provide power to the loop. The 4-20 mA signal must be from a powered transmitter or a loop with a power supply.

### Potentiometer (Slidewire) Feedback Signal
Terminals 6, 7, 8 provide the appropriate connections for the position feedback signal. The potentiometer or slidewire wiper is connected to terminal 7.

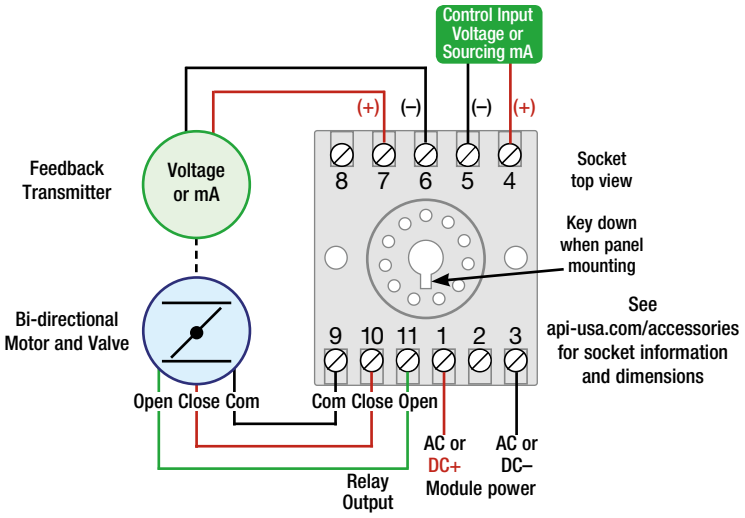
### Voltage (M01) or mA (M420) Feedback Signal
Terminals 6 and 7 provide the appropriate connections for the position feedback signal. Polarity must be observed.

The API 3200 G M420 uses a 4-20 mA feedback signal. The module does not provide power to the loop, thus the feedback signal must be from a powered transmitter or a loop with a power supply.

### Relay Output Terminals
Terminals 9, 10, 11 provide the appropriate connections for the desired motor operations.




Potentiometer Feedback




Feedback with M01 Voltage or M420 mA Option

### 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.

### Deadband
For most applications the deadband is the only required adjustment.

1. Deadband is normally adjusted after installation is complete.
2. Turn the deadband potentiometer counterclockwise to minimum.
3. Provide a near mid-level control input signal.
4. Allow the valve to stabilize.
5. If overshoot, oscillation, or hunting are detected, slowly increase the deadband clockwise to eliminate the oscillation.

### Zero and Span
Zero and span adjustments are located on the side of the case and normally do not need to be adjusted.

1. If adjustment is required, apply a control input that represents the fully closed position.
2. Adjust the zero control to just close the valve.
3. Apply a full open control input signal.
4. Adjust the span control to just fully open the valve.

### Operation
The API 3200 G provides an excitation voltage to the feedback potentiometer on the valve or valve actuator and monitors its position. If the difference between the control signal and the feedback signal is greater than the deadband setting, the appropriate relay is energized to actuate the positioning motor.

The API 3200 G M420 uses a 4-20 mA control signal input and feedback signal (unless another current range was specified). The difference between the control signal input and the feedback signal is compared to the deadband setting. If the difference between the two is greater than the deadband setting, the appropriate relay contact is energized to actuate the positioning motor.

API 3200 G M01 has a voltage feedback signal and control signal input (unless another voltage range was specified). The difference between the control signal input and the feedback signal is compared to the deadband setting. If the difference between the two is greater than the deadband setting, the appropriate relay contact is energized to actuate the positioning motor.

The 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 to provide a quick visual picture of your process loop at all times.

If the LED fails to illuminate, or fails to change in intensity as the process changes, this may indicate a problem with module power or signal input wiring. This features greatly aid in saving time during initial start-up or troubleshooting.

### Control Relays
For all versions an electronic lockout circuit is used to prevent both relay contacts from closing simultaneously. When the input and the feedback signals are equal, the relay contacts will go to the neutral position.

The bi-color relay LED provides a visual indication of the relay status. In all configurations, a green LED indicates a valve open relay position and a red LED indicates a valve closed relay position. In the neutral position, the LED will be off.

### Manual/Auto Mode
Switching the top-mounted toggle switch to Manual allows the Open and Close push buttons to be used to position the valve independent of the control and feedback signals. The manual mode is useful for troubleshooting, calibration, system testing, or as a manual bypass. The bi-color relay LED indicates the controller's Open/Close relay contact status. Switching to Auto mode allows normal operation.