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

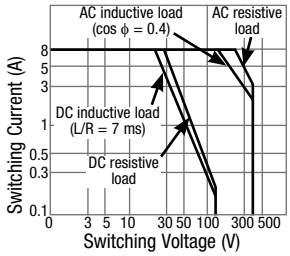
Automatic/manual switch. Manual open and close buttons.

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

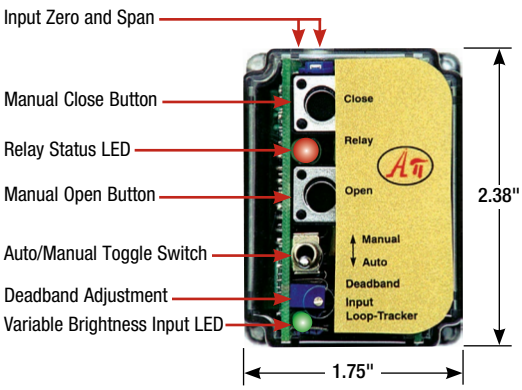
–10°C to +60°C operating ambient
Better than ±0.02% of span per °C stability, calculated, not tested

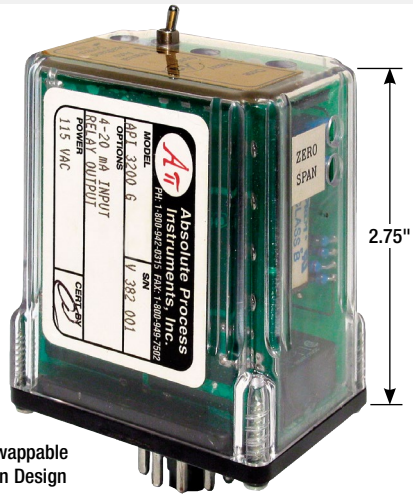
Housing and Sockets

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

6 YEAR WARRANTY

MADE IN USA

Quick Link api-usa.com/3200

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

ABSOLUTE PROCESS INSTRUMENTS
1220 American Way Libertyville, IL 60048
Phone: 800-942-0315 Fax: 800-949-7502
api-usa.com

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.

Control Input

The input range is factory configured and calibrated (at 24°C ±1°C), and normally does not require adjustment. See "Zero and Span" at right if adjustment is needed. 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.

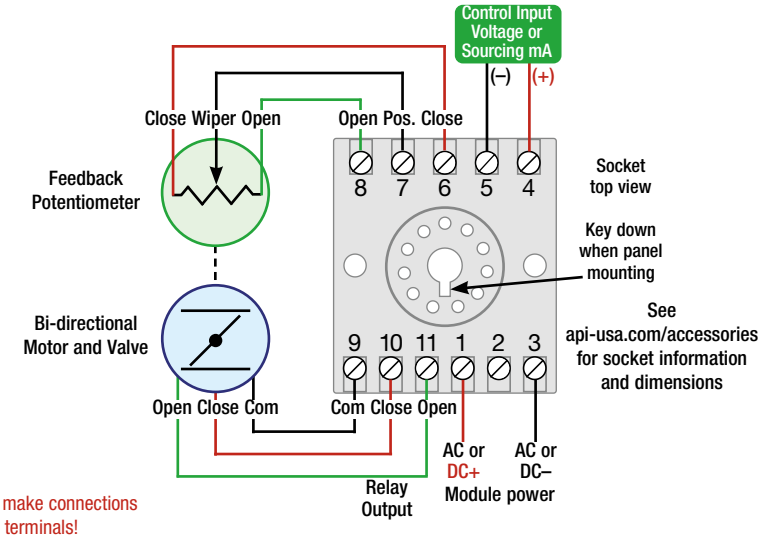
Voltage (M01) or mA (M420) Feedback Signal

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

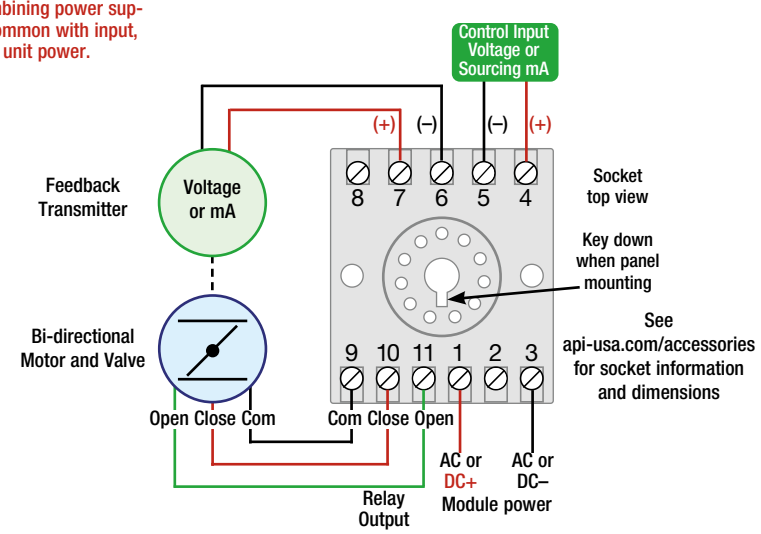
Terminals 9, 10, 11 provide the appropriate connections for the desired motor operations.



Potentiometer Feedback

* Do not make connections to unused terminals!

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



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.