

# API-Cecom Group n'fo

Technical Support Doc 1001

## Valve Positioner/Actuator/Controller API 3200 G M420

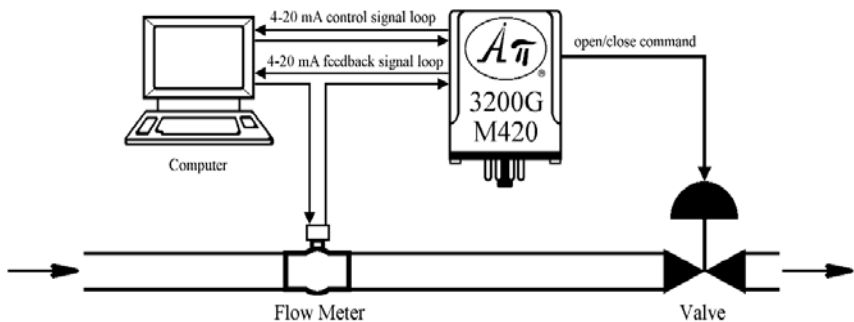


### Functional Description

The API 3200 G M420 controls the position of a valve or linear actuator by comparing a DC input (control signal, typically 4-20 mA) to that of a current feedback signal (typically 4-20 mA). 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 signal, becomes equal to the position as represented by the control input, the relay will go to the neutral position (Bi-color LED not lit) and the motor will halt. A top-accessible multi-turn deadband control allows precise positioning of the motor without hunting or oscillation.

**PROBLEM** : Operate a valve to accurately control the flow of liquid chemical in a pipeline where the feedback signal is 4-20 mA from a flow meter.

**SOLUTION** : An API 3200 G M420 Valve/Actuator Positioner/Controller module compares the 4-20 mA flow command signal from the process control computer to the 4-20 mA flow feedback signal from the flow meter. This positions the valve as necessary to match the feedback signal to the command signal.



### Calibration procedure:

- Equipment required:
  - API 3200 G M420
  - Proper power supply for the unit (115VAC, 230 VAC or 24VDC as specified on label)
  - Two (2) NIST traceable calibrator/simulator (Fluke Model 787 or equivalent)
  - Relay load visual indicator to verify relay open and close action
  - Connecting cables and socket
- ◆ Allow a minimum of 30 minutes of equipment warm up time for equipment temperature stabilization
2. Observing proper polarity connect one Calibrator/Simulator to the control input terminals (terminals 4 & 5) for the API 3200 G M420 and the other calibrator/simulator to the feedback input terminals (terminals 6 & 7) for the API 3200 G M420 and set the output from both Calibrator/Simulators for a 4.00 mA output.
3. Preset the API 3200 G M420 deadband to the minimum position (potentiometer to its fully CCW position)
- ◆ Note: The deadband potentiometer is a twelve turn potentiometers so turn it 13 turns in the specified direction and ensure that there is no “bounce back” from the potentiometer end of travel as this potentiometer have no “positive” end stops
4. Turn the zero potentiometer on the side of the unit to its mid position.
- ◆ Note: Since the zero potentiometer is a twelve turn potentiometer that has no “positive” end stops turn it 13 turns in a CW direction and then turn it 6 complete turns in a CCW direction to ensure that it is in the mid position.
5. Turn the zero potentiometer three complete turns in each direction from its mid position and observe that the Relay Bi-Color LED goes from green (open) to no color to red (close).
6. Verify that the relay load visual indicator indicates that the relay output goes from open to close.
7. Adjust the zero potentiometer so that the Relay Bi-Color LED is out and the zero potentiometer is at the mid-point of travel between the Relay Bi-Color LED going from green to red.
8. Adjust the output from both Calibrator/Simulator to the API 3200 G M420 so that it applies 20.0 mA to both the control input terminals and the feedback input terminals.
9. Turn the span potentiometer on the side of the unit to its mid position.
- ◆ Note: Since the span potentiometer is a twelve turn potentiometer that has no “positive” end stops turn it 13 turns in a CW direction and then turn it 6 complete turns in a CCW direction to ensure that it is in the mid position.
10. Turn the span potentiometer three complete turns in each direction from its mid position and observe that the Relay Bi-Color LED goes from green (open) to no color to red (close).
11. Verify that the relay load visual indicator indicates that the relay output goes from open to close.
12. Adjust the span potentiometer so that the Relay Bi-Color LED is out and the span potentiometer is at the mid-point of travel between the Relay Bi-Color LED going from green to red.
13. Calibration is complete return API 3200 G M420 to service.