



Freedom Automation, Inc.

"Providing simple solutions to today's complex problems"

AccuPos

Valve Position Sensor

Model No. AP001-01



The **AccuPos - Valve Position Sensor®** (AP001-01) is a device used to measure the position of a valve while in operation. It is made to work with diaphragm valves with a stem kit. Stem must be modified, see "Installation Instructions." The supplied target mounts on the stem and the instrument monitors and reports the movement with a 4-20mA output to your PLC. The unit comes equipped with an easy access calibration pushbutton. Users can easily span the instrument and be ready for operation in a matter of minutes.

The modular design allows for easy installation and parts replacement. All in a durable hard anodized aluminum case and sensor housing.

The **AccuPos - Valve Position Sensor®** can be safely installed in some of today's roughest environments, maintaining unparalleled accuracy.

Can easily replace any existing position device.

Positioner housing made of vandal-resistant 1/8" aluminum with 1/2" knockout for easy cable routing

MODEL #	MEASUREMENTS	VALVE SIZE	SUPPLY VOLTAGE	OUTPUT
AP001-01	3" x 3" x 3" x 12.5"	Up to 12"	10 to 30 VDC	4-20 mA
AP001-01 L	3" x 3" x 3" x 20"	12" to 36"	10 to 30 VDC	4-20 mA

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Email sales@freedomautomation.com with any questions, pricing and availability.

Sensing Range	30 to 300 mm (1.2" to 11.8")
Supply Voltage	10 to 30V dc (10% maximum ripple); 65 mA max. (exclusive of load), 40 mA typical @ 25V input
Ultrasonic Frequency	300 kHz, rep. rate 2.5 ms
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Configuration	Analog Output: 4 to 20 mA
Output Protection	Protected against short circuit conditions
Output Ratings	Analog Voltage Output: 2.5 kΩ minimum load resistance Minimum supply for a full 10V output is 12V dc (for supply voltages between 10 and 12, V out max is at least V supply -2) Analog Current Output: 1 kΩ max @ 24V input Max load resistance = (Vcc-4)/0.02 ohms For current output (4-20 mA) models, ideal results are achieved when the total load resistance $R = [(V_{in} - 3)/0.020]\Omega$. Example, at $V_{in} = 24V$ dc, $R \approx 1$ kΩ (1 watt). A worst-case shift of 1% of sensing distance is caused by operating the sensor at $V_{in} = 30V$ dc and $R = 0 \Omega$.
Output Response Time(for a 95% step change)	2.5 milliseconds: Black wire at 5-30V dc 30 milliseconds: Black wire at 0-2V dc (or open)
Delay at Power-Up	300 milliseconds
Temperature Effect	0.02% of distance/ °C
Linearity*	2.5 ms response: ±1 mm 30 ms response: ± 0.5 mm
Resolution*	2.5 ms response: 1 mm 30 ms response: 0.5 mm
Minimum Window Size	5 mm
Adjustments	Sensing window limits: Calibration-Mode programming of near and far window limits are set using the push button
Indicators	Range Indicator (Red/Green) Green — Target is within sensing range Red — Target is outside sensing range OFF — Sensing power is OFF Calibration/Output Indicator (Yellow/Red) Yellow — Target is within taught limits OFF — Target is outside calibration window limits Red — Sensor is in CALIBRATION mode Impedance: 12 kΩ
Construction	Threaded Barrel: Thermoplastic polyester Push Button Housing: ABS/PC Push Button: Santoprene Lightpipes: Acrylic
Operating Conditions	Temperature: -20° to +60° C (-4° to +140° F) Maximum relative humidity: 100%
Environmental Rating	Leakproof design is rated IEC IP67; NEMA 6P
Vibration and Mechanical Shock	All models meet Mil. Std. 202F requirements method 201A (vibration: 10 to 60 Hz max., double amplitude 0.06", maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 ms duration, half sine wave.
Temperature Warmup Drift	Less than 1.7% of sensing distance upon power-up (see Temperature Compensation, page 2)
Calibration Input	Pushbutton: Single Pole, Single Throw Impedance: 12 k Ohm
Housing	AP001-01 3"x3"x12.5", AP001-01 L 3"x3"x20, "1/8" anodized aluminum



Typical Connection Layout
(4-20mA unit shown)

