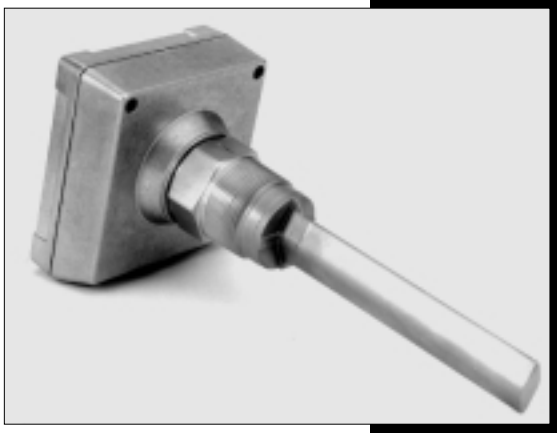
BULLETIN
523

VIBRATORY POINT LEVEL SENSOR

- *Extremely Versatile*
- *Exceptional Sensitivity*
- *Single-Prong Probe Design*
- *No Calibration*
- *Piezoelectric Technology*
- *Multiple Configurations*



Model PZP

MONITOR

"SETTING THE STANDARD FOR SUPPLIER EXCELLENCE"

BULLETIN

523

Model PZP

VIBRATORY POINT LEVEL SENSOR

- **Unique versatility for materials from 1.5 to 100 lb/ft³**
- **Unaffected by environmental and material changes**
- **Unique single-prong probe design prevents product build-up**
- **High and low applications/dust collector back-up protection**
- **Multiple configurations for a wide range of applications**

The PZP vibratory level sensor provides reliable point level detection in a wide variety of process control applications within the powder and bulk solids market.

The PZP offers many advantages over alternative technologies. The vibrating probe principle eliminates problems associated with temperature, humidity and material changes, while providing state-of-the-art electronic reliability and accuracy that requires **no calibration**. The unique single-prong probe design eliminates material build-up problems and false signaling typically associated with the dual-prong "tuning fork" design.

The PZP's ability to detect a wide variety of material densities, including very lightweight materials, makes it an attractive solution for many applications.

PRINCIPLE OF OPERATION

The PZP utilizes piezoelectric technology to create a vibration and then constantly monitors the presence or absence of that vibration. Two piezoelectric crystals are located in the base of the probe. A signal is applied to one crystal at the frequency corresponding to the probe's self-resonance. The electrical excitation causes physical deformation of the crystal resulting in probe vibration. With no material present, the vibration of the probe is felt by the second crystal. This vibration causes physical deformation of the second crystal which generates a voltage to be analyzed by the electronic circuitry. With material present around the probe, the vibration is dampened, thereby minimizing the voltage generated by the second crystal. The output voltage is analyzed by the circuitry and the relay status changes accordingly.

APPLICATIONS

The PZP is often applied in ultra lightweight applications due to its exceptional sensitivity to materials as light as 1.5 lb/ft³. However, the PZP is also a proven performer for materials up 100 lb/ft³. Current applications range from 1.5 lb/ft³ EPP (expanded polypropylene) beads to 100 lb/ft³ clay. The PZP is ideal for applications where vessel content changes are common, since no calibration is required when material changes are made. The PZP can also provide dust collector back-up protection.

Consult Monitor's experienced applications engineering staff to help determine if the PZP is right for your particular application.

SUCCESSFUL PZP APPLICATIONS INCLUDE, BUT ARE NOT LIMITED TO:

- **Chemicals**
- **Clay**
- **Sawdust**
- **Grain**
- **Plastics**
- **Sand**
- **Polystyrene**
- **Cement**
- **Feed Pellets**
- **Cereal**
- **Rice**
- **Flour**
- **Lime**
- **Tobacco**
- **Fly Ash**
- **Dust**
- **Carbon Black**
- **Food Products**
- **Many other applications**

FEATURES

VERSATILITY

The unique design makes the PZP **immune to changes** in many different variables including:

- vessel contents
- material composition
- density of material
- dielectric constant
- particle size
- moisture content
- temperature
- pressure
- humidity

EASE OF USE

The PZP offers maximum ease of use to its users. PZP set-up involves simply selecting the sensitivity and fail-safe settings, and requires **no calibration**.

SUPERIOR PROBE DESIGN

The PZP offers a superior probe design over similar devices. The unique single-prong probe design minimizes material build-up problems and false signaling that are typically associated with the dual-prong “tuning fork” design. Also, the vibration acts as a self-cleaning effect which further eliminates material build-up. The reinforced stainless steel probe construction allows use with a wide range of materials.

FAIL-SAFE

A switch permits selection of either high or low fail-safe. In the event of a failure, the relay drops into the mode which denotes an alarm condition. This alarm provides additional security against overfilling or emptying of a vessel.

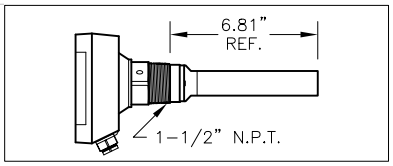
ELECTRONICS OPTIONS

The PZP’s electronic module is available in either 115/230 VAC or 24 VDC operation. Also, the 115/230 VAC is available with desensitized electronics for heavier products that tend to build up. Consult the factory for application assistance.

PROBE CONFIGURATIONS

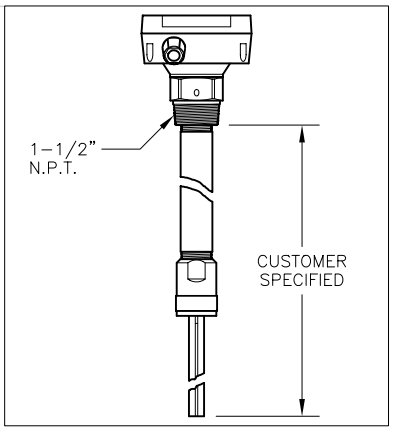
STANDARD PROBE

The standard probe is approximately 7" in length and is suitable for both top and side mount applications. It mounts to the vessel via a 1-1/2" mounting gland.



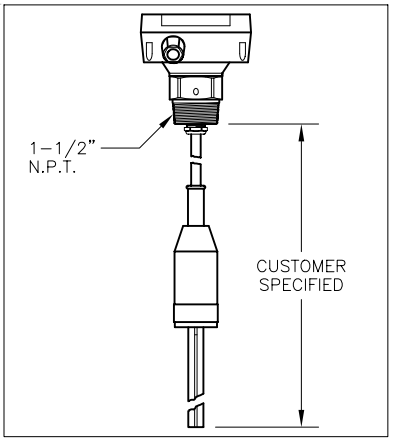
PIPE EXTENSION PROBE

For high and low level applications that extend beyond the length of a standard probe, Monitor offers a pipe extension probe. This configuration is intended for top mount applications only. The extension is constructed of 1" NPT stainless steel pipe which provides structural strength and affords a means to secure the assembly to the vessel. Available in lengths up to 12', this unit is factory sized to the customer’s specifications.



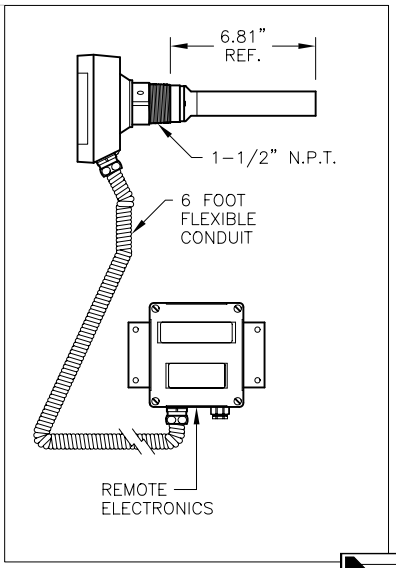
FLEXIBLE CABLE EXTENSION PROBE

The cable extension configuration extends the detection length beyond the standard probe length. This self-contained unit is for use in top mount applications and can be used for both high and low level detection. A polyurethane sheathed, steel rope reinforced cable is used for the extension, and is available in lengths up to 20'. The unit mounts to the top of the vessel via a 1-1/2" mounting gland.



HIGH TEMP / REMOTE ELECTRONICS

This configuration offers a split-architecture design that removes the electronics to a remote mounting location away from the vessel. The furnished cable allows for a 6' separation between the probe and the remote electronics. This unit offers a reliable solution for applications that involve high temperatures or in vibrating vessels that reduce the reliability of most level sensors. The probe can be top or side mounted for use in high or low level applications. For top mount applications, the probe can be ordered with a pipe extension (see above).



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ORDERING INFORMATION

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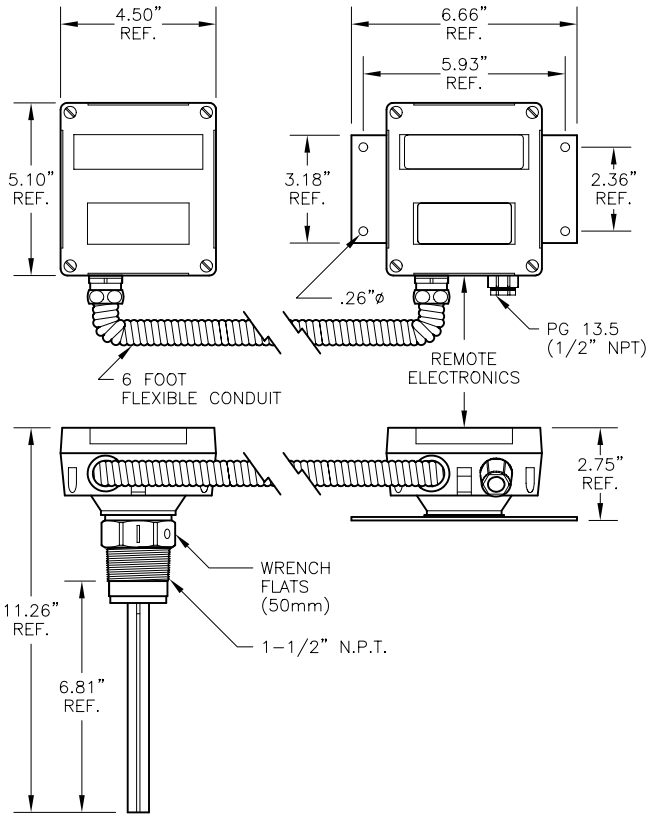
115/230 VAC - 0
24 VDC - 1
115/230 VAC - desensitized (consult factory) - 2

Standard Probe - 0
Flexible Cable Extension - 2
Rigid Cable Extension - 4
Hi-Temp/Remote Electronics Version - 6
Hi-Temp/Remote Electronics Version - with pipe extension - 8

MECHANICALS



High-temp unit shown here.

SPECIFICATIONS

Power Requirements:	115/230 VAC, -10%, +15%, 50/60 Hz; 24 VDC, ± 15%
Power Consumption:	2 VA max.
Operating Temperature:	
All models:	-22° F to +140° F (ambient external)
Standard models:	-22° F to 176° F (internal bin)
Hi-Temp models:	-22° F to 248° F (internal bin)
Output Relay:	SPDT dry contact; 5 amps @ 250 VAC max.
Sensitivity:	1.5 lb/ft³ minimum material density Switch selectable - A (high) or B (low)
Time Delay:	Hold-off, fixed delay of 1 second Hold-on, fixed delay of 2-5 seconds
Fail-Safe:	Switch selectable (high - FSH, low - FSL)
Operating Frequency:	280 Hz.
Enclosure:	Die cast aluminum, unpainted; NEMA 4; IP65
Probe/Gland Material:	304 stainless steel
Process Connection:	1-1/2" NPT
Pressure Rating:	150 PSI
Wire Entry:	PG 13.5 cord connector, remove for 1/2" NPT
Indicators:	Yellow LED - power Red LED illuminates when relay is energized; fail-safe dependent
Solid Extension:	1" pipe, 304ss, 12' length max. (customer specified length)
Cable Extension:	Polyurethane sheathed, steel rope reinforced; 20' length max. (customer specified length)
Interconnection Distance:	6' factory installed flexible conduit (hi-temp models)
Weight:	4.5 lb (standard model only)

WARRANTY

Monitor Technologies LLC warrants each PZP vibratory point level sensor it manufactures to be free from defects in material and workmanship under normal use and service within two (2) years from the date of purchase within North America, and within one (1) year from date of purchase outside of North America. The purchaser must give notice of any defect to Monitor within the warranty period, return the product intact and prepay transportation charges. The obligation of Monitor Technologies LLC under this warranty is limited to repair or replacement at its factory. This warranty shall not apply to any product which is repaired or altered outside of the Monitor Technologies LLC factory, or which has been subject to misuse, negligence, accident, incorrect wiring by others or improper installation.

Monitor Technologies LLC reserves the right to change the design and/or specifications without prior notice.

MONITOR

Monitor Technologies LLC

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