

Excellence in Magnetics and Cryogenics

**American
Magnetics**



Model 175 Industrial Liquid Level Transmitter

The Model 175 is an advanced, state-of-the-art, two-wire, RF Capacitance-based level transmitter suitable for a wide range of process applications boasting:

- The latest in microprocessor technology.
- A 3-button keypad for set-up and calibration – buttons can also be magnetically actuated through the installed enclosure window.
- An onboard 2-line by 8-character display.
- A standard 4-20mA current loop for remote signaling.
- Voltage range of 12V to 30V DC, introduced via the current loop.
- Consistent and reliable continuous level measurements.

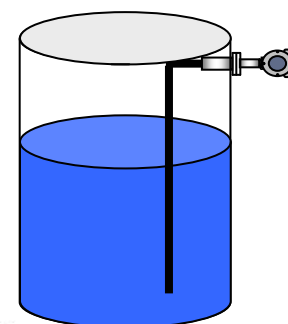
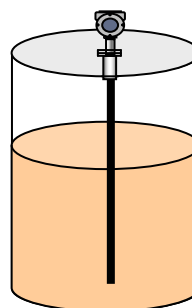
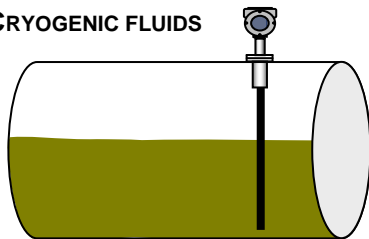


FEATURES and BENEFITS

Magtouch™ keypad interface: Adjust transmitter without removing the enclosure cover	Safety, Convenience
ProxCal™ calibration: Calibrate using one conveniently available fluid or length for application in another	Application flexibility
Only a 2% change in span is required to calibrate	Simple calibration
Powerful, onboard diagnostics	Reliability
2-line x 8-character alphanumeric display and 3-button keypad	Easy to use set-up interface
Probes designed for cryogenic or non-cryogenic fluids	Simple solution for a wide range of applications
Rugged NEMA 4 Enclosure	Perfect for Outside or other Industrial Environments

Applications

- CONTINUOUS LEVEL MEASUREMENT
- OILS, SOLVENTS AND OTHER HYDROCARBONS
- CRYOGENIC FLUIDS



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Information Brief

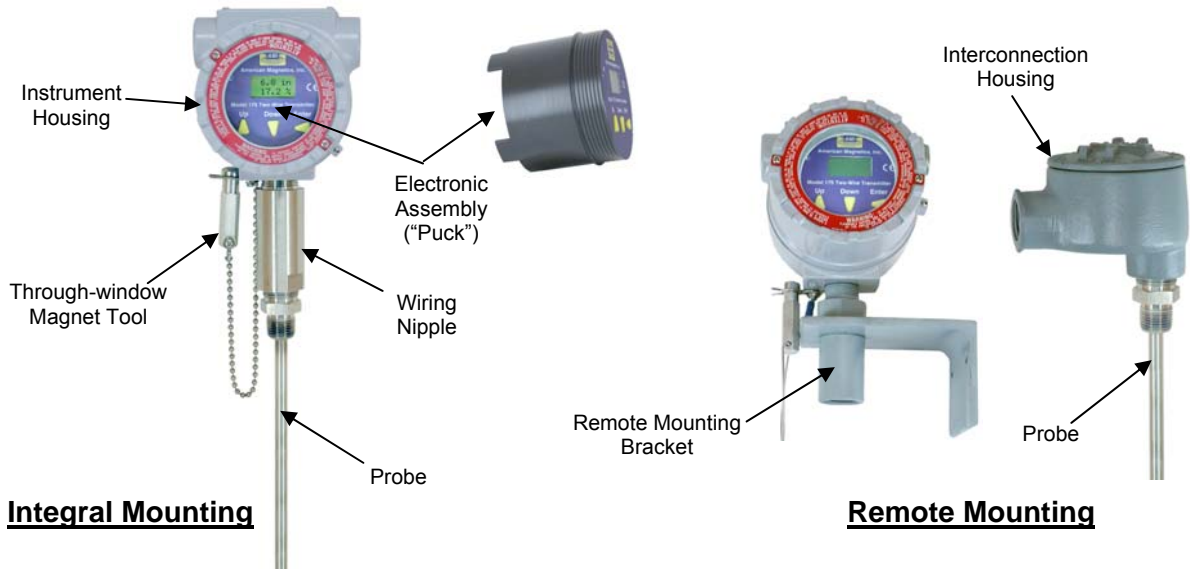
Principle of Operation

System

The Model 175 liquid level system consists of the following individual products: Model 175 Instrument, a customer-specified AMI CAPSEN Capacitance Sensor with special NPT fitting, and optional Remote Kit.

The Model 175 instrument is comprised of the electronic assembly (“puck”), an explosion-proof NEMA 4X enclosure with installed I/O interface board, and a wiring nipple. The enclosure provides two additional 3/4” NPT conduit openings for external wiring. The windowed cover allows viewing of process variables, and a magnet can be used to set-up and calibrate the instrument without removing the cover.

The Model 175 is available for remote-mounting a maximum of 10 feet from the probe (see Figure). This arrangement incorporates an Interconnection Housing mounted at the top of the sensor, hardware for remote-mounting the instrument, and 10 ft. of coaxial cable for connecting the sensor to the instrument.



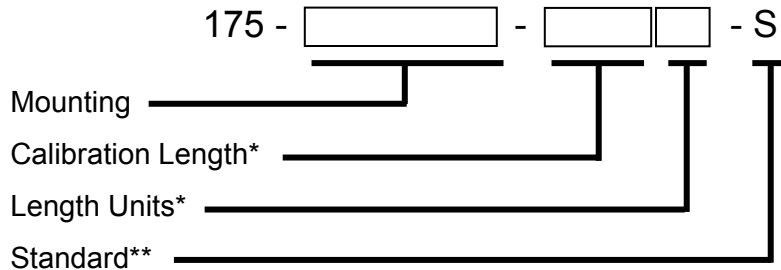
(Shown here with Cover Removed)



The probe/sensor is a concentric-tube assembly designed to mate to the Model 175, either directly or at the remote Interconnection Housing (up to 10-feet away). The process fluid fills the region between the sensor tubes, the capacitance of the probe varying with the level of the fluid. The Model 175 transmitter responds to this change, compares it to the calibrated values, calculates the level of the media, and transmits it to the display and 4-20 mA current loop (for conductive-media applications, the inner conductor is insulated).

The probe measurement length (operating length) is usually referred to as the “Active Length” while the “Overall Length” is measured tip-to-tip.

Instrument Model Configuration



**Custom versions of the Model 175 are not available.

Mounting

Description	Code
Integral	Integral
Remote	Remote

Length Units

Description	Code
Inches	in
Centimeters	cm

*Calibration Length and Length Units

Calibration length will normally be set at the Active Length of the probe as defined in the probe configuration (see next page). No leading zeroes.

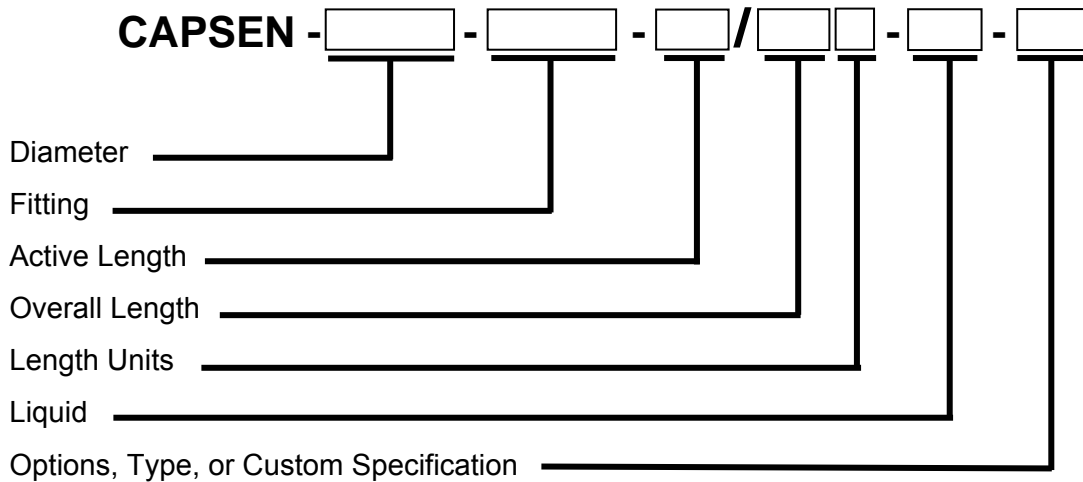
Liquid

The liquid is not part of the instrument configuration, but is required when calibrating the instrument to the probe. This information will be specified as part of the probe configuration (see next page).

Description		Specification
Power Supply		12 – 30Vdc; $\pm 10\%$; 24Vdc nominal
Supply Voltage Effect		Less than 0.01%/volt change
Ambient Temperature Range		-40°F to 176°F (-40°C to 80°C)
Humidity		100% condensing
Accuracy		$\pm 0.1\%$ of span
Repeatability		$\pm 0.05\%$ of span
*Linearity		$\pm 0.1\%$ of span
Resolution		0.01mA
Response Time		300 msec.
Temperature Effect		$\pm 0.01\%$ of span/°F (0.018% of span/°C)
Operator	Data Entry	3-button keypad
Interface	Display	2 Line by 8 Character LCD
Output	Analog	4-20mA; 3.8 – 20.5mA overtravel; reversible
Error Indication		3.6mA, 22mA, or Hold last value; field selectable
Range		15 – 100,000pF
Damping		0 – 60 seconds; field adjustable in 1 sec. increments
Maximum Remote Cable Length		10 feet between the electronics and the probe

For additional technical details, please refer to the **AMI Model 175 Two-Wire Continuous Level Transmitter INSTALLATION, OPERATION & MAINTENANCE MANUAL** at www.americanmagnetics.com, or view it on our Product CD supplied with all AMI products.

Probe (Capacitance Sensor) Model Configuration



Note: Always ensure the dimensions are such that when the probe fitting is fully engaged, the probe does not tighten against the bottom of the container! [Contact AMI Sales](#) if you have any questions concerning the dimensions or options. See dimensional drawing below.

Diameter

Description	Code
3/8" Outer Diameter	OD3/8
1/2" Outer Diameter	OD1/2

Fitting

Description	Code
Model 175 Welded 1/2" NPT (for either 3/8" or 1/2" dia sensor)	M175NPT

Active Length

The measurement range of the probe: starts 0.375" above the bottom tip of the probe, and ends 1" below the upper-most vent hole on the probe.

Overall Length

Tip-to-tip dimension. Contact the factory to discuss lengths exceeding the Maximum Overall Lengths:

100" for 3/8"-diameter, and
144" for 1/2"-diameter.

Length Units

Description	Code
Inches (nearest 1/10")	in
Centimeters (integer, no decimal)	cm

**For expanded possibilities or FM-Approved requirements, consider the AMI Model 32E and additional line of Industrial Probes.

***Custom probes require an AMI-approved customer-signed drawing. "Custom" applies to any probe not falling in the "S", "HCap", or "RSvc" Option categories. Also probes having a fitting other than the basic M175NPT with BNC, those deviating from the length limits, or special probes for use in conductive media.

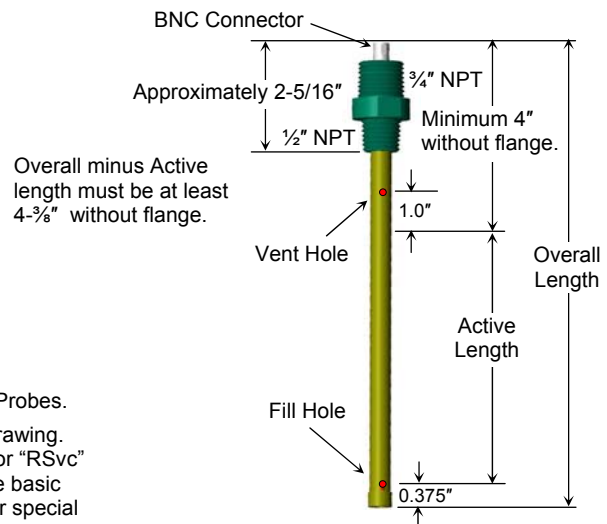
Liquid*

Description	Code
Liquid Nitrogen	LN2
Liquid Oxygen	O2
Liquid Hydrogen	H2
Liquid Carbon Dioxide	CO2

*For others, the commonly recognized chemical formula (or abbreviation) will be used. Contact factory.

Options**

Description	Code
Standard (3/8" only)	S
High Capacitance (1/2" dia. only)	HCap
Rugged Service (1/2" dia. only)	RSvc
Flange – Custom***, contact AMI.	TBD: per Spec



Typical Capacitance Probe with M175NPT Welded Fitting and BNC Connector