NEW Model 187

Self-Compensating Liquid Level Controller

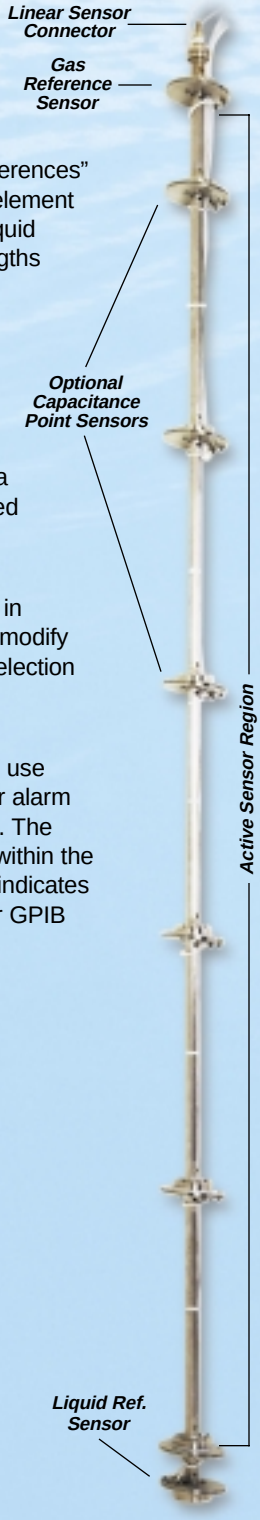
Patent Pending

Self-Compensation for Changing Conditions

The new Model 187 Liquid Level Controller system provides accurate capacitance based continuous level monitoring and control of virtually any cryogenic liquid over a wide range of operating pressures and temperatures. This system eliminates errors seen with standard capacitance devices due to changing gas and liquid properties such as density, composition, and dielectric values.

How It Works

The system consists of a Model 187 instrument, special sensor assembly, six (6) connecting coaxial cables, and an optional solenoid type fill valve. The sensor assembly consists of a primary linear sensing element is typically a 3/8 inch OD cylindrical capacitor constructed of stainless steel which allows a non-conducting fluid to become the dielectric in the annulus region. In addition to the linear sensing, two (2) sets of parallel plate disk capacitors serve as gas and Liquid "references" and are respectively located at the top and bottom of the sensor assembly. The instrument measures the linear sensing element capacitance, compensates for any dielectric variations with respect to the calibration conditions using the both gas and liquid "reference" plates, and displays an accurate level reading. The sensor assembly is normally constructed in one-piece lengths of up to 20 feet or more. Longer multi-section lengths are also available. The example sensor configuration shown to the right combines the 187 sensor assembly with optional point sensors for redundancy using the Model 188CPS.



No User Calibration Required

The Model 187 is designed to be factory calibrated by AMI for a matched sensor and is ready for immediate use upon delivery. The capacitance-based linear and reference sensors provide feedback to the instrument to measure liquid level for any non-conducting liquid and compensate for a wide range of operating conditions—Therefore, no user calibration procedure is required. For even greater accuracy, the Model 187 is easily user calibrated after installation. As a safety net feature the factory calibration is always saved. All calibration data is password protected to prevent unauthorized modification and is stored in nonvolatile memory.

Convenient Display and Direct Keypad Entry

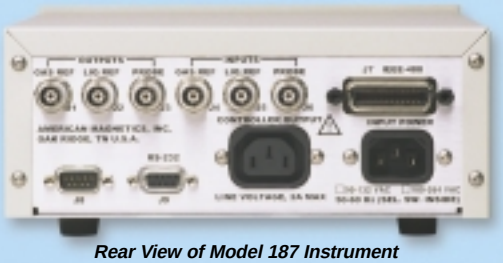
The instrument is equipped with a 16 x 2 character backlit LCD display which provides liquid level and setpoint indication in inches, centimeters, or percent as selected by the user. A front panel keypad interface allows the user to easily view and modify the instrument settings. A convenient menu-type interface is used for configuring various instrument setting that require selection from a list of options. The default display indicates liquid level and fill/loss rate.

Automatic Level Control and Rate Change

The Model 187 provides four level setpoints, two of which (A&B) are control setpoints used to control liquid level through use of a solenoid-operated fill valve. The remaining setpoints (HI & LO) are alarm setpoints and can be set for other control or alarm functions. All four setpoints operate front panel LED indications, and the HI and LO setpoints also operate relay contracts. The automatic controller function can also be manually overridden or disabled using the keypad. If a fill cycle is not achieved within the user specified "time-out" period, the Model 187 ends the fill operation (de-energizes the rear panel controller output) and indicates expiration of the time-out feature by blinking the Fill LED and setting the appropriate flags accessible through the serial or GPIB remote interfaces. The rate of increase or decrease in the level is continuously updated and displayed.

Sensor Assembly Specifications

Overall Outside Diameter:	3.5" typical, 2" minimum
Mounting:	Commercial flanges or internal tank
Active Sensor Length:	6" to 30+ feet
Operating Pressures:	UP to 2500 psi-Standard Up to 10,000 psi-Custom
Sensor Material:	304 Stainless Steel-Standard



Rear View of Model 187 Instrument

Model 187 Specifications

Level Range:	6" to 30+ feet	**HI, LO, A, B ALARMS:**	Audible + LED
Rate Change:	1 mm/min. resolution	**Alarm Relay Rating:**	N.O. 10 VA@ .5A max
Signal Outputs:	4-20 mA, or 0-10 VDC	**Controller Output:**	AC line voltage @ 2A max
Accuracy:	± 0.5% (installed calibration)	**Dimensions:**	3.8"H x 8.4"W x 11.4"D
Input Power:	100-120 or 200-240 Vac 50-60 Hz	**Communications:**	RS232 Std. (Optional RS422 or IEEE-488)
Operating Env.:	0 to 50° C, non-condensing	**Weight:**	6.1 lbs
Display Type:	Backlit LCD	**Avail. Options:**	Rack Mounting