

AMI LIQUID LEVEL SENSOR
(INCLUDING OSCILLATOR AND CABLES)
INSTALLATION, OPERATION AND MAINTENANCE
INSTRUCTIONS

I. INTRODUCTION

The AMI liquid level sensor is a cylindrical capacitor constructed of stainless steel, which allows a cryogenic fluid to become the dielectric between the concentric plates. The instrument measures the sensor capacitance, which is directly related to the percentage of the sensor immersed in the cryogenic liquid.

II. SPECIFICATIONS

Diameter0.375" (Standard)

Active lengthsTypically up to 255.9 inches (650 cm)

Overall lengthUp to 20 feet (longer multi-section lengths available upon request)

Resistance> than 10 Meg ohms (with no liquid level)

III. INSTALLATION

- A. Carefully remove the sensor from the shipping container and remove all packaging material.

If there is any shipping damage, save all packing material and contact the shipping representative to file a damage claim. Do not return the instrument to AMI unless prior authorization has been received.

- B. Install the sensor in the vessel using the specified fitting of the sensor.

CAUTION: *Ensure the sensor is mounted with the top vent hole located inside of the cryostat.*

NOTE: *Avoid installing in a location where icing may occur. Ice formations or moisture buildup on the BNC connector may cause the sensor to short out indicating a higher liquid level than actually exists.*

***CAUTION:** Exercise care when installing the sensor since dents, crimps, bends or other physical distortions in the thin wall capacitor will change electrical characteristics possibly causing calibration errors and/or disruption of proper instrument operation. Before installing the sensor, the user may want to review the Calibration and Operation sections of the meter manual to determine what, if any, calibration procedures may be necessary.*

- C. Connect the oscillator to the sensor using a supplied 6-foot RG-59/U coaxial cable. Ensure the oscillator is connected in the correct orientation (see figure). The cable length between the oscillator and the sensor should not exceed 6 feet.

***CAUTION:** The coaxial interconnecting cables and the oscillator are temperature sensitive and should be mounted in such a manner as to avoid large temperature changes such as those encountered in the path of dewar vents.*

***CAUTION:** Moisture or contaminants in any of the BNC coaxial connectors can short out the sensor and cause a false 'full' level indication or other erroneous readings. A pack of non-conductive Electrical Connection Lubricant (ECL), also called Dielectric Tune-up Grease, has been included with the liquid level sensor packaging to use to reduce the possibility of this occurring. Apply a small amount of ECL to the mating contacts of any of the BNC connectors that may be exposed to moisture (typically the BNC connection at the end of the sensor). Mate the doped connectors; then apply ECL to the exterior of the mated BNC connectors. Spread the ECL around the entire exterior of the BNC connectors, working the ECL into all connector and coaxial cable seams. Cover the doped connections with the supplied short section of heat-shrink tubing, and shrink with a heat-shrink heat gun. (If you do not have a heat-shrink gun, any device that will heat the tubing to between 90°- 125°C will work).*

***NOTE:** MSDS sheets for the ECL are available upon request. To request MSDS sheet, ask for AMI part # MS-1910.*

IV. MAINTENANCE

The liquid level sensor will provide years of useful service and require no maintenance if installed and operated in accordance with these instructions.

V. TROUBLESHOOTING

A. No level reading (indicated on the level instrument):

Ensure the orientation of the oscillator assembly is correct.

B. Erratic or erroneous level reading (indicated on the level instrument):

1. Verify that the sensor is properly connected to the oscillator cable and the extension cable (see figure).
2. Ensure the oscillator unit is not exposed to large temperature changes such as near dewar vents. Severe temperature changes of the oscillator unit can cause readout errors.
3. Verify the sensor is free of contaminants and not subject to any physical distortion. Disconnect the BNC connector at the top of the sensor and measure the sensor resistance by placing an ohmmeter across the center pin and the outer barrel of the connector. The resistance of the sensor should typically be >10 Meg ohms.
4. Ensure there is no ice formations or moisture buildup at the top of the sensor.

NOTE: If the level instrument suddenly reads 100% without a corresponding level, there is a possibility of moisture in the connector at the top of the sensor. Disconnect the BNC connection and remove any moisture. Moisture or contaminants in any of the BNC coaxial connectors can short out the sensor and cause a false 'full' level indication or other erroneous readings. A pack of non-conductive Electrical Connection Lubricant (ECL), also called Dielectric Tune-up Grease, has been included with the liquid level sensor packaging to use to reduce the possibility of this occurring. Apply a small amount of ECL to the mating contacts of any of the BNC connectors that may be exposed to moisture (typically the BNC connection at the end of the sensor). Mate the doped connectors; then apply ECL to the exterior of the mated BNC connectors. Spread the ECL around the entire exterior of the BNC connectors, working the ECL into all connector and coaxial cable seams. Cover the doped connections with the supplied short section of heat-shrink tubing, and shrink with a heat-shrink heat gun. (If you do not have a heat-shrink gun, any device that will heat the tubing to between 90°- 125°C will work).

NOTE: MSDS sheets for the ECL are available upon request. To request MSDS sheet, ask for AMI part # MS-1910.

5. Ensure the sensor has no condensation or debris between the inner and outer tubing.
 6. Verify the cabling has no breaks or cuts.
 7. Rapidly varying or sloshing liquids will sometimes make one think the instrument is in error when it is actually operating properly.
- C. In the event you are unable to locate the problem or have additional question, please call an AMI representative at (865) 482-1056.

VI. WARRANTY

All products manufactured by AMI are warranted to be free of defects in materials and workmanship and to perform as specified for a period of one year from date of shipment. In the event of a failure occurring during normal use, AMI, at its option, will repair or replace all products or components that fail under warranty, and such repair or replacement shall constitute a fulfillment of all AMI liabilities with respect to its products. All warranty repairs are F.O.B. Oak Ridge, Tennessee.

VII. RETURN AUTHORIZATION

Items to be returned to AMI for repair (warranty or otherwise) require a return authorization number to ensure your order will receive the proper attention. Please call an AMI representative at (865) 482-1056 for a return authorization before shipping any item back to us.