

## Thank You

Thanks for purchasing an Series MPI Intrinsicly Safe magnetostrictive level sensor from us! We appreciate your business and your trust. Please take a moment to familiarize yourself with the product and this manual before installation. If you have any questions, at any time, don't hesitate to call us at 888-525-7300.

NOTE: Scan the QR code to the right to see the full user manual on your tablet or smartphone. Or visit [www.apgsensors.com/support](http://www.apgsensors.com/support) to find it on our website.



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## 1 Description

The MPI series magnetostrictive level sensor provides highly accurate and repeatable level readings in a wide variety of liquid level measurement applications. It is certified for installation in Class I, Division 1, and Class I, Zone 0 hazardous areas in the US and Canada by CSA, and ATEX and IECEx for Europe and the rest of the world.

## 2 How To Read Your Label

Each label comes with a full model number, a part number, and a serial number. The model number for the MPI will look something like this:

▲ SAMPLE: MPI-R5-ZY-F2.5WB-120-4D

The model number correlates with all the configurable options and tells you exactly what you have. Compare the model number to the options on the datasheet to identify your exact configuration. You can also call us with the model, part, or the serial number and we can help you.

You'll also find all hazardous certification information on the label.

## 3 Warranty

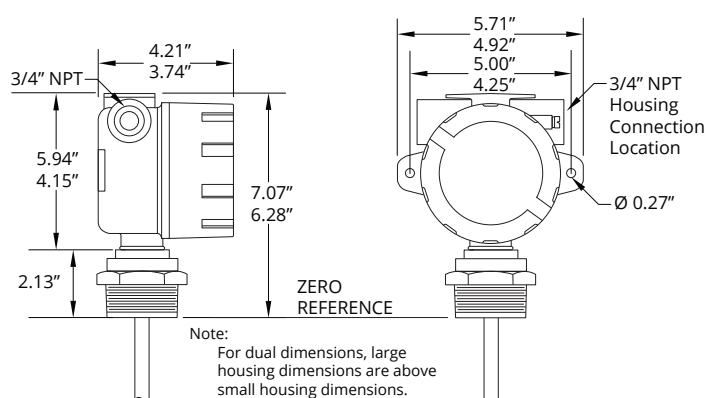
This product is covered by APG's warranty to be free from defects in material and workmanship under normal use and service of the product for 24 months. For a full explanation of our Warranty, please visit <https://www.apgsensors.com/about-us/terms-conditions>. Contact Technical Support to receive a Return Material Authorization before shipping your product back.

Scan the QR code below to read the full explanation of our Warranty on your tablet or smartphone.

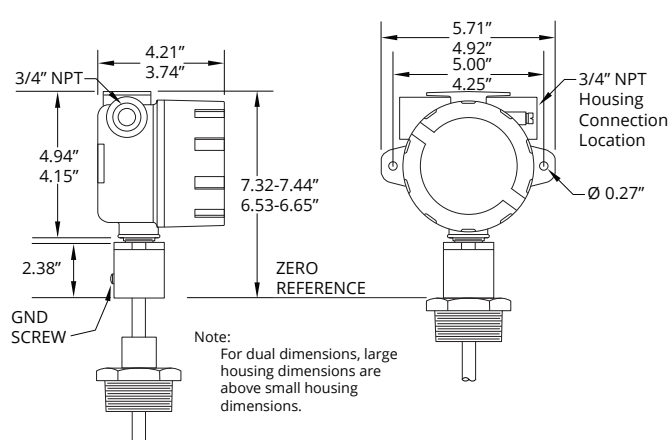


## 4 Dimensions

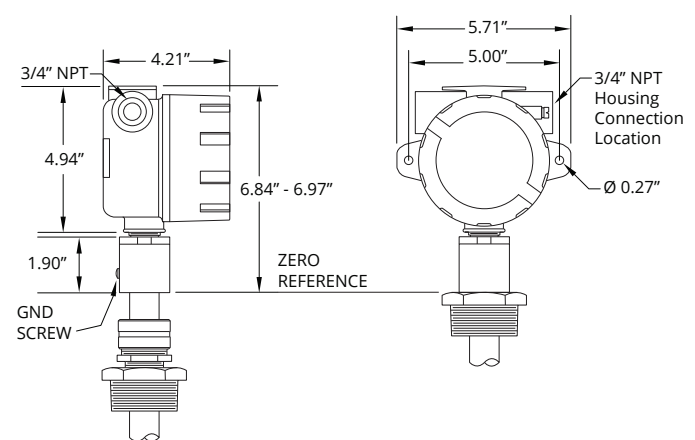
### MPI-E Chemical Housing Dimensions



### MPI-E Housing Dimensions



### MPI-R Housing Dimensions



# MPI Magnetostrictive Level Sensors Installation Guide

For MPI-E, MPI-E Chemical, and MPI-R Intrinsicly Safe



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Part # 200339  
Doc #9005625 Rev A

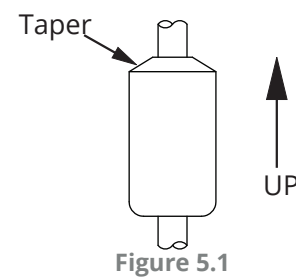
## 5 Installation Guidelines & Instructions

The MPI should be installed in an area--indoors or outdoors--which meets the following conditions:

- Ambient temperature between -40°F and 185°F (-40°C to 85°C)
- Relative humidity up to 100%
- Altitude up to 2000 meters (6560 feet)
- IEC-664-1 Conductive Pollution Degree 1 or 2
- IEC 61010-1 Measurement Category II
- No chemical corrosive to stainless steel (such as NH<sub>3</sub>, SO<sub>2</sub>, Cl<sub>2</sub>, etc.)
- Ample space for maintenance and inspection

Additional care must be taken to ensure:

- The probe is located away from strong magnetic fields, such as those produced by motors, transformers, solenoid valves, etc.
- The medium is free from metallic substances and other foreign matter.
- The probe is not exposed to excessive vibration.
- The float(s) fit through the mounting hole. If the float(s) does/do not fit, it/they must be mounted on the stem from inside the vessel being monitored.
- The float(s) is/are oriented properly on the stem (See Figure 5.1 below). MPI-E floats will be installed by the factory. MPI-R floats are typically installed by customer.



**IMPORTANT:** Floats must be oriented properly on the stem, or sensor readings will be inaccurate and unreliable. Untapered floats will have a sticker indicating the top of the float. Remove sticker prior to use.

ATEX Stated Conditions of Use:

- Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. In addition, the equipment shall only be cleaned with a damp cloth.
- The enclosure is manufactured from Aluminum. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation.

Installation Instructions:

- If your sensor's stem and floats fit through the mounting hole, carefully lower the assembly into the vessel, then secure the sensor to the vessel.
- If the floats do not fit, mount them on the stem from inside the vessel being monitored. Then secure the sensor to the vessel.
- For sensors with float stops, refer to the assembly drawing included with the sensor for float stop installation locations.
- For MPI-E Chemical, ensure probe is concentric with fitting so as not to scrape chemical resistant coating off against threads of fitting.

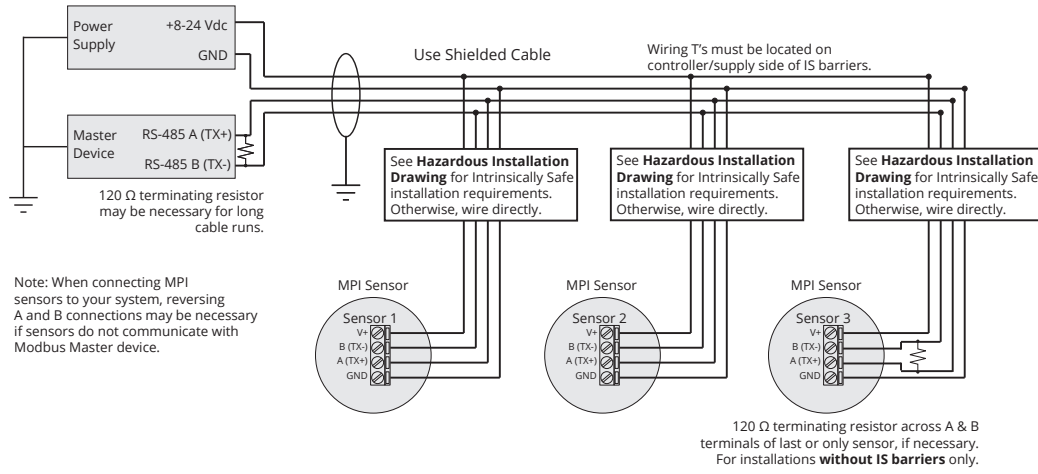
Electrical Installation Instructions:

- Remove the housing cover of your MPI.
- Feed system wires into MPI through 3/4" NPT conduit openings. Fittings must be UL/CSA Listed for CSA installation.
- Connect wires to MPI terminals. Use crimped ferrules on wires, if possible.
- Replace housing cover.

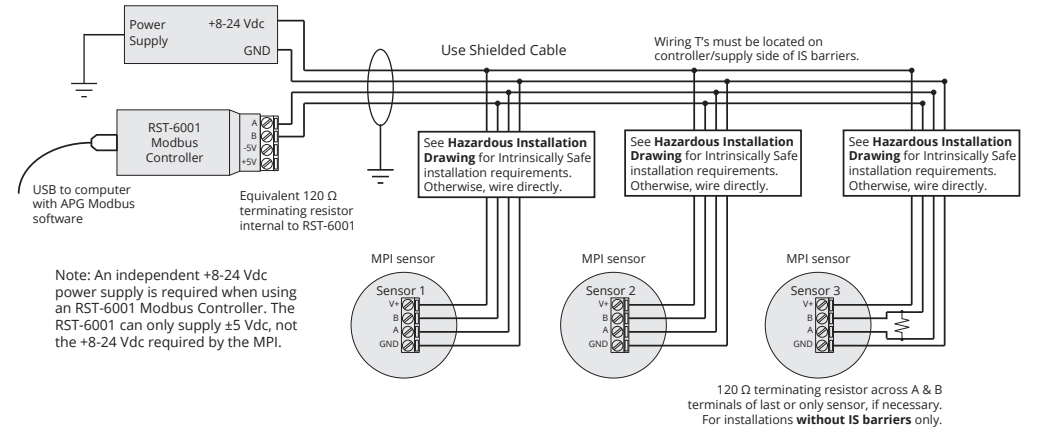
See Sensor and System Wiring Diagrams (section 6) for Modbus wiring examples.

## 6 Sensor and System Wiring Diagrams

### MPI-E/R Intrinsically Safe Modbus System Wiring



### MPI-E/R Intrinsically Safe Modbus System Wiring with RST-6001

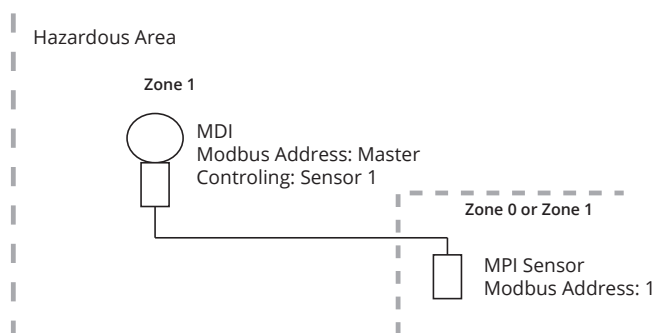


**IMPORTANT:** Refer to section 9 for Hazardous Location Wiring.

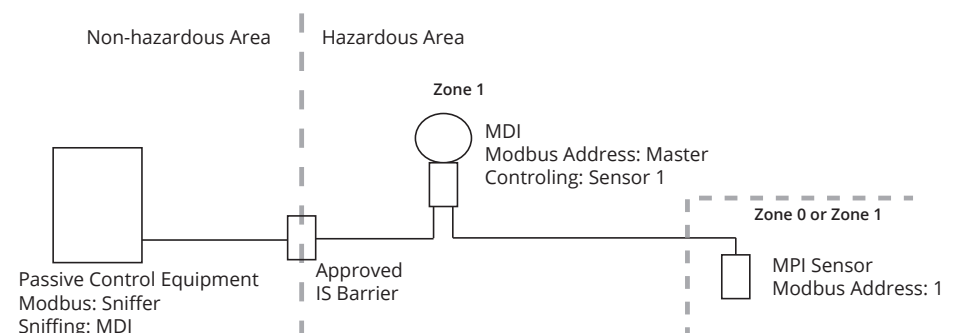
**NOTE:** For APG Modbus programming instructions, please see MPI user manual. APG Modbus software can be downloaded from [www.apgsensors.com/support](http://www.apgsensors.com/support).

**IMPORTANT:** MPI level sensor **MUST** be installed according to drawing 9005491 (Intrinsically Safe Installation Drawing for Hazardous Areas) in section 9 to meet listed approvals. Faulty installation will invalidate all safety approvals and ratings.

### MPI - MDI Use Case Diagram



### MPI - MDI with Passive Controller Use Case Diagram



## 7 General Care

Your level sensor is very low maintenance and will need little care as long as it was installed correctly. However, in general, you should periodically inspect your MPI unit to ensure the stem is free of any heavy buildup that might impede the movement of the float(s). If sediment or other foreign matter becomes trapped between the stem and float(s), detection errors can occur.

If you need to remove the floats(s) from the stem of your MPI, be sure to note the orientation of the float(s) prior to removal. This will help ensure proper re-installation of the float(s).

Also, ensure that the housing cover is snugly secured. If the cover becomes damaged or is misplaced, order a replacement immediately.

**NOTE:** For MPI-E Chemical sensors: Chemical resistant coating will scar and expose stainless steel if scraped or abused. Use caution when handling. Always transport in packaging to protect probe and coating.

## 8 Repair Information

The MPI-E Chemical's chemical resistant coating is a durable thermoplastic. This means that if damage occurs, repair is possible:

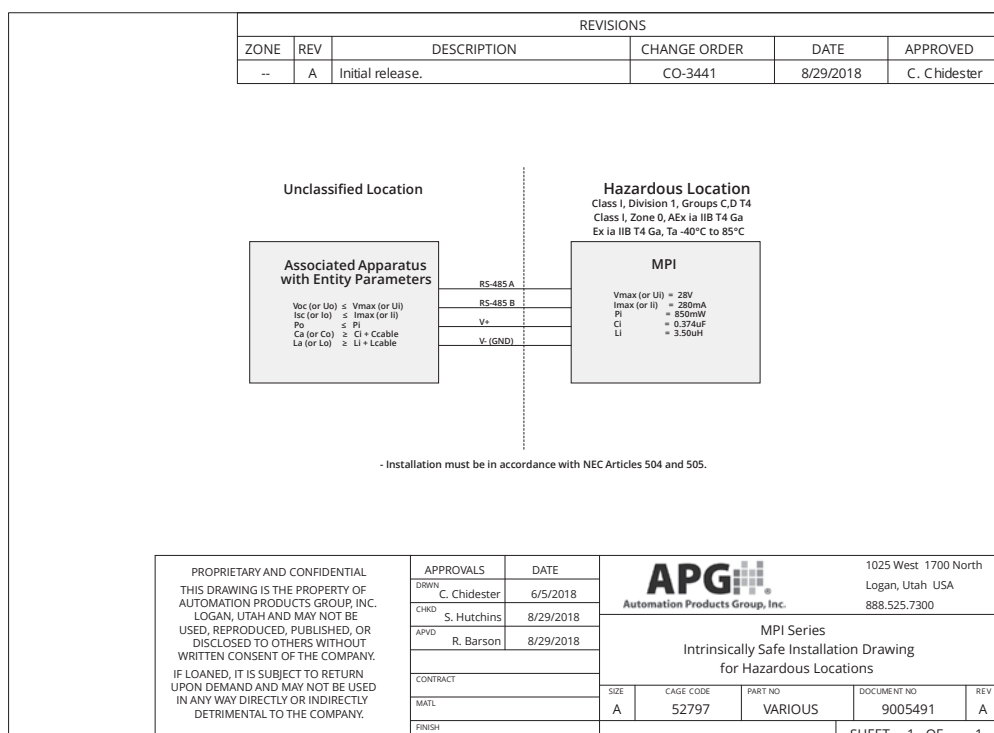
- Use a heat gun on a low setting to heat the damaged location until coating becomes soft and malleable. If coating begins to ripple or bubble, too much heat has been applied.
- With a blunt object, gently smear the coating to recover the damaged area.
- Allow chemical resistant coating patch to cool before reinstalling probe.
- Keep MPI-E Chemical probe and chemical resistant coating away from flammable material during patching process.

If your MPI level sensor needs repair, contact us via email, phone, or online chat on our website. We will issue you an RMA number with instructions.

- Phone: 888-525-7300
- Email: [sales@apgsensors.com](mailto:sales@apgsensors.com)
- Online chat at [www.apgsensors.com](http://www.apgsensors.com)

**IMPORTANT:** All repairs and adjustments of the MPI level sensor must be made by the factory. Modifying, disassembling, or altering the MPI, other than patching the chemical resistant coating on an MPI-E Chemical probe, is strictly prohibited.

## 9 Hazardous Location Wiring



**DANGER: OPEN CIRCUIT BEFORE REMOVING COVER or KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE;**  
**AVERTISSEMENT -- COUPER LE COURANT AVANT D'ENLEVER LE COUVERCLE, ou GARDER LE COUVERCLE FERME TANT QUE LES CIRCUITS SONT SOUS TENSION.**

**DANGER: WARNING -- EXPLOSION HAZARD -- SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;**  
**AVERTISSEMENT -- RISQUE D'EXPLOSION -- LA SUBSTITUTION DE COMPOSANTS PEUT ENDRE CE MATERIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 2.**

**DANGER: WARNING -- EXPLOSION HAZARD -- DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS;**  
**AVERTISSEMENT -- RISQUE D'EXPLOSION -- AVANT DE DECONNECTER L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNÉ NON DANGEREUX.**