Thank You

Thanks for purchasing an MPI series 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.
You can also find a full list of our product manuals at:
www.apgsensors.com/resources-user-manuals/

Table of Contents

MPI Magnetostrictive Level Sensors

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

Installation Guide

Automation Products Group, Inc.
1025 W 1700 N Logan, UT 84321
www.apgsensors.com | phone: 888-525-7300 | email: sales@apgsensors.com

Part # 200339
Doc #9005625
Rev F1, 11/2024

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-P3SB-120-4D-N

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.

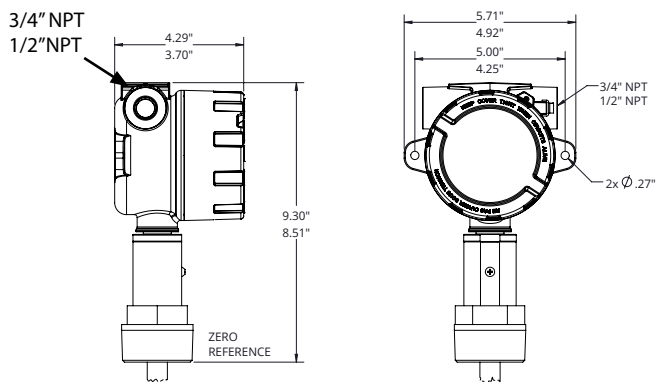
You'll also find all hazardous certification information on the label.

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 www.apgsensors.com/resources/warranty-certifications/warranty-returns/. Contact Technical Support to receive a Return Material Authorization before shipping your product back.

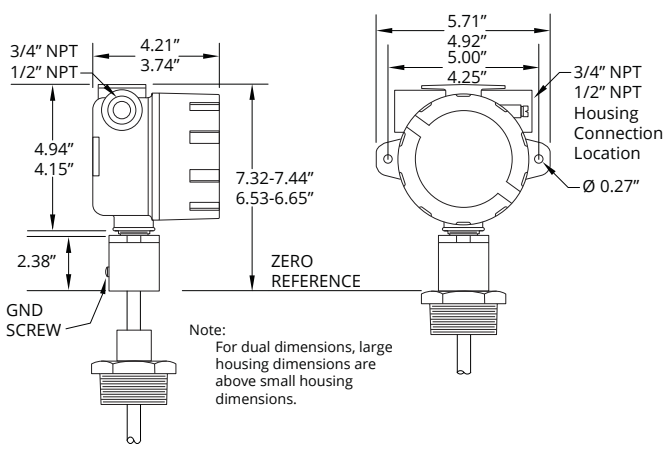
4 Dimensions

MPI-E Chemical Housing Dimensions



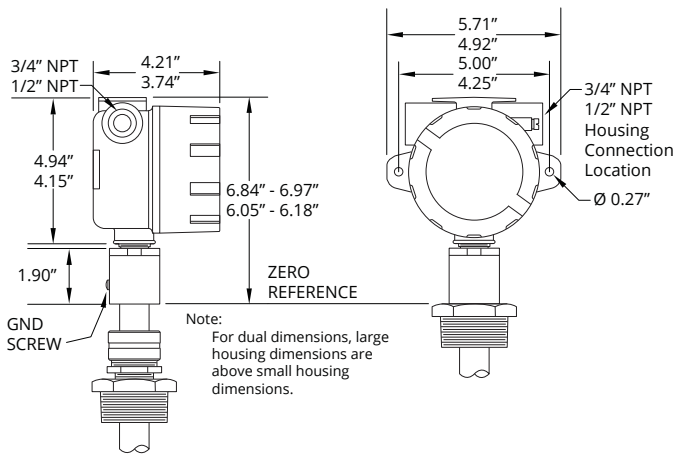
Note:
For dual dimensions, large housing dimensions are above small housing dimensions.

MPI-E Housing Dimensions



Note:
For dual dimensions, large housing dimensions are above small housing dimensions.

MPI-R Housing Dimensions



Note:
For dual dimensions, large housing dimensions are above small housing dimensions.

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 NH3, SO2, Cl2, etc.) (Not applicable to plastic-type stem options)
- 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.

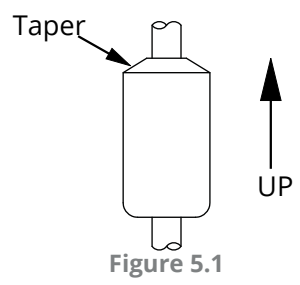


Figure 5.1

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

Conditions of Use:

1. 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.
2. The enclosure is manufactured from Aluminium. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation.
3. Model MPXI shall be installed as per drawing 9006113.
4. Unused entries of model MPXI shall be closed with blanking elements maintaining explosion proof properties and ingress protection rating of the enclosure.
5. For information on the dimensions of the flameproof joints the manufacturer shall be contacted.
6. For model MPXI only, the Stem Assembly shall not be subject to vibrations or exposed to chemicals which might adversely affect the partition wall.

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's mounting option 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.

  Warning! *The Kynar stem is susceptible to thermal expansion when the process temperature exceeds 73°F / 23°C. This expansion can be calculated as follows: Expansion = (Max Process Temperature (°F) -73)*.000108 * Kynar Stem Length). This is the distance that must be left between the end of the Kynar stem and the tank bottom at the maximum process temperature.*

Installation Guidelines & Instructions, cont'd

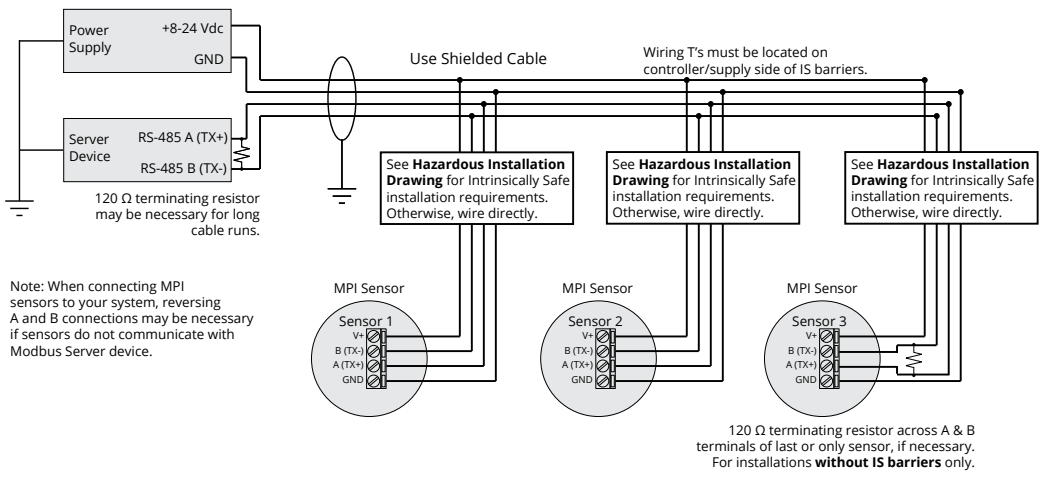
Electrical Installation Instructions:

- Remove the housing cover of your MPI.
- Feed system wires into MPI through conduit openings. Fittings must be UL/CSA Listed for CSA installation and IP65 Rated or better.
- 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.

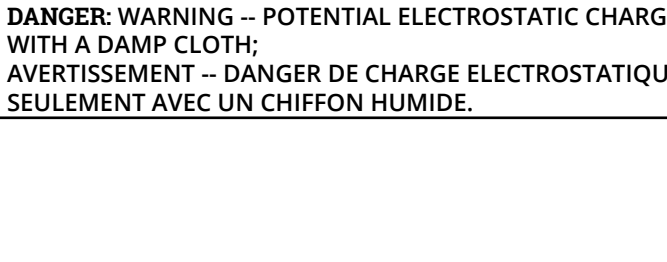
6 Sensor and System Wiring Diagrams

MPI-E/R Intrinsically Safe Modbus System Wiring



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



7 General Care

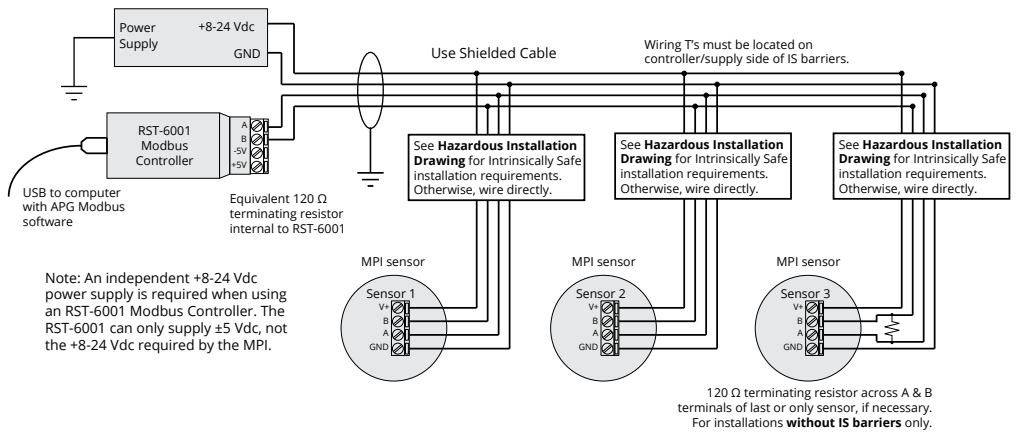
Your level sensor is very low maintenance and will need little care as long as it is installed correctly. However, in general, you should periodically inspect your MPI unit to ensure the stem is free of any heavy buildup that might impede the movement of the float(s). If sediment or other foreign matter 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 secured snugly. If the cover becomes damaged or is misplaced, order a replacement immediately.

DANGER: WARNING -- POTENTIAL ELECTROSTATIC CHARGING HAZARD - CLEAN ONLY WITH A DAMP CLOTH;
AVERTISSEMENT -- DANGER DE CHARGE ELECTROSTATIQUE POTENTIEL - NETTOYER SEULEMENT AVEC UN CHIFFON HUMIDE.

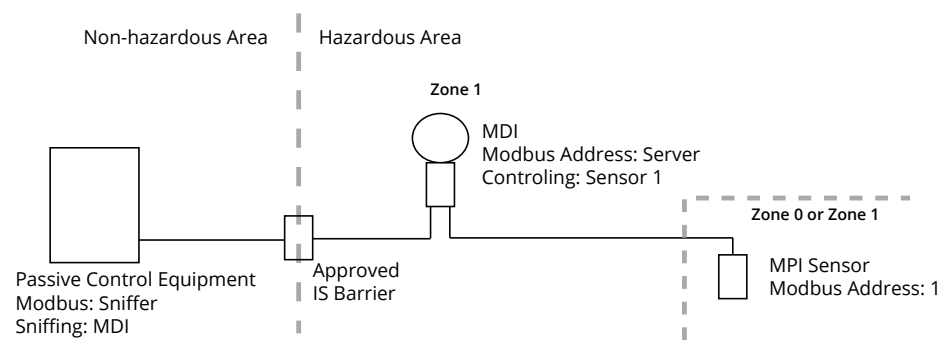
MPI-E/R Intrinsically Safe Modbus System Wiring with RST-6001



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.

MPI - MDI with Passive Controller Use Case Diagram



8 Repair Information

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

- Phone: 888-525-7300
- Email: sales@apgsensors.com
- Online chat at 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 is strictly prohibited.

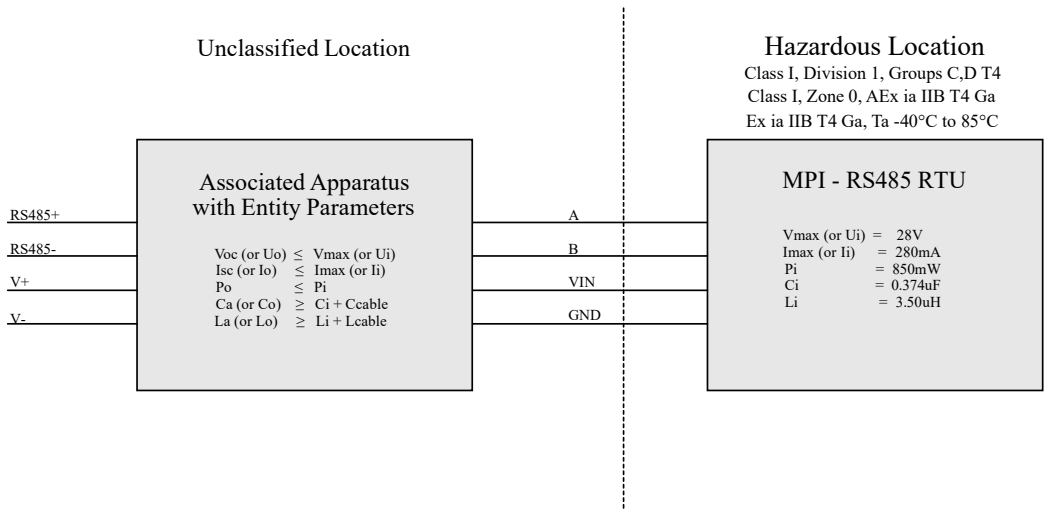
DANGER: OPEN CIRCUIT BEFORE REMOVING COVER or KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE;
AVERTISSEMENT -- COUPER LE COURANTAVANT D'ENLEVER LE COUVERCLE, ou GARDER LE COUVERCLE FERME TANT QUE LES CIRCUITS SONT SOUS TENSION.

DANGER: WARNING -- EXPLOSION HAZARD -- SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY;
AVERTISSEMENT -- RISQUE D'EXPLOSION -- LA SUBSTITION DE COMPOSANT PEUT AMELIORER LA SECURITE INTRINSIQUE.

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 DESIGNE NON DANGEREUX.

IMPORTANT: Only the combustion gas detection performance of the instrument has been tested.

REVISIONS					
ZONE	REV	DESCRIPTION	CHANGE ORDER	DATE	APPROVED
--	B	See Change Order	CO-3982	06/01/2020	A. Fullmer



- Installation must be in accordance with NEC Articles 504 and 505.

AGENCY APPROVED DRAWING

DO NOT ALTER WITHOUT PROPER APPROVAL FROM THE CONTROLLING AGENCY AUTHORIZED PERSON AND THE NOTIFIED BODY.

APPROVALS	DATE
DRWN C. Chidester	6/5/2018
CHKD S. Hutchins	8/29/2018
APVD R. Barson	8/29/2018
CONTRACT	
MATL	
FINISH	

Automation Products Group, Inc.
1025 West 1700 North
Logan, Utah USA
888.525.7300

MPI Series
Intrinsically Safe Installation Drawing
for Hazardous Locations

SIZE	CAGE CODE	PART NO	DOCUMENT NO	REV
A	52797	VARIOUS	9005491	B

SHEET 1 OF 2