

Thank You

Thanks for purchasing an MPX 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 guide before installation. If you have any questions, at any time, don't hesitate to call us at 435-753-7300. You can also find a full list of our product install guides at:

apgsensors.com/resources/install-guides

Table of Contents

- | | |
|---|------------------------------|
| 1. Description | 5. General Care |
| 2. How to Read Your Label | 6. Dimensions |
| 3. Warranty & Return Information | 7. Sensor & System Wiring |
| 4. Installation Guidelines & Instructions | 8. Hazardous Location Wiring |

1 Description

The MPX 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 hazardous areas in the US and Canada by CSA for Class I, Division 1 & 2, and Class I, Zones 1 & 2 environments.

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 MPX will look something like this:

Sample: MPX-R3-ZY-F2.5WB-120

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 will also find all hazardous certification information on the label.

3 Warranty & Return Information

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/warranty-returns/

Contact Technical Support to receive a Return Material Authorization (RMA) before shipping your product back.

If your product needs to be returned for evaluation, contact us via email, phone, or online chat on our website. We will issue you an RMA number with instructions. You can also find the form on our website by clicking "RMA" in the web footer, or go to:

apgsensors.com/RMA-form

- Phone: (435) 753-7300
- Email: sales@apgsensors.com
- Online chat at apgsensors.com

Please have your part number and serial number available.

4 Installation Guidelines & Instructions

The MPX 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.

MPX Magnetostrictive Level Sensors

For MPX-E, MPX-E Chemical, and MPX-R

INSTALLATION GUIDE



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4 Installation Guidelines & Instructions Cont.

- 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). MPX-E floats will be installed by the factory. MPX-R floats are typically installed by customer.

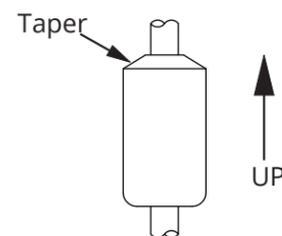


FIGURE 5.1

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

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.

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) * 0.000108 * 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.

Electrical Installation Instructions

- Remove the housing cover of your MPX.
- Feed system wires into MPX through 3/4" NPT conduit openings. Fittings must be UL/CSA Listed for CSA installation and IP65 Rated or better.
- Connect wires to MPX terminals. Use crimped ferrules on wires, if possible.
- Replace housing cover.
- For EMI protection on MPX-E4 and MPX-R4 models, either connect the grounding screw (see Dimensions section 6) to an earth ground, or ensure that tank mounting of MPX is grounded.

See Sensor & System Wiring Diagrams (Section 7) for Modbus and 4-20 mA wiring examples.

IMPORTANT: WARNING—A SEAL SHALL BE INSTALLED WITHIN 18 inches OF THE ENCLOSURE;

AVERTISSEMENT—UN SCELLEMENT DOIT ETRE INSTALLÉ A MOINS DE 18 inches DU BOITIER.

5 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 MPX 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.

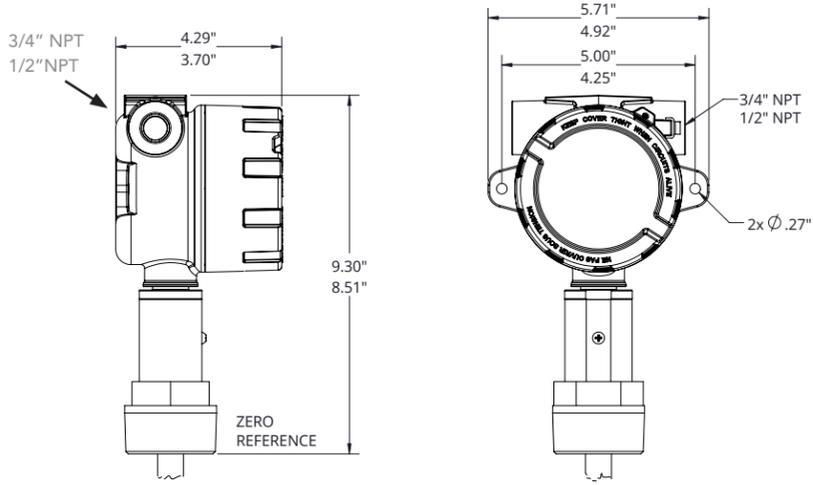
If you need to remove the float(s) from the stem of your MPX, be sure to note the orientation of the float(s) prior to removal. This will help ensure proper re-installation of the float(s).

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

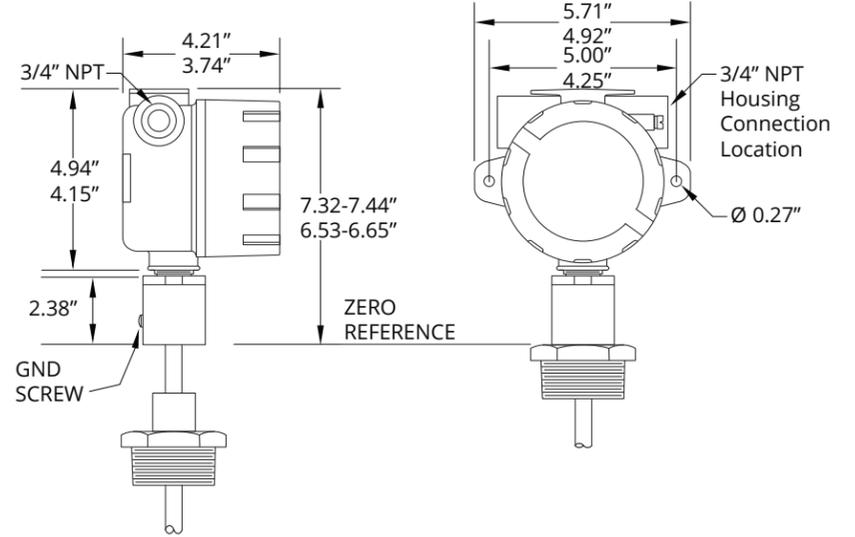
6 Dimensions

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

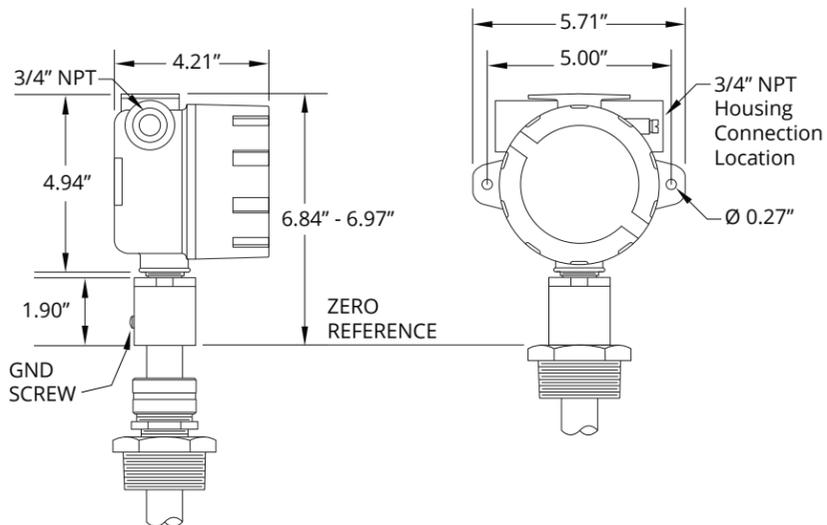
MPX-E CHEMICAL HOUSING DIMENSIONS



MPX-E HOUSING DIMENSIONS

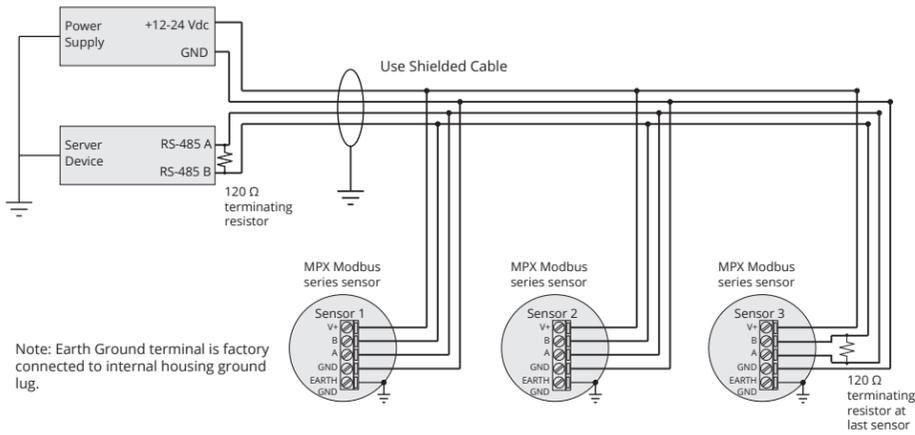


MPX-R HOUSING DIMENSIONS



7 Sensor & System Wiring Diagrams

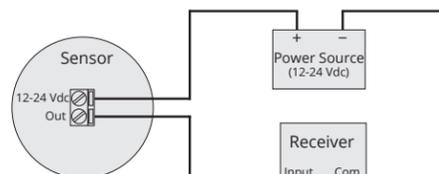
MODBUS SYSTEM WIRING



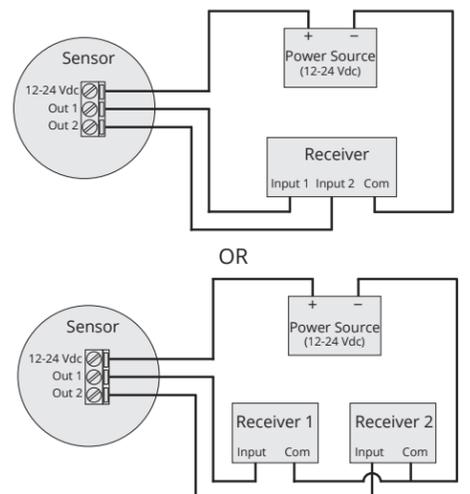
IMPORTANT: For EMI protection on an MPX-E4 or -R4, either connect the grounding screw (see Section 6) to an earth ground, or ensure that tank mounting of the MPX is grounded.

4-20 MA WIRING

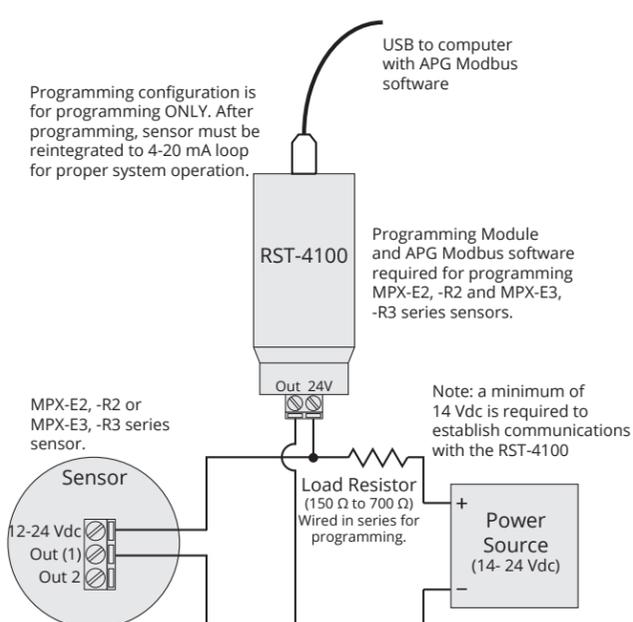
4-20 mA Single Float Loop Wiring (MPX-E2 and MPX-R2 Series)



4-20 mA Dual Float Loop Wiring (MPX-E3 and MPX-R3 Series)



4-20 MA PROGRAMMING WIRING



IMPORTANT: Refer to section 8 for Hazardous Location Wiring

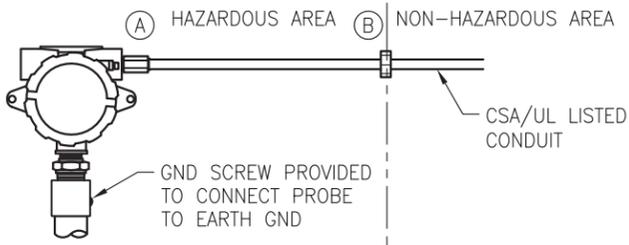
IMPORTANT: MPX level sensors MUST be installed according to drawing 9003468 (Hazardous Installation and Non-Incendive Wiring Drawing) in Section 8 to meet listed approvals. Faulty installation will invalidate all safety approvals and ratings.

IMPORTANT: All repairs and adjustments of the MPX level sensor must be made by the factory. Modifying, disassembling, or altering the MPX is strictly prohibited.

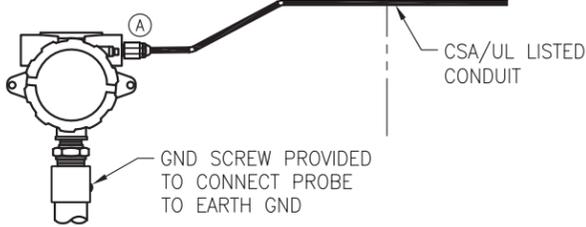
NOTE: For APG Modbus programming instructions, please see MPX user manual. APG Modbus software can be downloaded from apgsensors.com/resources/software-downloads/

REVISIONS					
ZONE	REV	DESCRIPTION	CHANGE ORDER	DATE	APPROVED
-	D	INCLUDE MPX-G.	CO- 2406	04/21/16	K. REID
-	E	ADD MPX-E & -R TO ES WRN.	CO-3436	03/06/19	R. OBORN

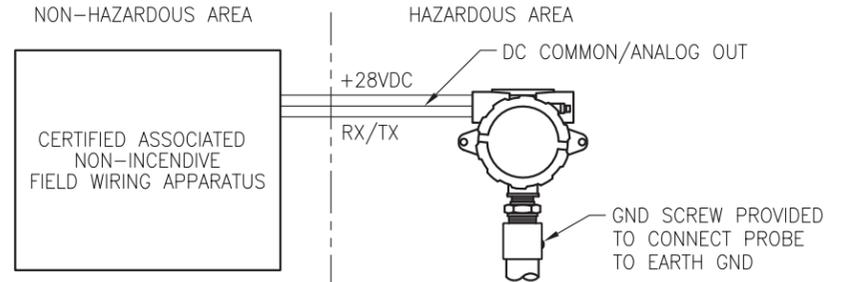
INSTALLATION IN:
 CLASS I, DIV 1 & 2, GROUPS C & D, MAX. TEMP. 85° C
 Ex d IIB : Ex nA IIB
 CLASS I, ZONE 1; AEx d IIB : CLASS I, ZONE 2; AEx nA IIB



* INSTALL IN ACCORDANCE WITH SECTION 18 OF THE CEC OR ARTICLE 500 OF THE NEC.
 * CSA LISTED OR NRTL/UL LISTED CONDUIT SEAL AT LOCATION A & B.



NON-INCENDIVE WIRING FOR INSTALLATION IN
 CLASS I, DIVISION 2, GROUPS C AND D, MAX. TEMP. 85°C



* $V_{Max} \geq V_{oc}$,
 $C_a \geq C_{cable} + C_i$
 $L_a \geq L_{cable} + L_i$

* $V_{max} = 28VDC$,
 $I_{max} = 200ma$,
 $C_i = 0nF$, $L_i = 0$

WARNING - OPEN CIRCUIT BEFORE REMOVING COVER OR KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE.
 AVERTISSEMENT - CIRCUIT OUVERT AVANT DE LE DÉMONTER OU DE GARDER LA COUVERTURE SERRÉE PENDANT QUE LES CIRCUITS SONT VIVANTS.

WARNING EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
 AVERTISSEMENT RISQUE D'EXPLOSION - LA SUBSTITUTION DE COMPOSANTS PEUT NUIRE À LA CONFORMITÉ POUR LA CLASSE I, DIVISION 2.

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 - NE PAS DÉCONNECTER L'ÉQUIPEMENT, À MOINS QUE L'ALIMENTATION EST COUPEE OU QUE LA ZONE EST CONNUE POUR ÊTRE NON DANGEREUX.

SENSORS WITH COATING OR SLEEVE OPTION:
 CAPTEURS AVEC DE L'ENDUIT OU DE LA MANCHE OPTION:

WARNING (WRN) - POTENTIAL ELECTROSTATIC (ES) CHARGING HAZARD - CLEAN WITH DAMP CLOTH or AVOID STATIC DISCHARGE BY WIPING PLASTIC WITH DAMP CLOTH.
 AVERTISSEMENT (WRN) - POTENTIEL ÉLECTROSTATIQUE (ES) de CHARGE de DANGER - NETTOYER AVEC un CHIFFON HUMIDE ou d'ÉVITER les décharges d'électricité STATIQUE EN frottant en PLASTIQUE AVEC un CHIFFON HUMIDE.

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		CONTRACT MAIL FINISH	SIZE C CAGE CODE 52797 SCALE NONE	

DANGER: OPEN CIRCUIT BEFORE REMOVING COVER or KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE;

AVERTISSEMENT—OUVRIR LE CIRCUIT AVANT D'ENLEVER LE COUVERCLE, or GARDER LE COUVERCLE BIEN 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 SUBSTITION D E COMPOSANTS PEUTR 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 NONHAZARDOUS;

AVERTISSEMENT—RISQUE D'EXPLOSION—AVANT DE DECONNECTER L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX.

DANGER: WARNING—POTENTIAL ELECTROSTATIC CHARGING HAZARD—CLEAN ONLY WITH A DAMP CLOTH;

AVERTISSEMENT—DANGER DE CHARGE ELECTROSTATIQUE POTENTIEL—NETTOYER SEULEMENT AVEC UN CHIFFON HUMIDE.