

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 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/product-resources/user-manuals.

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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 and 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.

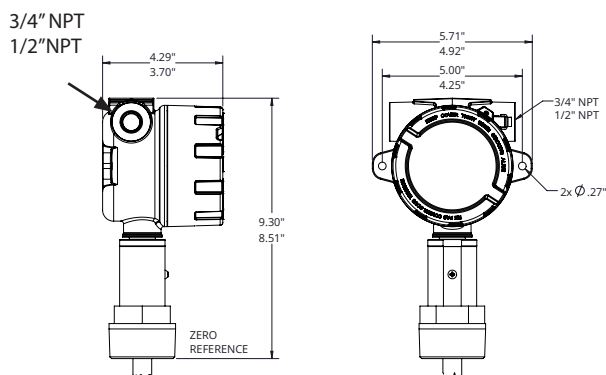
You'll also find all hazardous certification information on the label.

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.

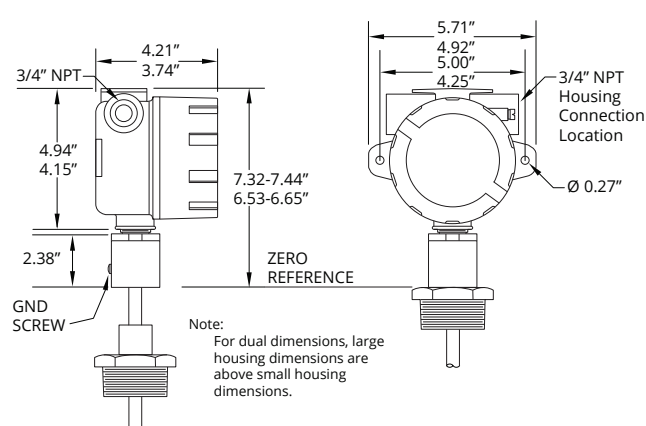
4 Dimensions

MPX-E Chemical Housing Dimensions



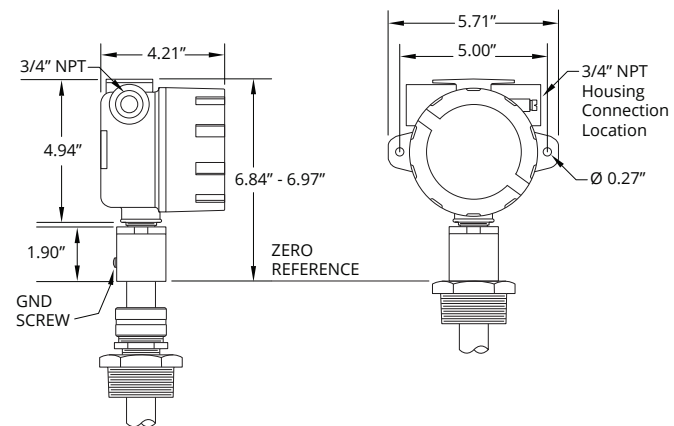
Note:
for dual dimensions,
large housing dimensions
are above small housing
dimensions.

MPX-E Housing Dimensions



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

MPX-R Housing Dimensions



MPX Magnetostrictive Level Sensors Installation Guide

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



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

Part # 122950-0003
Doc #9004081 Rev H

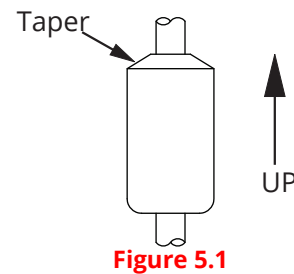
5 Installation Guidelines & Instructions

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.
- 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.



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.

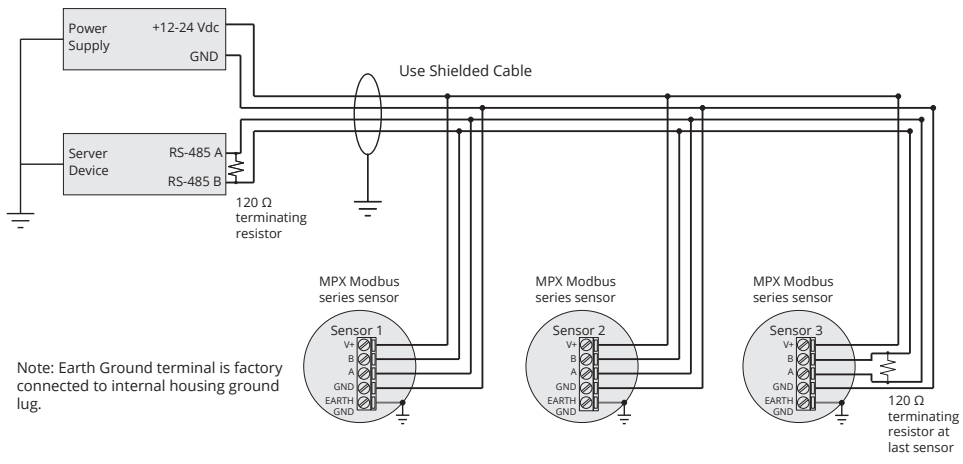
Electrical Installation Instructions:

- 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 4) to an earth ground, or ensure that tank mounting of MPX is grounded.

IMPORTANT: WARNING -- A SEAL SHALL BE INSTALLED WITHIN 18 inches OF THE ENCLOSURE;
AVERTISSEMENT -- UN SCÈLEMENT DOIT ÊTRE INSTALLÉ À MOINS DE 18 inches DU BOITIER.

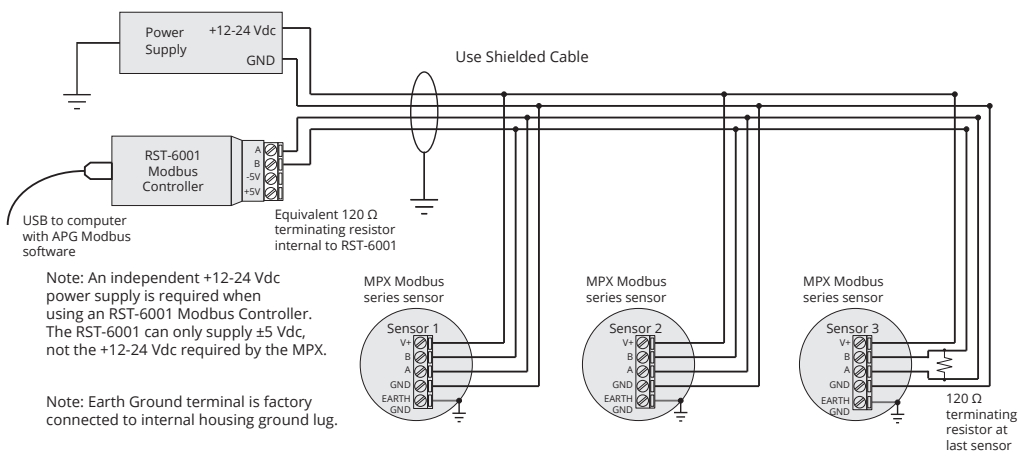
6 Sensor and System Wiring Diagrams

Modbus System Wiring



IMPORTANT: For EMI protection on an MPX-E4 or -R4, either connect the grounding screw (see section 4) to an earth ground, or ensure that tank mounting of the MPX is grounded.

Modbus System Wiring with RST-6001

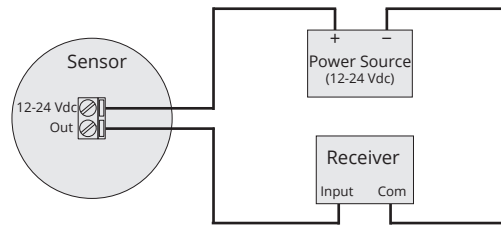


IMPORTANT: Refer to section 9 for Hazardous Location Wiring.

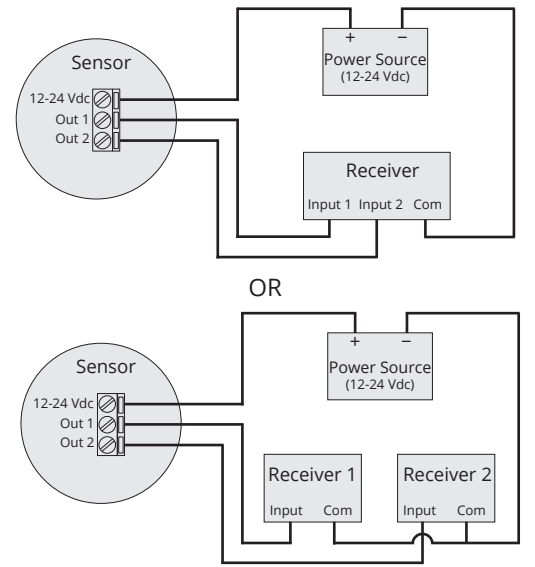
NOTE: For APG Modbus programming instructions, please see MPX user manual. APG Modbus software can be downloaded from: www.apgsensors.com/resources/product-resources/software-downloads/.

4-20 mA Wiring

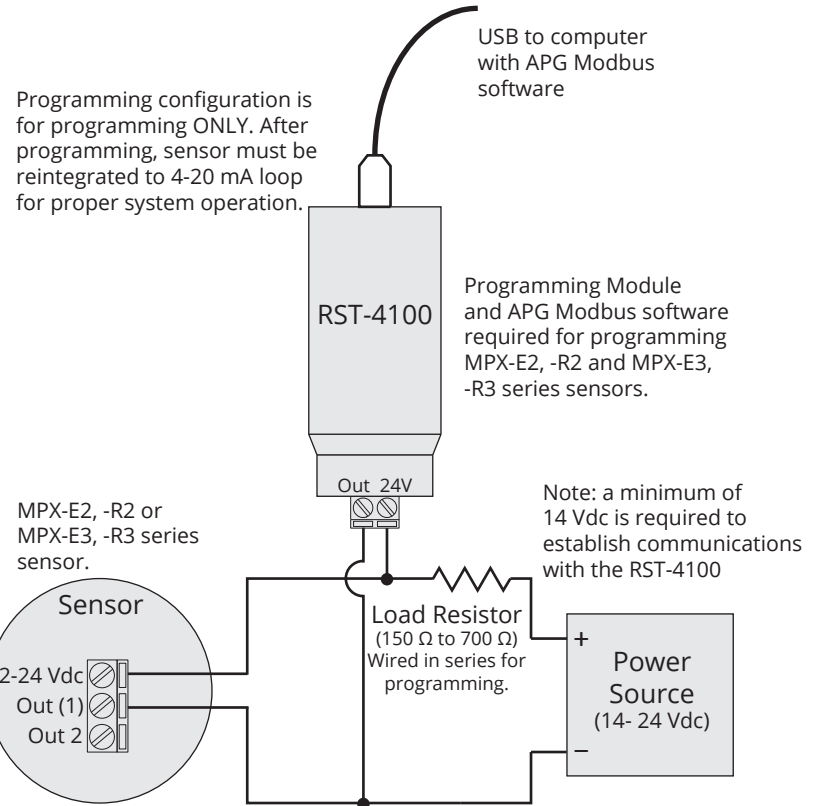
4-20 mA Single Float Loop Wiring (MPX-E2 and MPX-R2 Series)



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



4-20 mA Programming Wiring



IMPORTANT: MPX level sensor MUST be installed according to drawing 9003468 (Hazardous Installation and Non-Incendive Wiring Drawing) in section 9 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.

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 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 floats(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.

8 Repair Information

If your MPX 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
- Online chat at www.apgsensors.com

DANGER: OPEN CIRCUIT BEFORE REMOVING COVER or KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE;
AVERTISSEMENT -- OUVRIER 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 SUBSTITUTION DE COMPOSANTS PEUT ENDRE CE MATERIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 2.

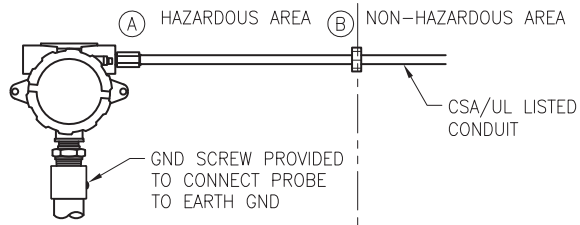
DANGER: WARNING -- EXPLOSION HAZARD -- DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS;
AVERTISSEMENT -- RISQUE D'EXPLOSION -- AVANT DE DECONNECTER L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNÉ NON DANGEREUX.

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

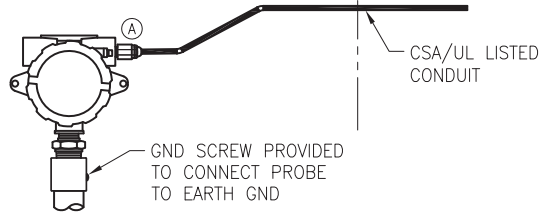
9 Hazardous Location Wiring

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

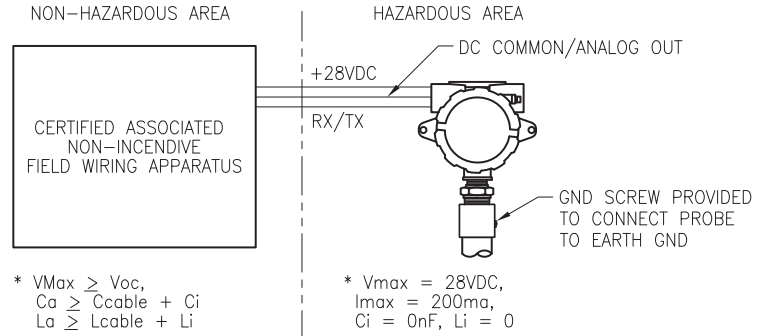
INSTALLATION IN:
 CLASS I, DIV 1 & 2, GROUPS C & D, MAX. TEMP. 85° C
 Ex d IIB : Ex nA IIB
 CLASS I, ZONE 1; AEx d IIB : CLASS I, ZONE 2; AEx nA IIB



* 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 COUPÉE 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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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND TOLERANCES ARE AS FOLLOWS:
 TOLERANCE ON ANGLE: ±1°
 2 PLACES: ±0.1°
 3 PLACES: ±0.05°
 INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-2009
 THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN K. REID	09/08/10
CHEK HUTCHINS	09/11/10
APPD K. REID	09/11/10

APGH
 1025 West 1700 North
 Logan, Utah USA
 888.525.7300
 AUTOMATION PRODUCTS GROUP, INC.
 MAGNETOSTRICTIVE PROBE, MPX-E, MPX-R, & MPX-G
 HAZARDOUS INSTALLATION DRAWING
 EX WIRING, CSA

SIZE	CASE CODE	PART NO	DOCUMENT NO	REV
C	52797		9003468	E
SCALE	NONE	DO NOT SCALE DRAWING	SHEET 1 OF 3	