

APG[®] MPX series Magneto Strictive Level Sensor



APG MPX series Magneto Strictive Level Sensor Installation Guide

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APG MPX series Magneto Strictive Level Sensor



Specifications

- **Product:** MPX Series Magnetostrictive Level Sensor
- **Accuracy:** Highly accurate and repeatable
- **Measurement Applications:** Liquid level measurement, including API 18.2 Custody Transfer
- **Certifications:** Hazardous areas in the US and Canada for Class I, Division 1 & 2 and Class I, Zones 1 and 2 environments

Product Usage Instructions

Installation Guidelines & Instructions

- The MPX should be installed in an area—indoors or outdoors—that meets specific conditions as per the installation manual.

How To Read Your Label

- Each label contains the model number, part number, and serial number. The model number provides information on the configurable options. Compare it with the datasheet for exact configuration details.

Warranty

- The product is covered by a 24-month warranty against defects in material and workmanship under normal use and service. Refer to the warranty section on the website for more details.

Dimensions

- Refer to the provided dimensions for MPX-R & MPX-T Housing for installation purposes.

Hazardous Location Wiring

- Follow the instructions in drawing 9003468 for Hazardous Installation and Non-Incendive Wiring to maintain safety approvals and ratings.

General Care

- Handle the sensor with care to ensure proper functioning and longevity. Avoid any physical damage or exposure to harsh conditions.

Sensor and System Wiring

- Follow the wiring guidelines provided in the installation manual to ensure the correct connection and operation of the sensor.

INTRODUCTION

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 8885257300.
- You can also find a full list of our product manuals at: www.apgsensors.com/resources/product-resources/user-manuals

Description

- The MPX series magnetostrictive level sensor provides highly accurate and repeatable level and temperature readings in a wide variety of liquid level measurement applications, including API 18.2 Custody Transfer.
- It is certified for installation in hazardous areas in the US and Canada for Class I, Division 1 & 2 and Class I, Zones 1 and 2 environments.

How To Read Your Label

- Each label comes with a full model number, a part number, and a serial number.

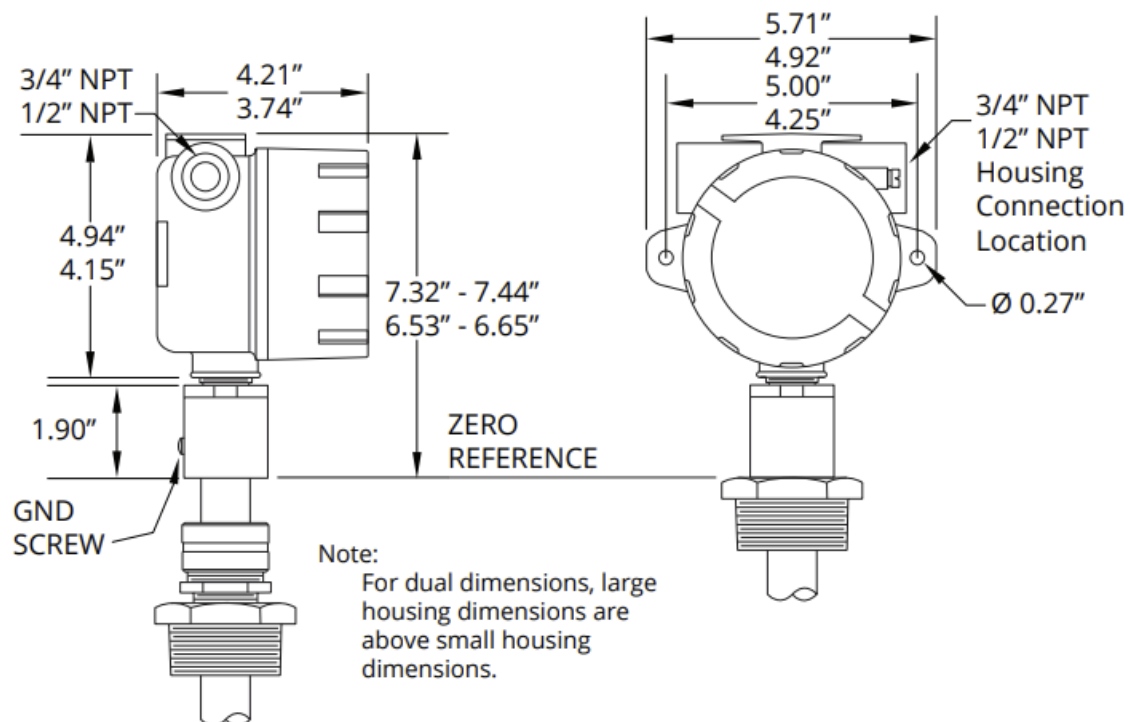
The model number for the MPX will look something like this:

- **SAMPLE:** MPX-T5-JI-P2ST-180-AP
- 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 serial number and we can help you.
- You'll also find all hazardous certification information on the label.

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.

Dimensions



- **IMPORTANT:** WARNING — A SEAL SHALL BE INSTALLED WITHIN 18 inches OF THE ENCLOSURE;
- **DANGER:** OPEN CIRCUIT BEFORE REMOVING COVER or KEEP COVER TIGHT WHILE CIRCUITS ARE ALIVE;
- **DANGER:** WARNING — EXPLOSION HAZARD — SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 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;
- **Warning:** — The model MPX-T contains titanium over 7.5% for Group II and care needs to be taken to avoid ignition hazards due to impact or friction;

Installation Guidelines & Instructions

- The MPX should be installed in an area—indoors or outdoors—that meets the following conditions.
- Ambient temperature between -40°C and 85°C (-40°F to +185°F)
- 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.) for MPX-R
- No chemicals incompatible with Titanium Grade 2 for MPX-T
- 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.
- No ignition hazards exist due to impact or friction with the titanium stem.
- 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-R and MPX-T floats are typically installed by customers.
- **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.
- The faulty installation will invalidate all safety approvals and ratings.

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.

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.
- Connect wires to MPX terminals. Use crimped ferrules on wires, if possible.
- Replace the housing cover.
- For EMI protection, either connect the grounding screw (see Dimensions section 4) to an earth ground or ensure that the tank mounting of MPX is grounded.
- See Modbus System Wiring Diagrams (section 6) for Modbus wiring examples.

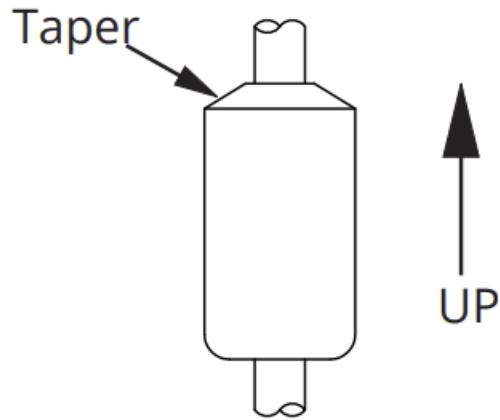
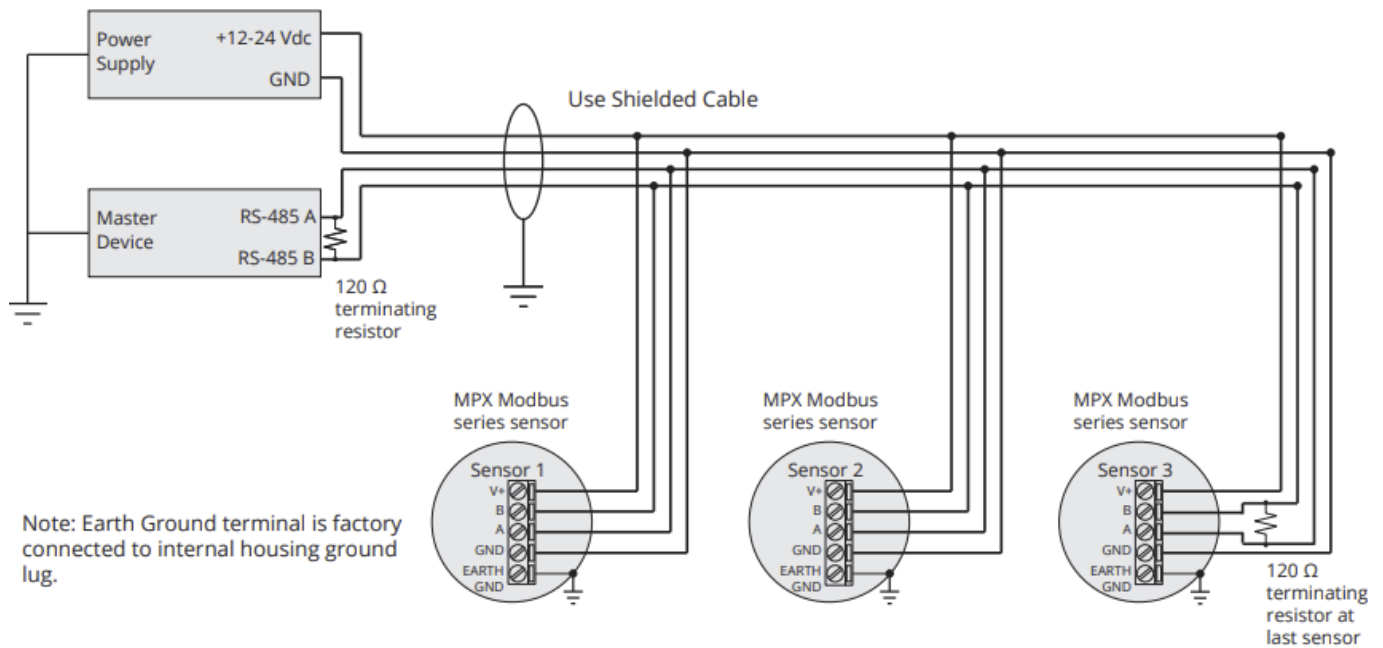


Figure 5.1

- **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 the sticker before use.

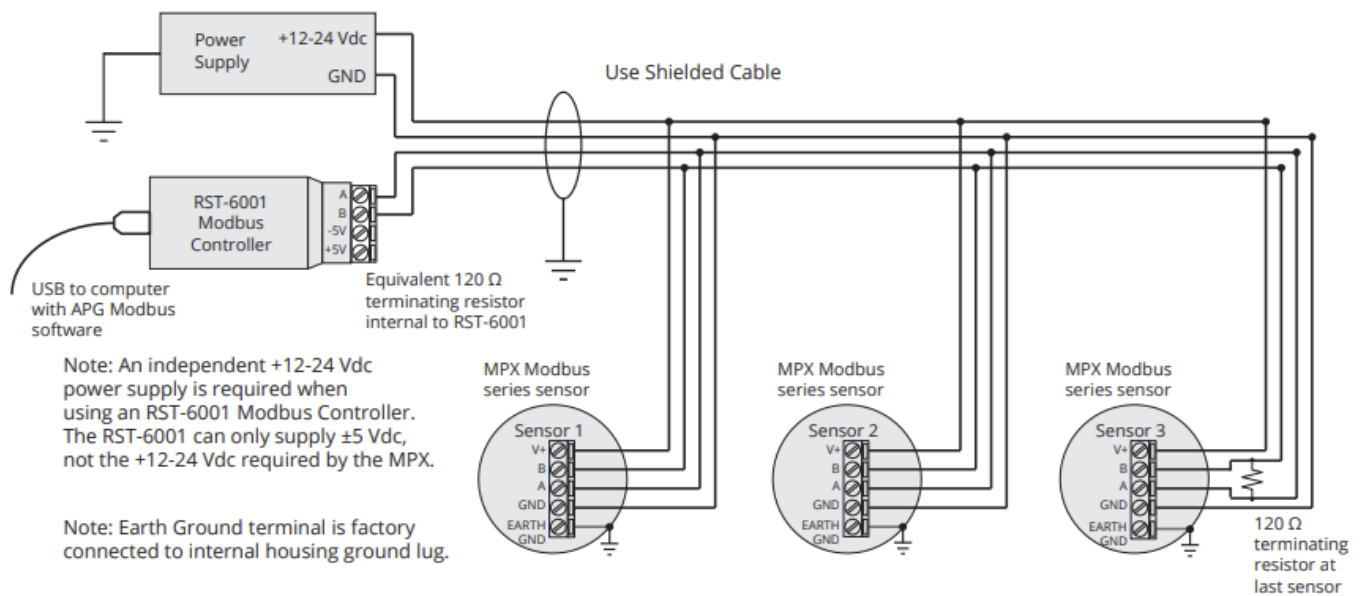
Sensor and System Wiring Diagrams

Modbus System Wiring



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

Modbus System Wiring with RST-6001



- **IMPORTANT:** For EMI protection, either connect the grounding screw (see section 4) to an earth ground or ensure that the mounting of the MPX is grounded.
- **IMPORTANT:** Refer to section 9 for Hazardous Location Wiring.

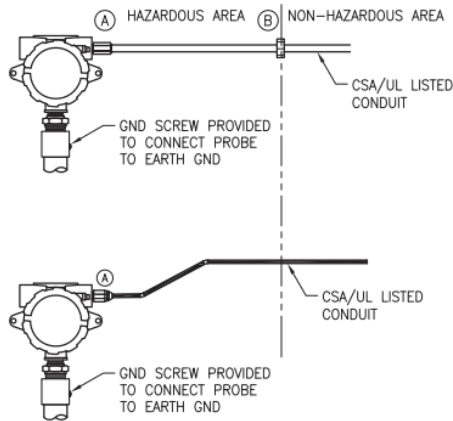
General Care

- 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 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) before 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.
- **DANGER:** WARNING — POTENTIAL ELECTROSTATIC CHARGING HAZARD – CLEAN ONLY WITH A DAMP CLOTH.
- **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.

Hazardous Location Wiring

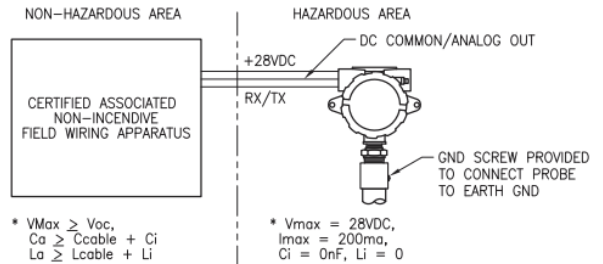
REVISIONS					
ZONE	REV	DESCRIPTION	CHANGE ORDER	DATE	APPROVED
-	D	INCLUDE MPX-G.	CO- 2406	04/21/16	K. REID
-	E	ADD MPX-E & -R TO ES WRN.	CO-3436	03/06/19	R. OBORN

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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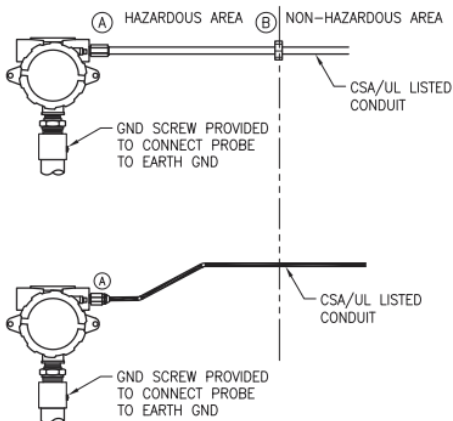
UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 AND TOLERANCES ARE AS FOLLOWS:
 TOLERANCE ON ANGLES: ±1°
 2 PLACES: ±0.1°
 3 PLACES: ±0.005°
 INTERPRET DIMENSIONS AND TOLERANCES
 PER ASME Y14.5-2009
 THIRD ANGLE PROJECTION

APPROVALS DATE
 DESIGNED K. REID 09/08/10
 CHECKED H. HUTCHINS 09/11/10
 APPROVED K. REID 09/11/10
 CONTRACT
 SERIAL
 FINISH

APGH.
 AUTOMATION PRODUCTS GROUP, INC.
 1025 West 1700 North
 Logan, Utah USA
 888.525.7300
 MAGNETOSTRICTIVE PROBE, MPX-E, MPX-R, & MPX-G
 HAZARDOUS INSTALLATION DRAWING
 EX WIRING, CSA
 SIZE C 52797 PART NO 9003468 SHEET 1 OF 3
 SCALE NONE DO NOT SCALE DRAWING

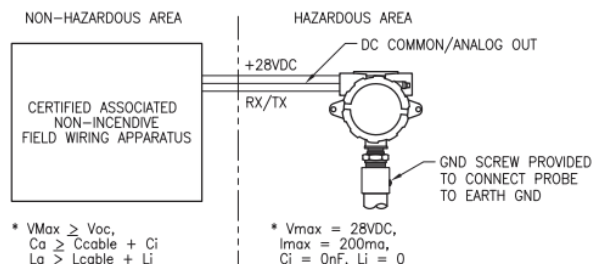
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ZONE	REV	DESCRIPTION	CHANGE ORDER	DATE	APPROVED
-	D	ADD WRN ON TITANIUM.	CO- 2406	4-21-16	K. REID
-	E	ADD MPX-E & -R TO ES WRN.	CO-3436	03/06/19	R. OBORN

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 Ex d IIB : Ex nA IIB
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NON-INCENDIVE WIRING FOR INSTALLATION IN
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WARNING -THE MODEL MPX-T CONTAINS TITANIUM IN EXCESS OF 7.5% FOR GROUP II AND CARE NEEDS TO BE TAKEN TO AVOID AN IGNITION HAZARD DUE TO IMPACT OR FRICTION.
 AVERTISSEMENT -LE MODÈLE MPX-T CONTIENT DU TITANE DANS L'EXCÈS DE 7.5% POUR LE GROUPE II ET LES SOINS DOIVENT ÊTRE PRISES POUR ÉVITER LE RISQUE D'INFLAMMATION PROVOQUÉE PAR UN CHOC OU D'UN FROTTEMENT.

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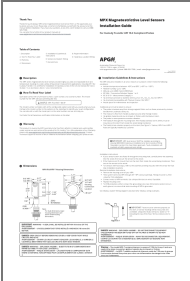
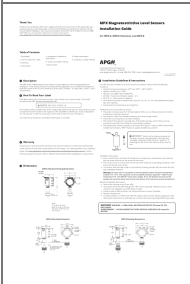
Repair Information

- 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: 8885257300
- Email: sales@apgsensors.com
- Online chat at www.apgsensors.com

Frequently Asked Questions

- **Q: What should I do if I encounter difficulties during installation?**
 - **A:** If you face any challenges during installation, please contact our support team at 8885257300 for assistance.
- **Q: How do I know if the sensor is suitable for my specific application?**
 - **A:** Refer to the model number and datasheet to ensure that the sensor configuration meets the requirements of your application.
- **Q: Can the MPX sensor be used in hazardous environments?**
 - **A:** Yes, the MPX sensor is certified for installation in hazardous areas in the US and Canada for specific environments.
 - Follow the installation guidelines for safe usage.

Documents / Resources

	<p>APG MPX series Magneto Strictive Level Sensor [pdf] Installation Guide MPX-T5-JI-P2ST-180-AP, MPX series Magneto Strictive Level Sensor, MPX series, Magneto Strictive Level Sensor, Strictive Level Sensor, Level Sensor, Sensor</p>
	<p>APG MPX Series Magneto Strictive Level Sensor [pdf] Installation Guide MPX-E, MPX-E Chemical, MPX-R, MPX Series Magneto Strictive Level Sensor, MPX Series, Magneto Strictive Level Sensor, Strictive Level Sensor, Level Sensor, Sensor</p>

References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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