

APG
RPM Series Float
Level Sensor



APG RPM Series Float Level Sensor User Manual

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APG RPM Series Float Level Sensor



INTRODUCTION

Thank you for purchasing an RPM Series Float Level Sensor from APG. We appreciate your business! Please take a few minutes to familiarize yourself with your RPM and this manual. The RPM utilizes reed switches in the instrument's stem and a permanent magnet in the float. As the float rises or falls with the level of the liquid, the magnet inside the float acts on the reed switches inside the stem and provides a resistive-chain output. The RPM is also available with optional electronics that convert the resistance output into a 4-20mA signal.

Reading your label

Every RPM sensor comes with a label that includes the instrument's model number, part number, and serial number. Please ensure that the part number on your label matches your order.

HAZARDOUS RATINGS

All repairs and adjustments of the RPM must be made by the factory. To modify, disassemble, or alter the RPM on site is strictly prohibited. Do not loosen any joints, with the exception of the housing cover for electrical connection.

Intrinsically Safe (Install per Drawing 9001414)



- Electrical ratings: 4-20mA: 12 to 24 Volts DC
 - Class I Division 1; Groups C, D T3C (Max. Temp. 85°C) $V_{max} = 30VDC$, $I_{max} = 130ma$, $C_i = 3nF$, $L_i = 0uH$



- ATEX Directive 2014/34/EU:
 - Sira 11ATEX2136X EX II 1G Ex ia IIB T3 Ga $-40^{\circ}C \leq T_a \leq +85^{\circ}C$ $U_i \leq 30 V$, $I_i \leq 130 mA$, $P_i \leq 1 W$, $C_i \leq 3 nF$, $L_i \leq 0 mH$
- IECEx CSA 16.0018X
 - Ex ia IIB T3 Ga $-40^{\circ}C \leq T_a \leq +85^{\circ}C$

Non-Incendive (Install per Drawing 9001415)



- Electrical ratings: Resistive: 5 to 24 Volts DC, 100 ma, 4-20mA: 12 to 24 Volts DC Class I Division 2; Groups C & D T3 (Max Ambient 85°C).
 - $V_{max} = 30 VDC$, $I_{max} = 200ma$, $C_i = 3nF$, $L_i = 0$

Flame-Proof



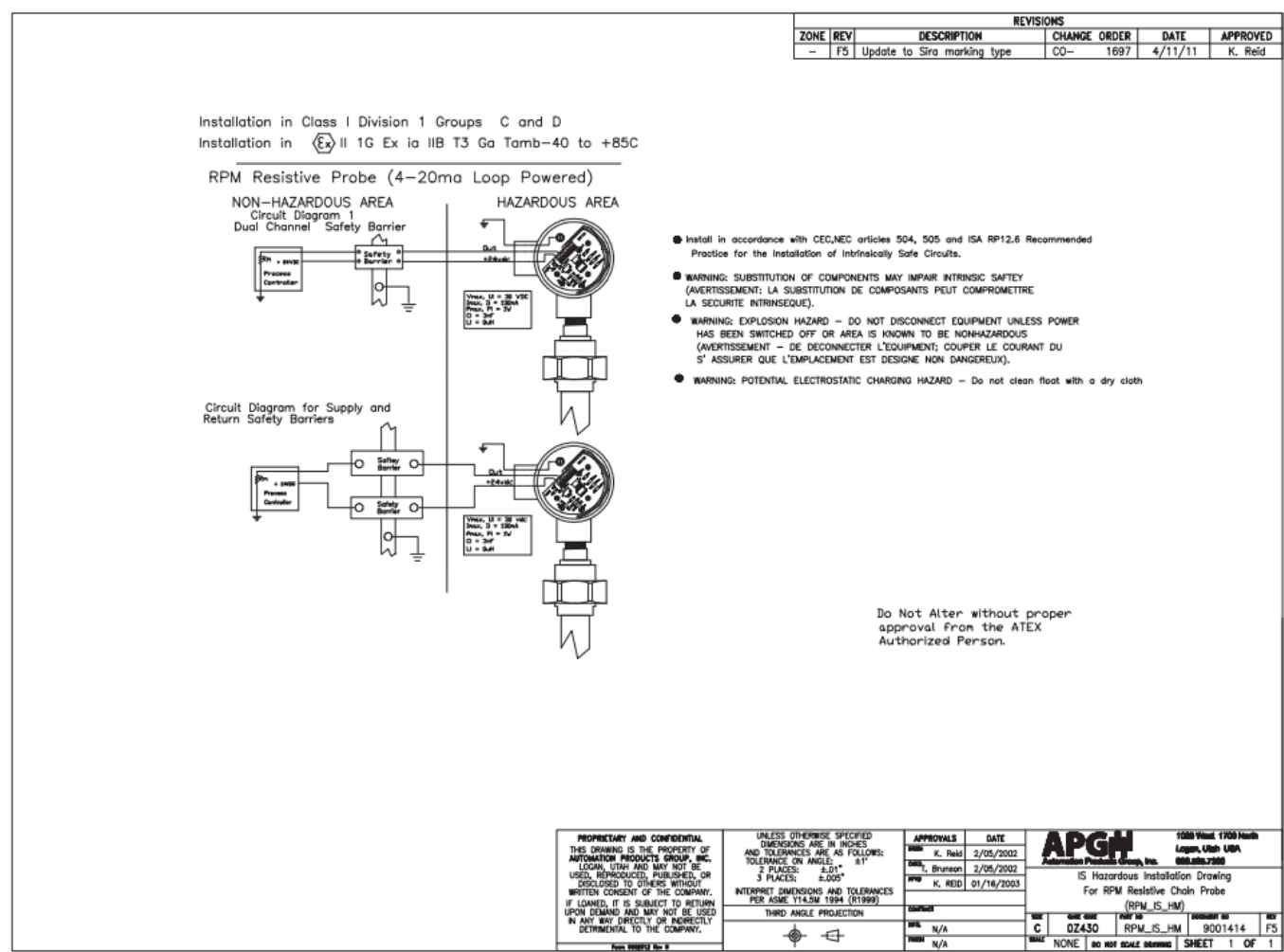
- Electrical ratings: Resistive: 5 to 24 Volts DC, 100 ma, 4-20mA: 12 to 24 Volts DC
- Class I Division 1; Groups C & D T3 (Max Ambient 40°C.)
- Class I, Zone 1, AEx d, IIB T3 Ex d, IIB T3
- Class I Division 2; Groups C & D T3 (Max Ambient 85°C).

IMPORTANT: Your RPM MUST be installed according to drawing 9001930 (IS Hazardous Installation Drawing For RPX) or 9001932 (Hazardous Mounting Drawing RPX) to meet the listed approvals. The faulty installation will invalidate all safety approvals and ratings.

- **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.
- **IMPORTANT:** SEAL SHALL BE INSTALLED WITHIN 50 mm OF THE ENCLOSURE;
 - IMPORTANT — UNSCELLEMENT DOIT ETRE INSTALLE A MOINS DE 50 mm DU BOITIER.
- **DANGER:** EXPLOSION HAZARD-DO NOT DISCONNECT WHILE THE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS;
 - AVERTISSEMENT — RISQUE D'EXPLOSION. NE PAS DEBRANCHER TANT QUE LE CIRCUIT EST SOUS TENSION, A MOINS QU'IL NE S'AGISSE D'UN EMPLACEMENT NON DANGEREUX.
- **WARNING:** SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY;
 - AVERTISSEMENT — LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE.

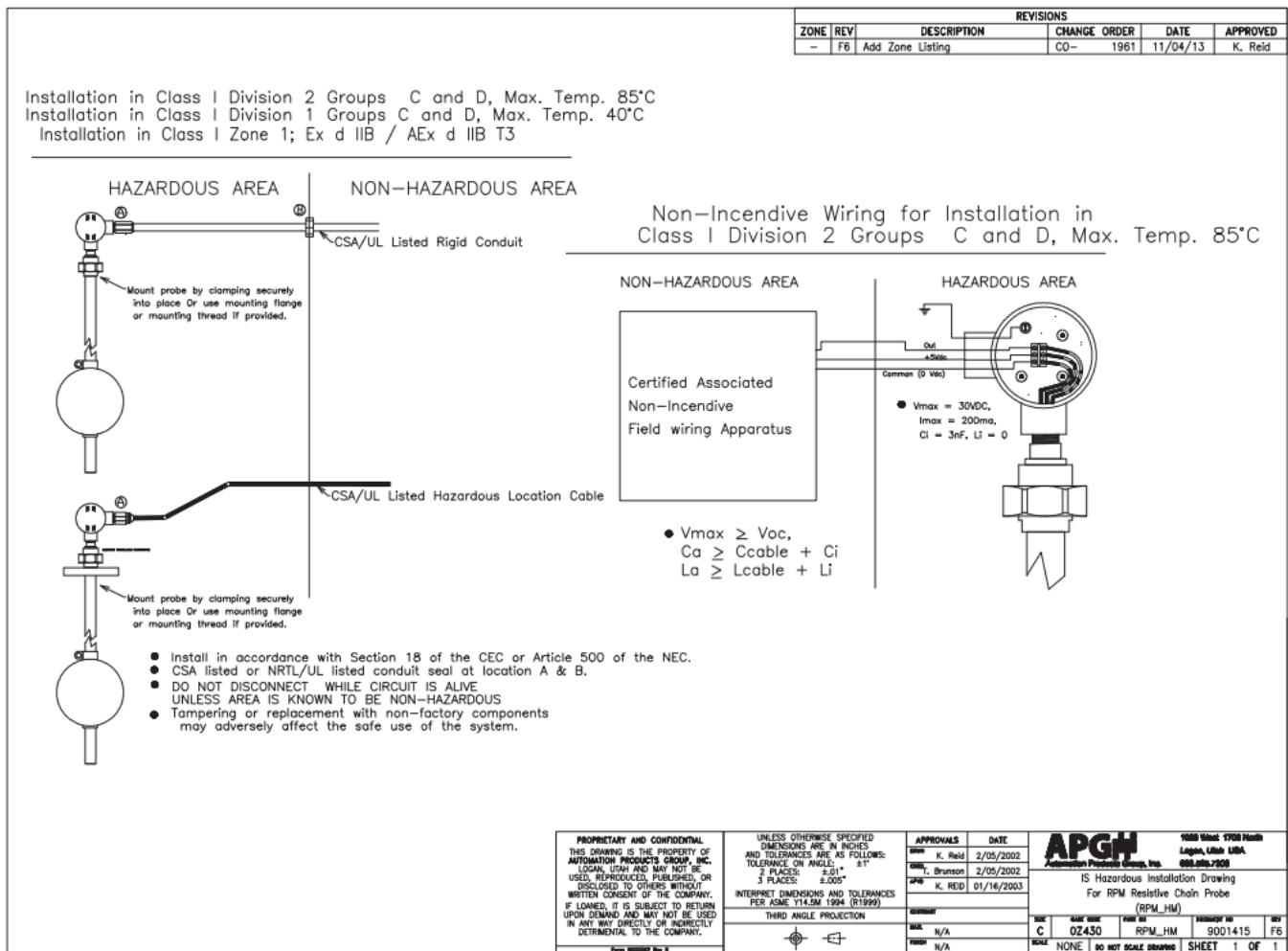
WIRING AND DIMENSIONS

Hazard Installation Drawings
Drawing 9001414: Intrinsically Safe Installation



IMPORTANT: Ensure that all metal parts are grounded.

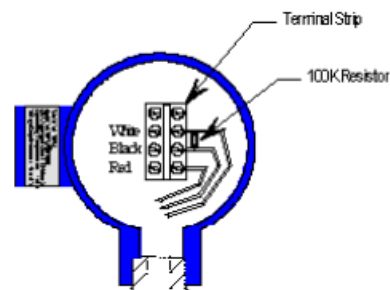
Drawing 9001415: Non-Incendive Installation



Wiring for Voltage Operation

Red and Black connect to each end of a resistive chain. The white wire is the voltage output that is connected to different points on the resistive chain by reed switches.

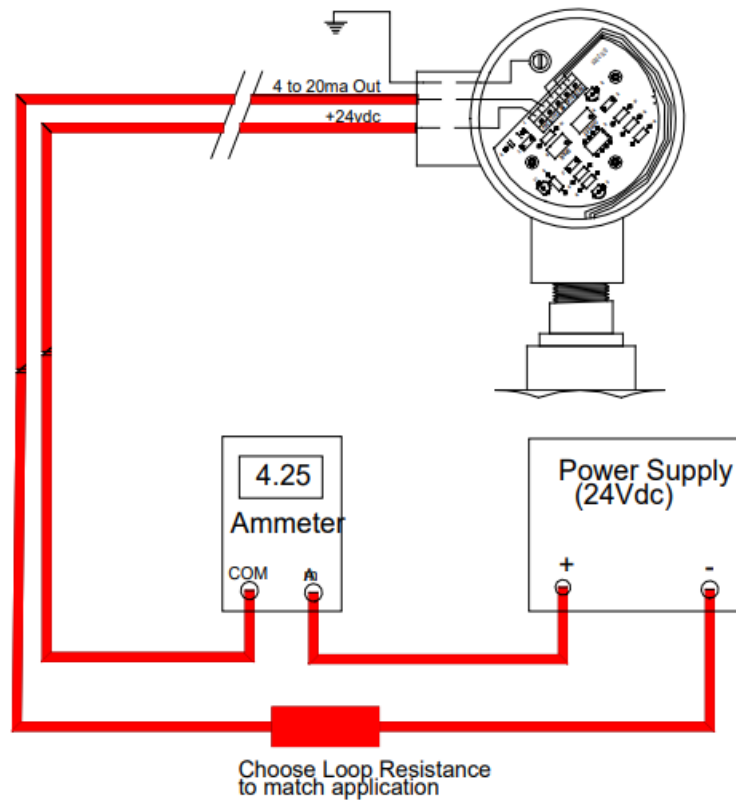
Red +5 to +24 VDC
 Black Ground
 White Voltage Out



Wiring for 4-20 mA Loop Powered

The wiring of your RPM is as follows:

- 4-20 mA Out: terminal out
- +24 VDC: 24V



Dimensions



INSTALLATION AND REMOVAL

PROCEDURES AND NOTES

Unpacking Note

When unpacking the instrument, exercise care not to subject the instrument to mechanical shock. After unpacking, visually inspect the instrument for damage.

Physical Installation Notes

The RPM series instruments should be installed in an area indoors or outdoors which meets the following conditions:

- The ambient and medium temperatures do not exceed the hazard ratings
- Relative humidity up to 100%
- Pollution Degree 2
- Measurement Category II
- Altitude 2000 m or less.
- Locate the sensor 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 corrosive gases such as NH₃, SO₂, Cl₂, etc.
- No excessive vibration
- Ample space for maintenance and inspection.

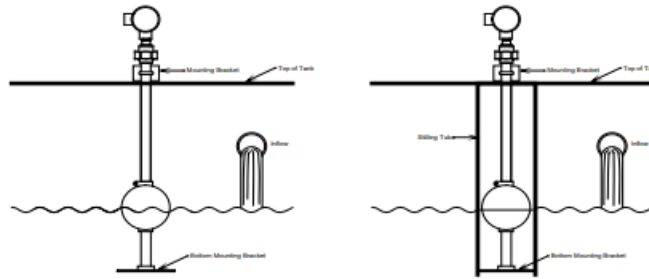
NOTE: It is recommended that a sun shield be installed over the housing if exposed to direct sunlight.

ATEX Specific Conditions of Use

1. Parts of the enclosure are manufactured from aluminum. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation, particularly if the equipment is installed in a zone 0 location.
2. 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. Because the non-conductive surface of the float may be charged by non-conductive media, it has to be assured that the media is electrostatically conductive. This is particularly important if the equipment is installed in a zone 0 location. In addition, the equipment shall only be cleaned with a damp cloth.
3. The sensor tube shall be reliably connected to the potential equalizing system to ensure that it is not an isolated part.

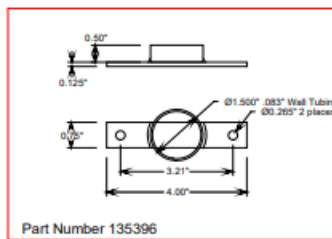
Location

Do not locate the RPM sensor near inlets/outlets. If there is surface wave action, then it may be advisable to use a stilling tube. If a stilling tube is used, drill vent holes in the tube and use a spacer bottom mounting bracket to assure the probe is centered in the tube and the float can move without interference. Wave action will cause signal bounce. Use a stilling tube to provide a smooth output signal.



Mounting Instructions

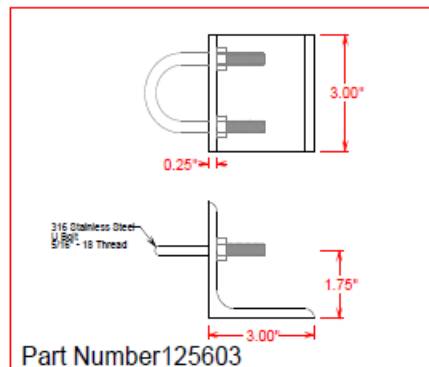
The RPM probe must be secured top and bottom. The bottom of the probe can be secured using a stainless steel bottom mounting bracket (p/n 135396) or similar stainless steel mounting method. This bracket is fixed to the bottom of the vessel and the probe stem seats inside of it.



Note: Mounting in this way will prevent any lateral movement and prevent the float from coming off of the stem during use.

Clamp Mounting

The most common method of mounting the top of the RPM probe is by clamping it into place. Top stainless steel mounting bracket part number 125603 or similar can be used. The U-bolt is tightened around the 1.25\" stainless steel stem just below the union. The bracket is permanently mounted to the top of the tank. It is important to keep mounting hardware clear of float travel.



Flange Mounting

Provide the compatible mating flange on the tank and install using a suitable gasket.

Plug Mounting

Provide the compatible female boss on the tank and install the RPM with a suitable gasket, O-ring, or thread tape.

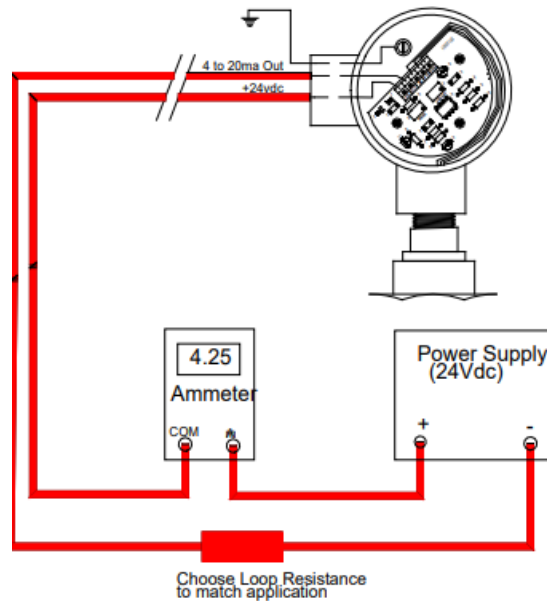
IMPORTANT: Ensure that all metal parts are earthed. Check that the sensor tube is connected to the grounding system, and is not isolated from it for any reason (e.g. loose grounding wire connection).

IMPORTANT: Because the enclosure of the electronics/terminals of the Float Level Sensor is made of aluminum, if it is mounted in an area where the use of category 1 G apparatus is required, it must be installed such that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded. In the event that the polyurethane float is used, the nonconductive surface of the float may be charged by nonconductive media, ensuring that the media is electrostatically conductive.

Analog Calibration Procedure

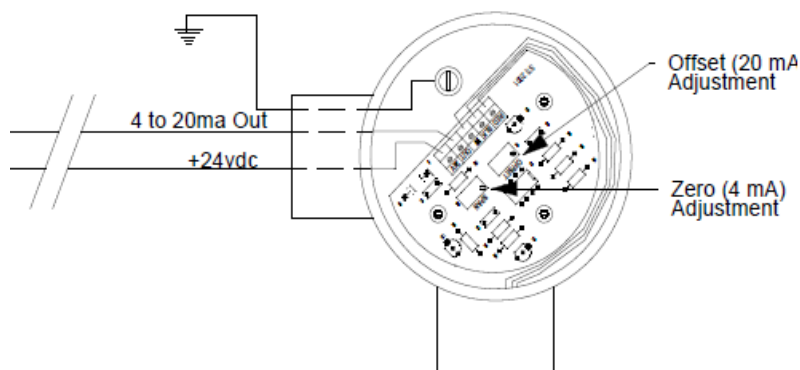
(for models equipped with 4-20 mA conversion board)

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Step 1. Set DC power supply voltage at 24VDC.

- Step 2. Connect the Ammeter in series with a loop.
- Step 3. Move float to the bottom position.
- Step 4. Adjust the Offset potentiometer until the meter reads 4mA.
- Step 5. Move float to the top position.
- Step 6. Adjust the Span potentiometer until the meter reads 20mA.
- Step 7. Repeat steps 3 – 6 for final adjustment



Analog Board is Encapsulated

INSPECTION AND MAINTENANCE

Your RPM Float Level Sensor requires periodic inspection to keep the unit in good working condition. It is important to keep the sensor clean.

- Avoid applications for which the sensor was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals, or other damaging environments.


- Inspect the probe shaft and bottom weld for any possible holes or leaks. If possible leak is detected remove the probe from the service and send to the factory for repair.
- Inspect the O-ring on the cover to make sure that it is in good condition. Never leave the housing cover off. If the cover becomes damaged or is misplaced, replace it immediately.
- If sediment or other foreign matter is trapped between the stem and the float, detection errors may be caused

CAUTION! Do not remove the housing cover until the atmosphere is determined to be safe, and the power supplied to the unit is turned off.

CONTACT

- Automation Products Group, Inc.
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- Automation Products Group, Inc.
- 1025 W. 1700 N.
- Logan, UT 84321

Documents / Resources

	<p>APG RPM Series Float Level Sensor [pdf] User Manual RPM Series Float Level Sensor, RPM Series, Float Level Sensor, Level Sensor, Sensor</p>
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References

- [User Manual](#)

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

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