
# APG RPE Resistive Chain Continuous Level Probes User Manual



Contents



## APG RPE Resistive Chain Continuous Level Probes

## FAQs

- **Q: What should I do if the RPX probe label does not match my order?**
  - **A:** If the part number on the label does not match your order, contact APG for assistance and verification.
- **Q: How do I ensure compliance with hazardous location installation requirements?**
  - **A:** Follow the installation drawings (9001930 and 9001932) provided in the manual for RPX probes to meet safety approvals and ratings. Faulty installation can invalidate safety certifications.

## Introduction

- Thank you for purchasing an RP Resistive Chain Continuous Level Probe from APG. We appreciate your business! Please take a few minutes to familiarize yourself with your RPE or RPX and this manual.
- The RP resistive probes contain reed switches in a 1/2” Ø stainless steel stem and a permanent magnet in a float. As the float rises or falls with the level of the liquid, the magnet inside the float acts on the corresponding reed switches inside the stem changing the output of the probe. The RPX carries explosion-proof, intrinsically safe, and non-incendive hazardous location approvals.

### Reading your label

- Every APG instrument 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.

#### RPX Electrical ratings

- 

Class I Division 1, Groups C, and D T3
- Ta 40°C
- **Rated:** 5 – 24 VDC, 100 mA, or 12 – 24 VDC, 4-20 mA
- Ex d, IIB T3
- Class I Zone1, AEx, IIB 13
- Ta 40°C
- **Rated:** 5 – 24 VDC, 100 mA, or 12 – 24 VDC, 4-20 mA
- Class I Division 2, Groups C, and D T3
- Ta 85°C
- **Rated:** 5 – 24 VDC, 100 mA, or 12 – 24 VDC, 4-20 mA
- Class I Division 2, Groups C, and D T3
- Ta 85°C
- Field wiring is non-incendive when installed per drawing 9001932
- **Rated:** 5 – 15 VDC, 100 mA, or 12 – 24 VDC, 4-20 mA
- Class I Division 1, Groups C, and D T3C
- Max Ta 85°C
- Intrinsically Safe when installed per drawing 9001930 with the following entity parameters: max = 30 V, max = 130 mA, C, = 3 nF, L, = 0 ph
- **Rated:** loop-powered 24 VDC, 4-20 mA converter module

**IMPORTANT:** Your RPX 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;
**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;

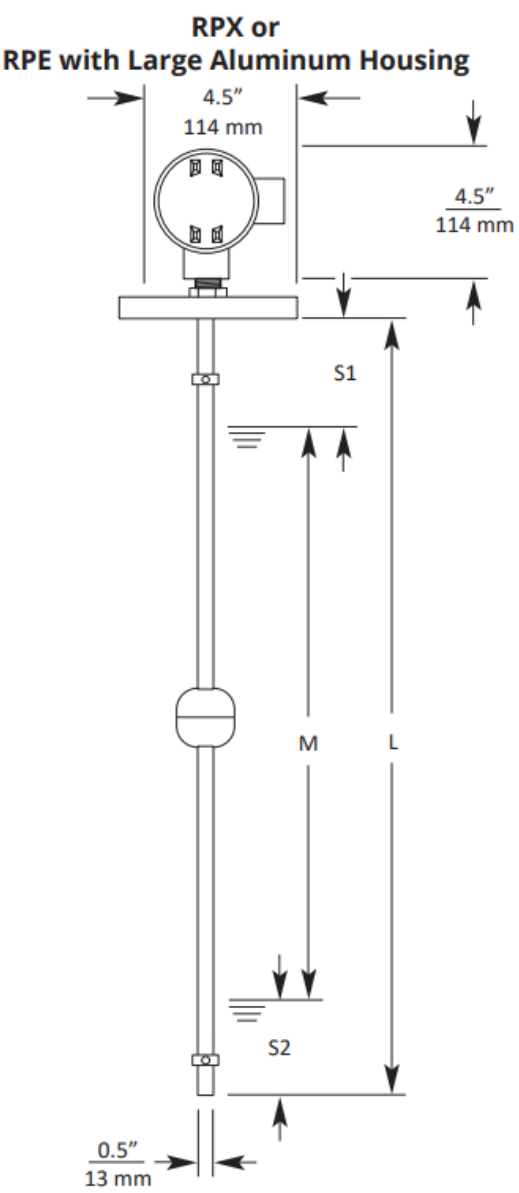
## Warranty

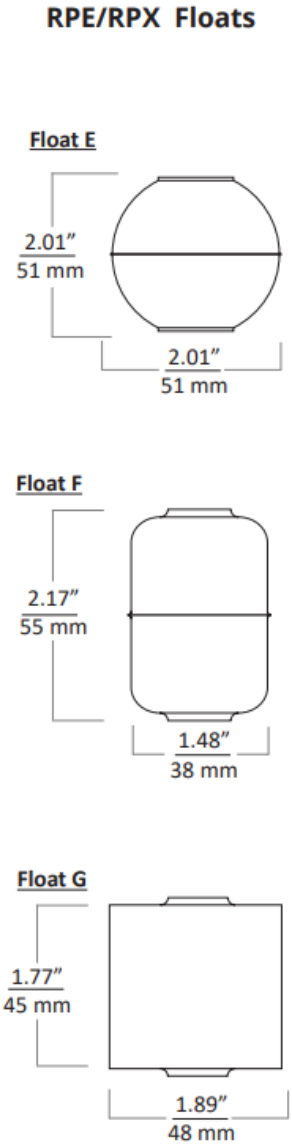
#### Warranty and Warranty Restrictions

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

## Specifications and Options

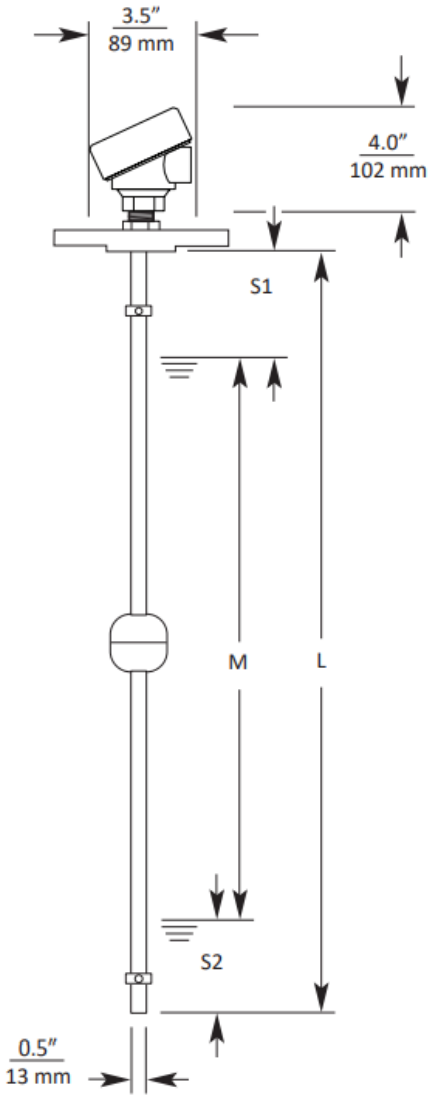
**Dimensions**



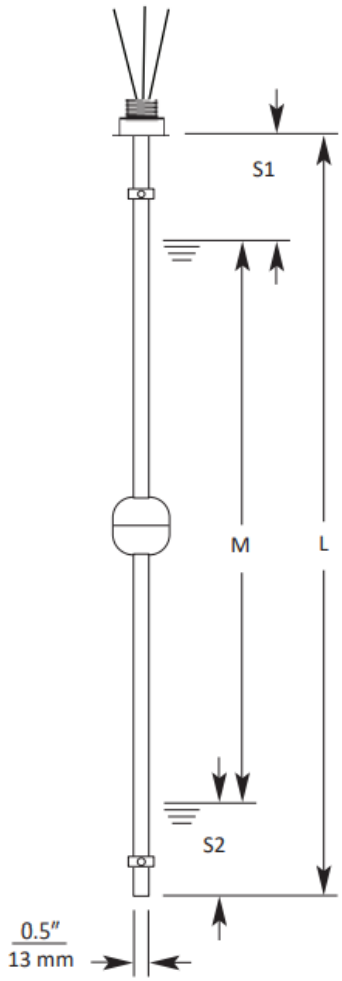




- **Legend**
  - **L =** Total Stem Length
  - **M =** Measured Length
  - **S1 =** Top Deadband (1.75” / 44.5 mm)
  - **S2 =** Bottom Deadband (1.75” / 44.5 mm)
  - **L =** M + S1 + S2 M = L – S1 – S2
- **Maximum Stem Length:**
  - **RPX:** 96” / 2440 mm

**RPE with Small Housing**
**Nylon or Aluminum**




**RPE with No Housing**




- **Legend**
  - **L =** Total Stem Length
  - **M =** Measured Length
  - **S1 =** Top Deadband (1.75" / 44.5 mm)
  - **S2 =** Bottom Deadband (1.75" / 44.5 mm)
  - **L =** M + S1 + S2 M = L – S1 – S2
- **Maximum Stem Length:**
  - **RPE:** 153" / 3890 mm

**Specifications**

**RPX**

- **Performance**
  - Resolution ±0.25 in. (6.4 mm)
  - Accuracy ±0.12 in. (3 mm)
- **Environmental**
  - Temperature See Chart Below
  - Maximum pressure 72.5 PSI (5 bar)

- Enclosure Protection NEMA 4 & 7, IP65

- **Electrical**
  - Output 4-20 mA; Resistive
  - Typical Current (Resistive Output) I = VDC supply / (45 Ω * Length in inches)
  - Internet Connectivity via RST-5003; 4-20 mA output only
- **Materials of Construction**
  - Stem 316L Stainless Steel
  - Floats 316L Stainless Steel, or Buna
  - Housing Die Cast Aluminum
- **Mechanical**
  - Conduit connection 3/4" NPTM
  - Maximum stem length 96 inches / 8 feet / 2440 mm
  - Float Specific Gravity 0.39, 0.57, or 0.65

**RPX Outputs with Temperature and Power Requirements for Hazardous Locations**

| Output | Intrinsically Safe Class I, Div. 1 Groups C & D T3C | Explosion Proof Class I, Div. 1 Groups C & D T3; Class I, Zone 1 Ex/AEx d, IIB T3 | Non-incendive Class I, Div. 2 Groups C & D T3 | Class I, Div. 2 Groups C & D, T3. |
|---|---|---|---|---|
| **A - 4-20 mA, Hazardous** | -- | 12-24 VDC Supply<br>-40° - **40° C** / (-40° - **104°F**) | 12-24 VDC Supply;<br>Install per dwg 9001932<br>-40° - **85° C** / (-40° - **185°F**) | 12-24 VDC Supply<br>-40° - **85° C** / (-40° - **185°F**) |
| **R -Resistive, Hazardous** | -- | 5-**24** VDC Supply, 100 mA max<br>-40° - **40° C** / (-40° - **104°F**) | 5-**15** VDC Supply, 100 mA max<br>Install per dwg 9001932<br>-40° - **85° C** / (-40° - **185°F**) | 5-**15** VDC Supply, 100 mA max<br>-40° - **85° C** / (-40° - **185°F**) |
| **I - 4-20 mA, Intrinsically Safe** | Loop powered 24 VDC;<br>Install per dwg 9001930<br>-40° - 85° C / (-40° - 185°F) | -- | -- | -- |

- **Performance**
  - Resolution ±0.25 in. (6.4 mm)
  - Accuracy ±0.12 in. (3 mm)
- **Environmental**
  - Temperature -40 – 85°C / -40 – 185°F
  - Maximum Pressure 72.5 PSI (5 bar)
  - Enclosure Protection
  - Large Aluminum NEMA 4 & 7, IP65
  - Small Nylon IP65
  - Small Aluminum NEMA 4X, IP68
- **Electrical**
  - Output 4-20 mA; Resistive
  - Voltage and Current Ratings
  - Resistive 5 – 24 VDC, 100 mA (max)
  - 4-20 mA 12 – 24 VDC, 4-20 mA
  - Typical Current (Resistive Output) I = VDC supply / (45 Ω * Length in inches)
  - Hookup wire 22 AWG

    - Internet Connectivity via RST-5003; 4-20 mA output only
- **Materials of Construction**
    - **Materials**
        - Stem 316L Stainless Steel
        - Floats 316L Stainless Steel, or Buna
    - **Housing**
        - Large Cast Aluminum
        - Small Nylon
        - Small Aluminum
- **Mechanical**
    - **Conduit connection**
        - Large Aluminum 3/4” NPT
        - Small Nylon 1/2” NPT
        - Small Aluminum 3/4” NPT
        - Maximum stem length 153 inches / 12.75 feet / 3890 mm
        - Float Specific Gravity 0.39, 0.57, or 0.65

**Model Number Configurator**

**Model Number:** RPX - ____ - ____ ____ - __S6__ - ____ - ____
A B C D E F

**A.** Output

- **A** Hazardous, 4-20 mA output
- **R** Hazardous, resistive output
- **I** Intrinsic safety, 4-20 mA output

**B.** Mounting Type, Option, and Size

- **F** Flat Face ANSI 150# Flange (size=1.5, 2, 2.5, 3, 4)
- **R** Raised Face ANSI 150# Flange (size=1.5, 2, 2.5, 3, 4)
- **S** Triclamp (size=2, 2.5, 3, 4)
- **P** Externally-mounted NPT Plug 150# (size=1.5†, 2, 2.5, 3, 4)
- **N** None

**C.** Mounting Connection

- **W** Welded (fixed)
- **S** Slide with Compression Fitting
    - **†Note:** Size 1.5 NPT Externally-mounted (P1.5) requires float F.

**D.** Stem Material

- **S6** 316L Stainless Steel
- **E.** Float Type
- **E** 316L SS 2.01 in. (53 mm) Round; 0.57 SG
- **F** 316L SS 2.17h x 1.48w in. (55h x 38w mm); 0.65 SG
- **G** Buna 1.77h x 1.89w in. (45h x 48w mm); 0.39 SG

**F.** Stem Length in Inches

- __ Min. 11 in. – Max 96 in.

**Model Number:** RPE - ____ - ____ ____ - __S6__ - ____ - ____ - ____ ____
A B C D E F G H

**A.** Output

- **A** 4-20 mA output†
- **R** Resistive output

**B.** Mounting Type, Option, and Size

- **F** Flat Face ANSI 150# Flange (size=1.5, 2, 2.5, 3, 4)
- **R** Raised Face ANSI 150# Flange (size=1.5, 2, 2.5, 3, 4)
- **S** Triclamp (size=2, 2.5, 3, 4)
- **P** Externally-mounted NPT Plug 150# (size=1.5††, 2, 2.5, 3, 4)
- **I** Internally-mounted NPT Plug 150#††† (size=0.25, 0.375, 0.5, 0.75, 1, 1.25, 1.5)
- **N** None

**C.** Mounting Connection

- **W** Welded (fixed)
- **S** Slide with Compression Fitting

**D.** Stem Material

- **S6** 316L Stainless Steel
- **†Note:** Output A 4-20 mA requires Housing A Large Aluminum.
- **††Note:** Size 1.5 NPT Externally-mounted (P1.5) requires float F.
- **†††Note:** Mounting Type I Internally-mounted NPT Plug requires Housing W Hookup Wire and Output R Resistive.

**E.** Float Type

- **E** 316L SS 2.01 in. (53 mm) Round; 0.57 SG
- **F** 316L SS 2.17h x 1.48w in. (55h x 38w mm); 0.65 SG
- **G** Buna 1.77h x 1.89w in. (45h x 48w mm); 0.39 SG

**F.** Stem Length in Inches

- __ Min. 11 in. – Max 153 in.

**G.** Housing, Cable Entry Size

- **A** Large Aluminum, 3/4” NPT
- **B** Small Nylon, 1/2” NPT
- **C** Small Aluminum, 3/4” NPT
- **W** Hookup wire (no housing)

**H.** Hookup Wire Length

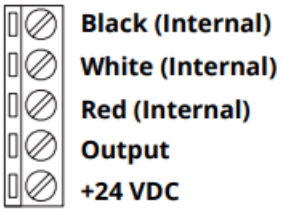
- **12** 12 in.
- **24** 24 in.
- __ Specify length in inches

**Wire Color and Terminal Tables**

- **Wire Colors For RPE-R with Hookup Wires**

| Wire | Resistive Output |
|---|---|
| **Red** | +24 VDC |
| **Black** | DC Ground |
| **White** | Voltage Out |

- **Terminals for RPX-A, RPX-I, and RPE-A (4-20 mA Output)**




- **Terminals for RPE-R with Housing and RPX-R (Resistive Output)**


## Installation and Removal Procedures and Notes

**Tools Needed**

- Wrench-sized appropriately for your RPEs or RPX’s mounting

- Wrench-sized appropriately for conduit connections
- Thread tape or sealant compound for threaded connections

### Physical Installation Notes

- **The RPE or RPX should be installed in an area–indoors or outdoors–that meets the following conditions:**
  - IEC-664-1 Conductive Pollution Degree 2
  - IEC 61010-1 Measurement Category II
  - Altitude up to 2000 meters (6560 feet)
  - Relative humidity up to 100%
  - DC power supply
  - Ambient temperature between -40°C and 85°C (-40°F to +185°F)
  - No chemicals corrosive to stainless steel (such as NH3, SO2, Cl2, etc.)
  - Ample space for maintenance and inspection
- **Additionally, locate the probe:**
  - Away from strong magnetic fields, such as those produced by motors, transformers, solenoid valves, etc.
  - Away from excessive vibration.
  - In a medium free from metallic substances and other foreign matter.

### Installation Notes

- Do not locate your RP series level sensor near inlets/outlets.
- If there is surface wave action, then use a time-delay relay or stilling tube. If a stilling tube is used, drill vent holes in the tube and use a spacer to ensure the float has free travel inside the tube (See Figure 2.1).
- The RPE and RPX can be mounted up to 20° from vertical.

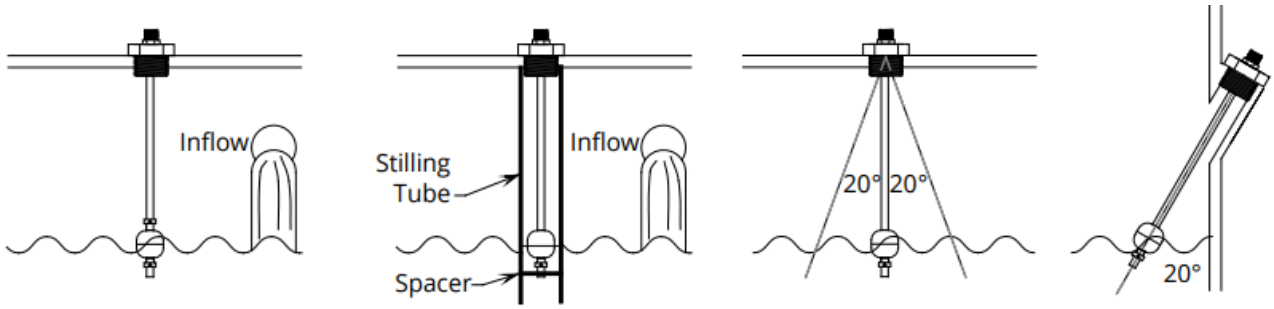



Figure 2.1

## Mounting Instructions

- **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 probe with thread tape.

### Electrical Installation

**DANGER:** Do not remove the housing cover until the atmosphere is determined safe, and the power supply is turned off.

**For RPX and RPE probes with Housings**

- install conduit and/or cable with necessary seal(s) per Drawing 9001930 or 9001932 for hazardous locations.
- Remove the housing cover.
- Check the Wire Color and Terminal Tables on page 6 before making any connections.
- Connect the wire for your system to the appropriate terminal.
- Replace the housing cover.

**For RPE probes with hookup wires**

- Pull probe hookup wires through the conduit as appropriate before attaching the conduit to the top of the probe.
- Check the Wire Color and Terminal Tables on page 6 before making any connections.
- Connect the wires from the probe to your system appropriately.

**IMPORTANT:** Your RPX 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.

**Removal Instructions**

- Removing your RP probe from service must be done with care.
- Ensure all circuits are de-energized, and any hazardous atmosphere has dispersed.
- Disconnect wires, at terminals in the RP head or at your system.
- Remove the RP with an appropriately sized wrench (per your mounting type).
- Clean the RP's stem float of any debris (see General Care) and inspect for damage.
- Store your RP in a dry place, at a temperature between -40° and 40°C (-40° and 104°F).

## Maintenance

**General Care**

Your RP series continuous-level probe is very low maintenance and will need little care as long as it is installed correctly. However, in general, you should:

- Periodically inspect the stem and float for any trapped debris, sediment, or other foreign material.
- Avoid applications for which the RP was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals, or other damaging environments.
- If your RPX or RPE has an NPT mount, inspect the threads whenever you remove it from duty or change its location.
- For units with housing, never leave the housing cover off. If the cover is damaged or lost, order a replacement immediately.

**Offset and Span Calibration (4-20 mA output probes only)**

**NOTE:** This procedure can be performed in a non-hazardous area, either before installation or by temporarily uninstalling your 4-20 mA RP probe.

1. Remove the housing cover.
2. Set the DC power supply to 24 VDC, and connect to the RP probe, with an ammeter in the loop.
3. Move float to the desired position for 4 mA output.
4. Using a jeweler's screwdriver or a suitable instrument, adjust the "Offset" potentiometer until you have a 4 mA output.
5. Move float to the desired position for 20 mA output.
6. Using a jeweler's screwdriver or a suitable instrument, adjust the "Span" potentiometer until you have a 20 mA output.
7. Repeat steps 3 – 6 as necessary to fine-tune calibration.

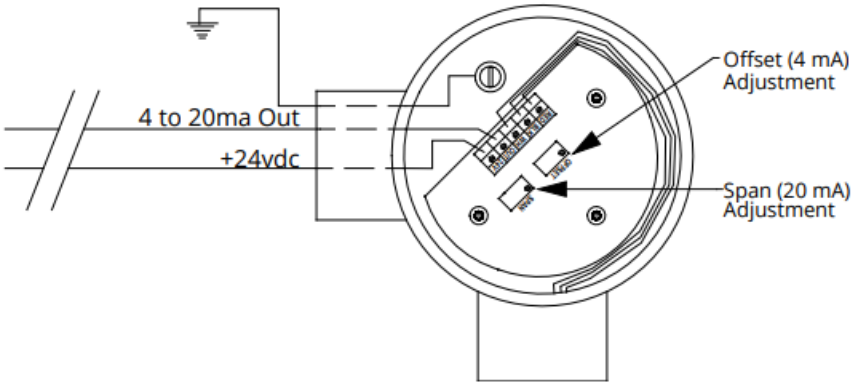



Figure 3.1

**NOTE:** You may also return the RP probe to the factory for repair and/or adjustment.

**Repair and Returns**

Should your RPX or RPE require service, please contact the factory via phone, email, or online chat. 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

Please have your probe's part number and serial number available. See Warranty & Warranty Restrictions for more information.

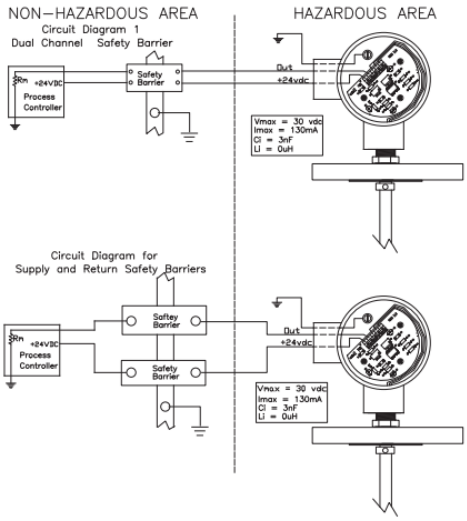
**Hazardous Location Installation and Certification**

- **IS Hazardous Installation Drawing For RPX**

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| ZONE | REV | DESCRIPTION | CHANGE ORDER | DATE | APPROVED |
| – | C1 | Change to APG Title Block | CO– 1471 | 7/20/09 | K. Reid |

Installation in Class I Division 1 Groups C and D

RPX Resistive Probe (4–20ma Loop Powered)







- Install in accordance with CEC,NEC articles 504, 505 and ISA RP12.6 Recommended Practice for the Installation of Intrinsically Safe Circuits.
- WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFTEY (AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE).
- WARNING: EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NONHAZARDOUS (AVERTISSEMENT – DE DECONNECTER L'EQUIPMENT; COUPER LE COURANT DU S' ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX).



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND TOLERANCES ARE AS FOLLOWS: TOLERANCE ON ANGLE: ±1°
2 PLACES: ±.01"
3 PLACES: ±.005"
INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 (R1999)
THIRD ANGLE PROJECTION

| APPROVALS | DATE |
|---|---|
| DRWN K. Reid | 10/10/02 |
| CHKD D. Hutchins | 10/10/02 |
| APVD K. REID | 10/10/2002 |
| CONTRACT | |
| MATL N/A | |
| FINISH N/A | |

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

IS Hazardous Installation Drawing
for RPX Resistive Chain Probe
(RPX_IS_HM)

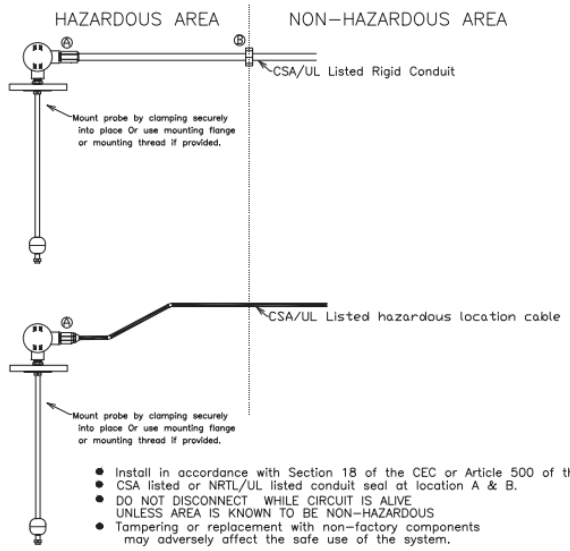
| SIZE | CAGE CODE | PART NO | DOCUMENT NO | REV |
|---|---|---|---|---|
| C | 0Z430 | RPX_IS_HM | 9001930 | C1 |

SCALE NONE DO NOT SCALE DRAWING SHEET 1 OF 1

- **Hazardous Mounting Drawing RPX**

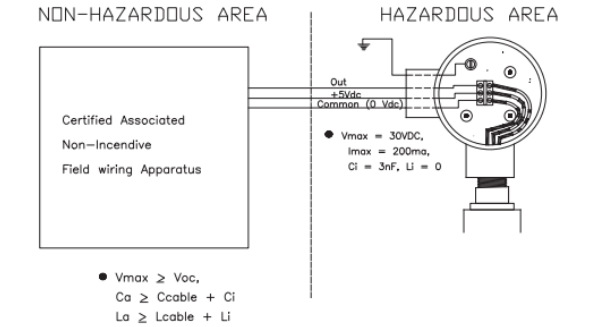
| REVISIONS | | | | | |
|---|---|---|---|---|---|
| ZONE | REV | DESCRIPTION | CHANGE ORDER | DATE | APPROVED |
| – | C2 | Add Zone Listing | CO– 1961 | 11/04/13 | K. Reid |

Installation in Class I Division 2 Groups C and D, Max. Temp. 85°C
Installation in Class I Division 1 Groups C and D, Max. Temp. 40°C
Installation in Class I Zone 1; Ex d IIB / AEx d IIB T3




- 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.
- DO NOT DISCONNECT WHILE CIRCUIT IS ALIVE UNLESS AREA IS KNOWN TO BE NON–HAZARDOUS
- Tampering or replacement with non–factory components may adversely affect the safe use of the system.

Non–Incendive Wiring for Installation in
Class I Division 2 Groups C and D, Max. Temp. 85°C




- Vmax ≥ Voc,
  Ca ≥ Ccable + Ci
  La ≥ Lcable + Li



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND TOLERANCES ARE AS FOLLOWS: TOLERANCE ON ANGLE: ±1°
2 PLACES: ±.01"
3 PLACES: ±.005"
INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 (R1999)
THIRD ANGLE PROJECTION

| APPROVALS | DATE |
|---|---|
| DRWN K. Reid | 10/10/02 |
| CHKD D. Hutchins | 10/10/02 |
| APVD K. REID | 10/10/2002 |
| CONTRACT | |
| MATL N/A | |
| FINISH N/A | |

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

Hazardous Mounting Drawing
RPX Resistive Chain Probe
(RPX_HM)

| SIZE | CAGE CODE | PART NO | DOCUMENT NO | REV |
|---|---|---|---|---|
| C | 0Z430 | RPX_HM | 9001932 | C2 |

SCALE NONE DO NOT SCALE DRAWING SHEET 1 OF 1

**CSA Certificate of Compliance**

Certificate of Compliance

- **Certificate:** 2167400
- **Master Contract:** 237484
- **Project:** 70193876
- **Date Issued:** 2019-04-09
- **Issued To:** Automation Products Group Inc 1025 West 1700 North Logan, Utah, 84321 United States
- **Attention:** Joe James

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

- **Issued by:** Albert Jansen Albert Jansen

**PRODUCTS**

- CLASS 2252 06 – PROCESS CONTROL EQUIPMENT
- CLASS 2252 86 – PROCESS CONTROL EQUIPMENT (Certified to U.S. Standards)
- Float Level Sensors, permanently connected, indoor and outdoor use, max. operating ambient 85°C:
- Models FLXx and FLRx, rated 220 V, 0.5 A;
- Models RPMx, RPXx, and RPEx, rated 5 – 15 Vdc, 100 mA, or 12 to 24 Vdc, 4-20mA;
- Model RPAx rated 12 to 24 Vdc, 4-20mA;
- Model CTR-0100 (P/Ns 110101 and 110101-0001), Loop Powered 4-20mA Module, rated 4-20mA output is 12 to 24 Vdc.

**Note:** The above models are Pollution Degree 2, Measurement Category II.

**Notes for Models FLXx, FLRx, RPMx, RPAx, RPXx, RPEx:**

1. The "x" in the Model designations may be any alpha-numeric character, to denote minor mechanical options, not affecting safety. Refer to Illustration 28 for Model designator and suffix details.
2. The equipment is intended to be installed as required by the applicable electrical code (CEC, NEC) and as specified by the manufacturer's Installation Instructions.
3. The circuit board P/N STF-CTR-01** from the Model RPMx Probe may be supplied as a part where the suitability of the final installation will be inspected by the authority with jurisdiction in the area where installed.
4. The installation will be inspected by the authority with jurisdiction in the area where installed.
    - FS-400, FS-410, and FS-500 float switches. Single Seal (MWP 1000psi). Ambient temperature -40°C to 260°C.
    - **Type 4X (NPT Connection Only). Ratings as follows:**
        - 0.416A, 240Vac (50/60 Hz)
        - 0.833A, 120Vac (50/60 Hz)/Vdc
        - 1.00A, ≤100Vac (50/60 Hz)/Vdc
    - **Conditions of Acceptability for FS-400, FS-410, and FS-500**
        - The equipment must be connected to a purely resistive load
        - The equipment must be grounded through the final installation

- **CLASS 2258 02 –** PROCESS CONTROL EQUIPMENT – FOR HAZARDOUS LOCATIONS
- **CLASS 2258 82 –** PROCESS CONTROL EQUIPMENT – FOR HAZARDOUS LOCATIONS, U.S. Requirements

**Class I, Division 1, Groups C, and D T3**

- Float Level Sensors, model FLXx, rated 220 V, 0.5 A, max. or rated 24Vdc, 0.5A, max., and model RPMx and RPXx, rated 5 – 24 Vdc, 100mA or 12 to 24 Vdc, 4-20mA; operating ambient 40°C.

**Ex d, IIB T3 Class I, Zone 1, AEx d, IIB T3**

- Float Level Sensors, model FLXx, rated 24 Vdc, 0.5 A, max., and model RPMx and RPXx, rated 5 – 24 Vdc, 100mA or 12 to 24 Vdc, 4-20mA; operating ambient 40°C.

**Notes for Models FLXx, RPMx, RPXx:**

1. The “x” in the Model designations may be any alpha-numeric character, to denote minor mechanical options, not affecting safety.
2. The equipment is intended to be installed as required by the applicable electrical code (CEC, NEC) and as specified by the manufacturer’s Installation Instructions.
3. The installation will be inspected by the authority with jurisdiction in the area where installed.

**Class I, Division 2, Groups C, and D T3**

Float Level Sensor model FLXx, rated 220 V, 0.5 A, model RPMx and RPXx, rated 5 – 15 Vdc, 100mA, or rated 12 to 24 Vdc, 4-20mA, and model RPAx, rated 12 to 24 Vdc, 4-20mA; max; operating ambient 85°C.

**Notes for Models FLXx, RPMx, RPAx, RPXx:**

1. The “x” in the Model designations may be any alpha-numeric character, to denote minor mechanical options, not affecting safety.
2. The equipment is intended to be installed as required by the applicable electrical code (CEC, NEC) and as specified by the manufacturer’s Installation Instructions.
3. The installation will be inspected by the authority with jurisdiction in the area where installed.
    - Class I Division 1 Groups A, B, C, and D, Class II Division 1 Groups E, F, Class III; T3
    - Class I Division 2 Groups A, B, C, and D, Class II Division 2 Groups F, G; T200°C
    - FS-400, FS-410, and FS-500 (NPT Connection) float switches. Single Seal (MWP 1000psi). Ambient temperature -40°C to 187°C. Type 4X. Seal Not Required. Ratings as follows:
        - 0.416A, 240Vac (50/60 Hz)
        - 0.833A, 120Vac (50/60 Hz)/Vdc
        - 1.00A, ≤100Vac (50/60 Hz)/Vdc

**Conditions of Acceptability**

- The equipment must be connected to a purely resistive load

- The equipment must be grounded through the final installation
- **CLASS 2258 03 –** PROCESS CONTROL EQUIPMENT – INTRINSICALLY SAFE AND NON INCENDIVE
- **SYSTEMS –** FOR HAZARDOUS LOCATIONS
- **CLASS 2258 83 –** PROCESS CONTROL EQUIPMENT – INTRINSICALLY SAFE AND NON INCENDIVE SYSTEMS – FOR HAZARDOUS LOCATIONS, CERTIFIED TO U.S. STANDARDS

**Class I, Division 2, Groups C, and D T3**

- Float Level Sensor model RPMx and RPXx, rated 5 – 15 Vdc, 100mA, or rated 12 to 24 Vdc, 4-20mA, and model RPAx, rated 12 to 24 Vdc, 4-20mA; max; operating ambient 85°C. Field wiring is non-incendive when installed per drawings 9001415, 9001932, and 9002023 respectively.

**Notes for Models RPMx, RPAx, RPXx:**

1. The “x” in the Model designations may be any alpha-numeric character, to denote minor mechanical options, not affecting safety.
2. The equipment is intended to be installed as required by the applicable electrical code (CEC, NEC) and as specified by the manufacturers Installation Instructions.
3. The installation will be inspected by the authority with jurisdiction in the area where installed.
    - **CLASS 2258 04 –** PROCESS CONTROL EQUIPMENT – INTRINSICALLY SAFE, ENTITY – FOR HAZARDOUS LOCATIONS
    - **CLASS 2258 84 –** PROCESS CONTROL EQUIPMENT – INTRINSICALLY SAFE, ENTITY – FOR HAZARDOUS LOCATIONS, U.S. Requirements

**Class I, Division 1, Groups C, and D**

Float Level Sensors, model RPMx, RPAx, RPXx, and model CTRx loop powered 24Vdc, 4-20mA converter module, max. operating ambient 85°C; Temperature Code rating T3C; Intrinsically Safe when connected as per drawing 9001414, 9001423 and 9001930 with the following Entity Parameters: Vmax = 30V, Imax = 130mA, Ci = 3nF, Li = 0uH.

**Notes for Models RPMx, RPAx and RPXx:**

1. The “x” in the Model designations may be any alpha-numeric character, to denote minor mechanical options, not affecting safety.
2. The equipment is intended to be installed as required by the applicable electrical code (CEC, NEC) and as specified by the manufacturers Installation Instructions.
3. The installation will be inspected by the authority with jurisdiction in the area where installed.

## APPLICABLE REQUIREMENTS

| Standard | Title |
|---|---|
| CSA C22.2 No. 0-10 | General Requirements – Canadian Electrical Code, Part II |
| CSA C22.2 No. 25-17 | Enclosures for use in Class II, Division 1, Groups E, F, and G hazardous locations |
| CSA C22.2 No. 30-M1987 | Explosion-Proof Enclosures for Use in Class I Hazardous Locations |
| CAN/CSA C22.2 No. 61010-1-12 | Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements |
| CSA C22.2 No. 157-M1992 | Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations |
| CSA C22.2 No. 213-17 | Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations |
| CSA C22.2 No. 60079-0:15 | Explosive atmospheres – Part 0: Equipment – General requirements |
| CSA C22.2 No. 60079-1:11 | Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d” |
| ANSI/UL 61010-1 (3rd Edition) | Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements |
| UL 913, Eighth Edition | Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II, III, Division 1, Hazardous (Classified) Locations |
| UL1203, Fifth Edition | Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations |
| UL/ISA 60079-0, Sixth Edition | Explosive atmospheres – Part 0: Equipment – General requirements |
| UL/ISA 60079-1, Seventh Edition | Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures “d” |
| FM 3611, December 2018 | Nonincendive Electrical Equipment for Use in Class I and II, Divisions 1 and 2 Hazardous (Classified) Locations |

## CONTACT INFORMATION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- sales@apgsensors.com.


## Documents / Resources

| | |
|---|---|
|  | APG RPE Resistive Chain Continuous Level Probes [pdf] User Manual<br>RPE, RPX, RPE Resistive Chain Continuous Level Probes, RPE, Resistive Chain Continuous Level Probes, Chain Continuous Level Probes, Continuous Level Probes, Level Probes, Probes |

## References

- User Manual