

# PT-503 Series Submersible Pressure Transmitter

4-20 mA, 0.5 – 4.5 VDC

User Manual



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# INTRODUCTION

Thank you for purchasing a PT-503 Series Submersible Pressure Transmitter from APG. We appreciate your business! Please take a few minutes to familiarize yourself with your PT-503 and this manual.

The PT-503 Series Submersible Level Sensor brings precision level measurement to harsh chemical environments. Engineered with advanced materials, the PT-503 can be used in many places that stainless steel and PVC can't go. With user-friendly analog output options and the ability to submerge it up to 69 feet (21 meters) underwater (30 psig), the PT-503 simplifies the process of obtaining dependable level measurements in challenging chemical environments.

## Reading your label

Every PT-503 sensor comes with a label that is etched in the body of the sensor, that includes the instrument's model number, part number, serial number, and a wiring pinout table. Please ensure that the part number and pinout table on your label match your order.

## Chemical Compatibility

The PT-503 Series Submersible Pressure Transmitter may provide resistance\* to several common bleaching and corrosive agents beyond that of stainless steel and PVC. For best results, check the exact concentrations and temperature range compatibility of your liquid.

- Aluminum Chloride
- Benzene
- Butadiene
- Calcium Chloride
- Calcium Hydroxide
- Calcium Hypochlorite
- Carbon disulfide
- Carbon Tetrachloride
- Chlorine
- Hydrobromic Acid
- Hydrochloric Acid
- Magnesium Chloride
- Methylene Chloride
- Nitric Acid
- Phosphoric Acid
- Potassium Chloride
- Potassium Permanganate
- Silver Nitrate
- Sodium Hydroxide
- Sodium Hypochlorite
- Stearic Acid
- Sulfuric Acid
- Trichloroethylene

\*Always confirm the concentrations and temperature ranges of your specific chemical environment. This list does not constitute a guarantee of performance. Always conduct your own tests for compatibility.

# 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 <https://www.apgsensors.com/warranty-returns/>. Contact Technical Support to receive a Return Material Authorization before shipping your product back.

## Repair and Returns

Should your PT-503 Series Submersible Pressure Transmitter 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](mailto:sales@apgsensors.com)
- Online chat at [apgsensors.com](https://www.apgsensors.com)

Please have your PT-503's part number and serial number available.

**NOTE:** APG recommends sending your unit in for NIST calibration services at least once a year, though frequency may vary by sensor, regulation, or application. Contact our Technical Support to schedule a service.

**NOTE:** APG recommends replacing your liquid ingress prevention accessory at least once a year. To learn more, contact our Technical Support.

# CHAPTER 1: DIMENSIONS AND WIRING

## Dimensions



Actual size

## Electrical Pinout and Supply Power Tables

### PT-503 Series Pin Out Table

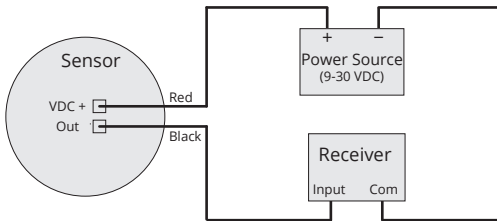
Pigtail		4-20 mA	0.5 – 4.5 VDC
	Red	+ Power/Signal	+ Power
	Black	- Power/Signal	Common
	Yellow	n/a	+ Out

### PT-503 Series Supply Power Table

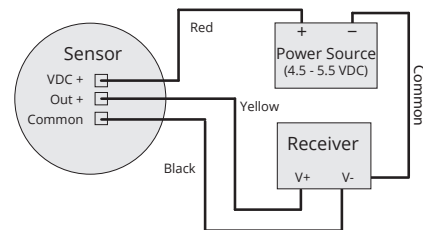
	4-20 mA	0.5 – 4.5 VDC
Power Supply	9-30 VDC	4.5 – 5.5 VDC

## Wiring Diagram

### PT-503 L1 4-20 mA System Wiring



### PT-503 L20 Voltage System Wiring



**WARNING:** When wiring the PT-503 L20 Ratiometric system, do NOT exceed 5.5 Volts DC. Excessive voltage will result in permanent damage to the sensor and void the warranty.

# CHAPTER 2: INSTALLATION AND REMOVAL PROCEDURES AND NOTES

## Physical Installation Notes

The PT-503 should be installed in an area — indoors or outdoors — which meets the following conditions:

- Ambient temperature between -18°C and 70°C (0°F to 158°F)
- Relative humidity up to 100%
- IEC-664-1 Conductive Pollution Degree 1 or 2
- IEC 61010-1 Measurement Category II
- Ample space for maintenance and inspection
- Class II power supply

## Tools Needed

Tools necessary to make electrical connection.

## Mounting Instructions

Your PT-503 Series Submersible Pressure Transmitter is designed to be free-hanging. It can safely lay on the bottom of the tank or pool. If your tank contains sediment, it is recommended to suspend the PT-503 just above the sediment layer.

Common installation methods include mounting a cable clamp or grip at the top of a tank to prevent the cord from falling into the tank.

## Electrical Installation

Connect the wires of your PT-503 to your control system according to the pinout table on page 2.

NOTE: If your PT-503 has a vent tube, do not seal, cover, or close the vent tube with anything other than an APG-provided venting cap or desiccant drying cartridge (See Figure 3.1 and 3.2). Unapproved seals or covers will prevent proper sensor operation.

## Removal Instructions

Removing your PT-503 from service must be done with care. It's easy to damage your sensor if you are not careful to follow these guidelines:

- Retrieve the sensor from the vessel. Follow any and all procedures for safely isolating any media contained inside the line or vessel.
- Carefully clean the sensor's fitting and diaphragm of any debris (see General Care) and inspect for damage.
- Store your sensor in a dry place, at a temperature between -40° F and 180° F.

## CHAPTER 3: MAINTENANCE

### General Care

Your PT-503 Series Submersible Pressure Transmitter is very low maintenance and will need little care as long as it is installed correctly. However, in general, you should:

- Avoid applications for which the transmitter was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals, or other damaging environments.
- Avoid touching the diaphragm. Contact with the diaphragm, especially with a tool, could permanently shift the output and ruin accuracy.
- Clean the diaphragm or the diaphragm bore only with extreme care. If using a tool is required, make sure it does not touch the diaphragm.

**IMPORTANT:** Any contact with the diaphragm can permanently damage the sensor. Use extreme caution.

## Vent Tube Drying

Condensation in the vent tube can damage the electronics in your sensor, resulting in unreliable readings. APG offers two methods of preventing vent tube condensation: a venting cap, and a desiccant drying cartridge. By default, the PT-503 comes with a venting cap pre-installed.

The venting cap is a PVC tube with a hydrophobic patch that allows moisture to pass out of the tube without allowing water in (See Figure 3.1). The cap is sealed by an o-ring, and is easily installed in the field.

The desiccant drying cartridge with vent tube adapter absorbs any moisture in the vent tube to keep vapor from condensing (See Figure 3.2). The installation of the desiccant drying cartridge is quick and easy. Common installation methods are cable tie, Velcro, and cable clamps.



**Figure 3.1**



**Figure 3.2**

NOTE: Desiccant crystals change from blue to pink as they become saturated. Cartridge must be replaced when all crystals have saturated.

IMPORTANT: Do NOT use desiccant cartridge in the presence of vapors or liquids containing phosphate esters, synthetic lubricants, hydrocarbon solvents, methanol, acetone, lacquer solvents, or other organics.



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