IPT122 Series

2 Inch Indicating Pressure Transmitter

User Guide

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A331666 REV 002 08/07

CELERITY.

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1.0 INTRODUCTION

1.1 FUNCTION/OPERATION

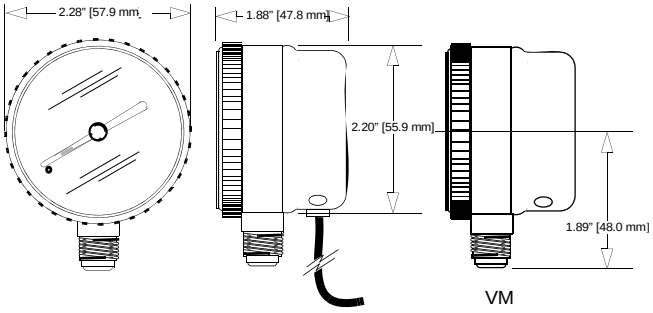
The Celerity IPT122 Series, 2 inch Indicating Pressure Transmitter (IPT) is a very versatile sending unit that can be used for semiconductor processing, including, but not limited to bulk gas, gas cabinets, gas distribution, and gas panels. Accurate within 1% of full scale, the IPT can provide selected outputs with pressure ranges up to 10,000 psi. The IPT is solid state designed with 0 - 5 VDC, 1 - 5 VDC, or 4 - 20 mA outputs. The Celerity IPT122 has a one year warranty and is cleaned and double bagged in Celerity's Class 100 cleanroom for ultimate high purity.

1.2 SPECIFICATIONS

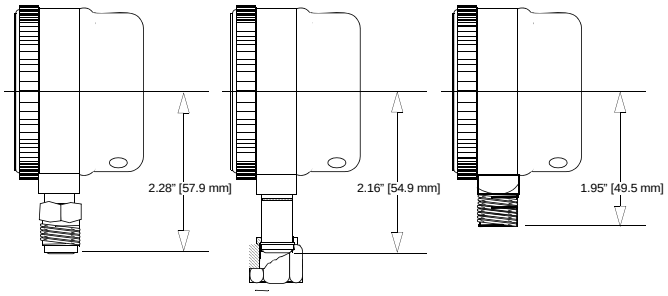
	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6	TYPE 8	TYPE 9
Electrical								
Output Signal	0 - 5 VDC Differential	1 - 5 VDC Differential	1 - 5 VDC Ground Referenced	4 - 20 mA Current Sink	0 - 5 VDC, 1 - 5 VDC, 4 - 20 mA Current Sink	4 - 20 mA Current Sink, 1 - 5 VDC Ground Referenced Output	4 - 20 mA Current Source	
Voltage In	11.5 to 30 VDC (12 Volts Recommended)							
Voltage Stability	Filtered power supply with noise < 2 mV RMS, ripple < 6 mV P-P							
Operating Current (Exclusive of Signal)	20mA							
Output Current (Voltage Signals)	8 mA continuous, 10 mA maximum intermittent							
Current Signals	Currents are limited to 60 mA (Max.)							
Connections								
Electrical Transmitter Leads	6' cable, tinned ends						3 Pin Molex connector w/ 10' cable	6' cable, tinned ends.
Physical	Face-seal male, face-seal swivel male, face-seal swivel female and 1/4" NPT male							
Performance								
Accuracy	1% of full scale							
Helium Leak Check	4×10^{-9} Inboard Std. cc/sec							
Response Time	Less than 200 milliseconds							
Temperature	Operating (ambient): 0° to 160°F (-18° to 71°C) Compensating: 20° to 135°F (-7° to 57°C) Storage: -20° to 175°F (-29° to 79°C)							
Proof Pressure	110% of Full Scale							
Burst Pressure	400% of Full Scale							
Materials								
Case Material	300 Series Stainless Steel							
Bezel and Lens Material	One-piece polycarbonate, screw-on							
Socket and Bourdon Tube	316L Stainless Steel							
Movement	300 Series Stainless Steel							
Dial	White with black marking "Use No Oil" is red							

1.0

1.3 IPT122 DIMENSIONAL DRAWINGS



VM
FACE SEAL
MALE 1/4"

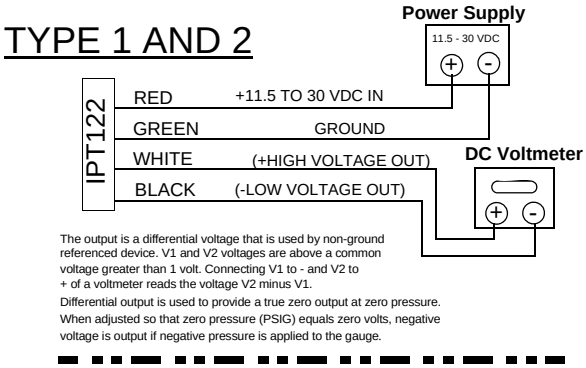


VSM
FACE SEAL
SWIVEL MALE 1/4"

VSM
FACE SEAL
SWIVEL FEMALE 1/4"

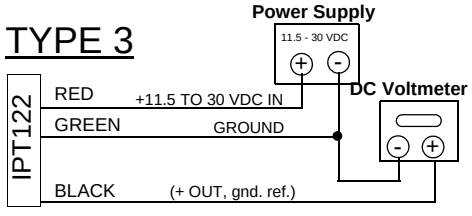
NPT 1/4"

1.4 IPT122 ELECTRICAL CONNECTIONS



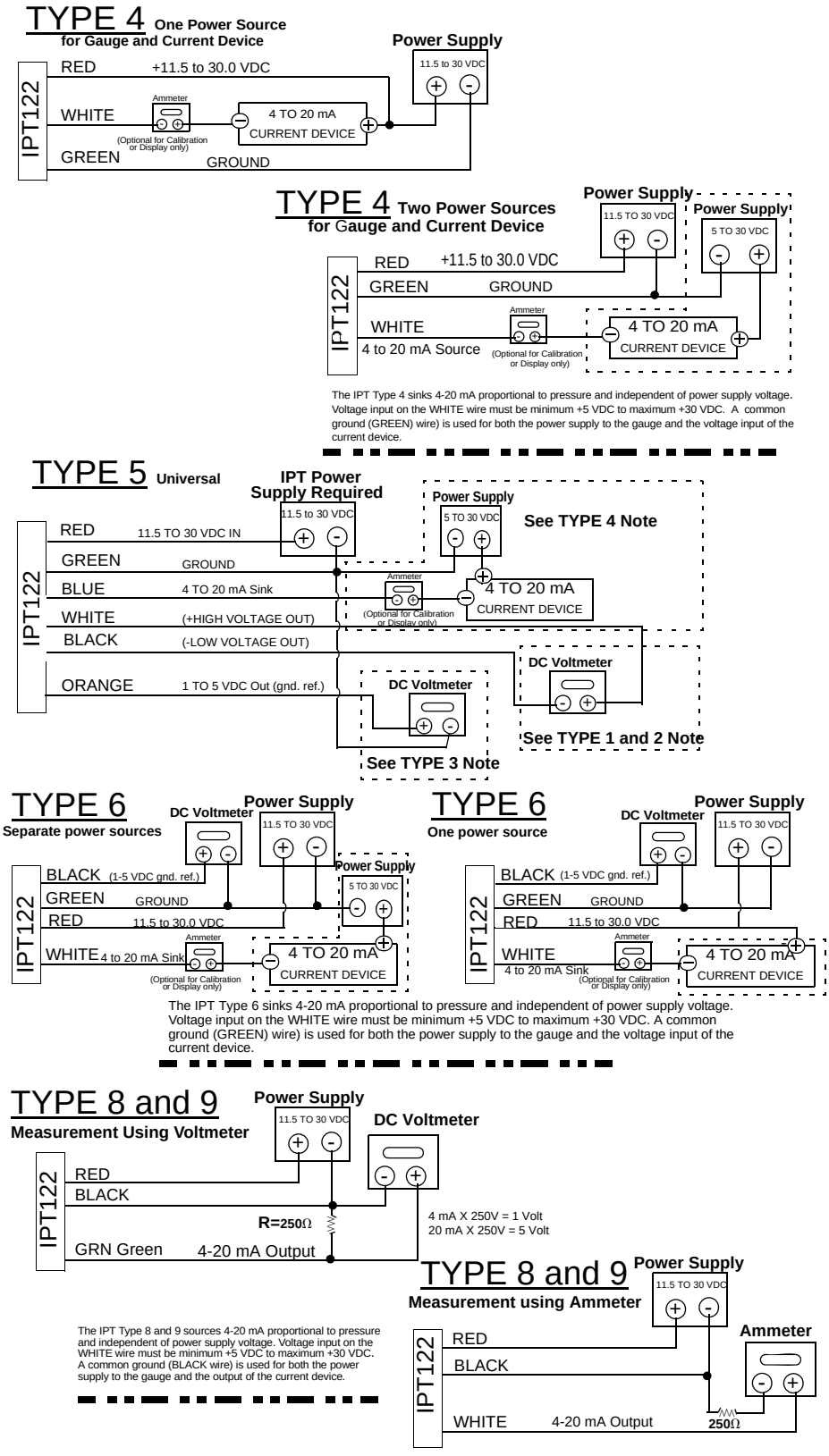
The output is a differential voltage that is used by non-ground referenced device. V1 and V2 voltages are above a common voltage greater than 1 volt. Connecting V1 to - and V2 to + of a voltmeter reads the voltage V2 minus V1.

Differential output is used to provide a true zero output at zero pressure. When adjusted so that zero pressure (PSIG) equals zero volts, negative voltage is output if negative pressure is applied to the gauge.



Output is provided as a positive voltage above ground (power supply common). The normal factory calibrated range is +1 to +5 VDC, although it may be adjusted. Adjustment allows the zero pressure output to be set for less than +0.4 VDC to more than +3 VDC.

1.4 IPT122 ELECTRICAL CONNECTIONS (CONTINUED)



⚠ **CAUTION** ⚠
Perform all operations with standard gas handling procedures in accordance with all local codes for safety and ventilation. You MUST wear appropriate clothing and safety apparatus for the gas you are using.

2.0 INSTALLATION

2.1 IPT122 INDICATING PRESSURE TRANSMITTER MECHANICAL INSTALLATION

Failure to follow these procedures may adversely affect the product's performance and could void the product warranty. Inspect but DO NOT unwrap any parts until installation. Contact your Celerity representative with any problems.

1. Unpack the pressure transmitter

Determine that the desired IPT unit is listed on the packaging. Do not open if the package does not contain the proper device.

The IPT is double-bagged for cleanroom service and should remain packaged until installation.

Do not remove the pressure transmitter from the protective bag unless you are in a clean environment.

A. Remove pressure transmitter from the box and carry it into the gray area.

B. Remove and discard the outer protective bag.

C. Carry the pressure transmitter (sealed in the inner bag) into the clean area.

2. Install the pressure transmitter

A. Prepare the connection fitting in place on the gas line. Any other fitting components, such as stainless steel gaskets, should be blown clean with a filtered gas before use.

B. Note: For installation in tight spaces, and on some regulators, it may be necessary to remove the electronic assembly (back half) of the IPT. This reduces the depth of the gauge by approximately 7/16".

C. Maintain a flow of at least 1 slpm (0.05 scfm) of inert gas during installation to minimize tubing and IPT contamination from environmental moisture and particles. The recommended purge gas is electronic-grade Nitrogen.

D. Open the inner bag and remove the pressure transmitter. Remove any fitting protection caps and seat the pressure transmitter on the mating connections.

E. Tighten the nuts by hand, then 1/8 turn past hand-tight by wrench for fittings compatible with VCR ® fittings. DO NOT overtighten.

NOTE: Refer to specific technical guides furnished by fitting manufacturers for additional specifications.

3. Prepare the pressure transmitter for use

A. Verify integrity of the seal by appropriate helium leak-testing procedures.

B. Turn the gas flow ON then OFF, 10 times to remove any particles generated during installation. (The flow rate used should at least equal the process flow specifications.)

C. Mechanical Installation is complete. Complete electrical connections as noted in the next section.

2.2 IPT122 ELECTRICAL INSTALLATION

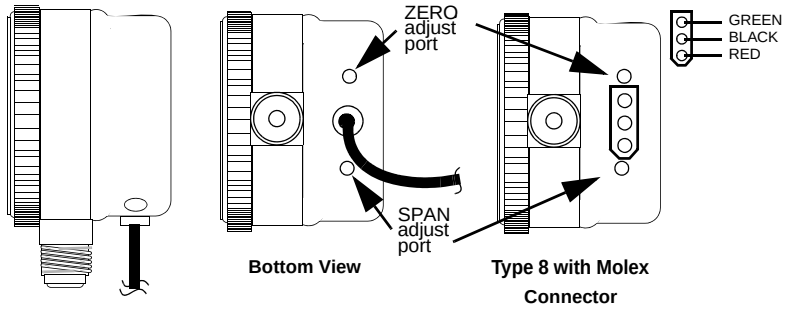


Figure 1: IPT122 Bottom and Side View

3.0 IPT122 CALIBRATION/MAINTENANCE

3.1 GAUGE ALIGNMENT

Since the IPT is an electromechanical device, the gauge linkage may move from the home position during shipment or installation. Pressure cycle the gauge a few times to assure the movement is in its home position.

3.2 ADJUSTMENTS AND CALIBRATION

The IPT is factory calibrated for the proper output. Field calibration is only necessary if ZERO and SPAN adjust potentiometers have been changed or different output is required.

3.2.1 ZERO Adjustment Potentiometer

(See Figures 1 and 2 and Inside Views)

The ZERO adjustment sets the output signal to the low level when zero pressure (or maximum inches of vacuum for compound gauges) is applied to the gauge.

3.2.2 SPAN Adjustment Potentiometer

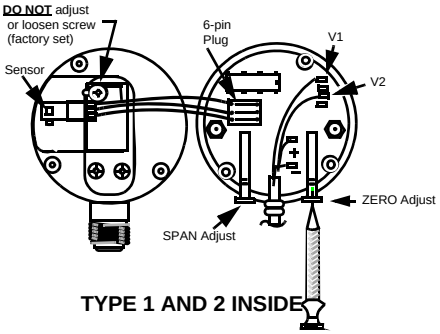
(See Figures 1 and 2 and Inside Views)

The SPAN adjustment sets the output signal to the high level when full scale pressure is applied to the gauge Calibration Procedure

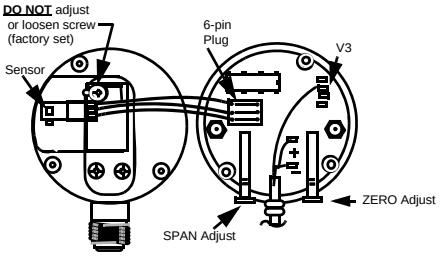
1. Turn on power and pressure cycle the IPT a few times to verify a reading at the voltmeter and to assure the mechanical movement is in its home position.
2. Set pressure to zero (remove all pressure).
3. Rotate the ZERO adjust potentiometer CW to increase, or CCW to decrease the output signal. Set the output to the low level (for example, 4 mA).
4. Apply full scale pressure to IPT.
5. Rotate the SPAN adjust potentiometer CW to increase, or CCW to decrease the output signal. Set the output to the high level (for example, 20 mA).
6. Set pressure to zero and repeat the calibration procedure until accuracy of SPAN and ZERO points is obtained.

3.0

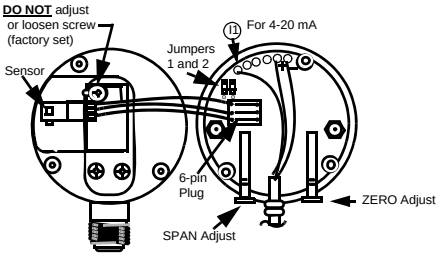
3.3 IPT122 INSIDE VIEWS



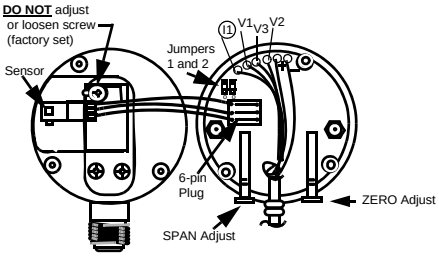
TYPE 1 AND 2 INSIDE



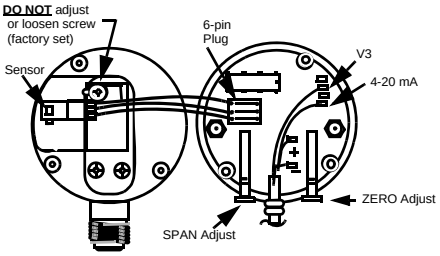
TYPE 3 INSIDE



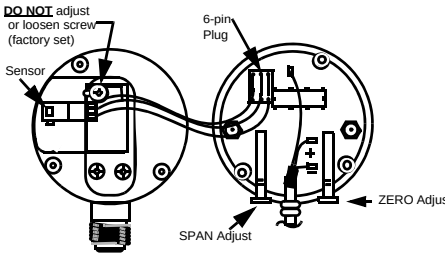
TYPE 4 INSIDE



TYPE 5 INSIDE



TYPE 6 INSIDE



TYPE 8 AND 9 INSIDE

4.0 MAINTENANCE

The IPT122 is designed to operate continuously over long periods of time with no maintenance and no adjustment. Cycle testing of the gauge at annual intervals is recommended to insure smooth operation and to verify the ZERO and SPAN adjustments.

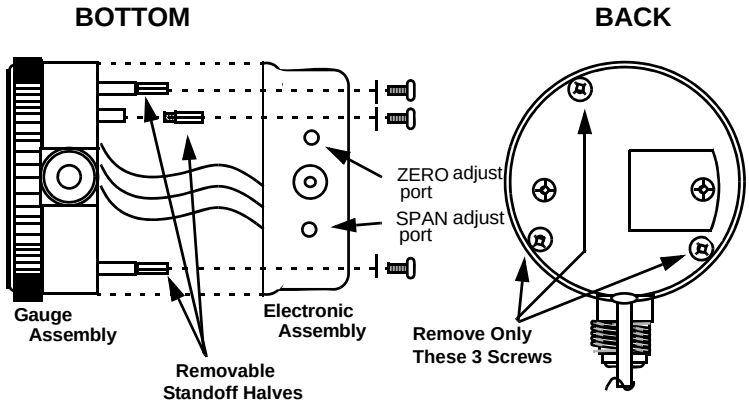


Figure 2: Typical Assembly/Disassembly

4.1 DISASSEMBLY

⚠ CAUTION ⚠
DO NOT twist the plug and DO NOT pull by the wires.

Under normal conditions, it will not be necessary to disassemble the IPT. If however disassembly is necessary, follow the following steps. (See Figure 2:, Typical Assembly/Disassembly and “IPT122 Inside Views” on page 6)

1. Remove three (3) screws on back of gauge and lift electronic assembly straight off.
2. Remove the six-pin sensor plug straight up.
3. Remove three (3) standoff halves.

4.2 REASSEMBLY

⚠ CAUTION ⚠
Plugging the six-pin plug in backwards will destroy the sensor.
DO NOT interchange electronic assemblies between different gauges (each is factory matched).
DO NOT adjust the sensor mounting, it is factory set by using special equipment.

1. Insert sensor plug into socket, verifying that the wires on the plug exit as in the illustration (See Figure 2:, Typical Assembly/Disassembly and “IPT122 Inside Views” on page 6)
2. Install three (3) standoff halves.
3. Install Electronic Assembly to Gauge Assembly.
4. Install three (3) screws on back of gauge.

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Product warranty information can be found on our Celerity website at www.Celerity.net. This information provides general warranty information, limitations, disclaimers, and applicable warranty periods according to product group.

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 A331666 Rev 002 08/07