



Precise Sensors
"Defining Higher Expectations"

Installation, Calibration & Troubleshooting

Model 6001

Gas Cylinder Scale



235 West Chestnut Avenue, Monrovia, CA 91016-3315
Tel: (800) 423-7123 Tel: (626) 358-4578 Fax: (626) 358-3546



Table of Contents

Warranty	1
Disclaimer	1
Warning	1
Section I Introduction	2
Section II Specifications	2
Section III Unpacking & Inspection	3
Section IV Electrical Installation	3
Pigtail Cable	3
Grounding Pigtail Cables	3
Power Supply	4
Power Up.....	4
Thermal Effect	4
Section V Shunt Calibration	5
General Information	5
Procedure	5
Section VI Troubleshooting	6



WARRANTY

Precise Sensors, Inc. warrants that, within 3 years from the date of shipment, if the product(s) manufactured by us and sold by us are in the possession of the original buyer from us (or from an authorized distributor), we will replace or repair, at our option, free of charge, any part or parts, which upon examination we find defective in workmanship or material, provided that, upon our request, the product or parts are returned to our plant, transportation charges prepaid, along with satisfactory documentation that the product has been installed, used, and maintained in accordance with the instructions in this Installation Guide and has not been subject to abuse. We shall not be liable or responsible for any expense or liability of repairs, additions, or modifications made upon the product without our written consent. Any unauthorized disassembly or attempt to repair the product shall void this warranty. No agent is authorized to assume any liability except as set forth above.

Warranty specifications and qualitative calibration data, as supplied with each product, are based on tests performed on and values obtained with N.I.S.T. traceable laboratory standards and test equipment of Precise Sensors, Inc.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). IN NO EVENT SHALL WE BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS OR OTHER DAMAGES FROM LOSS OF PRODUCTION) CAUSED BY DEFECTIVE MATERIAL, OR BY UNSATISFACTORY PERFORMANCE OF THE PRODUCT, OR BY ANY OTHER BREACH OF CONTRACT BY US.

DISCLAIMER

No representations or warranties are made with respect to the contents of this Installation Guide. Precise Sensors, Inc. reserves the right to revise this guide and to make changes from time to time in the content hereof, without obligation to notify any person of such revision.

WARNING

The product described in this guide should be operated only by personnel trained in procedures that will assure safety to themselves, to others, to the equipment, and to the product. Before performing any maintenance, turn the power off.



I. INTRODUCTION

The Model 6001 is an exceptional gas cylinder scale with a low profile platform and is offered in a robust corrosion-resistant 303 stainless steel housing. It is completely self-contained and can be operated with Precise Sensors' Model 4221 or 4222 Controller to provide the ultimate in gas cylinder event monitoring.

II. SPECIFICATIONS

Size.....	9 X 9 X 1 inch platform (22.86 X 22.86 X 2.54cm)
Material.....	303 Stainless Steel
Standard Capacities.....	60, 100, and 300 lbs., 27, 45, 136 kgs. other capacities available on request
Useable Overload.....	150% of capacity
Mechanical Overload Protection.....	250% of rated capacity
Test Ports.....	Test ports are provided for local readout of output signal Shunt Cal With momentary switch engaged an output signal equal to 50% of capacity is produced.
Accuracy:	
Combined linearity & hysteresis.....	<±0.25% of Reading
Repeatability.....	<±0.05% of Reading
Stability Under Load.....	<±0.25% of Capacity / 30 Days
Relative Humidity.....	0-95% R.H. Non-Condensing
Operating Temperature Range.....	0°F (-18°C) to 150°F (65°C)
Supply Voltage.....	10-30 VDC unregulated
Electrical Termination.....	15 ft. pigtail, exits from rear center of scale
Circuit Protection.....	Reverse polarity protection
CE Approval.....	Conforms with IEC standards EN 55011:1991 Class A and EN 50082-2:1995
Current Output Specification	
Current Output.....	4 to 20 mA
Current Limiting.....	35 mA typical
Power Supply Effect.....	Less than ±0.005% per volt change
Loop Resistance.....	0 ohms @ 10 VDC to 1K ohms @ 30VDC

III. UNPACKING & INSPECTION

The Model 6001 Scale was systematically inspected and tested, then carefully packed prior to shipment. Upon receipt of the shipment, thoroughly inspect the scale(s) for obvious shipping damage. If any damage is found, notify the freight carrier immediately.

IV. ELECTRICAL INSTALLATION

Pigtail Cable

The Model 6001 Scale has a fifteen (15) foot long, two (2) conductor shielded, #22 AWG stranded cable. The two (2) wires are red and black. The red wire is positive and the black wire is negative. Figure 1 shows the wiring diagram.

NOTE: Incorrect wiring of the power leads (red and black) on the scale, for short periods of time, will not damage the circuitry (see Figure 1).

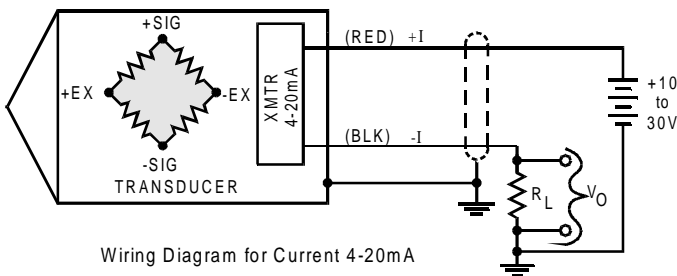


Figure 1

Grounding Pigtail Cables

Pigtail cables are double shielded with a braided shield and a foil wrap with a drain wire. The pigtail cable has both shields and the drain wire internally connected to the housing of the scale. The scale has internal EMI filters and Transient Absorption diodes to reduce external interference. This circuitry requires the shields to be grounded for proper operation.



Power Supply

The Model 6001 Scale is designed to operate with an input voltage of 10-30 VDC unregulated. The exact operating input voltage is controlled by the load resistance (R_L), see Figure 2.

To determine the correct operating input voltage, refer to the graph in Figure 2.

Example: For an R_L of 500 ohms, the correct operating input voltage would be 20 VDC.

Power Up

No warm up time is necessary before using the scale. Apply power to the scale, perform the shunt calibration and the scale is ready to go.

Thermal Effect

Due to thermal errors, especially in outdoor applications, slight changes in instrument calibration may be seen with small span and zero offsets. The magnitude will be less than 0.005% FSO/°F of temperature differential from the nominal calibration temperature of 72°F ± 2°F.

Example: If the ambient temperature is 92°F and the scale rating is 300 lbs.

Max Thermal Error = (T) x (0.005% FSO) X Rating
Max Thermal Error = 20°F x (0.005% FSO) X 300
Max Thermal Error = .30 lbs.

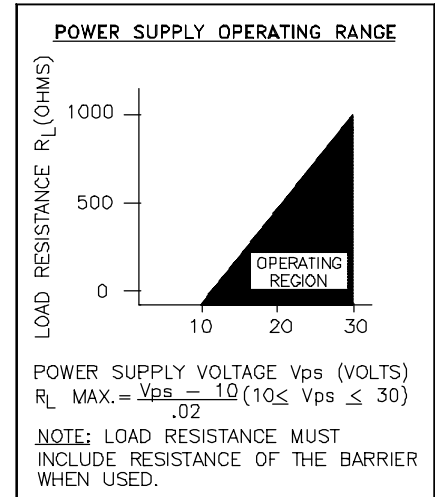


Figure 2



V. SHUNT CALIBRATION

General Information

Shunt calibration is a means by which the span can be monitored and adjusted without performing recalibration of the entire scale/electronics combination. Shunt calibration has these attributes:

- Allows a given scale to be used with various signal conditioners without scale/electronics recalibration.
- Verifies the accuracy of the instrumentation on a periodic basis.
- Provides the ability to compensate for the minor drift that may occur over a period of time, or between the start and finish of critical testing.



Figure 3

Procedure

1. Unload the scale to zero (0) lbs., monitor the signal output, and adjust the zero control (see Figure 3) to 4.00 mA.
2. Refer to the Certificate of Conformance supplied with the scale for the shunt calibration percent of span value.
3. Multiply the shunt calibration percent (step 2) by the span of 16.0 mA.
4. Add the product of step 3 to the zero (0) weight value of 4.00 mA (step 1), to determine the calibration current.
5. Press and hold the shunt button and at the same time adjust the span control (see Figure 3) to the calibration current obtained in step 4.
6. Reverify zero (0), step 1.
7. Reverify span, step 5.

Example:

(Shunt Calibration Percent x Span) + Zero Load Current = Calibration Current.
(49.50% x 16.0 mA) + 4.00 mA = 11.92 mA.



VI. TROUBLESHOOTING

<u>Symptom/Problem</u>	<u>Action</u>
No output	<ol style="list-style-type: none">1. Verify power supply voltage meets scale requirements2. Check wiring connections.3. Verify weight is being applied.4. Verify output load is not shorted.
Incorrect zero level	<ol style="list-style-type: none">1. Check for load on scale.2. Adjust zero control.
Erratic/intermittent output or zero drift	<ol style="list-style-type: none">1. Verify weight applied is constant.2. Verify power supply remains within specifications.3. Inspect electrical connections for discontinuity or damage.4. Verify output with ammeter.5. Check for insulation resistance between wiring and scale case.