

# User's Guide



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## Series DPG701 Room Pressure Monitor



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The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient-connected applications.

# INSTALLATION, WIRING AND CALIBRATION OF ROOM PRESSURE MONITOR DPG701

## 1. GENERAL

The DPG701 monitors either positive or negative room pressures.  
Refer to the Data Sheet for detailed specifications.

## 2. INSTALLATION

This instrument is designed for mounting on the surface of a wall by means of (3) #10 screws (5 mm screws).  
Select a wall area which is reasonably flat to prevent stressing of the enclosure. A template is printed on a separate sheet to facilitate installation on a wall.

## 3. WIRING AND PIPING

### 3.1. Electrical connections

**WARNING: Check setting of voltage selector switch, 120/240 Vac, before applying power to this instrument!**

NOTE: There is no selector switch when this instrument is powered from a 24 Vac supply.

Connections are by means of a 3/8" terminal barrier with #6 screws.

Terminals 1 and 2 are the power supply connections.

Terminals 4, 5, and 6 are the relay output terminals.

Terminals 8 and 10 are the 0-5 V analog output. Terminals 8 and 9 are the 0-10 V analog output.

Terminals 11 and 12 are the 4-20 mA output, sourcing. Total loop resistance must be less than 580 Ohms.

It is recommended that the length of the signal wires connected to the voltage outputs be limited to about 18 feet (6 m). The 4 - 20 mA output should be used if the signal wires are long.

A 15 volt supply with a maximum current of 13 mA is available from terminal 8 (COM) and terminal 3.

A light indicator status signal is accessible at terminal 7. The output is low (about 1 Volt) when pressure is within normal condition (green led on).

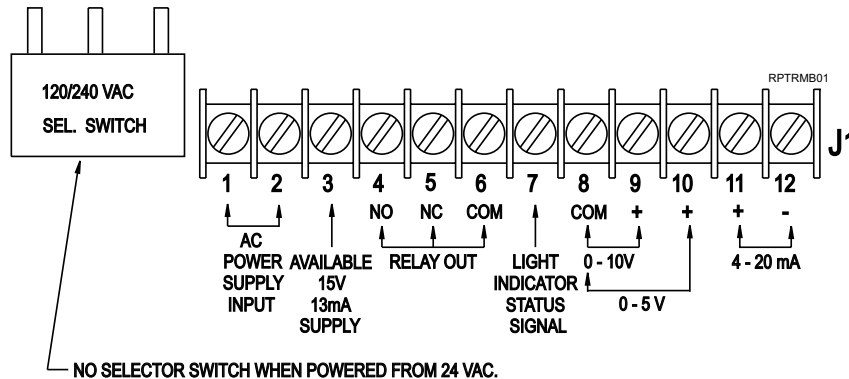


Fig.1 Terminal connections

### 3.2. Pressure connections

To monitor the differential pressure between a room and a selected reference, connect the air line from the room to be monitored to the fitting labeled "ROOM PRESSURE", and the air line from the reference area to the fitting labeled "REFERENCE".

Three sets of barb fittings accommodate plastic tubing sizes from 1/8", to 7/32" I.D. (3 to 6 mm I.D.)

**Do not overtighten the fittings, a 1/4 turn, hand-tightening, is sufficient to insure a leak-proof connection!**

If the pressure in the room to be monitored is higher than the reference pressure, the digital display indicates a positive pressure, and conversely, if the pressure in the room is less than the reference pressure, the digital display indicates a negative pressure.

## 4. DISPLAY PANEL

To open the clear polycarbonate cover, depress the ridged slot along the narrow side of the polycarbonate cover and pull. The cover can be installed to hinge from the left or from the right. To remove the cover, open the cover and place thumbs along the inside hinge of cover, carefully push the cover forward (away from the case) while pushing the hinge down. Use the same technique to remove the latch. To install the cover, align the cover to the desired side, left or right of the body hinge retainers. Insert the centering pins in the cover through the two side retainers on the case and pull up, the cover will snap into place. To install the optional cover lock, remove the blank in cover lock assembly, insert optional key and press until slotted end is flush with cover.

### 4.1- Panel description

Refer to Fig. 2 Display panel to locate the various components of the panel.

- A - Status selector switch and accompanying indicator lights: The selector switch allows for programming of the red and green light which indicate when the pressure in the room is above or below a preset pressure. When monitoring a positive pressure, set the selector switch to "+". The green LED is on when the pressure is above the minimum set pressure. The red LED lights up if the pressure falls below the allowed minimum pressure. When monitoring a negative room pressure, set the selector switch to "-". The green LED is on when the pressure, is below the minimum set pressure. The red LED lights up if the pressure rises above the allowed minimum pressure.
- B - Light adjust potentiometer: To change the light set pressure remove the plug marked "LIGHT" and turn the potentiometer (clockwise to raise the pressure setpoint) until the desired set pressure is reached. The setting may be determined by pressurizing the instrument until the status indicator light activates, the pressure may be read from the display panel at the moment the light changes states. Refer to section 5.2.2 for a precise calibration procedure.
- C - Relay adjust potentiometer: A SPDT relay output is available at terminals 4, 5, and 6 of connector J1 (See Fig. 1). The contacts are rated 5A at 30 Vdc or 120 Vac, 4A at 240 Vac resistive. Adjustment of the relay set pressure is by means of a potentiometer located behind the plug marked "RELAY". Turn the potentiometer (clockwise to raise the pressure setpoint) until the desired pressure is reached. The relay is set at the factory to energize on falling pressure. To change the logic, see section 5.1.2. and refer to section 5.2.2 for a precise calibration procedure.
- D - Digital display: Displays the room pressure in engineering units, either English or metric. To change the units of measurement, refer to section 5.2.1.
- E - Unit indicating light: One of three lights indicates the unit of measure being displayed.
- F - Transmitter span adjust potentiometer: Should the pressure transmitter require recalibration, remove the the plug to gain access to the potentiometer. It is recommended that the recalibration be performed in the field only if proper calibrating equipment is available. Refer to section 5.3 for calibration instructions.
- G - Transmitter zero adjust potentiometer: Used during calibration of the instrument.

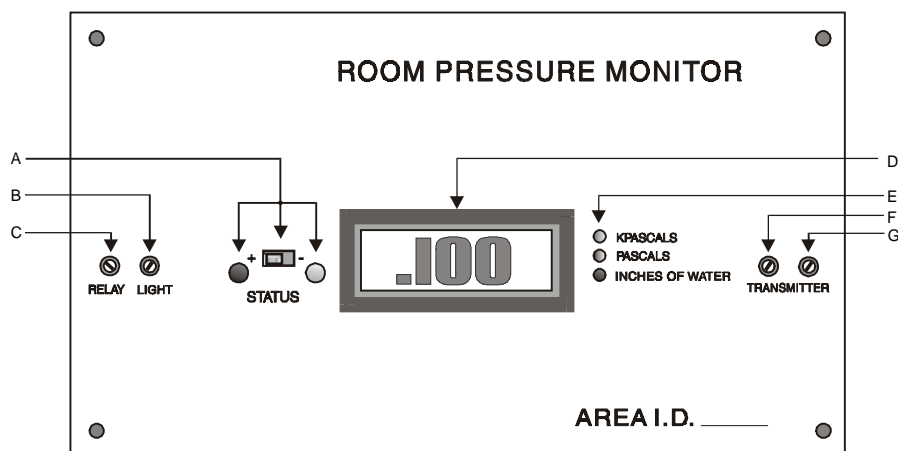


Fig.2 Display panel

## 5. ADDITIONAL CONTROLS

Disconnect the AC power to the instrument, and remove the front panel to gain access to the other controls. Two interconnected PC Boards are seen. One PC board is labeled "RPM MAIN BOARD" and the other is labeled "RPM DISPLAY BOARD".

### 5.1. Main Board

The main board consists of a power supply, a pressure sensing element and associated electronics, alarm circuitry and a relay.

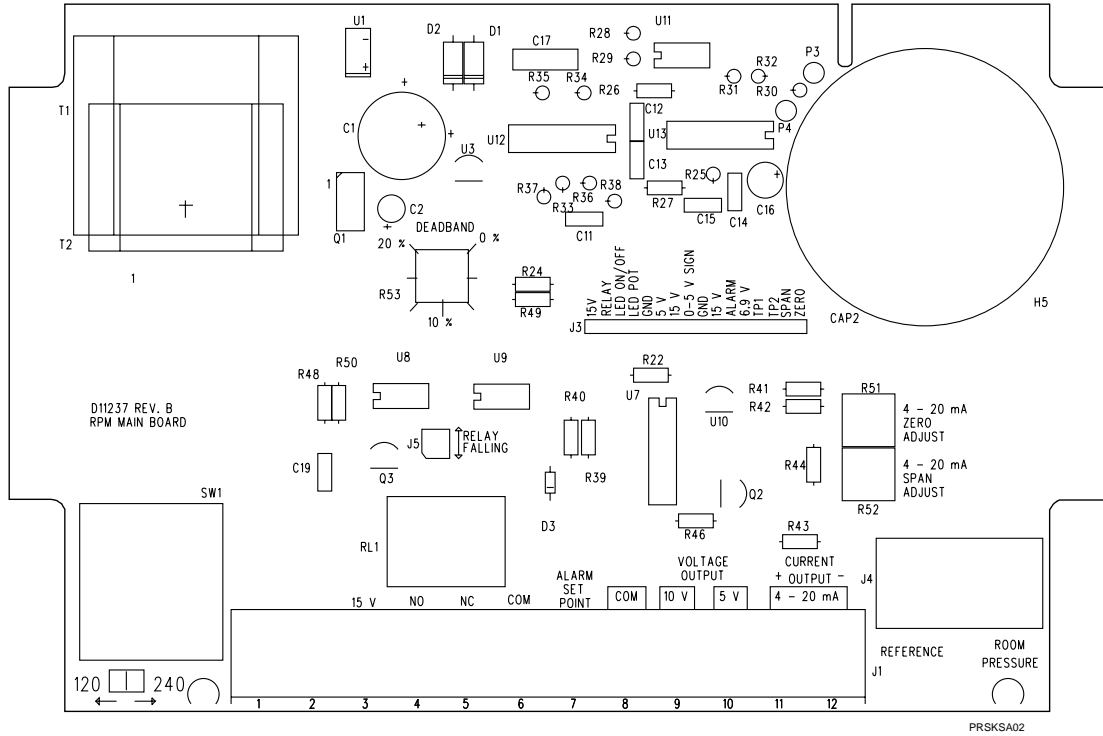


Fig.3 Main board

- 5.1.1 - To change the deadband of both, the lights and the relay, locate potentiometer **R53**, labeled **DEADBAND**, and rotate the screw to the desired position. The deadband adjustment ranges from 0 to 20 %. Fluttering indicator lights and chattering relay output indicate that the deadband is set too low. Increase the deadband until chatter stops.
- 5.1.2 - To change the relay logic from energizing on falling pressure to energizing on rising pressure, locate connector **J5**, remove both jumpers, rotate them 90° and re-insert.

### 5.2. Display Board

- 5.2.1 - To change from English to metric unit, locate the selector switch "**SW2**" on the display board and select either "**METRIC**" (Pascals and kPascals) or "**ENGLISH**" (inches of water).

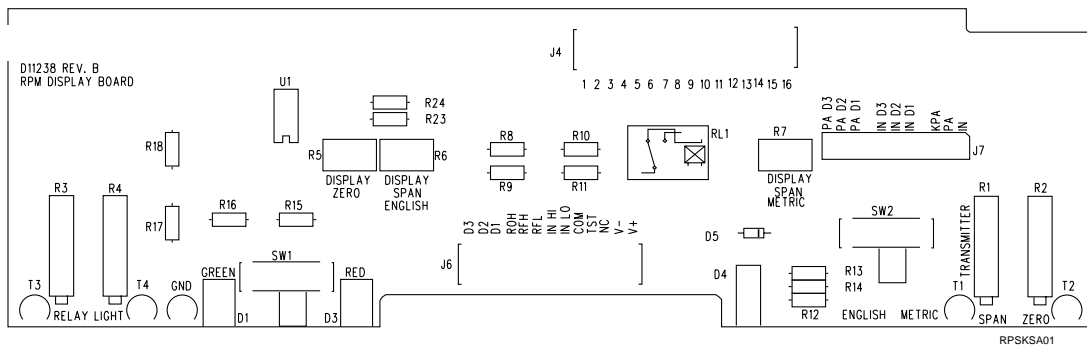


Fig.4 Display board

5.2.2 - Apply the AC power to the unit.

- To obtain a precise "**LIGHT**" adjust or "**RELAY**" adjust setting, locate testpoints "**GND**", "**T4**", and "**T3**" on the display board.
- The testpoint voltage range is 0 - 5.0 Volts.
- To adjust the light set pressure, connect a voltmeter across "**GND**" and "**T4**" and adjust potentiometer **R4**.
- A reading between 2.5 Volts and 5.0 Volts will activate the light when the room pressure is higher than the reference pressure. A reading between 0 and 2.5 Volts will activate the light when the room pressure is lower than the reference pressure.
- To adjust the relay set pressure connect the voltmeter across "**GND**" and "**T3**" and adjust potentiometer **R3**.
- A reading between 2.5 Volts and 5.0 Volts will energize the relay when the room pressure is higher than the reference pressure.
- A reading between 0 and 2.5 Volts will activate the relay when the room pressure is lower than the reference pressure.

### 5.3. Calibration

To calibrate the transmitter, proceed as follows:

5.3.1 - Connect a voltmeter across terminals 8 (ground terminal) and 10 (5.00 Volt Output) of connector J1 on the Main Board (refer to Fig. 1).

- Locate the "**ZERO**" potentiometer **R2** and the "**SPAN**" potentiometer **R1** on the display board (refer to Fig. 4).
- With no pressure applied to the pressure ports, adjust the "**ZERO**" potentiometer **R2** until the output signal between terminals 8 and 10 of J1 is 2.50 Volts.
- Apply full pressure to the positive pressure port and adjust the "**SPAN**" potentiometer **R1** until the output signal is 5.00 Volts.
- Check the zero pressure output again and repeat the above steps if necessary.
- When the instrument is fully calibrated, pressurize the reference port. When full pressure is applied to the reference port, the voltmeter should read 0 Volts. No adjustment is necessary.

5.3.2 - To check the 10 Volt output connect the positive side of the voltmeter to terminal 9 (10.00 Volt Output) of connector J1.

- The output signal should read 5.00 Volts when no pressure is applied and 10.00 Volts at full pressure.
- No adjustment is necessary if the instrument has been calibrated as specified in step 5.3.1.

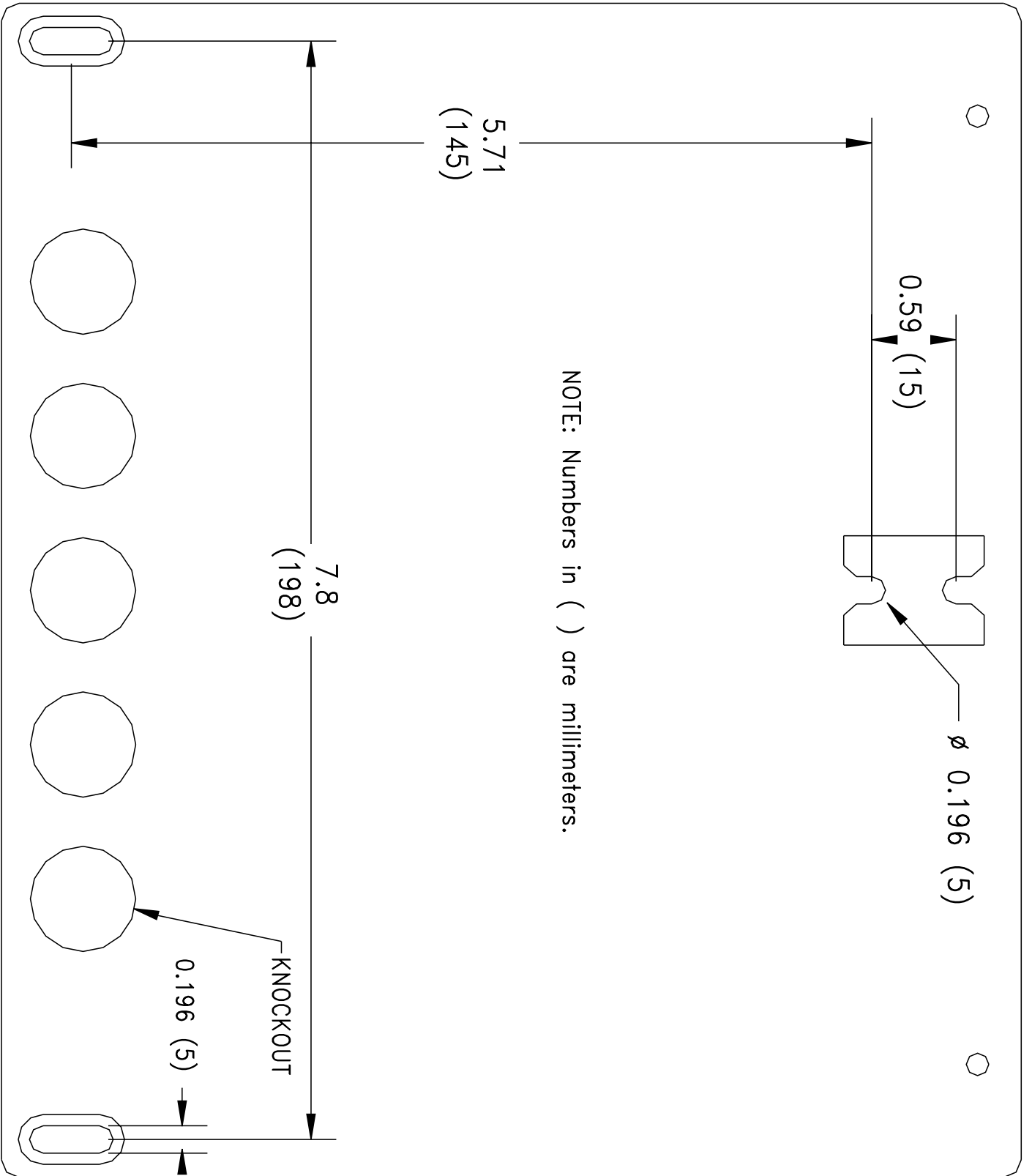
5.3.3 - To check the current output, first proceed with steps 5.3.1 above then connect an ammeter across terminals 11 and 12 of connector J1.

- Locate the "**4-20 mA ZERO ADJUST**" **R51** and the "**4 - 20 mA SPAN ADJUST**" **R52** potentiometers on the main board, (see Fig 3).
- With no pressure applied to the pressure ports, adjust the "**ZERO**" potentiometer **R51** until the output signal reads 12 mA.
- Apply full pressure and adjust the "**SPAN**" potentiometer **R52** until the output signal is 20 mA.
- Check the zero pressure output again and repeat the above steps if necessary.

5.3.4 - Disconnect the AC power to the instrument and replace the front panel by carefully inserting the digital panel meter terminals into the display socket J6.

- The digital display is calibrated at the factory and should not require recalibration.
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# INSTALLATION TEMPLATE



NOTE: Numbers in ( ) are millimeters.

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

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2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

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2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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