

User's Guide



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PX291 Series Low Differential Pressure Transmitter



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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

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 OF PRESSURE TRANSMITTERS SERIES PX291

NOTE: *Each transmitter is calibrated in the vertical position. For maximum accuracy, re-zero the transmitter if it is mounted in other than the vertical position. It is not necessary to respan the instrument.*

The Series PX291 differential pressure transmitter is suitable for clean air or inert gas applications. If dust is present, a small in-line filter is recommended to insure long trouble-free operation. The normal operating temperature range is from 0°C to 45°C (32°F to 115°F), and the normal humidity range is from 10% to 90% R.H.

Air connections are by means of 3/16" (4.75mm) barbed fittings suitable for 1/4" (6mm) O.D. polyethylene tubing, 1/8" (3 –4mm) I.D. Tygon or polyurethane tubing.

The two mounting holes are 0.19" (4.8mm) in diameter and are suitable for #8 or #10 mounting screws.

Electrical connections are by means of 3/8" terminal strips with #6 screws.

Care should be taken not to exceed the maximum overpressure.

| Maximum Safe Momentary Overpressure Table | | | |
|--|----------------|---------------------|---------|
| Range | | Overpressure | |
| English | Metric | English | Metric |
| 0.1" to 1.0" H ₂ O | 25 to 250 Pa | 8" H ₂ O | 2 kPa |
| 2.0" to 10.0" H ₂ O | 0.5 to 2.5 kPa | 5 PSID | 35 kPa |
| 11" H ₂ O to 5 PSID | 2.7 to 35 kPa | 20 PSID | 140 kPa |
| 6 PSID to 15 PSID | 40 to 100 kPa | 30 PSID | 200 kPa |
| 16 PSID to 30 PSID | 110 to 200 kPa | 60 PSID | 420 kPa |

Zero and Span Adjustment

The transmitter may be re-zeroed if overpressure occurs and a permanent drift is noted.

Vent both pressure ports to atmosphere before re-zeroing the transmitter.

- A. Voltage Output units (PX291-XXXXD5V): Connect a voltmeter across the signal terminals and adjust the zero potentiometer until the voltage is equal to or less than .015 Volts.
- B. Current Output units (PX291-XXXXDI): Connect an ammeter in the loop and adjust the zero potentiometer (R2) until the ammeter reads 4.00mA.

Should re-spanning of the transmitter become necessary in the field, a manometer or gage of satisfactory accuracy must be used.

- A. Voltage Output units (PX291-XXXXD5V): With the voltmeter connected across the signal terminals (see Figure 1) apply full pressure to the instrument and adjust the Span potentiometer (R1), until the output reading is 5.00V.
- B. Current Output units (PX291-XXXXDI): With the ammeter connected in the loop (see Figure 2), apply full pressure to the instrument and adjust the Span potentiometer (R2), until the output reading is 20.00mA.

Check the zero reading again for accuracy, and repeat the above steps if required.

VOLTAGE OUTPUT UNITS (PX291-XXXD5V)

This transmitter is powered by an external power supply between 11 and 32 Vdc, the current drawn is less than 8mA.

The output voltage is limited to about 5.6V when the applied pressure exceeds the range of the transmitter. Short-circuiting the signal terminals will not damage the transmitter.

There are three terminals for electrical connections (see Figure 1)

1. The left terminal labeled "COM" is the negative terminal common to both the power supply and the output signal.
2. The middle terminal labeled "Vsup" is connected to the positive power supply lead.
3. The right terminal labeled "Vout" is the positive signal voltage output. The current (either sinking or sourcing) through this terminal should be limited to about 3.5mA. Linearity will suffer if this current is exceeded. The output is current-limited to protect against short circuits and also voltage-limited to about 5.6 Volts should the maximum pressure be exceeded.

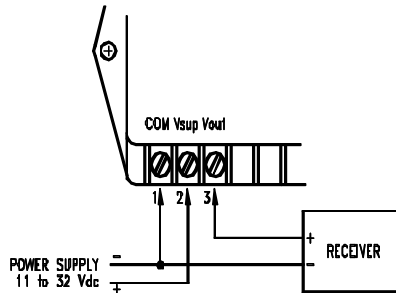


Figure 1

CAUTION: REVERSAL OF THE "Vdc SUPPLY" AND "SIGNAL OUT" MAY RESULT IN PERMANENT DAMAGE TO THE TRANSMITTER.

CURRENT OUTPUT UNITS (PX291-XXXDI)

This is a 2-wire 4-20mA pressure transmitter which requires an external power supply of 11 to 32Vdc to power the loop. The supply voltage should not exceed 32Vdc (see Figure 2)

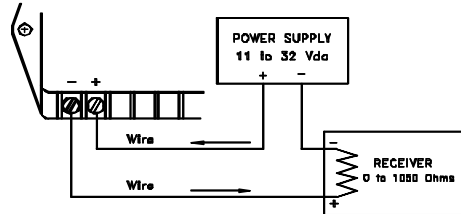


Figure 2

The following table (see Figure 3) illustrates the maximum wire and receiver resistances as a function of supply voltage. For example, the total loop resistance should not exceed 650 Ohms for a typical supply voltage of 24Vdc.

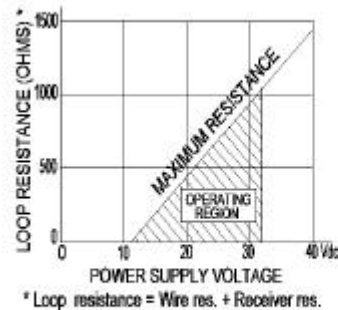


Figure 3

The standard transmitter is current-limited to about 3.85mA at the low end and approximately 27mA at the high end. An internal diode protects the transmitter against reverse polarity (there is no current flowing through the loop if the leads are reversed).

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.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

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:

1. Purchase Order number under which the product was PURCHASED,
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:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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