User's Guide

PX6000 Series
Diffused Semiconductor Pressure Transmitter/Transducer
**MV/V OUTPUT MODELS**

**SPECIFICATIONS: mV/V Models**

**Electrical:**
- Excitation: 10 VDC (15V Max)
- Output: 3 mV/V ± 10% at rated excitation
- Input Resistance: 2500 ohms minimum
- Output Resistance: 1000 ohms minimum, 1500 ohms maximum
- Zero Balance: 0 mV ± 5% FSO
- Dielectric Isolation Resistance: 100 Megohms minimum at 50 Vdc applied between the case or a conductive medium and the bridge circuit
- Sensing Element: 4 active-arm bridge using a micro-machined diffused silicon diaphragm sensor, thin-film media and dielectric isolation barriers
- Temperature Sensor: Output resistance @ 24°C (75°F) 900 to 1500 ohms
- Temperature Coefficient: 8% min., 10% max. per 55.5°C (100°F)

**Performance:**
- **Accuracy:** Combined Linearity, Hysteresis and Repeatability ± 0.25% FSO for all ranges

- **Environmental:**
  - **Operational Temp Range:** -54°C to 150°C (-65°F to 300°F)
  - **Compensated Temp Range:** -54°C to 121°C (-65°F to +250°F)
  - **Thermal Effects:** Span: ± 0.02% of FSO/°F
  - **Zero:** ± 0.02% of FSO/°F
  - **Vibration Sensitivity:** At 35g peak sinusoidal vibration from 10 Hz to 2000 Hz (±1 D.A.), the output shall not exceed 0.04% FSO/g for 15 PSI range to 0.005% FSO/g for 100 PSI and above
  - **Natural Frequency:** Greater than 35 KHz for 100 PSI and above
  - **Shock:** 100g, 11 milliseconds half sine wave without damage

- **Pressure:**
  - **Proof Pressure:** 2.0 times rated pressure will not cause changes in performance beyond the specified tolerances
  - **Burst Pressure:** 3.0 times rated pressure for pressure ranges below 200 psi, or 2.5 times rated pressure for pressure ranges above 200 psi will not cause rupture of the pressure sensor

- **Mechanical:**
  - **Wetted Parts:** 316 Stainless Steel, Silicon Nitride, pyrex glass, epoxy, Kovar
  - **Electrical Connection:** PT1H-10-6P (standard) Optional: 2 ft cable or 4-pin solder terminal header
  - **Pressure Port:** MS35654 Male (std) Optional: MS35649 Female, 1/8-27 NPT Male or Female
  - **Weight:** 4 oz maximum, excluding pressure fitting and electrical connection

**SPECIFICATIONS: 4-20mA Models**

**Electrical:**
- Excitation: 10 to 40Vdc
- Unregulated
- Output: 4-20 mA
- Adjustable ±10% FSO
- **Load Impedance (Max):** 50(2V-12.5V) where V = Supply voltage (40Vdc max)
- **Zero Balance:** 4mA Adjustable ±10% FSO
- **Dielectric Isolation Resistance:** 100 Megohms minimum at 45 Vdc applied between the case or a conductive medium and the bridge circuit
- **Sensing Element:** 4 active-arm bridge using a micro-machined diffused silicon diaphragm sensor, thin-film media and dielectric isolation barriers
- **Temperature Sensor:** Output resistance @ 24°C (75°F) 900 to 1500 ohms

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

The information contained in this document is believed to be correct but OMEGADYNE, 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.
4-20MA OUTPUT MODELS (continued)

Temperature Coefficient: 8% min., 10% max. per 55.5°C (100°F)

Performance:
Accuracy: Combined Linearity, Hysteresis and Repeatability \( \pm 0.25\% \) FSO for all ranges

Environmental:
Operational Temp Range: -29° to 85°C (-20° to 185°F)
Compensated Temp Range: -29° to 85°C (-20° to 185°F)

Thermal Effects: Span: \( \pm 0.02\% \) of FSO/F. Zero: \( \pm 0.02\% \) of FSO/F

Vibration Sensitivity: At 20g peak sinusoidal vibration from 10 Hz to 2000 Hz (5° D.A.), the output shall not exceed 0.04% FSO/g for 15 PSI range to 0.005% FSO/g for 100 PSI and above

Natural Frequency: Greater than 35 kHz for 100 PSI and above

Shock: 100g, 11 milliseconds half sine wave without damage

Pressure:
Proof Pressure: 2.0 times rated pressure will not cause changes in performance beyond the specified tolerances

Burst Pressure: 3.0 times rated pressure for pressure ranges below 200 psi, or 2.5 times rated pressure for pressure ranges above 200 psi will not cause rupture of the pressure sensor

Mechanical:
Wetted Parts: 316 Stainless Steel, Silicon, pyrex glass, epoxy, Kovar

Electrical Connection: PT11H-10-6P (standard)
Optional: 2 ft (0.6m) cable or 4-pin solder terminal header

Pressure Port: MS33656-4 Male (std)
Optional: MS33649-4 Female, ¼-18 or ¼-27 NPT Male or Female

Weight: 6 oz (170g) Typical

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5VDC OUTPUT MODELS

Environmental:
Operational Temp Range: -54° to 121°C (-65° to 250°F)
Compensated Temp Range: -18° to 82°C (0° to +180°F)

Thermal Effects: Span: \( \pm 0.03\% \) of FSO/F. Zero: \( \pm 0.03\% \) of FSO/F

Vibration Sensitivity: At 20g peak sinusoidal vibration from 10 Hz to 2000 Hz (5° D.A.), the output shall not exceed 0.04% FSO/g for 15 PSI range to 0.005% FSO/g for 100 PSI and above

Natural Frequency: Greater than 35 kHz for 100 PSI and above

Shock: 100g, 11 milliseconds half sine wave without damage

Pressure:
Proof Pressure: 2.0 times rated pressure will not cause changes in performance beyond the specified tolerances

Burst Pressure: 3.0 times rated pressure for pressure ranges below 200 psi, or 2.5 times rated pressure for pressure ranges above 200 psi will not cause rupture of the pressure sensor

Mechanical:
Wetted Parts: 316 Stainless Steel, Silicon, pyrex glass, epoxy, Kovar

Electrical Connection: PT11H-10-6P (standard)
Optional: 2 ft (0.6m) cable or 4-pin solder terminal header

Pressure Port: MS33656-4 Male (std)
Optional: MS33649-4 Female, ¼-18 or ¼-27 NPT Male or Female

Weight: 6 oz (170g) Typical

SPECIFICATIONS: 0-5Vdc Models

Electrical:
Excitation: 12 to 40Vdc Unregulated
Output: 0-5Vdc ±0.1Vdc Adjustable ±10% FSO
Input Current: 15mA maximum with no load
Output Resistance: Less than 200 ohms
Zero Balance: 0 V ±0.1 Vdc Adjustable ±5% FSO
Dielectric Isolation Resistance: 100 Megohms minimum at 45 Vdc applied between the case or a conductive medium and the bridge circuit
Sensing Element: 4 active-arm bridge using a micro-machined diffused silicon diaphragm sensor, thin-film media and dielectric isolation barriers
Temperature Sensor: Output resistance @ 24°C (75°F) 900 to 1500 ohms
Temperature Coefficient: 8% min., 10% max. per 55.5°C (100°F)

Performance:
Accuracy: Combined Linearity, Hysteresis and Repeatability \( \pm 0.25\% \) FSO for all ranges

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Available Pressure Electrical Pin Wire Color
Connections
Fittings
¼-27 NPT Male + Input A Red
¼-27 NPT Female N/C B Yellow
¼-18 NPT Male N/C C Blue
¼-18 NPT Female - Input D White
MS33656-4 Male Temp. Sensor E N/A
Shield F Case
MS33649-4 Female Temp. Sensor G N/A
Shield H Ground
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 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 should malfunction, 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 being 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 fuses.

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, EXPRESSED 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.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a “Basic Component” under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/Disclaimer language, and additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the product(s) in such a manner.

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. P.O. 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. P.O. number to cover the COST of the repair,
2. Model and serial number of 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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- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

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