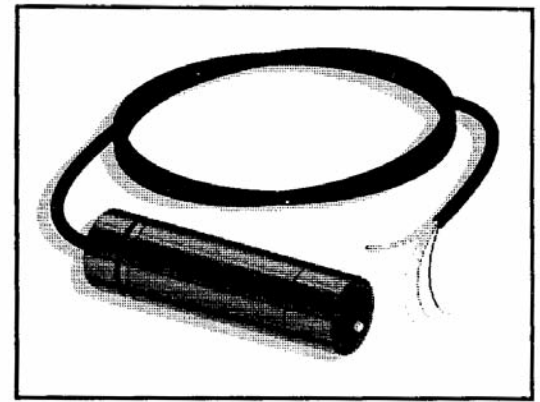


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PX437, PX438, PX439

Deep Depth Submersible Pressure Transmitter



INSTRUCTION
SHEET

M2075/1008

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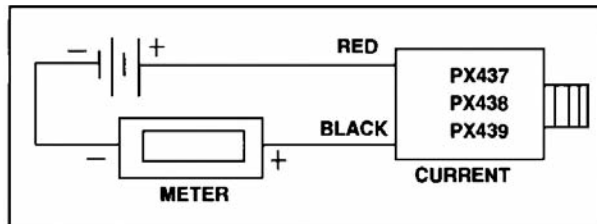
General Description

The OMEGA[®] PX437, PX438, PX439 Series Pressure Transmitters can be used in cases where the transmitter is to be submerged. The 4 to 20 mA output signal can be transmitted up to 10,000 feet.

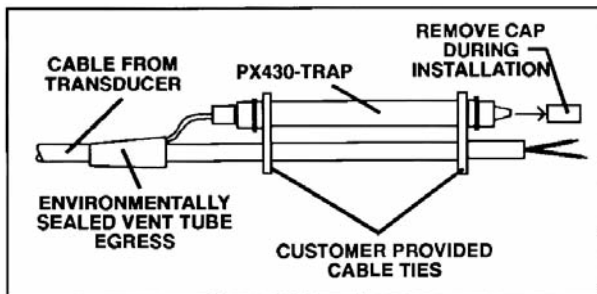
Theory of Operation

The transducers incorporate an isolated diaphragm sensor which is specifically designed for use with hostile fluids and gases. The sensors utilize a silicon pressure cell that has been fitted into a stainless steel package with integral, compliant stainless steel barrier diaphragm. This sensor assembly is housed in a rugged 316SS case which provides for a variety of pressure ranges. These devices feature internal signal conditioning, and the output is 4 to 20 mA.

Typical Wiring 4-20mA Configuration



PX430-TRAP Option Attached to Vented Cable



Optional PX430-TRAP Vent Filter/Water Vapor Trap

The PX430-TRAP is a replaceable vent tube dehumidifier intended for use with PX430 series submersible pressure transducers. This device protects sensitive electronic components from mildew, corrosion, rust and prevents the formation of liquid column in the vent tube. Any such column affects the calibration. The PX430-TRAP can be

exposed to air, industrial gases, refrigerants, organic liquids and solvents. It should not be used when ammonia is present.

The PX430-TRAP connects to the existing vent tube via a 10" flexible tube (locate the plastic tube near the two wires on the transducer cable). The acrylic drying tube is 6" long and the diameter is 3/4". Inserted in each pull-off molded polypropylene drying tube end cap is a 20 micron polypropylene filter.

The drying tube is filled with 30 grams of indicating desiccant (drying agent). The maximum flow rate through the drying tube is 300 cubic centimeters per minute, more than sufficient flow through to allow the transducer to respond to barometric changes. As air passes through the drying tube, moisture is absorbed by the desiccant. The desiccant changes from blue to a rose red as its drying capacity becomes diminished.

Desiccant can be rejuvenated after normal use by spreading it in a single layer in a container and heating for 1 hour at 205°C (400°F).

Drying Transducers

Transducers can be dried on-site if water has entered the vent tube. Place coiled cable and transducer in a container and heat in an oven at 50°C (122°F) for 2 hours. Do not exceed the temperature, or else the transducer and cable may be damaged.

Bending Cable

Minimum bending radius is 1 inch. Do not crimp the vent tube inside the cable.

Cable Compression

Compression fittings can be used to secure the jacketed cable. 15 ft/lb of force is allowable without damaging the cable or crimping the vent tube.

Specifications

Excitation:	9-30 Vdc, reverse polarity protected
Output:	4-20 mA dc, 2-wire
Input Current:	20 mA max
Insulation Resistance:	100 MΩ at 50 Vdc
Proof Pressure:	150%
Burst Pressure:	200%
Wetted Parts:	316 Stainless Steel, and Viton



PX437, PX438, PX439 Series Submersible Pressure Thermometers

Accuracy:	PX437: 0.1% FS BFSL PX438: 0.25% FS BFSL PX439: 0.5% FS BFSL (includes linearity, hysteresis, and repeatability)	Combined Thermal Effect: ±0.05% FS/°C (Zero and Span)
Response Time:	2 msec.	Mounting Provisions: Suspended by cable
Zero Offset:	±0.12 mA max	Electronic Connections: Submersible cable terminating in pigtail leads
Operating Temperature:	15°F to 140°F (-10°C to 60°C)	Cable: Polyurathane jacketed shielded cable with polyethylene vent tube and Kevlar tension members. 200 lbs pull strength.
Compensated Temperature:	32°F to 120°F (0°C to 50°C)	Weight: 7 oz. (198 g.) (cable not included)
Fill Fluid:	Silicone oil	

Available Models

Range		0.1% FS Accuracy Model	0.25% FS Accuracy Model	0.5% FS Accuracy Model	Cable Length
PSIG	FtH ₂ O				
0-2	5	PX437-002GI	PX438-002GI	PX-439-002GI	20 ft.
0-5	11.5	PX437-005GI	PX438-005GI	PX439-006GI	20 ft.
0-10	23.1	PX437-010GI	PX438-010GI	PX439-010GI	40 ft.
0-15	34.6	PX437-015GI	PX438-015GI	PX439-015GI	50 ft.
0-30	69.2	PX437-030GI	PX438-030GI	PX439-030GI	90 ft.
0-50	115	PX437-050GI	PX438-050GI	PX439-050GI	135 ft.
0-100	230	PX437-100GI	PX438-100GI	PX439-100GI	250 ft.
0-150	345	PX437-150GI	PX438-150GI	PX439-150GI	365 ft.
0-200	460	PX437-200GI	PX438-200GI	PX439-200GI	480 ft.
0-250	575	PX437-250GI	PX438-250GI	PX439-250GI	595 ft.
0-300	690	PX437-300GI	PX438-300GI	PX439-300GI	710 ft.

Accessories

Model	Description
PX430-TRAP	Vent Filter/Water Vapor Trap

OPTION -009

OPTION -009 surge protection kit is designed to protect above and below ground pressure transducers from damaging surge voltage and current. The OPTION -009 is designed for 4-20mA current loop (2 wire) transmitters. Designed in cooperation with a major manufacturer of surge protection devices, these systems are capable of protecting against fast rising voltage transients as well as current surges associated with lightning discharges.

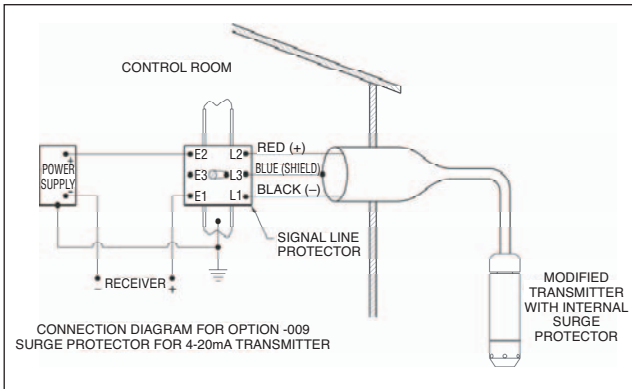
The protectors are multi-stage design, with a solid state section that intercepts the leading edge of the surge within nanoseconds. The second stage of the design contains a gas discharge tube which crowbars up to 20,000 ampere currents to ground. The tube remains in the crowbar state until the surge has passed, then automatically resets the line to normal operation without the need to reset a circuit breaker.

Each system consists of two parts. One is integral to the pressure transducer via a factory-installed extension to the cable end of the transducer housing, while the other is installed by the user between the transducer wiring and the power supply/readout.

The transducer is covered against damage due to lightning or voltage spikes for the life of the instrument, however, is not meant to protect against continuous over voltage and will not be warranted for such applications.

NOTE:

External line protection must be used in conjunction with the internally protected transducer at all times for lifetime warranty coverage.



CONNECTION DIAGRAM

for the next surge without the need for resetting a breaker or replacing a fuse. Both line to ground and line to line protection are provided.

NOTE:

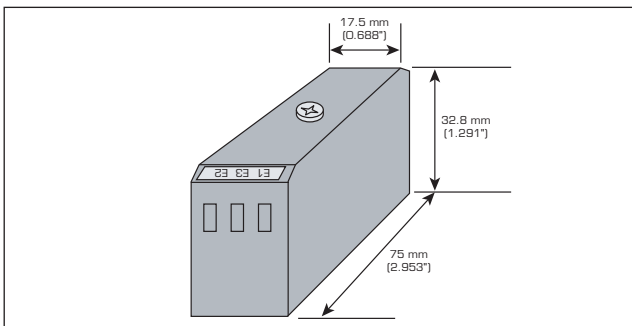
For 4 to 20 mA type sensors the supply voltage must be at least 15Vdc when using lightning protection OPTION-009 is installed.

Lightning Protection Specifications

- Life Expectancy: >1000 operations
- Peak Clamping Voltage: 36 volts
- Response Time: <10 nsecs
- Dimensions, length: 10.75 inches

Method of Operation

A solid state section intercepts the leading edge of the surge with sub-nanosecond response time. Within microseconds, a gas tube capable of shunting 20,000 amperes current operates and crowbars the surge to ground. The protector remains in the crowbar state until the surge has passed and line voltages return to safe levels. The line is automatically restored to normal operation and the lightning protection waits



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WARNING: These products are not designed for use in, and should not be used for, human applications.



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 in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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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.

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