1 YEAR WARRANTY

CE

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User's Guide

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Section 1 - Overview

Unless otherwise noted, this manual contains user information for the following sensors provided by Omega Engineering Inc:

PX709 and PXM709 Series Submersible Pressure Transducers.

Section - 2 Features

3 Pressure Types: Gage pressure (vented through the cable), Sealed gage pressure, Absolute pressure

4 Outputs: mV/V, 0-5Vdc, 0-10Vdc, or 4-20 mA

Pressure Ranges: from 10 inH2O to 1000 psi

The Standard cable length is 10 ft and optional lengths are available up to 300 ft.

NPT Pipe conduit fitting: NPT male fitting, allows rigid mounting to the conduit, see PX709C

Optional Lightning Protection: Integral lightning surge protection to IEC-61000-4-5 (Level 4).

Drying Tube Assembly: Clear tube filled with indicating desiccant, attaches directly to cable vent tube and intercepts water vapor. We highly recommended the desiccant tube when operating in high humidity conditions. Must be periodically renewed as desiccant becomes saturated, turning color from blue (dry) to pink (saturated).

NOTE:

Drying tubes are not required for sealed gage or absolute pressure models (Vent tube is sealed at sensor).

Termination Enclosure: Convenient option complementing gage-type pressure/level transmitters, where it is desired to terminate the transmitter cable close to the measurement point. It includes a NEMA 4X clear front enclosure (9.9 x 5.8 x 3.0") with two, liquid-tight cable fittings (one in, one out), a terminal strip or surge protection, and ample room for mounting a drying tube, and a waterproof vent. See page 7-1 for more detail.

External Surge Protector - Surge protection is recommended on sensors with very long cable for lightning/surge protection of user's power supply/readout.

Section 3 - General Maintenance

WARNING:

Under no circumstances should the pressure input port to the PX709 be probed with any object. Damage to the sensing diaphragm can be permanent and in most cases requires repair or replacement.

Transmitter Anchoring:
It is recommended that PX709 submersible transmitters be installed in a stilling well or attached to rigid conduit using the PX709C with the integral conduit fitting in order to prevent damage to the transmitter from impact with immovable objects. It is not advisable to tie the transmitter to a pump or to piping, as any problem with the transmitter could require that the pump be pulled from the installation.

Some applications require the transmitter to be suspended without a protective stilling well or conduit attachment. In all installations, care should be taken to prevent damage to the submersible cable.

Transmitter Submersion:
Damage to submersible cable can lead to failure of the transmitter. Omega employs a cable made with a Polyurethane jacket with double Kevlar reinforcing stringers, fused to case, with large vent tube to minimize the risk of cuts and abrasion. Still, take care when lowering your transmitter into the well, making sure the cable does not drag over sharp edges. Avoid dropping the transmitter from the surface.

Condensation protection:
Omegadyne has optimized the size of the cable vent to minimize the occurrence of water vapor incursion. In areas of high humidity, it may be desirable to use a Drying Tube Assembly (desiccant) to prevent water vapor from entering the vent tube. An enclosure with a desiccant is available as an option. See page 7-1 for details and options.

Bending of Cable:
Our Polyurethane jacketed cable is quite flexible. However care must be taken to ensure the vent tube integral to the cable is not crimped when bending the cable to suit your installation. It is recommended that the cable not be bent to a radius smaller than 2 inch.

Cable Compression:
Many users employ a compression fitting to secure our cable as it enters a junction box. Care must be taken that the fitting is not over tightened, causing damage to the cable and/or crimping the vent tube.

Position Sensitivity:
The transmitter should be installed in a vertical position; otherwise it may exhibit an offset. If the transmitter must be installed in any position other than vertical, measure the output with no pressure applied prior to connection to your display, PLC, or controller. Use the measured value for your zero point.

Section 4 – Voltage Output

4.1 Specifications

Output:	0 to 5, 0 to 10 Vdc
Operating Current:	Less than 10 mA
Supply Voltage Range:	10 to 30 Vdc (0 to 5 Volt Output)
Supply Voltage Range:	16 to 30 Vdc (0 to 10 Volt Output
Response Time:	1 mSec
Output Common Mode:	0 volts (Output can be used as 3-wire with reduced accuracy) A four wire connection is recommended for long cables and sensors with lightning protection due to voltage drop in the cable.
Reverse Voltage Protection:	Yes

CAUTION:

Do not short + output to the + supply. Permanent damage will occur.

4.2. Wiring

Red:	+Excitation
Black:	-Excitation
White:	+Output Signal
Green:	-Output Signal

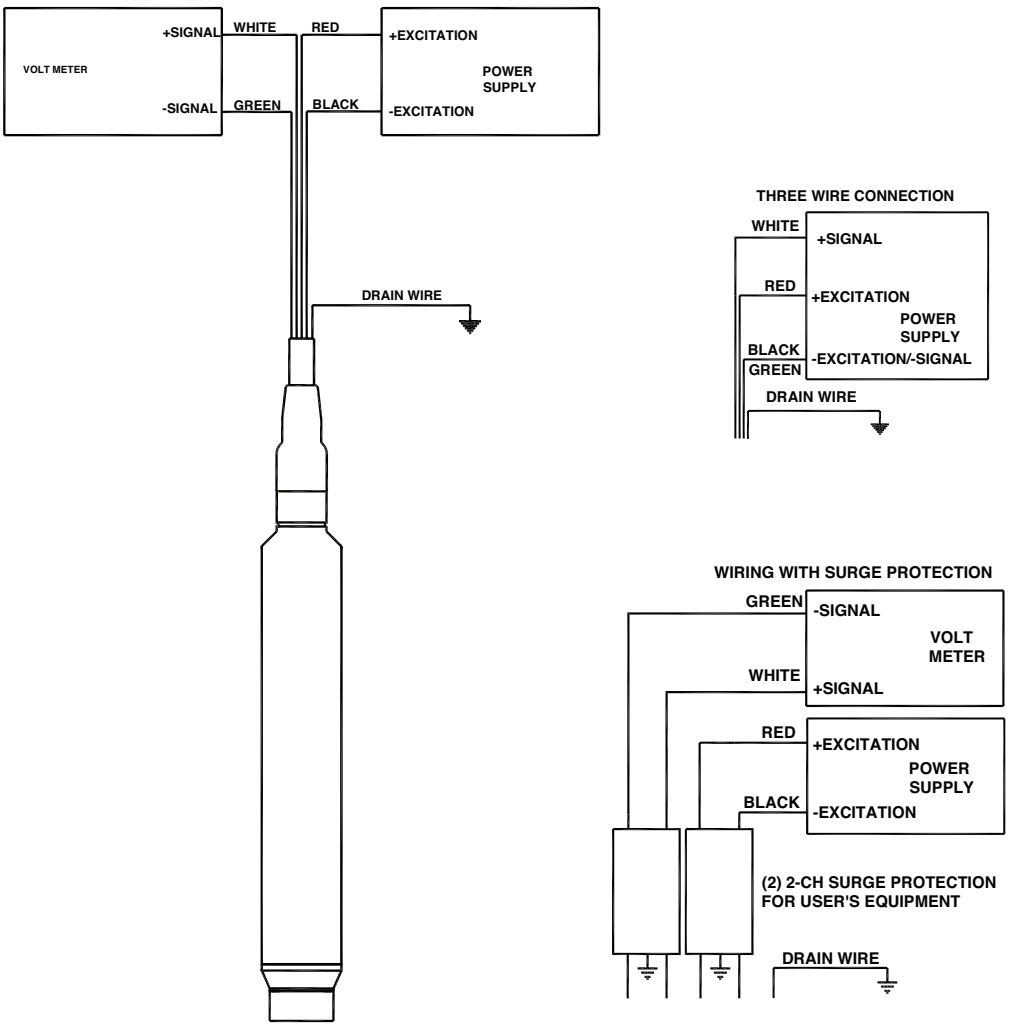

Figure 4-1 Voltage Wiring Diagram

Section 5 - Current Output

5.1 Specifications

Output:	20 mA
Operating Current:	28 mA max
Supply Voltage Range:	10 to 30 volts
Response Time:	1 mSec
Reverse Voltage Protection:	Yes
Max Loop Resistance:	(Input supply voltage -10) x 50 ohms

5.2 Wiring

Red:	+Input
Black:	-Input

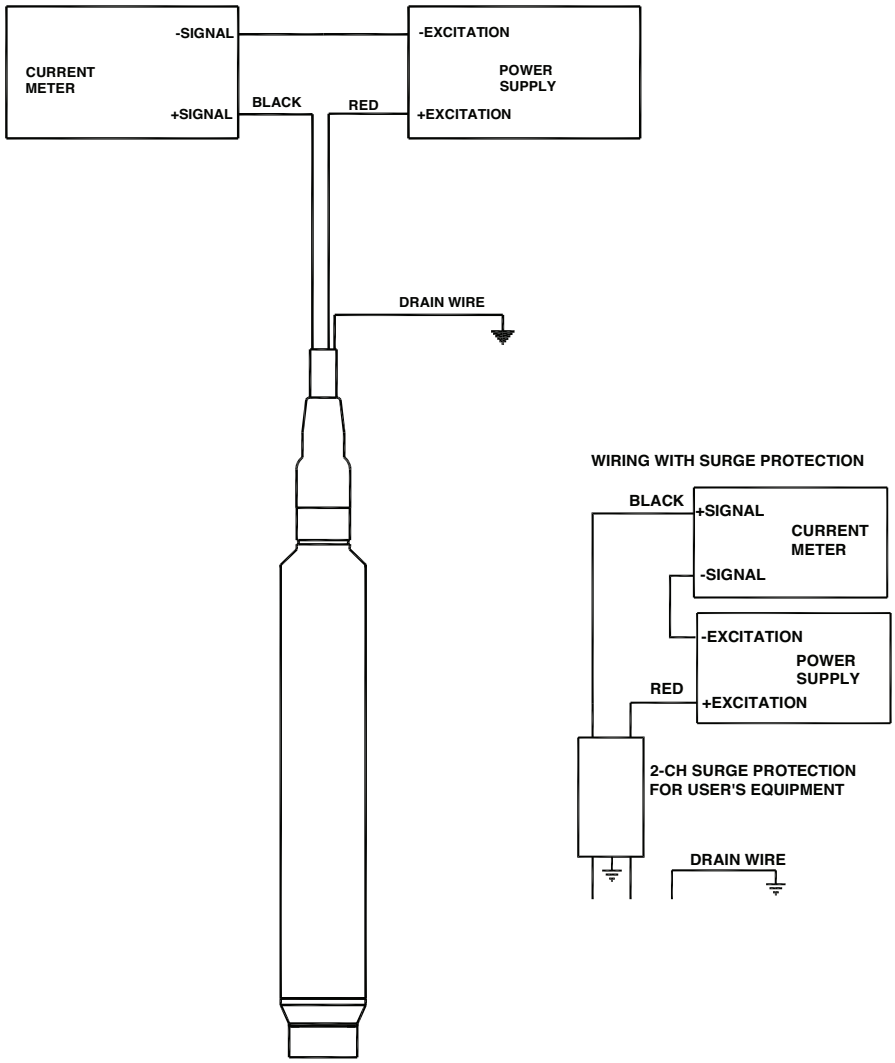

Figure 5-1 Current Wiring Diagram

Section 6 - Millivolt/Volt Output

6.1 Specifications

Output:	30 mV @ 10 Vdc (15 mV @ 5 volts)
Output Resistance:	5000 ohms
Operating Current:	Less than 6mA
Supply Voltage Range:	5 to 10 volts (5 volt minimum - 10.6 maximum)
Response Time:	1 mSec
Output Common Mode:	1/2 of supply voltage

Electronically linearized; do not reverse excitation polarity.

6.2 Wiring

Red:	+Excitation
Black:	-Excitation
White:	+Output Signal
Green:	-Output Signal

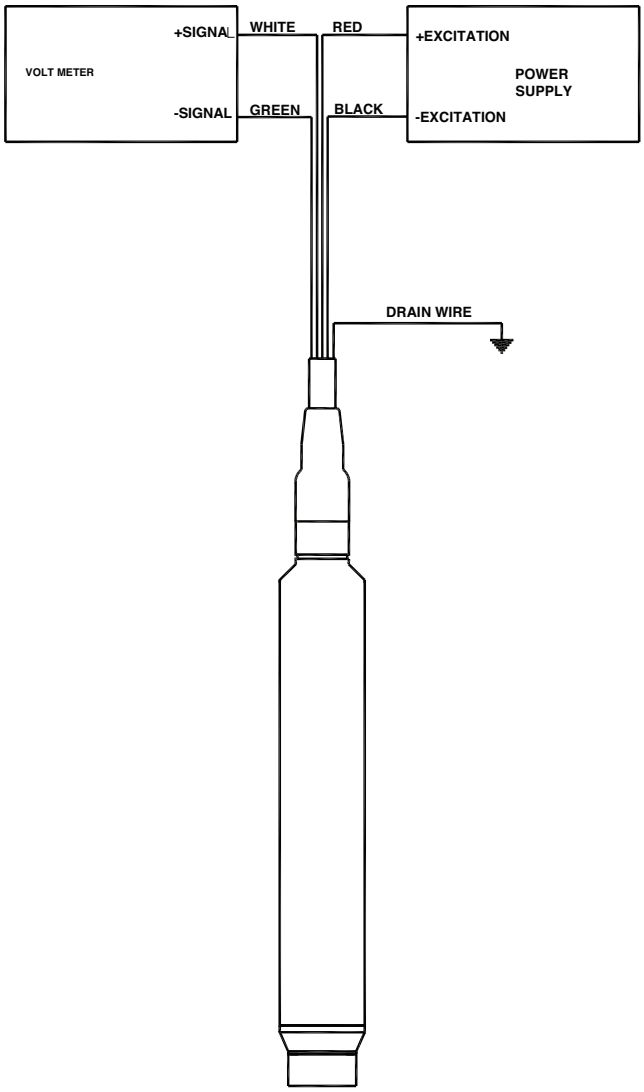

Figure 6-1 Millivolt/Volt Wiring Diagram

Section 7 - Termination Enclosure

Desiccant Tube:
Always install a desiccant vent filter immediately after gage transducer installation. Failure to use one could result in premature failure of the transducer; which would not be covered by warranty. If you use a desiccant filter, you should establish a regular maintenance schedule. You should change your vent filter when it is 75% spent (pink color). Replacement filters (part number A019385) are available at a nominal cost from the Omega Engineering. Do not remove the old vent filter until a new one is available. The most common failure mode of our transducers is moisture and corrosion damage due to lack of use or maintenance of the vent filter. This will allow air into the desiccant filter and allows the transducer to properly vent with changes in barometric pressure.

Drain Wire:
The drain wire should be tied to a good earth ground with a minimum of a #22 AWG wire or heavier.

Surge Protection at the Termination Enclosure:
For long cable runs in areas that are prone to lightning a surge protector is recommend at the end of the cable to protect the user's equipment from damage. A Bourns 1820 - 28-A3 is recommended for both the current and voltage versions of the PX709LGW. The termination enclosure can be ordered with terminals or surge protectors and a desiccant tube.

PX709-BOX1- Waterproof enclosure with no surge protection.

PX709-BOX2- Waterproof enclosure with surge protection for mA Output models.

PX709-BOX3- Waterproof enclosure with surge protection for 5V/10V Output models

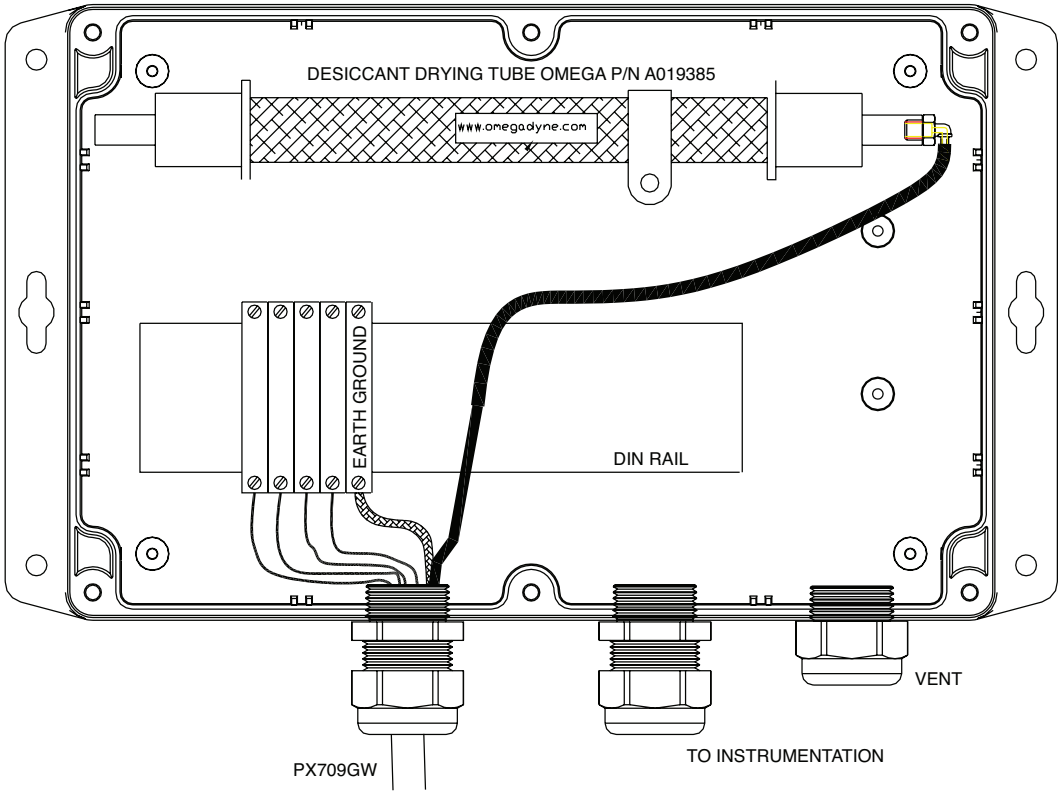

Figure 7-1 Termination Enclosure Without Surge Protection

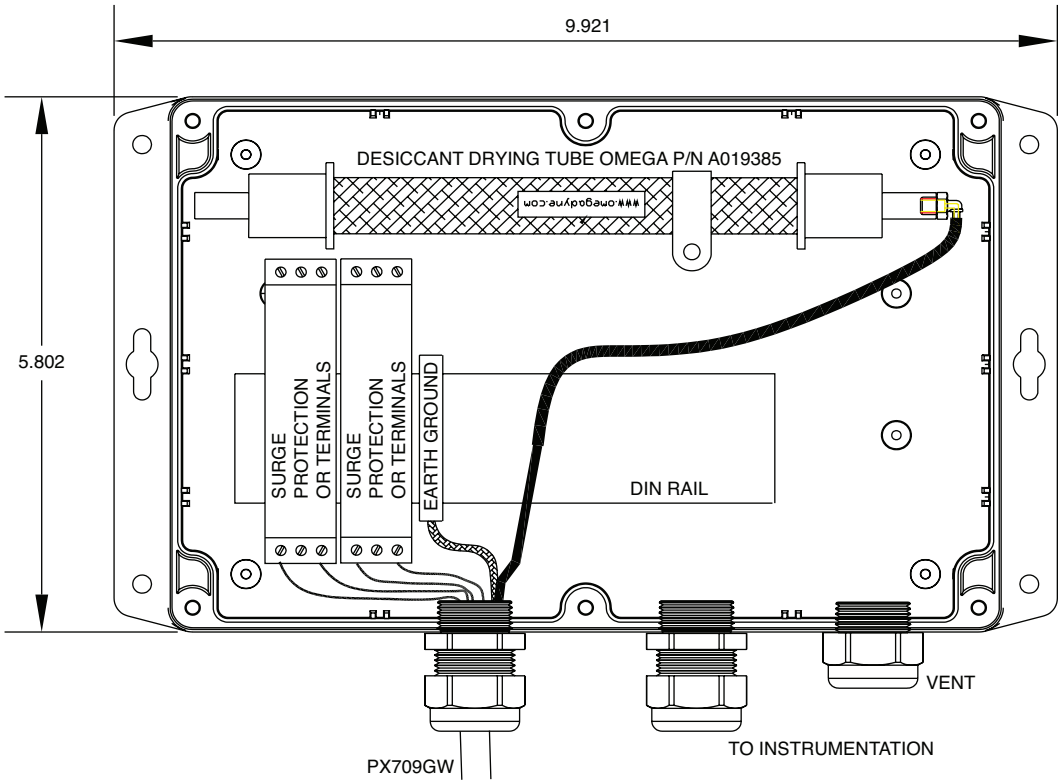

Figure 7-2 Termination Enclosure With Surge Protection

NOTES:

MADE IN USA

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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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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