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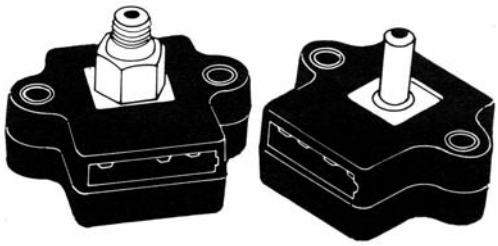
PX105 Series

Pressure Transducers



INSTRUCTION SHEET

M0211/1008

General

The Model PX105 pressure transducer is a high gain strain gage device with a hybrid amplifier providing a conditioned output. The 5 volt output is capable of driving control, indicator, or alarm circuitry directly without external amplification.

A unique stainless steel pressure chamber design insures circuit protection from corrosive measurand while the outer case of Valox protects against harsh environments. This combination assures the Model PX105 performance to continue within orginal specification limits.

Typical media used with the PX105 include oil, gases, saline solutions, blood, hydraulic fluids, alcohol, acids, and gasoline.

Installation

The Model PX105 may be easily mounted on a printed circuit board using the two mounting holes or by supporting it from the stainless steel pressure port. Many applications require a threaded pressure port. For these we recommend the use of adapters similar to the Swagelok type. The internal voltage regulator allows the use of economical unregulated power sources from 8-20 Vdc.

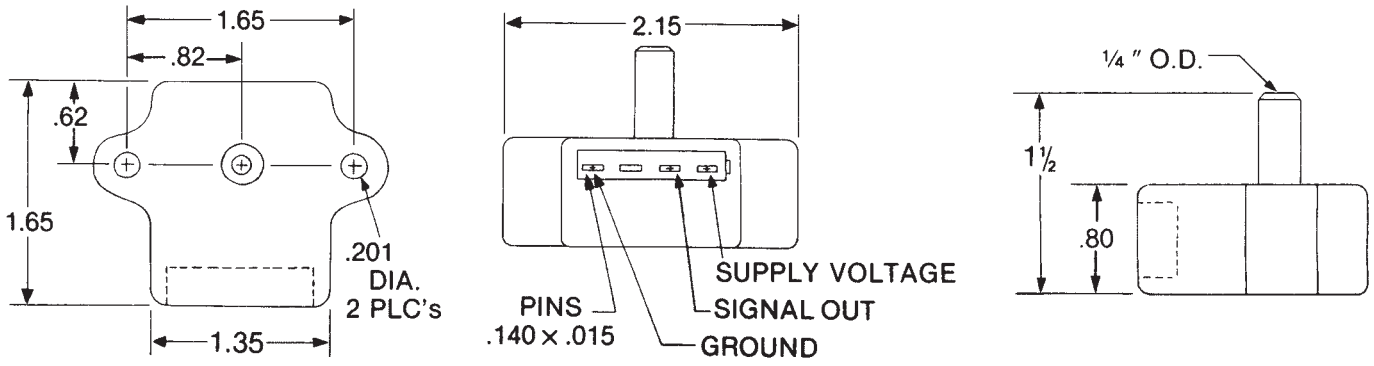


Figure 1. Mechanical Ranges 0-6 to 0-50 PSI

*⅛"-27 NPT (FOR EA/100 THROUGH 2000)

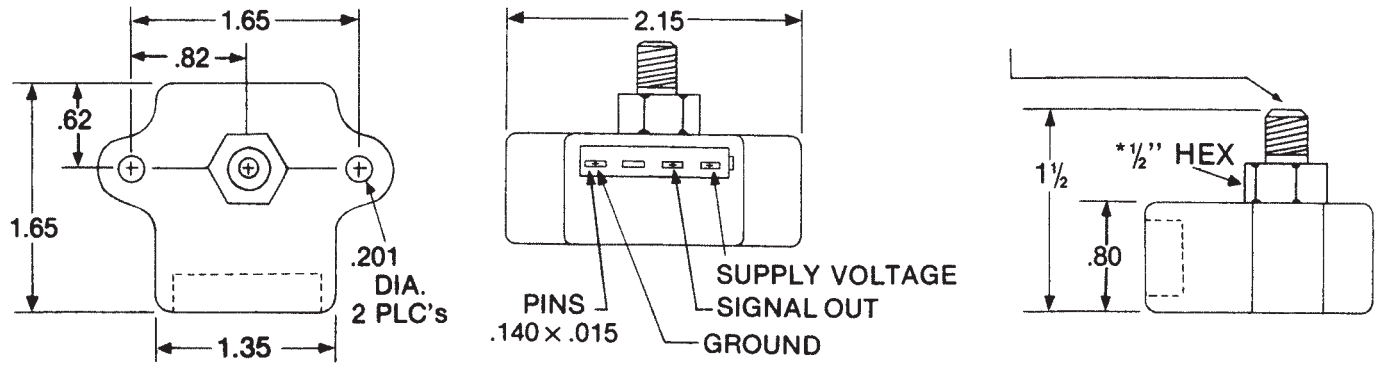


Figure 2. Mechanical Ranges 0-100 to 0-5000 PSI

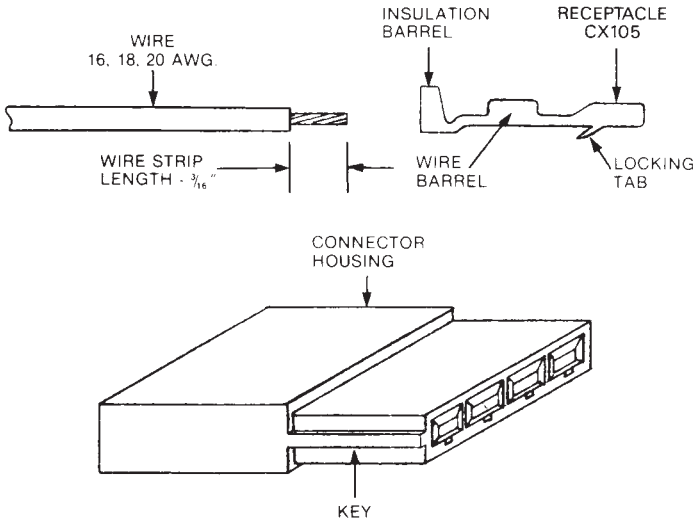
Pressure Overloads

PX105 transducers will withstand high overloads. If the overload rating is exceeded, electrical failure may occur. As a safety feature, the transducers have been designed to withstand much higher burst pressures than the pressure which will cause permanent damage.

Important: Both static and dynamic overloads must be considered when selecting a pressure transducer. Pressure fluctuations exist in most systems. These fluctuations can have very large and very fast peak pressures, as in water hammer effects. If the transducer is connected to a slow responding instrument, such pressure peaks may not be observed. An oscilloscope is a convenient tool for determining if high pressure transients exist in a system. Where pressure pulses are expected, the transducer rating should be high enough to prevent overload by the peak pressure. Where high pressure transients are unavoidable, use either a higher range transducer or a snubber, which will reduce the peak pressure applied to the transducer. The life of the transducer will be reduced if it is repeatedly overloaded, particularly under dynamic conditions.

NOTES

CONNECTOR ASSEMBLY INSTRUCTIONS



1. CRIMP RECEPTACLE TO WIRE USING AMP TOOL CR-100 OR EQUIVALENT.
2. LOOKING AT THE FRONT OF THE CONNECTOR HOUSING, (KEY ON LEFT SIDE), INSERT RECEPTACLE WITH LOCKING TAB FACING DOWN, MAKING SURE LOCKING TAB IS FULLY ENGAGED INTO HOUSING.

WARNING! READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transducer and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects.

Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.

Liquid surges are particularly damaging to pressure transducers if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed, and a pressure snubber should be installed on every transducer.

Symptoms of fluid hammer and surge's damaging effects:

a) Pressure transducer exhibits an output at zero pressure (large zero offset). If zero offset is less than 10% FS, user can usually re-zero meter, install proper snubber and continue monitoring pressures.

b) Pressure transducer output remains constant regardless of pressure.

c) In severe cases, there will be no output.

PX105 SPECIFICATIONS AT 25°C

	PRESSURE RANGE									
	6, 15, 25			50, 100, 200,			500, 1K, 2K,			
PARAMETER	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Full Scale Output (FSO)*	4.90	4.95-5.05	5.10	4.90	4.95-5.05	5.10	4.90	4.95-5.05	5.10	Vdc
Null Offset	.85	.95-1.05	1.15	.85	.95-1.05	1.15	.85	.95-1.05	1.15	Vdc
Linearity (Best Fit)		± .5	± 1.0		± .2	± .5		± .2	± .5	% FSO
Hysteresis		± .25			± .25			± .25		% FSO
Temperature Error										
Null 0° to 85°C		± .01	± .02		± .01	± .02		± .01	± .02	% FSO/°C
– 55° to 0°C + 85°C to 125°C		± .02			± .02			± .02		% FSO/°C
Sensitivity 0° to 85°C		± .01	± .02		± .01	± .02		± .01	± .02	% Rdg/°C
– 55° to 0°C + 85°C to 125°C		± .02			± .02			± .02		% Rdg/°C
Stability (1 year)		± 1.0			± 1.0			± 1.0		% FSO
Frequency Response		10			10			10		kHz
Supply Voltage (V_S)	8		20	8		20	8		20	Vdc
Supply Current (Quiescent)		15			15			20		mA
Output Current										
Source	10			10			10			mA
Sink	5			5			5			mA
Pressure Overload			2×			2×			1.5×	Rated Pressure
Burst Pressure	20×			10×			5×			Rated Pressure
Operating Temperature	– 55° to 125°C									
Storage Temperature	– 65° to 150°C									

*FSO is the voltage change between minimum and rated pressure.
For example: NOM V_O = 1.00 V @ Null Pressure, NOM V_O = 6.00 V @ Rated Pressure, FSO = (6.00-1.00) = 5.00 V.

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

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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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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