SUBMERSIBLE PRESSURE TRANSDUCERS

FOR LEVEL, DEPTH OR GROUND WATER MEASUREMENTS

Gage, Sealed Gage or Absolute Pressure
4 to 20 mA Outputs
0 to 25 mbar to 0 to 70 bar

PXM709GW Series Level/Submersible

MADE IN USA NIST CE RoHS

Standard

- **Precision Micromachined Silicon Sensor**
- **5-Point NIST Traceable Calibration**
- **Lightning/Surge Protection Available on Amplified Models**
- **316L SS Case and Diaphragm**
- **Fused Polyurethane Cable**
- **Premium Temperature Performance**
- **Broad Compensated Temperature Range**
- **0.20% Standard Accuracy or Optional 0.08% High Accuracy Models for Precise Depth Measurement**
- **Available in Gage Pressure: Vented to Atmosphere Through the Cable; Sealed Gage: Not Vented to Atmosphere; or Absolute Pressure: Vacuum Reference**
- **Reverse Polarity Protected**
- **Protective Nose Cone and Desiccant Available**
- **Standard or Custom Cable Lengths**

PXM709GW available with optional lightning protection shown smaller than actual size.

Nose cone included.

The PXM709GW Series submersible depth transducers are designed to make precision level or depth measurements in fresh water or liquids compatible with 316 SS reliably for years in harsh industrial environments. The PXM709GW series has the proven Omega micromachined silicon technology as its core sensor. The Piezoresistive technology uses precision solid state strain gages molecularly embedded into a highly stable silicon wafer. The silicon is mounted in a sealed chamber and protected from the environmental fluids by a pressure sensitive stainless steel diaphragm. A very small volume of silicone oil transfers the pressure from the diaphragm to the silicon sensor. The cable is molded onto the case using a unique high pressure, high temperature system to assure the best possible quality seal for long life and durability. This technology produces a very rugged, high stability sensor with exceptional accuracy, minimal thermal effects and long term reliability.

Applications

- **Level Monitoring and Control**
- **Depth Measurement**
- **Surface Water Monitoring**
- **Tank Level**
- **Well Water Depth**
- **Waste Water Applications**
- **Dewatering Installations**
- **Construction Bypass**

Inconel® models are also available for oceanic research and highly corrosive or salt water applications. See model PXM709SW.

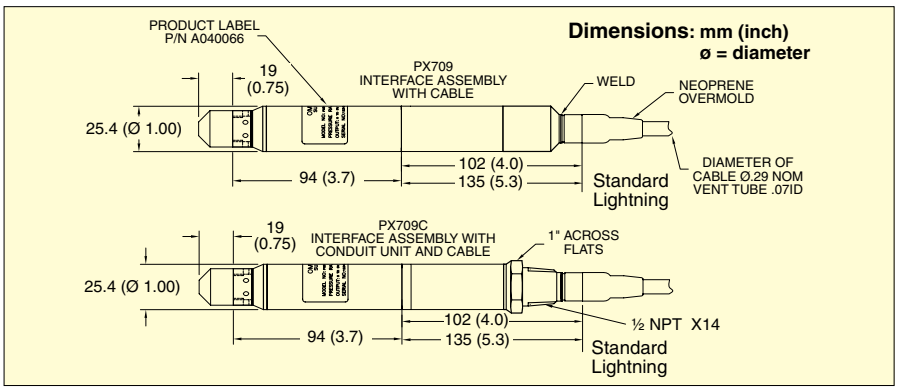
SUBMERSIBLE PRESSURE TRANSDUCERS
FOR LEVEL, DEPTH OR GROUND MEASUREMENTS

Shown monitoring river level for flood warning.

PXM709GW Connections

	mV/V	VOLTAGE	CURRENT
Red	(+) V in	(+) V in	(+) Supply
Black	(-) V in	(-) Common	(-) Supply
Green	(-) Signal	no connection or Common*	Shunt (option)
White	(+) Signal	(+) Signal	Shunt (option)

** If 4-wire voltage output is chosen, see application note in manual.*



COMMON SPECIFICATIONS

Approvals: RoHS compliant

Accuracy (Combined Linearity, Hysteresis and Repeatability): Standard ±0.20% BSL or high accuracy, option "HH", ±0.08% BSL

Setting Accuracy Zero: ± 0.5% full scale typical, ± 1.0% full scale maximum (± 1.0% full scale typical, ± 2.0% full scale maximum for ranges ≤ 170 mb)

Setting Accuracy Span: ± 0.5% full scale typical, ± 1.0% full scale maximum (± 1.0% full scale typical, ± 2.0% full scale maximum for ranges ≤ 170 mb) calibrated in vertical direction with fitting down

Minimum Resistance Between Transducer Body and Any Wire: 100M Ω @ 50 Vdc (before surge protection)

Pressure Cycles: 1 million minimum

Long Term Stability (1 Year.): ±0.1% full scale typical

Operating Temperature: -18 to 79°C (0 to 175°F) with no solid freeze

Compensated Temperature: -1 to 32°C (30 to 90°F)

Thermal Effects (Over Compensated Range):

Zero Balance:
- **Ranges >350 mb:** ±0.3% span
- **Ranges ≤350 mb:** ±0.5% span

Span Setting:
- **Ranges >350 mb:** ±0.3% span
- **Ranges ≤350 mb:** ±0.5% span

Bandwidth: DC to 1 kHz typical

Response Time: 500 usec, 0 to 90% step change

CE Compliant: Meets EN 61326-1: 2006 for industrial locations [certified with 91 m (300')]

Lightning Protection Option (if included): Integral lightning surge protection to IEC-61000-4-5 (Level 4)

Shock: 50 g, 11 ms, half-sine horizontal and vertical axis

Vibration: ± 20 g

Overpressure

Gage and Sealed Gage:
- **25 mb:** 10 times span
- **70 mb:** 6 times span
- **170 mb to 70 bar:** 4 times span

Absolute: 350 mba: 6 times span ranges
- **>350 mba:** 4 times span

Containment Pressure

Gage Pressure:
- **25 to 350 mb:** To 70 bar
- **1 to 70 bar:** To 200 bar

Absolute Pressure:
- **350 mb to 70 bar:** To 400 bar

Wetted Parts: 316L stainless steel

Body Material: 316L stainless steel

Pressure Connection: 9/16-18 UNF female

Transducer Weight: 285 g (10 oz) typical depending upon configuration

Cable Construction: Polyurethane jacket with double Kevlar® reinforcing stringers, fused to case, with large vent tube

Cable Pull Strength: 109 kg (240 lb)

Cable Conductors: Four 24 AWG (19/36 stranded tinned copper) with ETFE insulation; meets MIL-W-22759/16 & SAE AS22759/16

Cable Sealing: Fused to case via molded Neoprene boot rated to 610 m (2000') depth

Standard Cable Lengths (meters): 3, 4.6, 6, 7.5, 9, 12, 15, 18, 20, 22.5, 30.5, 45, and 90 for other lengths contact factory for lead times
(see page 6)

Desiccant, shown smaller than actual size.

SUBMERSIBLE PRESSURE TRANSMITTER
PXM709GW SERIES WITH 4 TO 20 mA OUTPUT

NEW®

Submersible Level Transducer

To Order

4 to 20 m OUTPUT, 0.2% ACCURACY[1] WITH 3 m (10') CABLE (MAX CABLE LENGTH 91 m (300')]

GAGE PRESSURE RANGES (INTERMEDIATE RANGES AVAILABLE, CONSULT PRESSURE ENGINEERING)

RANGE BAR	EQUIVALENT DEPTH mH_2O	STANDARD CABLE LENGTH	STANDARD PART NUMBER[2] STANDARD 0.20% ACCURACY	LIGHTNING[3] PROTECTED MODELS STANDARD 0.20% ACCURACY
0 to 25 mbar	0.25	3 m (10')	**PXM709GW-025HGI-[**]**	**PXM709LGW-025HGI-[**]**
0 to 70 mbar	0.7	3 m (10')	**PXM709GW-070HGI-[**]**	**PXM709LGW-070HGI-[**]**
0 to 170 mbar	1.7	3 m (10')	**PXM709GW-170HGI-[**]**	**PXM709LGW-170HGI-[**]**
0 to 350 mbar	3.6	3 m (10')	**PXM709GW-350HGI-[**]**	**PXM709LGW-350HGI-[**]**
0 to 700 mbar	7.1	3 m (10')	**PXM709GW-700HGI-[**]**	**PXM709LGW-700HGI-[**]**
0 to 1	10	3 m (10')	**PXM709GW-001BGI-[**]**	**PXM709LGW-001BGI-[**]**
0 to 2	20	3 m (10')	**PXM709GW-002BGI-[**]**	**PXM709LGW-002BGI-[**]**
0 to 3.5	35	3 m (10')	**PXM709GW-3.5BGI-[**]**	**PXM709LGW-3.5BGI-[**]**
0 to 7	71	3 m (10')	**PXM709GW-007BGI-[**]**	**PXM709LGW-007BGI-[**]**
0 to 10	102	3 m (10')	**PXM709GW-010BGI-[**]**	**PXM709LGW-010BGI-[**]**
0 to 17.5	178	3 m (10')	**PXM709GW-17.5BGI-[**]**	**PXM709LGW-17.5BGI-[**]**
0 to 35	357	3 m (10')	**PXM709GW-035BGI-[**]**	**PXM709LGW-035BGI-[**]**
0 to 50	510	3 m (10')	**PXM709GW-050BGI-[**]**	**PXM709LGW-050BGI-[**]**
0 to 70	714	3 m (10')	**PXM709GW-070BGI-[**]**	**PXM709LGW-070BGI-[**]**
SEALED GAGE PRESSURE				
0 to 7	71	3 m (10')	**PXM709GW-007BSGI-[**]**	**PXM709LGW-007BSGI-[**]**
0 to 10	102	3 m (10')	**PXM709GW-010BSGI-[**]**	**PXM709LGW-010BSGI-[**]**
0 to 17.5	178	3 m (10')	**PXM709GW-17.5BSGI-[**]**	**PXM709LGW-17.5BSGI-[**]**
0 to 35	357	3 m (10')	**PXM709GW-035BSGI-[**]**	**PXM709LGW-035BSGI-[**]**
0 to 50	510	3 m (10')	**PXM709GW-050BSGI-[**]**	**PXM709LGW-050BSGI-[**]**
0 to 70	714	3 m (10')	**PXM709GW-070BSGI-[**]**	**PXM709LGW-070BSGI-[**]**
ABSOLUTE PRESSURE				
0 to 350 mbar	3.6	3 m (10')	**PXM709GW-350HAI-[**]**	**PXM709LGW-350HAI-[**]**
0 to 700 mbar	7.1	3 m (10')	**PXM709GW-700HAI-[**]**	**PXM709LGW-700HAI-[**]**
0 to 1	10	3 m (10')	**PXM709GW-001BAI-[**]**	**PXM709LGW-001BAI-[**]**
0 to 2	20	3 m (10')	**PXM709GW-002BAI-[**]**	**PXM709LGW-002BAI-[**]**
0 to 3.5	35	3 m (10')	**PXM709GW-3.5BAI-[**]**	**PXM709LGW-3.5BAI-[**]**
0 to 7	71	3 m (10')	**PXM709GW-007BAI-[**]**	**PXM709LGW-007BAI-[**]**
0 to 10	102	3 m (10')	**PXM709GW-010BAI-[**]**	**PXM709LGW-010BAI-[**]**
0 to 17.5	178	3 m (10')	**PXM709GW-17.5BAI-[**]**	**PXM709LGW-17.5BAI-[**]**
0 to 35	357	3 m (10')	**PXM709GW-035BAI-[**]**	**PXM709LGW-035BAI-[**]**
0 to 50	510	3 m (10')	**PXM709GW-050BAI-[**]**	**PXM709LGW-050BAI-[**]**
0 to 70	714	3 m (10')	**PXM709GW-070BAI-[**]**	**PXM709LGW-070BAI-[**]**

4 to 20 mA SPECIFICATIONS

Output: 4 to 20 mA

Supply Voltage: 10 to 30 Vdc [10 to 20 Vdc above 105°C (229°F)] maximum loop res Ω = (Vs-10) x 50

Lightning Protection: See application note/manual

See Common Specifications for other parameters.

OPTIONS FOR SUBMERSIBLE TRANSDUCERS	
PX709-BOX1	Terminal enclosure without surge protection - for use with all models
PX709-BOX2	Terminal enclosure with surge protection - for use with 4 to 20 mA without Shunt Cal (one surge protection module)
PX709-BOX3	Terminal enclosure with surge protection - for use with voltage output sensors and 4 to 20 mA with Shunt Cal option (two surge protection modules)
A019385	Replacement desiccant to keep moisture out of vent tube

Comes complete with 5-point NIST traceable calibration certificate.

*[**] To order with addition cable length, specify total length in meters, **PXM709GW-001BGI-12M**, additional cost for length over 3 meters. Consult sales for stock cable length to assure fast delivery.*

*1.) To order with optional high accuracy for extra cost, insert code **"-HH"** after **"I"** for 0.08% accuracy, **PXM709-010BGI-HH-[**].***

*2.) To order with ½ NPT Conduit fitting for extra cost, specifiy Model **PXM709C**, **PXM709CGW-170HGI.***

*3.) To order with optional Lightning/Surge protection for extra cost, specify Model **PXM709LGW,** i.e. **PXM709LGW-001BGI.***

*4.) To order with optional Lightning/Surge protection and conduit fitting for extra cost, specify Model **PXM709CLGW,** i.e. **PXM709CLGW-001BGI.***

***Ordering Examples: PXM709GW-350HGI,** 350 mbar gage submersible transducer with 4 to 20 mA output, 3 m (10') of cable and standard 0.2% accuracy.*

***PXM709LGW-001BAI-HH-7.5M,** 1 bar absolute pressure, lightning protected submersible transducer with 4 to 20 mA output, 7.5 m (25') of cable and high 0.08% accuracy.*

***PXM709CGW-700HGI-6M**, 700 mbar gage submersible transducer with 4 to 20 mA output, a ½ NPT conduit fitting and 6 m (20') of cable with 0.2% accuracy.*

SUBMERSIBLE PRESSURE TRANSMITTERS
BUILD A TRANSDUCER TO YOUR SPECIFICATIONS

Build a Transducer to your Specifications

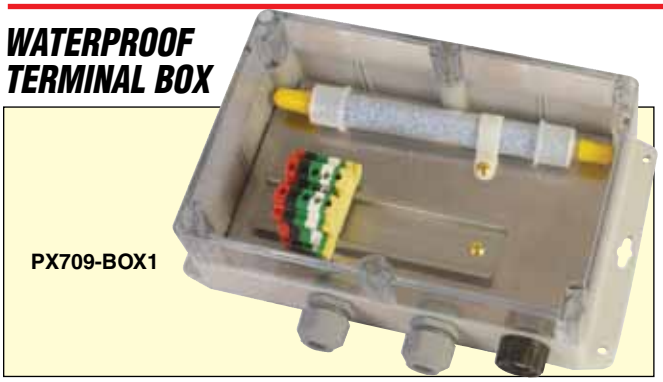
1	2		3	4	5		6		7
SERIES	TYPE		RANGE CODE	PRESSURE TYPE	OUTPUT		ACCURACY		TOTAL CABLE LENGTH (m)
PXM709	GW	–	3.5	G	I	–	HH	–	15 M
PXM709 = Cable PX709C = Conduit	GW = Stainless Steel Wetted Parts LGW = Lightning Protected (amplified models only)		Range (bar) xxx	G = Gage A = Absolute SG = Sealed gage	V = mV/V 5V = 5 Vdc 10V = 10 Vdc I = 4 to 20 mA		Blank = Standard 0.2% Accuracy HH = High 0.08% Accuracy		Total Length in meters if not 3 m (10') *Extra cost for additional length over 3 m (10')*

*Optional Higher Accuracy: Add suffix **"-HH"** after the **"V"** or **"I"** in the model number.*
*Optional Conduit Fitting Cable Exit: Specify model **PXM709CGW.***
*Optional Lightning Protection: Specify model **PXM709LGW.***
*Optional Lightning protection and conduit fitting: Specify model **PXM709CLGW.***

To select your submersible transducer all you have to do is

SELECT:
- Range
- Pressure Type
- Output
- Accuracy
- Total Cable Length (see table of stocked lengths)

WATERPROOF TERMINAL BOX



PX709-BOX1

PX709-BOX1 waterproof terminal box for PX709 provides a waterproof environment for electrical terminations and housing the desiccant. Also available with optional lightning protection for downstream instruments.

STANDARD CABLE LENGTHS FOR FAST DELIVERY

OMEGA® has designed the PX709 Series to be highly modular so we can configure and ship most models in 1 week. We stock the modules and can quickly assemble and do precision calibrations for any of our several thousand possible combinations. The cable molded onto the transducer using a high pressure, temperature molding process to assure complete sealing. We stock a series of molded cable assemblies in standard lengths to suit most common applications which we can build onto your transducer and deliver in 1 week (see the list below). We also can provide custom lengths with slightly longer lead times to allow for the molding process.

PX709C with ½ NPT conduit fitting.

PX709 with standard cable fitting.

Fast Delivery – Highlighted Typically Stock to 2 Weeks!

STANDARD LENGTHS
3 m (10')
4.5 m (15')
6 m (20')
7.5 m (25')
9 m (30')
12 m (40')
15 m (50')
18 m (60')
20 m (65')
22.5 m (74')
30 m (100')
45 m (150')
91 m (300')