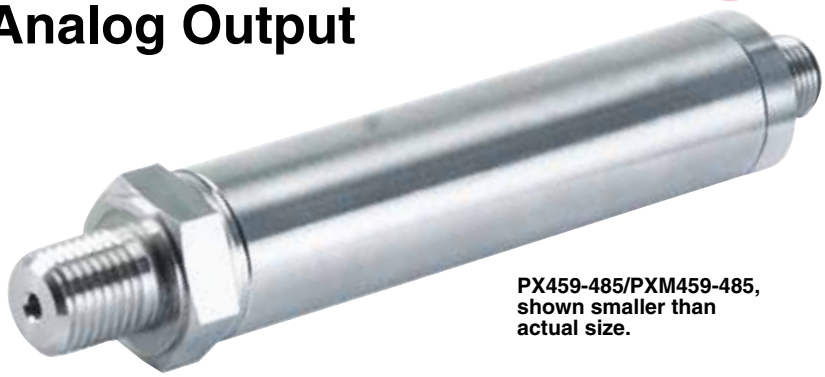
RS485 Output Silicon Pressure Transmitter

Digital RS485 with Analog Output

Imperial and Metric

Gage and Absolute Pressures
10 inH$_2$0 to 5000 psi (25 mb to 345 bar)
Vacuum and Compound Ranges
10 inH$_2$0 to 15 psi (25 mb to 1 bar)
Barometric Pressure Ranges
0 to 32, 16 to 32, and 26 to 32 inHg (0 to 1100 hPa, 550 to 1100 hPa, and 880 to 1100 hPa)



PX459-485/PXM459-485, shown smaller than actual size.

PX409-485/PXM409-485 Series

NIST CE

Standard

FREE OMEGA® Downloadable Software!

Free OMEGA PC software takes the data from the transmitter directly to the digital domain, turning your laptop or Windows® tablet into a virtual meter, chart recorder, or data logger. Also included are .NET APIs and a command set for command-line access. Visit **ftp://ftp.omega.com/public/DASGroup/products/USBH/** to download your free copy.

Note: *RS485 to PC interface is required, sold separately*

- **Up to 640 Readings/Second**
- **Micro-Machined Silicon Sensor**
- **316L SS Wetted Parts**
- **High ±0.08% BSL Accuracy**
- **RS485 and Analog Outputs**
- **Excellent Long Term Stability**
- **M12 Connection**
- **Ruggedized with Secondary Containment**

The PX409 RS485 Series is an industrial RS485 silicon pressure sensor. Use as a stand-alone for up to 640 Hz sampling rate, or connect up to 16 units in an independent multidrop RS485 network at 1 Hz overall bus sampling rate. Interface to the sensor using command line access, or use the free PC software from OMEGA to chart, log, display, and output data for analysis. An additional analog output (0 to 5V, or 4 to 20 mA) provides even more flexibility. The micro-machined silicon design is ideal for pressure or level applications in laboratory, test platforms, or bio/pharmaceutical applications as well as industrial applications that require a rugged, high accuracy transmitter that can transmit over long distances. The micro-machined silicon sensor provides a very stable transmitter with exceptional high accuracy of ±0.08% and a broad compensated range of -29 to 85°C (-20 to 185°F). The modular construction allows for fast delivery of most configurations and fittings.

Specifications

Supply: 12 to 36 Vdc (when using mA output, derate using formula in operating temperature section)

Maximum Loop Ω: (Supply-9) x 50

Accuracy: 0.08% BSL (linearity, hysteresis and repeatability combined)

Resolution: Up to 5.5 significant figures

Zero Balance: ±0.5% FS typical 1% maximum (1% typical, 2% maximum for 2.5 psi and below)

Span Setting: ±0.5% FS typical 1% maximum (1% typical, 2% maximum for 2.5 psi and below). Calibrated in vertical direction with fitting down

Temperature Compensation (Over Compensated Range):

Span: Range > 5 psi: ±0.5%; Range ≤ 5 psi: ±1.0%

Zero: Range > 5 psi: ±0.5%; Range ≤ 5 psi: ±1.0%

Minimum Isolation: 100 MΩ @ 50 Vdc case to sensor, 2 MΩ @ 50 Vdc case to output terminations

Pressure Cycles: 1 million, minimum

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

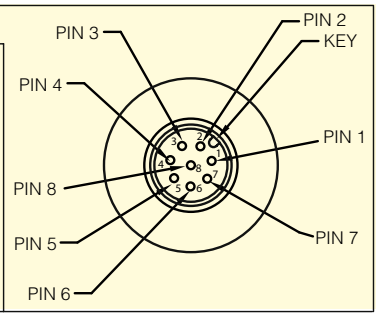
Power Consumption:

-5V: 0.65 W typical

-I: 1.25 W maximum

ELECTRICAL PINOUT

Pin 1: Vout (+) ANALOG
Pin 2: SUPPLY (+)
Pin 3: B (RS485)
Pin 4: A (RS485)
Pin 5: SUPPLY (-)
Pin 6: Vout (-) ANALOG
Pin 7: DO NOT CONNECT
Pin 8: SHIELD



Secondary Containment

Gage/Vacuum/Compound Pressure:
- **10 inH_2O to 5 psi:** to 1000 psi
- **15 to 1000 psi:** to 3000 psi
- **1500 to 5000 psi:** to 10,000 psi

Absolute/Barometric Pressure:
- **5 to 1000 psia:** to 6000 psia
- **1500 to 5000 psia:** to 10,000 psia

Overpressure

Gage/Vacuum/Compound Pressure:
- **10 inH_2O:** 10 times span
- **1 psi:** 6 times span
- **2.5 psi to 1000 psi:** 4 times span
- **1500 psi to 5000 psi:** 7250 psi maximum

Absolute/Barometric Pressure:
- **5 psia:** 6 times span
- **15 psia to 1000 psia:** 4 times span
- **1500 to 5000 psia:** 7250 psia maximum

Secondary Containment

Gage/Vacuum/Compound Pressure:
- **25 to 350 mb:** to 70 bar
- **1 to 70 bar:** to 200 bar
- **100 to 350 bar:** to 700 bar

Absolute/Barometric Pressure:
- **350 mb to 70 bar:** to 400 bar
- **100 to 350 bar:** to 700 bar

Overpressure

Gage/Vacuum/Compound Pressure:
- **25 mb:** 10 times span
- **70 mb:** 6 times span
- **170 mb to 100 bar:** 4 times span
- **175 to 350 bar:** 500 bar maximum

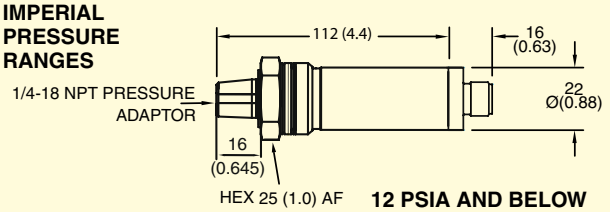
Absolute/Barometric Pressure:
- **350 mb to 100 bar Absolute:** 4 times span
- **175 to 350 bar Absolute:** 500 bar maximum

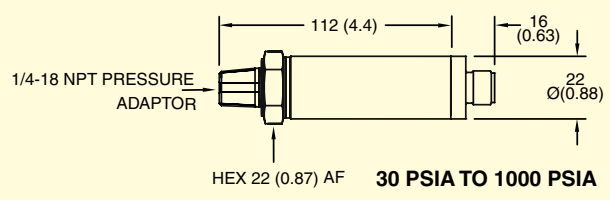
Wetted Parts: 316L stainless steel

Weight: 200 g (7 oz)

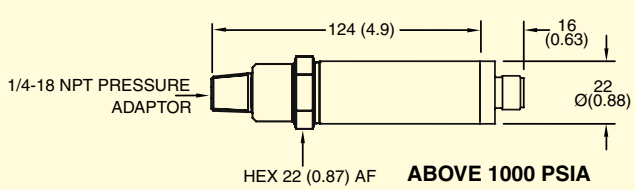
Operating Temperature Range: -40 to 85°C (-40 to 185°F); when using mA output; maximum ambient temperature = 106 + (0.038) R-(2.1)V where R = Loop Ω and V = Vsupply

IMPERIAL PRESSURE RANGES

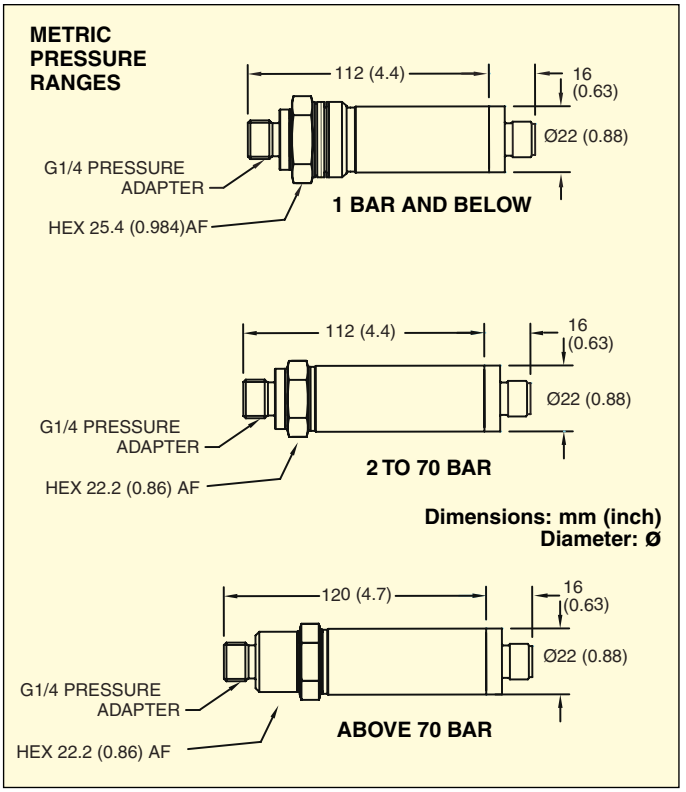




Dimensions: mm (inch)
Diameter: Ø



METRIC PRESSURE RANGES



Compensated Temperature

Imperial:
- **Ranges >5 psi:** -29 to 85°C (-20 to 185°F)
- **Ranges ≤5 psi:** -17 to 85°C (0 to 185°F)

Metric:
- **Ranges > 350 mb:** -29 to 85°C (-20 to 185°F)
- **Ranges ≤ 350 mb:** -17 to 85°C (0 to 185°F)

Pressure Port:
- **Imperial:** ¼–18 NPT male
- **Metric:** G-¼ male

A to D Conversion: 24-bit

Output: RS485 digital with discrete analog (choose 0 to 5 Vdc or 4 to 20 mA)

DAC Conversion: 320 Hz at 16 bit

Bandwidth:
- **Multidrop Mode:** Overall Bus rate: DC to 1 update per second typical
- **Standalone Mode:** DC to 640 updates per second

Electrical Termination: 8-pin M12 type A male with shield pin connection (IEC61076-2-101); female M12 connector M12.8-S-F-FM with screw terminals sold separately

CE Compliant: Meets industrial EN61326
- **Emissions, Burst and Surge**
- **Susceptibility (10 V/m):** ±0.25% max, all outputs, Tested using 6.1 m (20') shielded 6 conductor cable
- **ESD Protection:** Tested to 4 kV to case and shielded wire
  - **Digital Outputs:** Protection device rated to ±13 kV
  - **Analog Output:** Protection device rated to:
    - **Contact:** ±8 kV min, ±30 kV max
    - **Air:** ±15 kV min, ±30 kV max
- **For Stated EMC Performance:** Use recommended cable, tie drain wire to shield connection on PX409-485 side, and to earth ground on supply side. Ground PX409-485 case

Environmental Protection: IP65

RS485 (Non-Isolated):
- **Protocol:** OMEGA command structure (provided)
- **Unit Load:** ⅛
- **Standalone and Addressed Multidrop Modes**
- **Recommended Cable:** Belden 9843 or equivalent
- **Maximum Number of Units on One RS485 Bus:** 16 units (multidrop mode), 1 unit (standalone mode)
- **Software-enabled 120Ω termination resistor**

Imperial Models with RS485 and 0 to 5 Vdc or 4 to 20 mA Analog Output

To Order

Pressure Range		Model No. (with Electrical Output Style)			
		Gage Model No.		Absolute Model No.	
psi	bar	RS485 with 0 to 5 Vdc	RS485 with 4 to 20 mA	RS485 with 0 to 5 Vdc	RS485 with 4 to 20 mA
Gage and Absolute Pressure					
0 to 10 inH_2O	0 to 25 mbar	**PX459-10WG485-5V**	**PX459-10WG485-I**	-	-
0 to 1	0 to 69 mbar	**PX459-001G485-5V**	**PX459-001G485-I**	-	-
0 to 2.5	0 to 172 mbar	**PX459-2.5G485-5V**	**PX459-2.5G485-I**	-	-
0 to 5	0 to 345 mbar	**PX459-005G485-5V**	**PX459-005G485-I**	**PX459-005A485-5V**	**PX459-005A485-I**
0 to 15	0 to 1.0	**PX459-015G485-5V**	**PX459-015G485-I**	**PX459-015A485-5V**	**PX459-015A485-I**
0 to 30	0 to 2.1	**PX459-030G485-5V**	**PX459-030G485-I**	**PX459-030A485-5V**	**PX459-030A485-I**
0 to 50	0 to 3.4	**PX459-050G485-5V**	**PX459-050G485-I**	**PX459-050A485-5V**	**PX459-050A485-I**
0 to 100	0 to 6.9	**PX459-100G485-5V**	**PX459-100G485-I**	**PX459-100A485-5V**	**PX459-100A485-I**
0 to 150	0 to 10.3	**PX459-150G485-5V**	**PX459-150G485-I**	**PX459-150A485-5V**	**PX459-150A485-I**
0 to 250	0 to 17.2	**PX459-250G485-5V**	**PX459-250G485-I**	**PX459-250A485-5V**	**PX459-250A485-I**
0 to 500	0 to 34.5	**PX459-500G485-5V**	**PX459-500G485-I**	**PX459-500A485-5V**	**PX459-500A485-I**
0 to 750	0 to 51.7	**PX459-750G485-5V**	**PX459-750G485-I**	**PX459-750A485-5V**	**PX459-750A485-I**
0 to 1000	0 to 68.9	**PX459-1.0KG485-5V**	**PX459-1.0KG485-I**	**PX459-1.0KA485-5V**	**PX459-1.0KA485-I**
0 to 1500	0 to 103	**PX459-1.5KG485-5V**	**PX459-1.5KG485-I**	**PX459-1.5KA485-5V**	**PX459-1.5KA485-I**
0 to 2500	0 to 172	**PX459-2.5KG485-5V**	**PX459-2.5KG485-I**	**PX459-2.5KA485-5V**	**PX459-2.5KA485-I**
0 to 3500	0 to 241	**PX459-3.5KG485-5V**	**PX459-3.5KG485-I**	**PX459-3.5KA485-5V**	**PX459-3.5KA485-I**
0 to 5000	0 to 345	**PX459-5.0KG485-5V**	**PX459-5.0KG485-I**	**PX459-5.0KA485-5V**	**PX459-5.0KA485-I**
Vacuum Ranges (Negative Gage Pressure)					
0 to -10 inH_2O	0 to -25 mbar	**PX459-10WV485-5V**	**PX459-10WV485-I**	-	-
0 to -1	0 to -69 mbar	**PX459-001V485-5V**	**PX459-001V485-I**	-	-
0 to -2.5	0 to -172 mbar	**PX459-2.5V485-5V**	**PX459-2.5V485-I**	-	-
0 to -5	0 to -345 mbar	**PX459-005V485-5V**	**PX459-005V485-I**	-	-
0 to -15	0 to -1	**PX459-015V485-5V**	**PX459-015V485-I**	-	-
Compound Gage Ranges					
± 10 inH_2O	± 25 mbar	**PX459-10WCG485-5V**	**PX459-10WCG485-I**	-	-
± 1	± 69 mbar	**PX459-001CG485-5V**	**PX459-001CG485-I**	-	-
± 2.5	± 172 mbar	**PX459-2.5CG485-5V**	**PX459-2.5CG485-I**	-	-
± 5	± 345 mbar	**PX459-005CG485-5V**	**PX459-005CG485-I**	-	-
± 15	± 1	**PX459-015CG485-5V**	**PX459-015CG485-I**	-	-
Barometric Ranges (Absolute Pressure)					
0 to 32 inHg	0 to 1100 hPa	-	-	**PX459-32B485-5V**	**PX459-32B485-I**
16 to 32 inHg	550 to 1100 hPa	-	-	**PX459-16B485-5V**	**PX459-16B485-I**
26 to 32 inHg	880 to 1100 hPa	-	-	**PX459-26B485-5V**	**PX459-26B485-I**

Comes complete with 5-point NIST-traceable calibration and free downloadable software.

Ordering Examples: PX459-100G485-5V, *100 psi gage transducer with RS485 and 0 to 5 Vdc outputs, M12 electrical connection, and ¼–18 NPT male pressure port.*

Mating connector ***M12.8-S-F-FM*** *(sold separately).*

PX459-5.0KA485-I, *5000 psi absolute pressure transducer with RS485 and 4 to 20 mA outputs, M12 electrical connection, and ¼–18 NPT male pressure port.*

Metric Models with RS485 and 0 to 5 Vdc or 4 to 20 mA Analog Output

Pressure Range		Model No. (with Electrical Output Style)			
		Gage Model No.		Absolute Model No.	
bar	psi	RS485 with 0 to 5 Vdc	RS485 with 4 to 20 mA	RS485 with 0 to 5 Vdc	RS485 with 4 to 20 mA
Gage and Absolute Pressure					
0 to 25 mbar	0 to 10.04 inH_2O	PXM459-025HG485-5V	PXM459-025HG485-I	-	-
0 to 70 mbar	0 to 1.02	PXM459-070HG485-5V	PXM459-070HG485-I	-	-
0 to 170 mbar	0 to 2.47	PXM459-170HG485-5V	PXM459-170HG485-I	-	-
0 to 350 mbar	0 to 5.08	PXM459-350HG485-5V	PXM459-350HG485-I	PXM459-350HA485-5V	PXM459-350HA485-I
0 to 1.0	0 to 14.5	PXM459-001BG485-5V	PXM459-001BG485-I	PXM459-001BA485-5V	PXM459-001BA485-I
0 to 2	0 to 20.01	PXM459-002BG485-5V	PXM459-002BG485-I	PXM459-002BA485-5V	PXM459-002BA485-I
0 to 3.5	0 to 50.76	PXM459-3.5BG485-5V	PXM459-3.5BG485-I	PXM459-3.5BA485-5V	PXM459-3.5BA485-I
0 to 7	0 to 101.53	PXM459-007BG485-5V	PXM459-007BG485-I	PXM459-007BA485-5V	PXM459-007BA485-I
0 to 10	0 to 145.04	PXM459-010BG485-5V	PXM459-010BG485-I	PXM459-010BA485-5V	PXM459-010BA485-I
0 to 17.5	0 to 253.82	PXM459-17.5BG485-5V	PXM459-17.5BG485-I	PXM459-17.5BA485-5V	PXM459-17.5BA485-I
0 to 35	0 to 507.63	PXM459-035BG485-5V	PXM459-035BG485-I	PXM459-035BA485-5V	PXM459-035BA485-I
0 to 50	0 to 725.19	PXM459-050BG485-5V	PXM459-050BG485-I	PXM459-050BA485-5V	PXM459-050BA485-I
0 to 70	0 to 1015.26	PXM459-070BG485-5V	PXM459-070BG485-I	PXM459-070BA485-5V	PXM459-070BA485-I
0 to 100	0 to 1450.38	PXM459-100BG485-5V	PXM459-100BG485-I	PXM459-100BA485-5V	PXM459-100BA485-I
0 to 175	0 to 2538.16	PXM459-175BG485-5V	PXM459-175BG485-I	PXM459-175BA485-5V	PXM459-175BA485-I
0 to 245	0 to 3553.42	PXM459-245BG485-5V	PXM459-245BG485-I	PXM459-245BA485-5V	PXM459-245BA485-I
0 to 350	0 to 5076.32	PXM459-350BG485-5V	PXM459-350BG485-I	PXM459-350BA485-5V	PXM459-350BA485-I
Vacuum Ranges (Negative Gage Pressure)					
25 mbar	0 to 10.04 inH_2O	PXM459-025HV485-5V	PXM459-025HV485-I	-	-
70 mbar	0 to 1.02	PXM459-070HV485-5V	PXM459-070HV485-I	-	-
170 mbar	0 to 2.47	PXM459-170HV485-5V	PXM459-170HV485-I	-	-
350 mbar	0 to 5.08	PXM459-350HV485-5V	PXM459-350HV485-I	-	-
1	10 to 4.5	PXM459-001BV485-5V	PXM459-001BV485-I	-	-
Compound Gage Ranges					
± 25 mbar	± 10.04 inH_2O	PXM459-025HCG485-5V	PXM459-025HCG485-I	-	-
± 70 mbar	± 1.02	PXM459-070HCG485-5V	PXM459-070HCG485-I	-	-
± 170 mbar	± 2.47	PXM459-170HCG485-5V	PXM459-170HCG485-I	-	-
± 350 mbar	± 5.08	PXM459-350HCG485-5V	PXM459-350HCG485-I	-	-
± 1	± 14.5	PXM459-001BCG485-5V	PXM459-001BCG485-I	-	-
Barometric Ranges (Absolute Pressure)					
0 to 1100 hPa	0 to 32 inHg	-	-	PXM459-1100HB485-5V	PXM459-1100HB485-I
550 to 1100 hPa	16 to 32 inHg	-	-	PXM459-550HB485-5V	PXM459-550HB485-I
880 to 1100 hPa	26 to 32 inHg	-	-	PXM459-880HB485-5V	PXM459-880HB485-I

Accessories

Model No.	Description	
M12.8-S-F-FM	The M12 connectors can be attached to existing sensor or extension cables with a 6 to 8 mm cable diameter in the field by means of screw type connections	
CN7-485-USB-1	Mini-node communication signal converter converts RS485 to USB	

Comes complete with 5-point NIST-traceable calibration and free downloadable software.

Ordering Examples: PXM459-010BG485-5V, *10 bar gage transducer with RS485 and 0 to 5 Vdc outputs, M12 electrical connection, and G-¼ male pressure port.*

Mating connector ***M12.8-S-F-FM*** *(sold separately).*

PXM459-350HA485-I, *350 mbar absolute pressure transducer with RS485 and 4 to 20 mA outputs, M12 electrical connection, and G-¼ male pressure port.*