

# GE Sensing

## Features

- Solid state, high reliability
- High sensitivity, 200 mV typical FSO with 1.0 mA excitation
- 316 L stainless steel, IsoSensor design
- Linearity 0.1% FSO typical
- Three standard ranges: 0 psi to 500 psi to 0 psi to 5,000 psi (0 bar to 34 bar to 0 bar to 345 bar) available, sealed gage or absolute
- Standard configurations include:
  - 1/2–20 UNF threaded male port with 1.0 in (25.40 mm) flange
  - 0.59 in (15 mm) diameter x 0.87 in (22 mm) long cylinder with o-ring seals
  - 1/4–18 NPT male port with 7/8 in flange
  - 1/8–27 NPT male port with 7/8 in flange

- Thermal accuracy FSO 0.2% typical
- Custom Configurations and Other Pressure Ranges can be accommodated

## Applications

- Process control systems
- Hydraulic systems and valves
- Automobiles and trucks
- Biomedical instruments
- Refrigeration and HVAC controls
- Appliances and consumer electronics
- Ship and marine systems
- Aircraft and avionic systems

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# NPI-15 Series

## NovaSensor Current Driven, Media Isolated, High Pressure Sensors

NPI-15 Series is a NovaSensor product. NovaSensor has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



# NPI-15 Series Specifications

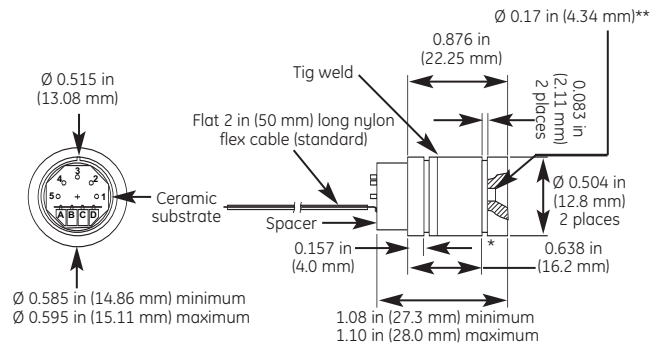
## Description

The NovaSensor NPI-15 Series incorporates state-of-the-art IsoSensor technology, which gives the OEM user the best in price and performance. They are designed to operate in hostile environments and yet give the outstanding sensitivity, linearity, and hysteresis of a silicon sensor. The piezoresistive sensor chip is housed in a fluid-filled cylindrical cavity and isolated from the measured media by a stainless steel diaphragm and body. As with all NovaSensor silicon sensors, the NPI-15 Series employs SenStable® processing technology, providing excellent stability.

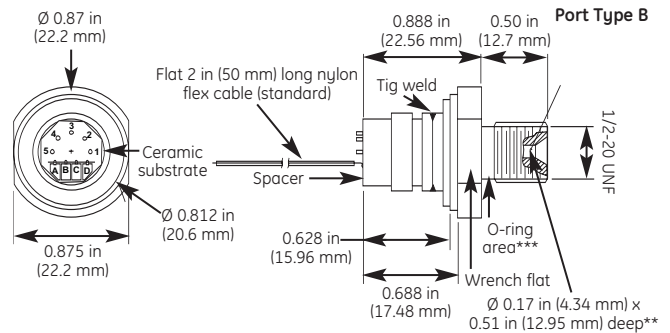
The modular design allows for a variety of pressure port modules which are hermetically welded to the sensor header module. Standard types A, B, H and J are shown to the right.

For compensation of temperature effects, a complete resistor network is supplied on a hybrid ceramic substrate. The IsoSensor design minimizes temperature errors to provide a maximum offset errors of 0.75% FSO over the 32°F to 158°F (0°C to 70°C) compensated range.

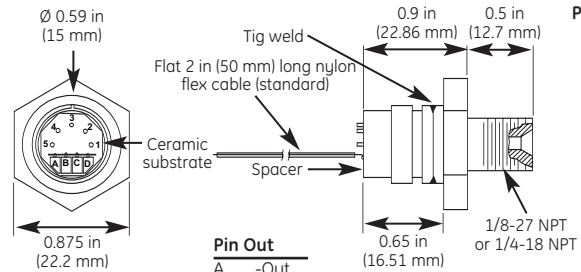
Port Type A



Port Type B



Port Type H and J

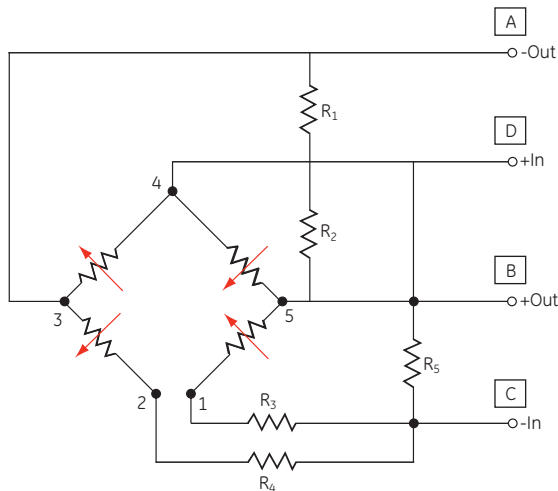


**Pin Out**

- A -Out
- B +Out
- C -In
- D +In

\*Uses 0.47 in x 0.05 in (12 mm x 1.5 mm) ID o-ring for outside seal.  
 \*\*Uses 2-003 per ISO 3601/1 o-ring for inside seal.  
 \*\*\*Uses 2-013 per I.S.O. 360 1/1 o-ring for outside seal.  
 \*\*\*\*Not available for 35,000 kPa.

NPI-15 Series dimensions



NPI-15 Series schematic diagram

# NPI-15 Series Specifications

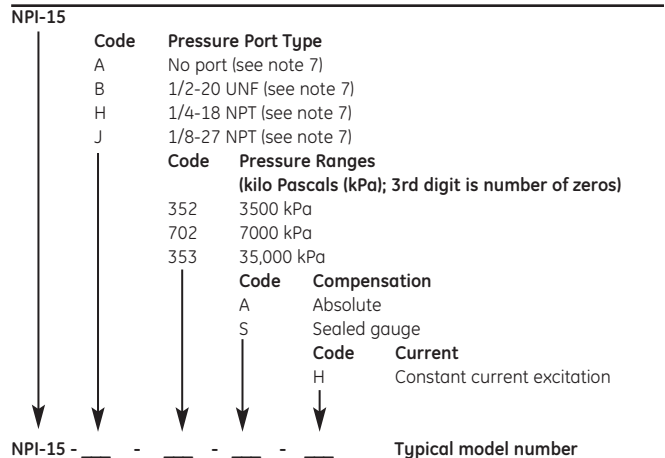
Parameter	Value	Units	Notes
<b>General</b>			
Pressure Range	3500	kPA	507 psi
	7000	kPA	1015 psi
	35,000	kPA	5,076 psi
Maximum Pressure	2 x		rated pressure
<b>Electrical @ 77°F (25°C) unless otherwise stated</b>			
Input Excitation	1.0	mA	1.5 mA maximum
Insulation Resistance	10 <sup>(8)</sup>	Ω	@ 50 VDC
Input Impedance	4,000	Ω	±20%
Output Impedance	5,000	Ω	±20%
Bridge Impedance	5,000	Ω	±20%
<b>Environmental</b>			
Temperature Range			
Operating <sup>(9)</sup> Compensated	-40 to 257	°F	(-40°C to 125°C)
	32 to 158	°F	(0°C to 70°C)
Vibration	10	gRMS	20 to 2000Hz
Shock	100	g	11 milliseconds
Life (Dynamic Pressure Cycle)	10 x 10 <sup>(6)</sup>	cycles	500/1000 psi (34.47/68.94 bar)
	1 x 10 <sup>(6)</sup>	cycles	5000 psi (344.73 bar)
<b>Mechanical<sup>(1)</sup></b>			
Weight	≈28	g	NPI-15A-XXX
	≈47	g	NPI-15B-XXX
Media Compatibility	All corrosive media compatible with 316 stainless steel		
Case and Diaphragm	316 L stainless steel		
Material			
Recommended O-Ring	Type A: 0.472 in (12 mm) ID x 0.059 in (1.5 mm) wall Type B: 2-013 per ISO 3601/1		
<b>Parameter Units Minimum Typical Maximum Notes</b>			
Performance	3,500, 7,000 & 35,000 kPa	(Note 1 and 8)	
Offset	mV	-2	1 2
Full Scale Output	mV	170	200 230 2
Linearity	%FSO	-0.25	0.1 0.25 3
Hysteresis and Repeatability	%FSO	-0.05	0.01 0.05
Thermal Accuracy of Offset	%FSO	-0.75	0.2 0.75 4
Thermal Accuracy of FSO	%FSO	-0.75	0.2 0.75 4
Thermal Hysteresis	%FSO	-0.2	0.1 0.2 5
Short-Term Stability of Offset	μV/V		5 6
Short-Term Stability of FSO	μV/V		5 6
Long-Term Stability of Offset	%FSO		0.1 7
Long-Term Stability of FSO	%FSO		0.1 7

- Performance with offset, thermal accuracy of offset and thermal accuracy of FSO compensation resistors.
- FSO with 1.0 mA input excitation.
- Linearity by best fit straight line.
- 32°F to 158°F (0°C to 70°C) with reference to 77°F (25°C).
- 32°F to 158°F (0°C to 70°C) by design.
- Normalized offset/ bridge voltage—100 hours, typical value, not tested in production.
- One year, typical value, not tested in production.
- All values measured at 77°F (25°C) and at 1.0 mA constant current, unless otherwise noted.
- Reduced performance outside compensation range.

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920-260A

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