

# NPI-15VC Series

Voltage Compensated,  
Media Isolated, High  
Pressure Sensors



## 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

## Features

- Solid state, high reliability
- High sensitivity with  $100 \text{ mV} \pm 1\% \text{ FSO}$  at 10 VDC
- 316L stainless steel, IsoSensor design
- Linearity 0.1% FSO typical
- Thermal accuracy 0.2% FSO typical
- Four standard ranges: 500, 1000, 3000, and 5000 psi (34.5, 69, 207, and 345 bar) available in absolute or sealed gage
- Standard configurations include:
  - 1/2–20 UNF threaded male port with 1.0 in (24.4 mm) flange
  - 0.59 in (14.98 mm) diameter x 0.87 in (22.09 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
- Custom configurations and other pressure ranges available. Please consult factory

# NPI-15VC Series Specifications

## Description

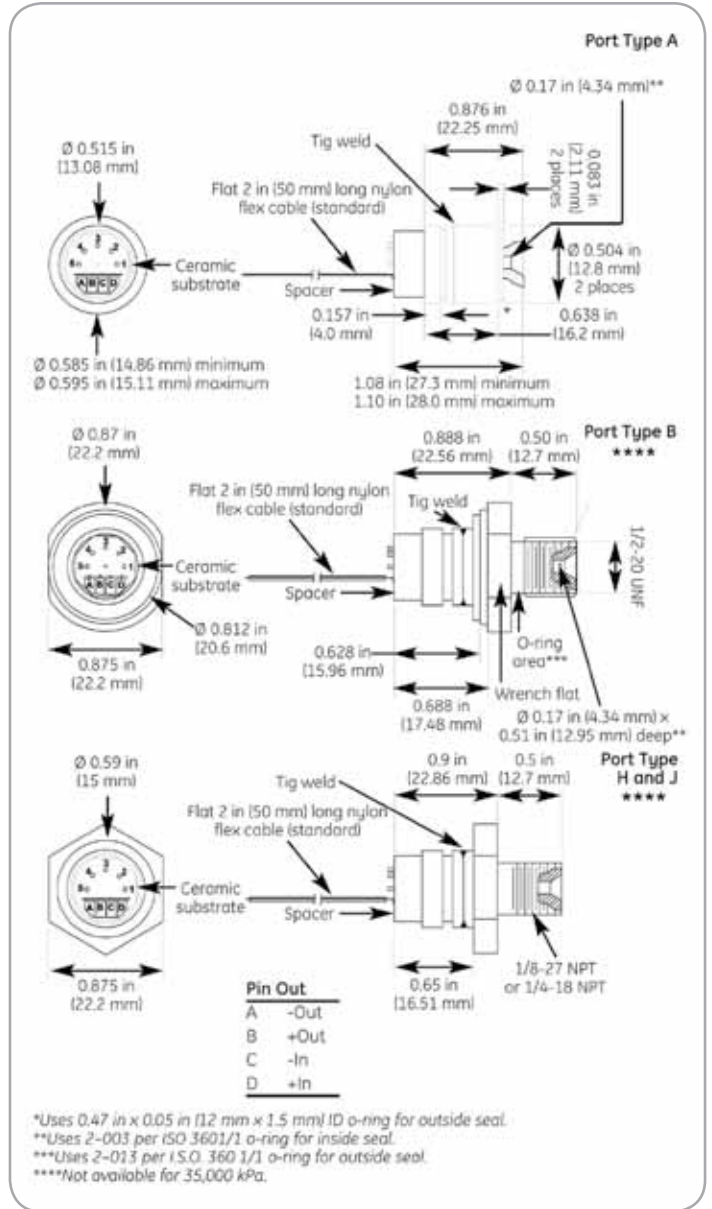
The NovaSensor voltage compensated NPI-15VC Series offers the performance of our current compensated sensors with the convenience of using a voltage supply. Voltage compensation allows the sensor to be connected directly to the power supply, thereby eliminating the need for additional components to construct a constant current source. These sensors enable field interchangeability with a calibrated FSO of 100 mV  $\pm$  1 %.

As with all NPI media isolated sensors, 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. The NPI Series employs SenStable<sup>®</sup> processing technology, providing excellent output stability.

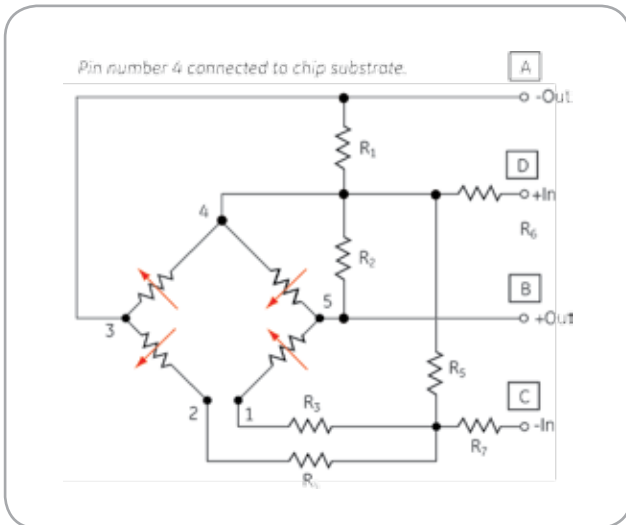
The modular design allows for a variety of pressure port modules which are hermetically welded to the sensor head module. Standard types A, B, H, and J are shown to the right.

For compensation of temperature effects, a resistor network is supplied on a hybrid ceramic substrate. The

IsoSensor design minimizes temperature errors to provide a maximum offset error of 1.0% FSO and a maximum full scale output error of 0.75% FSO over the 32°F to 158°F (0°C to 70°C) compensated range.



NPI-15VC Series dimensions



NPI-15VC Series schematic diagram

# NPI-15VC Series Specifications

Parameter	Value	Units	Notes
<b>General</b>			
Pressure Range	0 to 500	psi	3,447 kPa
	0 to 1,000	psi	6,894 kPa
	0 to 3,000	psi	20,682 kPa
	0 to 5,000	psi	34,470 kPa
Maximum Pressure	2 x		rated pressure
<b>Electrical @ 77°F (25°C) unless otherwise stated</b>			
Input Excitation	10	VDC	15 VDC maximum
Insulation Resistance	100M	Ω	@ 50 VDC Input
Impedance (minimum)	4,000	Ω	
Output Impedance	5,000	Ω	± 20%
Bridge Impedance	5,000	Ω	± 20%
<b>Environmental</b>			
Temperature Range			
Operating <sup>(9)</sup>	-40 to 257°F		(-40°C to 125°C)
Compensated Range	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
<b>Mechanical <sup>(1)</sup></b>			
Weight	0.06	lb	(28 g) NPI-15A-XXX
	0.10	lb	(47 g) NPI-15B/H/J-XXX
Media Compatibility	All corrosive media compatible with 316L stainless steel		
Case and Diaphragm Material 316L stainless steel			
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</b>	<b>Units</b>	<b>Min. Typical</b>	<b>Max. Notes</b>
<b>Performance Parameters 500, 1,000, 3,000, &amp; 35,000 psi (Note 1,8)</b>			
Full Scale Output	mV	99 100 101	2
Linearity	%FSO	-0.35 0.1 0.35	3
Hysteresis and Repeatability %FSO -0.05 0.01 0.05			
Thermal Accuracy of Offset	%FSO	-1.0 0.2 1.0	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 10 VDC.
- 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 10 VDC, unless otherwise noted.
- Reduced performance outside compensation range.

## Warranty

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## Ordering Information

### NPI-15

#### Code Pressure Port Type

A	No port
B	1/2-20 UNF
H	1/4-18 NPT
J	1/8-27 NPT

#### Code Pressure Ranges in psi

500	500 psi (3447 kPa)
1KØ	1000 psi (6894 kPa)
3KØ	3000 psi (20,632 kPa) NPI-15A only
5KØ	5000 psi (34,470 kPa) NPI-15A only

#### Code Compensation

A	Absolute
S	Sealed gauge
V	Constant Voltage Excitation

NPI-15 - - - - - Typical model number

# Amphenol

**Advanced Sensors**

[www.amphenol-sensors.com](http://www.amphenol-sensors.com)

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