NOVA SENSOR

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 mV ± 1% 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

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NPI-15VC Series Specifications

Description

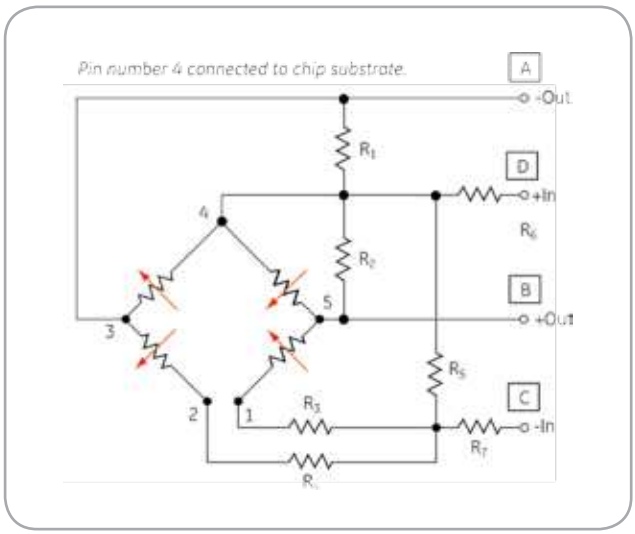
The NovaSensor voltage compensated NPI-15VC Series offers the performance of our current compensated sensors with the convenience of using a voltage supply. Voltage compensation allows the sensor to be connected directly to the power supply, thereby eliminating the need for additional components to construct a constant current source. These sensors enable field interchangeability with a calibrated FSO of 100 mV ±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® processing technology, providing excellent output stability.

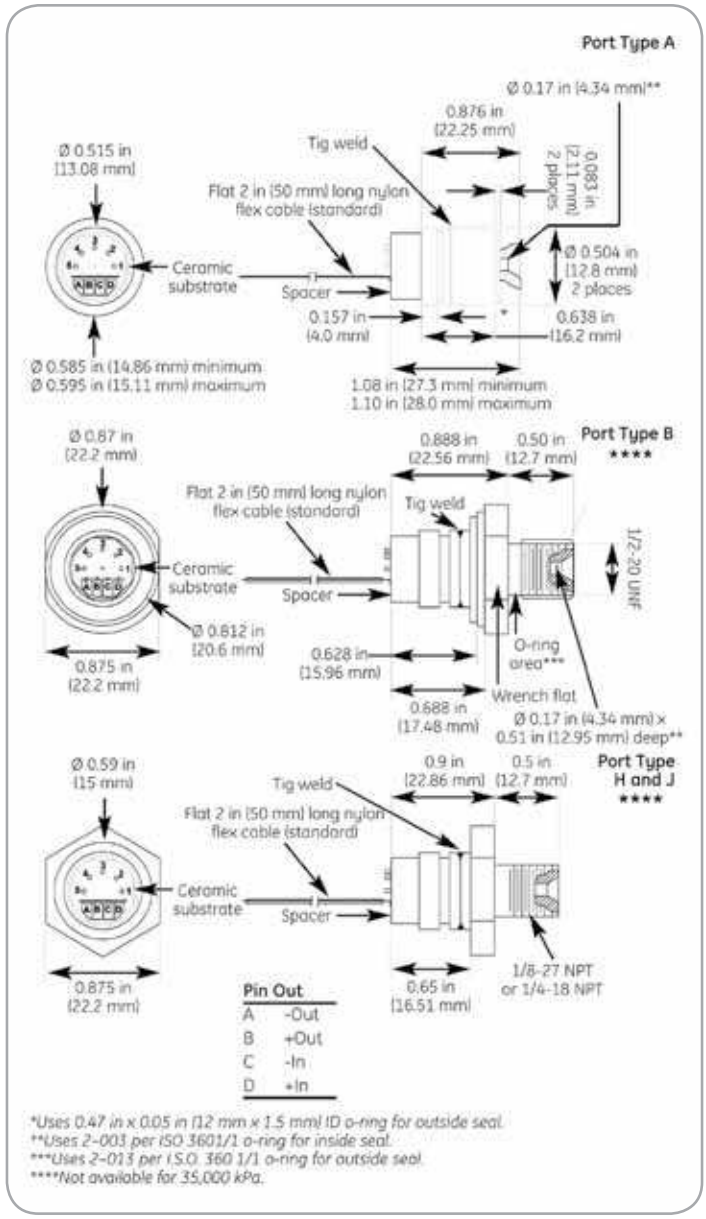
The modular design allows for a variety of pressure port modules which are hermetically welded to the sensor head module. Standard types A, B, H, and J are shown to the right.

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 schematic diagram



NPI-15VC Series dimensions

NPI-15VC Series Specifications

Parameter	Value	Units	Notes
General			
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
Electrical @ 77°F (25°C) unless otherwise stated			
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%
Environmental			
Temperature Range			
Operating [9]	–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 10^6 cycles		
Mechanical [1]			
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		

Parameter	Units	Min.	Typical	Max.	Notes
Performance Parameters 500, 1,000, 3,000, & 35,000 psi (Note 1,8)					
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

Warranty

NovaSensor warrants its products against defects in material and
workmanship for 12 months from the date of shipment . Products not subjected to misuse will be repaired or replaced. NovaSensor reserves the right to make changes without further notice to any products herein. NovaSensor makes no warranty, representation or guarantee regarding the suitability of its products for any particular application, nor does NovaSensor assume any liability arising out of the application or use of any product or circuit and specifically disclaims and all liability without limitation consequential or incidental damages. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. No Implied statutory warranty of merchantability or fitness for particular purpose shall apply.

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

Code	Voltage
V	Constant Voltage Excitation

NPI-15 — - — - — - — **Typical model number**

1. Performance with offset , thermal accuracy of offset and thermal accuracy of FSO compensation resistors.
2. FSO with 10 VDC.
3. Linearity by best fit straight line.
4. 32°F to 158°F (0°C to 70°C) with reference to 77°F (25°C).
5. 32°F to 158°F (0°C to 70°C), by design.
6. Normalized offset/bridge voltage_100 hours, typical value, not tested in production.
7. One year, typical value, not tested in production
8. All values measured at 77°F (25°C) and at 10 VDC, unless otherwise noted.
9. Reduced performance outside compensation range.

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