

# NPI-15 Series Current Driven, 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 200 mV typical FSO with 1.0 mA
- 316L stainless steel, IsoSensor design
- Linearity 0.1% FSO typical
- Thermal accuracy 0.2% FSO typical
- Four standard ranges: 500 psi to 5,000 psi (34 bar to 345 bar) available
- 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 available. Please consult factory



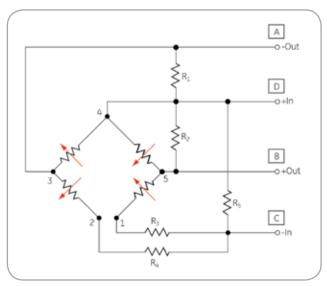
# **NPI-15 Series Specifications**

### Description

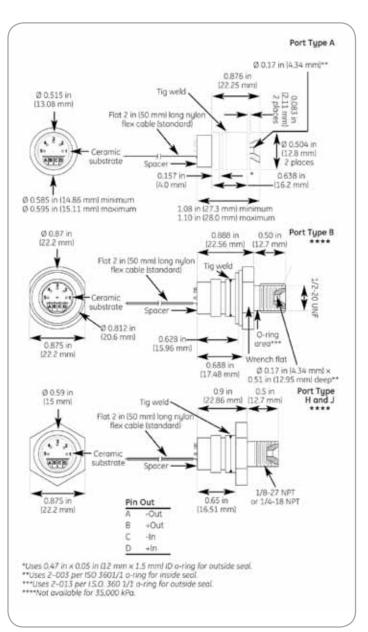
The NovaSensor NPI-15 Series incorporates state-of-the-art IsoSensor technology, which gives the OEM user the best in price and performance. They are designed to operate in hostile environments and yet give the outstanding sensitivity, linearity, and hysteresis of a silicon sensor. The piezoresistive 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.



NPI-15 Series schematic diagram



NPI-15 Series dimensions

# **NPI-15 Series Specifications**

Parameter	rameter Value Units		Notes				
General		<b>U</b> iiito	110100				
ressure Range 3500		kPa	507 psi				
	7000	kPa	1015 psi				
	35,000	kPa	5076 psi				
Maximum Pressure	2 x		rated pressure				
Electrical @ 77°F (25°C	C) unless o	therwise	stated				
Input Excitation	1.0	mA	1.5 mA maximum				
Insulation Resistance	100M	Ω	@ 50 VDC				
Input Impedance (min)	4,000	Ω	± 20%				
Output Impedance	5,000	Ω	± 20%				
Bridge Impedance	5,000	Ω	± 20%				
Environmental							
Temperature Range							
Operating <sup>(9)</sup>	-40 to 2	:57°F (-	-40°C to 125°C)				
Compensated Range	e 32 to 15	58°F (C	0°C to 70°C)				
Vibration	10	gRMS	20 to 2000Hz				
Shock	100	g	11 milliseconds				
Life (Dynamic	10 x 10 <sup>6</sup>	cycles	500/1000 psi				
Pressure Cycle)			34.47/68.94 (bar)				
	$1 \times 10^{6}$	cycles	5000 psi				
			(344.73 (bar)				
Mechanical <sup>(1)</sup>							
Weight	eight ≈28 g		(28 g) NPI-15A-XXX				
	≈47	g	(47 g) NPI-15B-XXX				
Media Compatibility	ia Compatibility All corrosive media compatible with						
	316 stainless steel						
Case and							
Diaphragm Material	316L stainless steel						
Recommended O-Ring	Type A: 0	.472 in (1	12 mm) ID x 0.059 in				
	(1.5 mm) wall						
	Type B: 2	-013 per	ISO 3601/1				

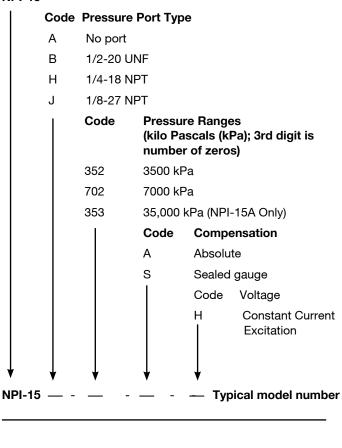
Parameter	Units	Min.	Typica	l Max. I	Notes			
Performance Parameters 3,500, 7,000, & 35,000 kPa (Note 1, 8)								
Offset	mV	-2	1	2				
Full Scale Output	mV	170	200	230	2			
Linearity	%FSO	-0.25	0.1	0.25	3			
Hysteresis and								
Repeatability	%FSO	05	0.1	0.05	3			
Thermal Accuracy								
of Offset	%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			

### 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**



- Performance with offset , thermal accuracy of offset and thermal accuracy of FSO compensation resistors
- 2. FSO with 1.0 mA input excitation.
- 3. Linearity by best fit straight line.
- 4.  $32^{\circ}F$  to  $158^{\circ}F$  (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.
- 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 1.0 mA constant current , unless otherwise noted
- 9. Reduced performance outside compensation range.



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Amphenol: NPI-15J-353SH