

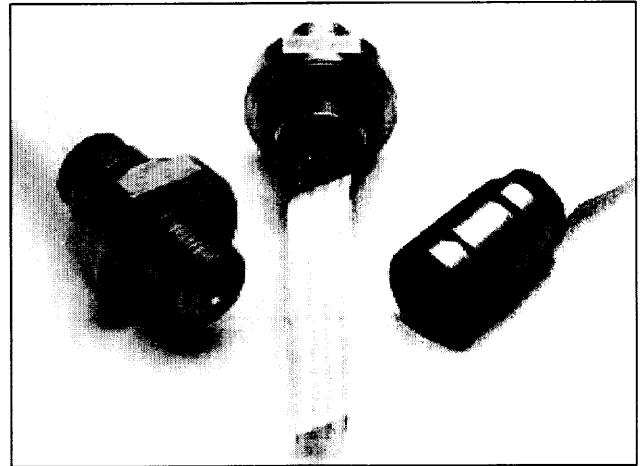
## NPI-15 Series High Pressure, Media Isolated Pressure Sensor

### DESCRIPTION

The NovaSensor® NPI 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 measured media by a stainless steel diaphragm and body. As with all NovaSensor® silicon sensors, the NPI 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 inside.

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 0 to 70°C compensated range.



### FEATURES

- Solid state, high reliability
- High sensitivity, 200mV FSO with 1.0mA excitation
- 316 stainless steel, IsoSensor design
- Linearity 0.1% FSO typical
- Thermal accuracy FSO 0.2% typical
- Three standard ranges: 0-500 to 0-5,000 psi available, sealed gage or absolute
- Standard configurations include:
  - 1/2" -20 UNF threaded male port with 1.0" flange
  - 0.59" diameter x 0.87" long cylinder with o-ring seals
  - 1/4" — 18 NPT male port with 7/8" flange
  - 1/8" — 27 NPT male port with 7/8" flange
- 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

# Operating Characteristics

PARAMETER	VALUE	UNITS	NOTES
<b>GENERAL</b>			
Pressure Range	0-3,500	kPa	≈ 0-500 psi
	0-7,000	kPa	≈ 0-1,000 psi
	0-35,000	kPa	≈ 0-5,000 psi
Maximum Pressure	2 x		rated pressure
<b>ELECTRICAL @ 25°C (77°F) unless otherwise stated</b>			
Input Excitation	1.0	mA	1.5mA max.
Insulation Resistance	10 <sup>8</sup>	Ω	@ 50 V <sub>DC</sub>
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>	-40 to +125	°C	-40° to +257°F
Compensation Range	0 to +70	°C	+32° to +158°F
Vibration	10	g <sub>RMS</sub>	20 to 2000Hz
Shock	100	g	11 milliseconds
Life (Dynamic Pressure Cycle)	10 x 10 <sup>6</sup>	cycles	500/1000 psi
	1 x 10 <sup>6</sup>	cycles	5000 psi
<b>MECHANICAL</b>			
Weight	≈ 28	grams	NPI-15A-XXX
	≈ 47	grams	NPI-15B-XXX
Media Compatibility	All corrosive media compatible with 316 stainless steel		
Case and Diaphragm Material	316 stainless steel		
Recommended O-Ring	Type A: 12mm (.472") ID x 1.5mm (.059") wall		
	Type B: 2-013 per ISO 3601/1		

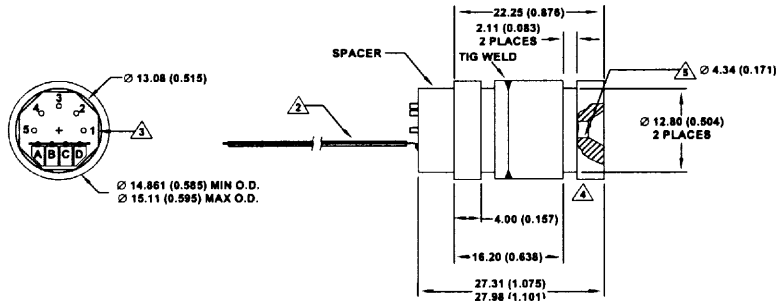
PARAMETER	COMPENSATED(1)				NOTES
	UNITS	MIN.	TYP.	MAX.	
<b>PERFORMANCE(8) 3,500, 7,000 &amp; 35,000 KPA</b>					
Offset	mV	-2	± 1	2	
Full Scale Output	mV	170	200	230	2
Linearity	%FSO	-0.25	0.1	0.25	3
Hysteresis and Repeatability	%FSO	-0.05	0.01	0.05	
Thermal Accuracy of Offset	%FSO	-0.75	0.2	0.75	4
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

- Notes:**
1. Performance with offset, thermal accuracy of offset and thermal accuracy of FSO compensation resistors.
  2. FSO measured with 1.0mA input excitation.
  3. Linearity by best fit straight line.
  4. 0 to +70°C with reference to 25°C.
  5. 0° to 70°C.
  6. Normalized offset/bridge voltage — 100 hours.
  7. 1 year.
  8. All values measured at 25°C and at 1.0mA constant current, unless otherwise noted.
  9. Reduced performance outside compensation range.

# Dimensions and Ordering Information

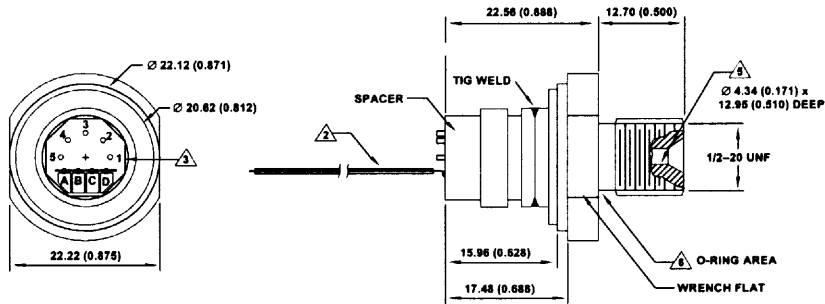
## PORT TYPE A

PIN OUT	
A	-OUT
B	+OUT
C	-IN
D	+IN



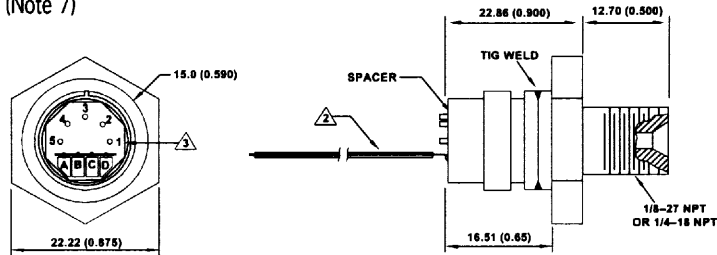
## PORT TYPE B (Note 7)

PIN OUT	
A	-OUT
B	+OUT
C	-IN
D	+IN



## PORT TYPE H AND J (Note 7)

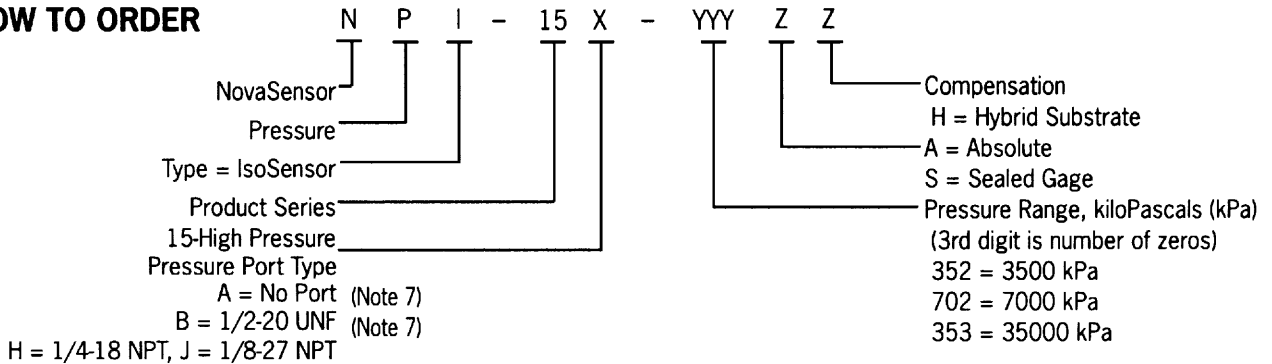
PIN OUT	
A	-OUT
B	+OUT
C	-IN
D	+IN



**Notes:**

1. All dimensions in inches (millimeters).
2. A flat, 2' long Nylon flex cable is standard.
3. Ceramic substrate.
4. Uses 12mm ID x 1.5mm o-ring for outside seal.
5. Uses 2 - 003 per I.S.O. 360 1/1 o-ring for inside seal.
6. Uses 2 - 013 per I.S.O. 360 1/1 o-ring for outside seal.
7. Not available for 35,000 kPa.

## HOW TO ORDER



**Sales Terms:**  
**Warranty:**

NovaSensor standard sales terms apply. Prices and specifications are subject to change without notice.  
NovaSensor warrants its products against defects in material and workmanship for 12 months from date of shipment. Products not subjected to misuse will be repaired or replaced.  
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1055 Mission Court • Fremont • California 94539 • Toll Free: 800-962-7364 Tel: 510-661-6000 Fax: 510-770-0645  
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SM0016 Rev. B

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西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX:029-88789382