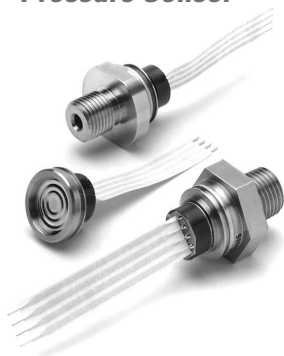




## GE NovaSensor

### NPI-19 Series

**Current Driven  
Medium 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 output stability.

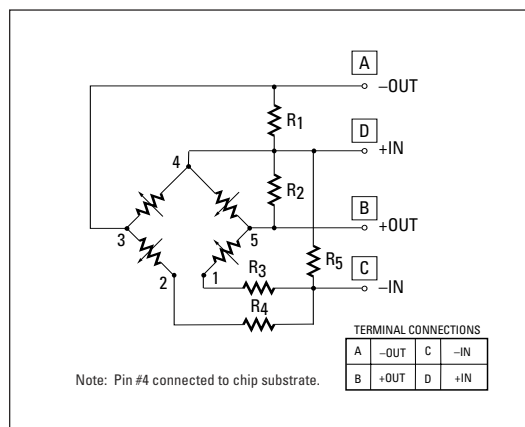
The modular design allows for a variety of pressure port modules, which are hermetically welded to the sensor header module. Standard types A, B, H, and J are shown inside.

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 full-scale offset error of 75% FSO over the 0 to 70°C compensated range.

#### Features

- Solid state, high reliability
- High sensitivity, 100mV FSO with 1.0mA excitation
- 316 stainless steel, wetted surfaces
- Linearity 0.1% FSO typical
- Thermal accuracy FSO 0.2% typical
- Four standard ranges: 0–15 to 0–250 psi available, gage or absolute
- Standard configurations include:
  - 1/2"–20 UNF threaded male port with 1.0" flange
  - 0.74" diameter x 0.28" 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 available. Please consult NovaSensor.

#### Schematic Diagram (with hybrid)



#### 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

# Specifications

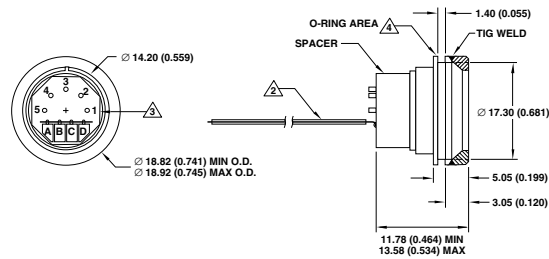
| Parameter                                                             | Value                                                                    | Units  | Notes           |      |       |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------|--------|-----------------|------|-------|
| General                                                               |                                                                          |        |                 |      |       |
| Pressure Range                                                        | 0–100                                                                    | kPa    | ~0–15 psi       |      |       |
|                                                                       | 0–200                                                                    | kPa    | ~0–30 psi       |      |       |
|                                                                       | 0–700                                                                    | kPa    | ~0–100 psi      |      |       |
|                                                                       | 0–1,700                                                                  | kPa    | ~0–250 psi      |      |       |
| Maximum Overpressure                                                  | 2X                                                                       |        | rated pressure  |      |       |
| Electrical @ 25°C (77°F) unless otherwise stated                      |                                                                          |        |                 |      |       |
| Input Excitation                                                      | 1.0                                                                      | mA     | 1.5mA max.      |      |       |
| 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%           |      |       |
| Environmental                                                         |                                                                          |        |                 |      |       |
| Temperature Range                                                     | Operating(9)<br>0 to +70                                                 | °C     | –40 to +257°F   |      |       |
|                                                                       |                                                                          | °C     | +32° to +158°F  |      |       |
| Vibration                                                             | 10                                                                       | gRMS   | 20 to 2000Hz    |      |       |
| Shock                                                                 | 100                                                                      | g      | 11 milliseconds |      |       |
| Life (Dynamic Pressure Cycle)                                         | 1 x 10 <sup>6</sup>                                                      | cycles |                 |      |       |
| Mechanical <sup>(1)</sup>                                             |                                                                          |        |                 |      |       |
| Weight                                                                | ~10                                                                      | grams  | NPI-19A-XXX     |      |       |
|                                                                       | ~45                                                                      | grams  | NPI-19B/H/J-XXX |      |       |
| Media Compatibility                                                   | All corrosive media compatible with 316 stainless steel                  |        |                 |      |       |
| Case and Diaphragm Material                                           | 316 stainless steel                                                      |        |                 |      |       |
| Recommended O-Ring                                                    | Type A: 16.76 dia. X 0.99 (0.66 x 0.039)<br>Type B: 2-013 per ISO 3601/1 |        |                 |      |       |
| Parameter                                                             | Units                                                                    | Min.   | Typ.            | Max. | Notes |
| Performance Parameters (8), Compensated(1), 100, 200, 700 & 1,700 kPa |                                                                          |        |                 |      |       |
| Offset                                                                | mV                                                                       | –2     | ±1              | 2    |       |
| Full Scale Output                                                     | mV                                                                       | 70     | 100             | 130  | 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 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, by design. 6. Normalized offset/bridge voltage — 100 hours, typical value, not tested in production. 7. 1 year, typical value, not tested in production. 8. All values measured at 25°C and at 1.0mA constant current, unless otherwise noted. 9. Reduced performance outside compensation range.



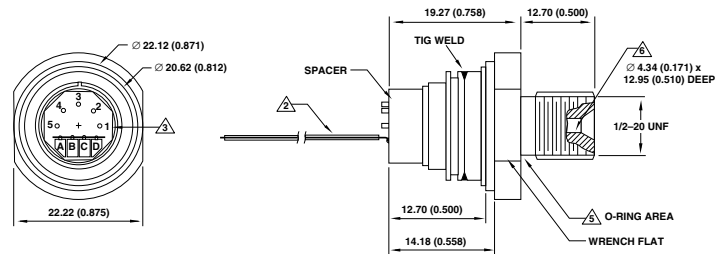
## Dimensions and Ordering Information

### Port Type A



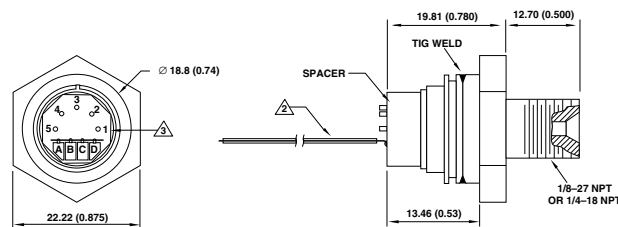
| Pin Out |      |
|---------|------|
| A       | -OUT |
| B       | +OUT |
| C       | -IN  |
| D       | +IN  |

### Port Type B (Note 7)



| Pin Out |      |
|---------|------|
| A       | –OUT |
| B       | +OUT |
| C       | –IN  |
| D       | +IN  |

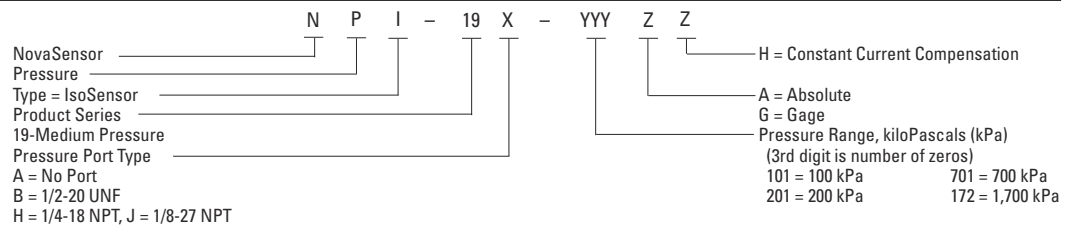
### Port Type H and J (Note 7)



| Pin Out |      |
|---------|------|
| A       | -OUT |
| B       | +OUT |
| C       | -IN  |
| D       | +IN  |

Notes: 1. All dimensions are in millimeters (inches). 2. A flat 2" long kapton flex cable is standard. 3. Ceramic substrate. 4. Uses O-ring 0.66" ID x 0.039" cross section. 5. Uses 2-013 per I.S.O. 360 1/1 o-ring for outside seal. 6. Uses 2-003 per I.S.O. 360 1/1 o-ring for inside seal.

## Ordering Information



**GE NovaSensor**

**Sales Terms:**

NovaSensor standard sales terms apply.  
Prices and specifications are subject to change without notice.

**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.**