

# NPC-1210 Series

## NovaSensor Medium/Low Pressure Sensors



### Features

- High sensitivity
- High accuracy
- Interchangeable
- Temperature compensated 0°C to 60°C (32°F to 140°F)
- PCB mountable package
- DIP package
- Solid-state reliability
- Individual device traceability

### Applications

- Industrial automation
- Air flow monitors
- Process control
- Medical equipment
- Underground cable leak detection
- Ventilation
- Respirator monitoring

# NPC-1210 Series Specifications

## Description

The NPC-1210 series of solid-state pressure sensors are designed to provide a cost effective solution for applications that require calibrated performance over a wide temperature range. Packaged in a dual-in-line configuration, the NPC-1210 Series is intended for printed circuit board mounting. Optional pressure port and lead configurations provide superior flexibility in low profile applications where pressure connection orientation is critical.

The NPC-1210 series is based on NovaSensor's advanced SenStable® piezoresistive sensing technology. Silicon micromachining techniques are used to ion implant piezoresistive strain gages into a Wheatstone bridge configuration. The NPC-1210 Series offers the added advantage of superior temperature performance over the temperature compensated range of 0°C to 60°C (32°F to 140°F). A gain set resistor is included to normalize the FSO for field interchangeability.



NPC-1210 Series Schematic Diagram



NPC-1210 Series Package Diagram

# NPC-1210 Series Specifications

## Medium Pressure Sensors

### Pressure Ranges

- Gauge and differential:
  - 5 psi (34 kPa, 0.34 bar)
  - 15 psi (100 kPa, 1.0 bar)
  - 30 psi (210 kPa, 2.1 bar)
  - 50 psi (340 kPa, 3.4 bar)
  - 100 psi (690 kPa, 6.9 bar)
- Absolute:
  - 15 psi (100 kPa, 1.0 bar)
  - 30 psi (210 kPa, 2.1 bar)
  - 50 psi (340 kPa, 3.4 bar)
  - 100 psi (690 kPa, 6.9 bar)
- For other pressure ranges, please contact NovaSensor.

| Parameter            | Value      | Units | Notes           |
|----------------------|------------|-------|-----------------|
| <b>Environmental</b> |            |       |                 |
| Temperature Range    |            |       |                 |
| <i>Operating</i>     | -40 to 125 | °C    | (-40° to 257°F) |
| <i>Compensated</i>   | 0 to 60    | °C    | (32°F to 140°F) |
| <i>Storage</i>       | -55 to 150 | °C    | (-67 to 302 °F) |

| <b>Mechanical</b>                            |                                   |   |            |
|--|-----------------------------------|---|------------|
| Weight                                       | 2.5                               | g | (0.005 lb) |
| Media Compatibility                          | Compatible with exposed materials |   | 7          |
| <i>Positive differential and gauge ports</i> | <i>Dry gases only</i>             |   |            |
| <i>Absolute. negative differential ports</i> | <i>Dry gases only</i>             |   |            |

| Parameter                          | Units | Minimum | Typical | Maximum | Notes   |
|------------------------------------|-------|---------|---------|---------|---------|
| <b>Performance Parameters *</b>    |       |         |         |         |         |
| FS Output (FSO)                    | mV    | 75      | 100     | 150     | 2, 3    |
| Zero Pressure Output               | mV    | -2      | —       | 2       | 3       |
| Linearity                          | %FSO  | -0.1    | —       | 0.1     | 4, 8    |
| Pressure Hysteresis                | %FSO  | -0.1    | —       | 0.1     |         |
| Input Impedance                    | Ω     | 2500    | 4000    | 6000    |         |
| Output Impedance                   | Ω     | 4000    | 5000    | 6000    |         |
| Thermal Accuracy–Span              | %FSO  | -0.5    | —       | 0.5     | 3, 5, 8 |
| Thermal Accuracy–Zero              | %FSO  | -0.5    | —       | 0.5     | 3, 5, 8 |
| Temperature Coefficient–Resistance | %/°C  | —       | 0.2     | —       | 5       |
| Thermal Hysteresis–Zero            | %FSO  | —       | 0.1     | —       | 5       |
| Input Excitation                   | mA    | —       | 1.5     | 2.0     |         |
| Pressure Overload                  | Rated | —       | —       | 3X      | 6       |

## Low Pressure Sensors

### Pressure Ranges

- Gauge and differential:
  - 10 in H<sub>2</sub>O (2.5 kPa, 0.025 bar)
  - 1 psi (6.9 kPa, 0.069 bar)

| Parameter            | Value      | Units | Notes           |
|----------------------|------------|-------|-----------------|
| <b>Environmental</b> |            |       |                 |
| Temperature Range    |            |       |                 |
| <i>Operating</i>     | -40 to 125 | °C    | (-40° to 257°F) |
| <i>Compensated</i>   | 0 to 60    | °C    | (32°F to 140°F) |
| <i>Storage</i>       | -55 to 150 | °C    | (-67 to 302 °F) |

| <b>Mechanical</b>                            |                                   |   |            |
|--|-----------------------------------|---|------------|
| Weight                                       | 2.5                               | g | (0.005 lb) |
| Media Compatibility                          | Compatible with exposed materials |   | 7          |
| <i>Positive differential and gauge ports</i> | <i>Dry gases only</i>             |   |            |
| <i>Absolute. negative differential ports</i> | <i>Dry gases only</i>             |   |            |

| Parameter                          | Units     | Minimum  | Typical | Maximum | Notes |
|------------------------------------|-----------|----------|---------|---------|-------|
| <b>Performance Parameters *</b>    |           |          |         |         |       |
| FSO 10 inH <sub>2</sub> O          | mV        | 25       | 50      | 70      | 2, 3  |
| FSO 1 psi                          | mV        | 50       | 75      | 110     | 2, 3  |
| Zero Pressure Output               | mV        | -2       | —       | 2       | 3     |
| Linearity                          | %FSO      | -0.5     | —       | 0.5     | 4     |
| Pressure Hysteresis                | %FSO      | -0.1     | —       | 0.1     |       |
| Input Impedance                    | Ω         | 2500     | 4000    | 6000    |       |
| Output Impedance                   | Ω         | 4000     | 5000    | 6000    |       |
| Thermal Accuracy–Span              | %FSO      | -1.0     | —       | 1.0     | 3, 5  |
| Thermal Accuracy–Zero              | %FSO      | -1.25    | —       | 1.25    | 3, 5  |
| Temperature Coefficient–Resistance | %/°C      | —        | 0.22    | —       | 5     |
| Thermal Hysteresis–Zero            | %FSO      | —        | 0.1     | —       | 5     |
| Input Excitation                   | mA        | —        | 1.5     | 2.0     |       |
| Pressure Overload                  | psi (bar) | 5 (0.34) | —       | —       | 6     |

- \* 1. Supply current = 1.5 mA and ambient temperature = 77°F (25°C), unless otherwise noted. Gauge and differential pressure devices are calibrated by applying pressure to the positive differential port (P2) and venting to atmosphere the reference port (P1).
2. Output span of unamplified sensor.
3. Compensation resistors are an integral part of the sensor package; no additional external resistors are required. Pins 7 and 8 must be kept open. The NPC-1210 is interchangeable only when used with the gain set resistor shown in the schematic diagram. Maximum gain-set resistor mismatch is 2%.
4. Best fit straight line.
5. Temperature range 32°F to 140°F (0°C to 60°C), reference to 77°F (25°C).
6. 3X or 200 psi (13.78 bar) maximum, whichever is less.
7. Exposed materials are pyrex, ceramic, silicon, epoxy, RTV, and stainless steel.
8. 5 psi (0.34 bar) spec.: Linearity: 0.25 ±%FSO, TC-span: 0.75 ±%FSO, TC-zero: 0.75 ±%FSO. otherwise noted.

# NPC-1210 Series Specifications

## Ordering Information

The code number to be ordered may be specified as follows:

### NPC-1210 (Medium Pressure)

|  |             |                       |              |                            |                     |
|--|-------------|-----------------------|--------------|----------------------------|---------------------|
|  | <b>Code</b> | <b>Pressure Range</b> |              |                            |                     |
|  | 005         | 5 psi (0.3 bar)       |              |                            |                     |
|  | 015         | 15 psi (1 bar)        |              |                            |                     |
|  | 030         | 30 psi (2 bar)        |              |                            |                     |
|  | 050         | 50 psi (3.4 bar)      |              |                            |                     |
|  | 100         | 100 psi (7 bar)       |              |                            |                     |
|  |             | <b>Code</b>           | <b>Type</b>  |                            |                     |
|  |             | D                     | Differential |                            |                     |
|  |             | A                     | Absolute     |                            |                     |
|  |             | G                     | Gauge        |                            |                     |
|  |             |                       | <b>Code</b>  | <b>Lead Configurations</b> |                     |
|  |             |                       | 1            | Up                         |                     |
|  |             |                       | 3            | Down                       |                     |
|  |             |                       |              | <b>Code</b>                | <b>Tube Options</b> |
|  |             |                       |              | L                          | Long                |
|  |             |                       |              | S                          | Short               |
|  |             |                       |              | N                          | None *              |

↓            ↓            ↓            ↓            ↓

NPC-1210 - \_ - \_ - \_ - \_      Typical model number

\* Order NPC-1210-XXXG-XN in place of NPC-1210-XXXD-XN

The code number to be ordered may be specified as follows:

### NPC-1210 (Low Pressure)

|  |             |                                  |              |                            |                     |
|--|-------------|----------------------------------|--------------|----------------------------|---------------------|
|  | <b>Code</b> | <b>Pressure Range</b>            |              |                            |                     |
|  | 10W         | 10 in H <sub>2</sub> O (25 mbar) |              |                            |                     |
|  | 001         | 1 psi (69 mbar)                  |              |                            |                     |
|  |             | <b>Code</b>                      | <b>Type</b>  |                            |                     |
|  |             | D                                | Differential |                            |                     |
|  |             | G                                | Gauge        |                            |                     |
|  |             |                                  | <b>Code</b>  | <b>Lead Configurations</b> |                     |
|  |             |                                  | 1            | Up                         |                     |
|  |             |                                  | 3            | Down                       |                     |
|  |             |                                  |              | <b>Code</b>                | <b>Tube Options</b> |
|  |             |                                  |              | L                          | Long                |
|  |             |                                  |              | S                          | Short               |

↓            ↓            ↓            ↓            ↓

NPC-1210 - \_ - \_ - \_ - \_      Typical model number

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