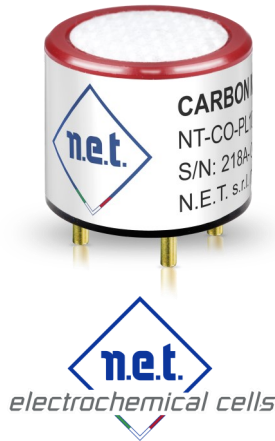




# NT-CO-PL200

## Premium Line Electrochemical Carbon Monoxide Sensor

055463 rev.0 dated 20/08/2024



### Key Features

The NT-CO-PL200 is a new, **high sensitivity** Premium Line electrochemical gas sensor with 3 electrodes for the detection of Carbon Monoxide in demanding gas detection applications. Exhibiting high performance with excellent stability and output signal, this compact sensor (20.4 mm diameter) is suitable both for portable and fixed gas detection instruments where the ability of detecting low levels of Carbon Monoxide is of the essence.

The porous electrode technology enables accurate gas detection with high sensitivity. The mechanical design of the sensor gives optimum gas diffusion characteristics, and the hermetically sealed enclosure prevents costly electrolyte leakage.

### NET Premium Line Electrochemical Cells

The European Standard EN 45544-2 (Workplace atmospheres. Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours. Performance requirements for apparatus used for exposure measurement) specifies the performance requirements for electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours in workplace atmospheres, including sensors. This standard provides a consistent approach and framework for the assessment of performance criteria to manufacturers, test laboratories and users of apparatus.

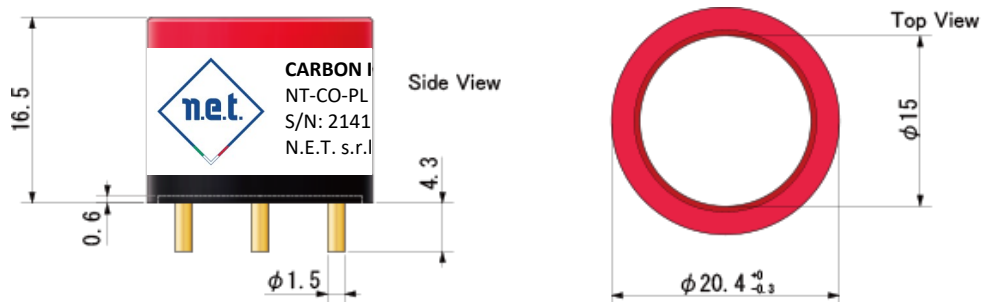
But, the standard states, "It is the manufacturer's primary responsibility to ensure that the apparatus meets the requirements laid down, including environmental influences

which can be expected to affect performance".

With this in mind, N.E.T. has designed its PREMIUM LINE: a range of electrochemical cells to exceed all the performance requirements of EN 45544-2 – including upper and lower limit of measurement, deviation of the measured values in clean air and in standard test gas, deviation of the measured values at all temperatures, pressures and at any humidity, time of response (t90, t50), time of recovery (t10, t50), over-range and stability.

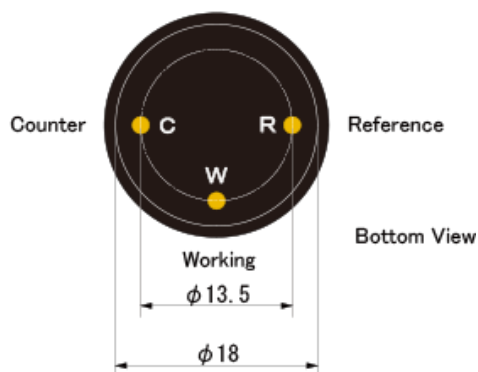
The Premium Line is manufactured exclusively for N.E.T. in Japan and includes sensors for CO, NO, NO2, H2S, SO2, HCl, Cl2, NH3 (available in 4 different ranges) and the new H2S-HT and CO-HT cells for high temperatures.

### Mechanical specifications



All dimensions are in mm with a tolerance of +/- 0.1 mm unless stated otherwise

## Pinout



## Product specifications

|                          |                                    |                                    |
|--------------------------|------------------------------------|------------------------------------|
| Technical Specifications | Detectable Gas                     | Carbon Monoxide                    |
|                          | Detection Range                    | 0 – 200 ppm                        |
|                          | Maximum Overload                   | 500 ppm                            |
|                          | Output Signal                      | 300± 75 nA/ppm                     |
|                          | Resolution                         | 0.1 ppm                            |
|                          | Repeatability                      | ± 2%                               |
|                          | Typical Baseline Range (pure air)  | ± 0.5 ppm                          |
|                          | Typical Response Time ( $t_{90}$ ) | < 30 s                             |
|                          | Baseline Shift (-30 ~ 40 degree C) | < 2 ppm                            |
|                          | Long Term Output Drift             | < 1.5%/month                       |
|                          | Weight:                            | Approximately 4.5 g                |
| Operating conditions     | Operating Temperature              | -30°C to + 50°C                    |
|                          | Operating Humidity                 | 15 to 90 % RH                      |
|                          | Operating Pressure Range           | 900 to 1100 mbar                   |
|                          | Recommended Load Resistor          | 10 $\Omega$                        |
|                          | Bias Voltage                       | Not required                       |
|                          | Recommended Storage Temperature    | 0-20 °C                            |
|                          | Position Sensitivity               | None                               |
|                          | Storage Life                       | < 6 months                         |
|                          | Warranty                           | 2 years on mechanical defects only |
|                          | Expected Life Time                 | 3 years                            |

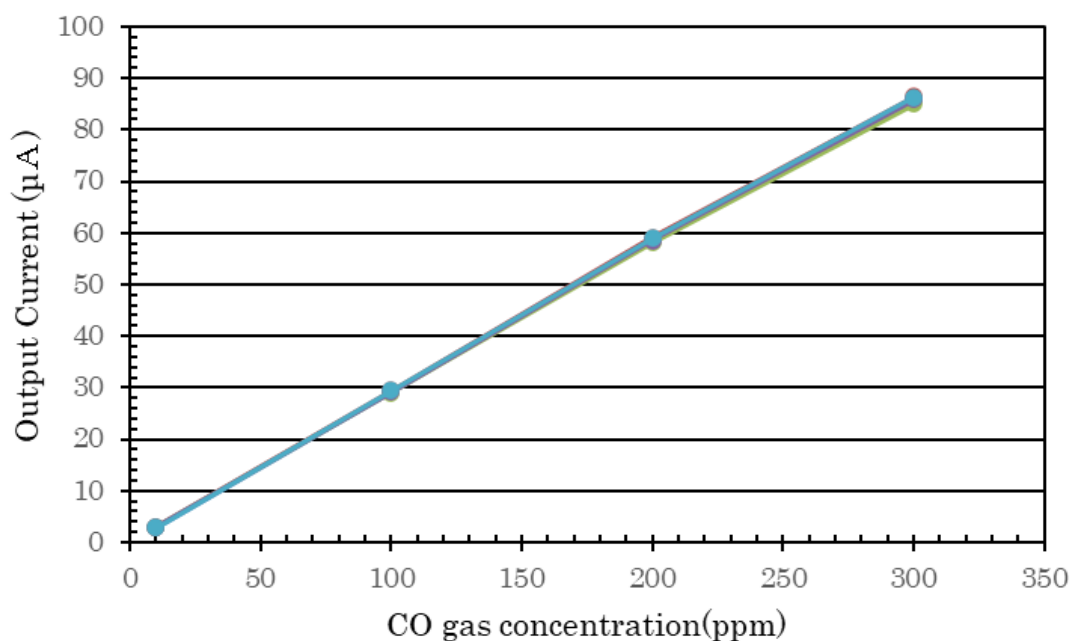
Performance data conditions: 20°C, 50%RH and 1013mBar

## Typical cross sensitivities

| Gas              | Test Gas Concentration (ppm) | Typical CO Concentration Equivalent (ppm) |
|------------------|------------------------------|-------------------------------------------|
| Carbon Monoxide  | 100                          | 100                                       |
| Hydrogen         | 100                          | 10                                        |
| Carbon Dioxide   | 5000                         | 0                                         |
| Sulphur Dioxide  | 10                           | 0                                         |
| Hydrogen Sulfide | 10                           | ±0.1                                      |
| Nitric Oxide     | 30                           | 25                                        |
| Nitrogen Dioxide | 10                           | 0.1                                       |
| Ammonia          | 100                          | 0                                         |
| Ethanol          | 200                          | 0                                         |

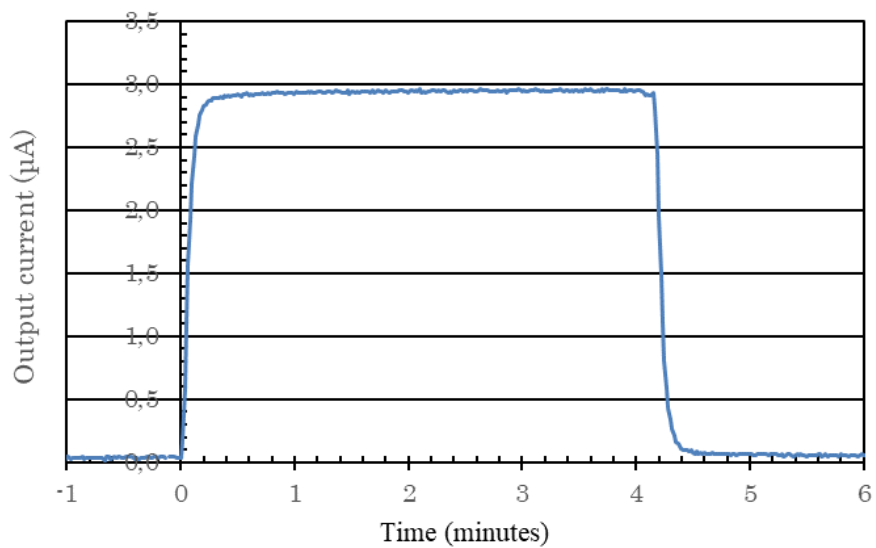
**Important note:** The values above are typical values and should not be used as a basis for cross calibration. Cross sensitivities may not be linear and should not be scaled either. Above data based on gassing for 5 minutes using test equipment. Should be noted some cross interference break through will occur if gas is applied for a longer period of time.

## Linearity



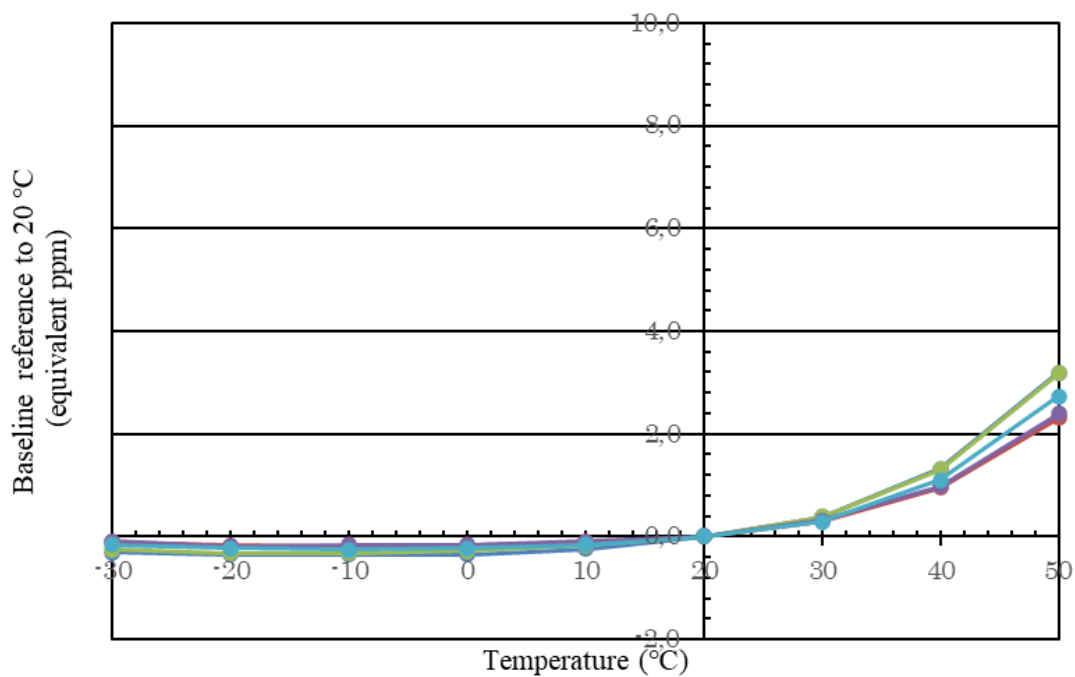
Linearity characteristics of NT-CO-PL200 (20°C)

## Response and Recovery

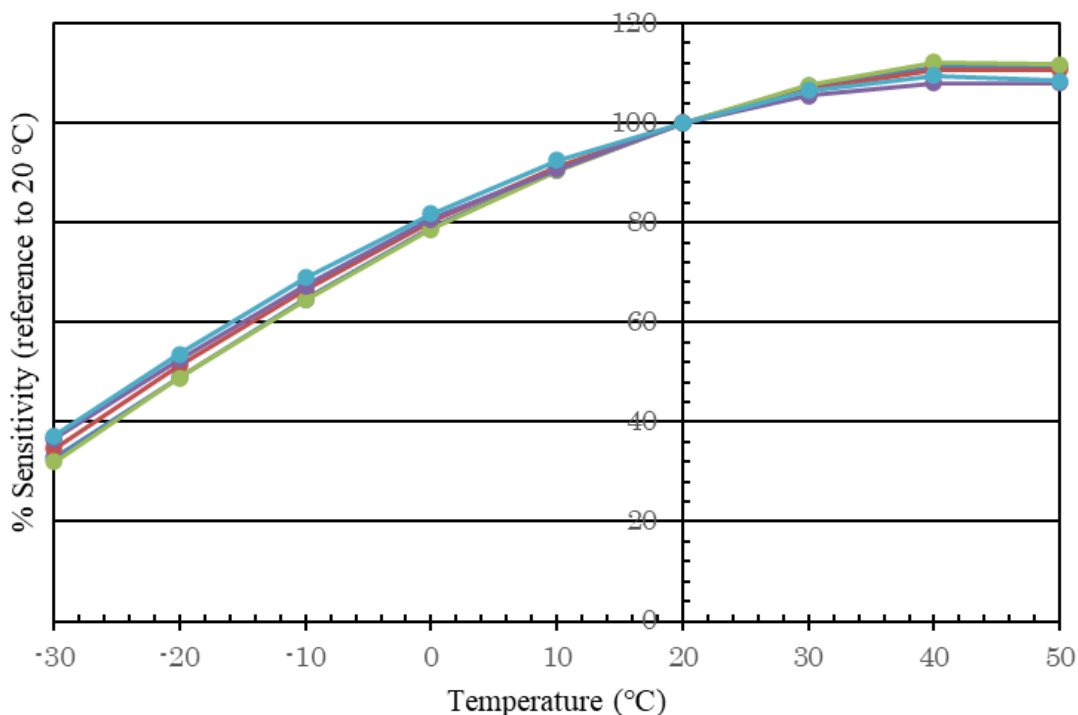


Response and Recovery characteristics of NT-CO-PL200 (CO:100ppm, 20°C)

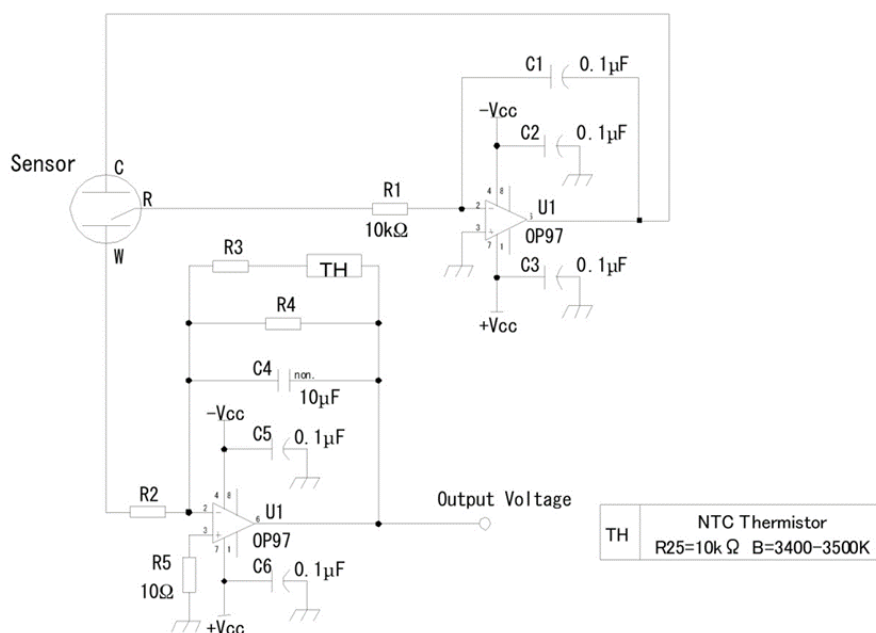
## Baseline shift



## Temperature dependency



## Recommended Circuit Diagram



In the circuit, R2=10 Ω, R3=19.6 kΩ and R4=15.0 kΩ. The temperature dependence of the sensor is compensated by NTC thermistor that has 3435K of B constant. Other thermistor can be used, if the B constant is around 3500K and the resistant value (R25) is 10 kΩ.

## Warranty and warning

Use within specified conditions.

Sensor characteristics must be measured in clean air without noise gases.

Electrode pins must be correctly connected. Wrong connection does not allow correct functions.

Do not apply voltage directly to electrode pins.

Do not bend pins.

Do not solder to electrode pins directly. Use exclusive sockets.

Do not use contact grease on electrode pins.

Do not put excess strength on electrode pins.

If sensor housing is damaged or scratched, do not use sensor.

Do not blow organic solvents, paints, chemical agents, oils, or high concentration gases onto sensor.

Do not disassemble or change any parts.

If sensor is used under irregular atmosphere, contact us for assistance.

**N.E.T. has a policy of continuous development and improvement of its products. As such the specification for the device outlined in the data sheet may be changed without notice. In case of modification of the product, N.E.T. disclaims all liability.**

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