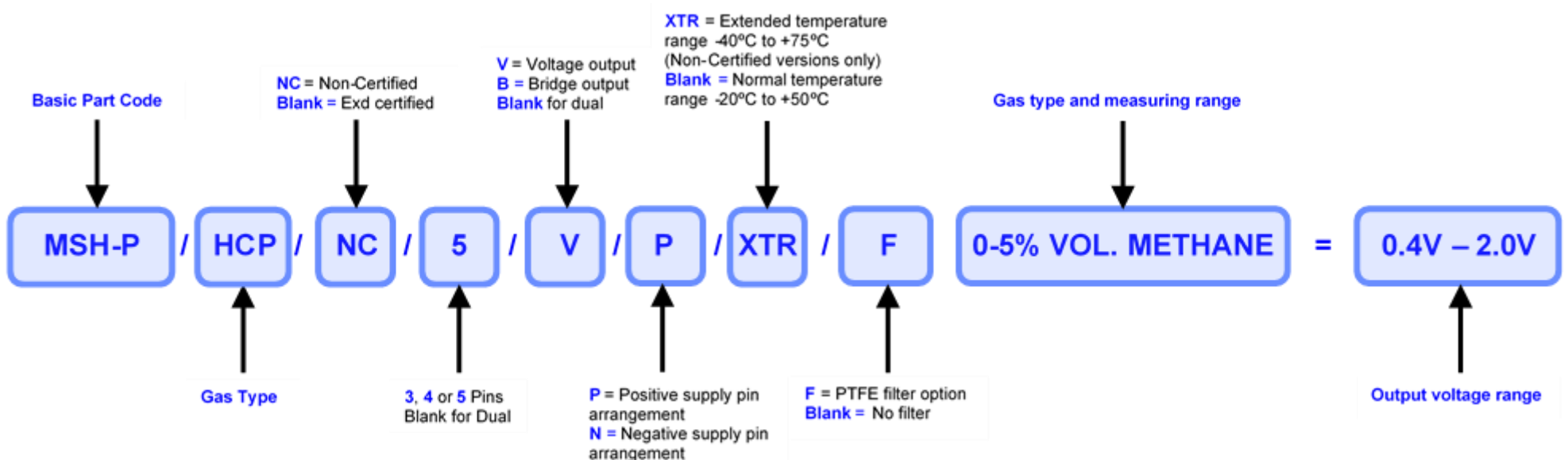


## PLATINUM INFRARED SENSOR ORDERING CODES

The following selection must be made in order to correctly specify the build and configuration of the sensor

| Basic part code   | Gas Type   | Ex'd' Certified or Non-Certified | 3 or 4 or 5 Pins      | Bridge or Voltage output   | Positive or Negative Polarity | Temperature Options   | Optional filter   |
|---|--|----------------------------------|-----------------------|--|-------------------------------|---|-------------------|
| <b>Regular Power</b>  |  |                                  |                       |  |                               |   |                   |
| <b>MSH-P/</b><br>Regular Power<br><b>MSHia-P/</b><br>Regular Power, M1 Cert   | <b>HCP/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> )<br><b>HHCP/</b><br>(0-100% Vol. C <sub>3</sub> H <sub>8</sub> )<br><b>CO2P/</b><br>(0-10,000ppm / 0-5% Vol. CO <sub>2</sub> )<br><b>MCO2P/</b><br>(0-10% Vol. CO <sub>2</sub> )<br><b>HCO2P/</b><br>(0-100% Vol. CO <sub>2</sub> )<br><b>N2OP/</b><br>(0-1,000ppm / 0-1% Vol. N <sub>2</sub> O)<br><b>RGP/</b><br>(0-15% Vol. R32) | Blank for Ex'd'<br>or <b>NC/</b> | <b>3/ or 4/ or 5/</b> | <b>B/ or V/</b>  | <b>P/ or N/</b>               | <b>XTR/</b><br>(-40°C...+75°C)<br>*Non-cert only<br><b>Blank</b><br>(-20°C...+50°C) | Blank or <b>F</b> |
|   | <b>MSH-PS/</b><br>Regular Power, SIL1 Cert<br><b>MSHia-PS/</b><br>Regular Power, SIL1 Cert, M1 Cert<br><b>MSH-HP/</b><br>High Power, Anti-Condensation<br><b>MSHia-PS/</b><br>High Power, Anti-Condensation, M1 Cert   |                                  |                       |  |                               |   |                   |
| <b>MSH-DP/</b><br>Regular Power Dual Gas<br><b>MSHia-DP/</b><br>Regular Power, M1 Cert, Dual Gas<br><b>MSH-DS/</b><br>Regular Power, SIL1 Cert, Dual Gas<br><b>MSHia-DS/</b><br>Regular Power, SIL1 Cert, M1 Cert, Dual Gas | <b>HC/CO2/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> & 0-5% Vol. CO <sub>2</sub> )<br><b>HC/HCO2/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> & 0-100% Vol. CO <sub>2</sub> )  | Blank for Ex'd'<br>or <b>NC/</b> | N/A                   | N/A  | <b>P/</b>                     | <b>XTR/</b><br>(-40°C...+75°C)<br>*Non-cert only<br><b>Blank</b><br>(-20°C...+50°C) | Blank or <b>F</b> |
|   | <b>HC/CO2/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> )<br><b>HHC/</b><br>(0-100% Vol. C <sub>3</sub> H <sub>8</sub> )<br><b>CO2/</b><br>(0-10,000ppm / 0-5% Vol. CO <sub>2</sub> )<br><b>MCO2/</b><br>(0-10% Vol. CO <sub>2</sub> )<br><b>HCO2/</b><br>(0-100% Vol. CO <sub>2</sub> )  |                                  |                       |  |                               |   |                   |
| <b>Low Power</b>  |  |                                  |                       |  |                               |   |                   |
| <b>MSH2-LP/</b><br>Low Power<br><b>MSH2ia-LP/</b><br>Low Power, M1 Cert<br><b>MSH2-LS/</b><br>Low Power, SIL1 Cert<br><b>MSH2ia-LS/</b><br>Low Power, M1 Cert, SIL1 Cert  | <b>HC/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> )<br><b>HHC/</b><br>(0-100% Vol. C <sub>3</sub> H <sub>8</sub> )<br><b>CO2/</b><br>(0-10,000ppm / 0-5% Vol. CO <sub>2</sub> )<br><b>MCO2/</b><br>(0-10% Vol. CO <sub>2</sub> )<br><b>HCO2/</b><br>(0-100% Vol. CO <sub>2</sub> )  | Blank for Ex'd'<br>or <b>NC/</b> | <b>3/ or 4/ or 5/</b> | <b>B/** or V/</b><br><small>**Note: Because the sensor supply current varies during operation, it is possible that this version of the sensor may not be suitable for all pellistor based instruments, without some modifications.</small> | <b>P/ or N/</b>               | <b>XTR/</b><br>(-40°C...+75°C)<br>*Non-cert only<br><b>Blank</b><br>(-20°C...+50°C) | Blank or <b>F</b> |
|   | <b>MSH2-LD/</b><br>Low Power, Dual Gas<br><b>MSH2ia-LD/</b><br>Low Power, M1 Cert, Dual Gas<br><b>MSH2-LS/</b><br>Low Power, SIL1 Cert<br><b>MSH2ia-LS/</b><br>Low Power, M1 Cert, SIL1 Cert   |                                  |                       |  |                               |   |                   |
| <b>Low Power 2</b>  |  |                                  |                       |  |                               |   |                   |
| <b>MSH2-LP2/</b><br>Low Power<br><b>MSH2ia-LP2/</b><br>Low Power, M1 Cert   | <b>HC/</b><br>(0-5% Vol. CH <sub>4</sub> / 0-100% Vol. CH <sub>4</sub> / 0-2% vol. C <sub>3</sub> H <sub>8</sub> )<br><b>CO2/</b><br>(0-10,000ppm / 0-5% Vol. CO <sub>2</sub> )  | Blank for Ex'd'<br>or <b>NC/</b> | <b>3/ or 4/ or 5/</b> | <b>V/</b>  | <b>P/</b>                     | <b>XTR/</b><br>(-40°C...+75°C)<br>*Non-cert only<br><b>Blank</b><br>(-20°C...+50°C) | Blank or <b>F</b> |



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Determining the correct ordering information can be broken down into 3 stages:

- a) Stage 1: Specify the part code
- b) Stage 2: Specify the target gas and the output specification
- c) Stage 3: Specify the output voltage

Stage 1: Specify the ordering code.

**STEP 1**

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| Choose the basic part number from the table on page 1. |  |  |  |  |  |
| MSH-P/   |  |  |  |  |  |

**STEP 2**

|  |        |  |  |  |  |
|--|--------|--|--|--|--|
| Choose your required gas type<br>(HC, HHC, CO2, MCO2, HCO2, N2O or HC/CO2 for dual gas sensors). |        |  |  |  |  |
| MSH-P/   | CO2P / |  |  |  |  |

**Note:** Regular power Platinum sensors require a "P" designation after the gas type. Omission of the "P" will result in the sensor being configured with legacy support for the Gold series Premier sensors. The "P" is omitted on all other build types as these sensors are only available in the Platinum sensor series.

Refer to the table on page 3 for further information on sensor type selection.

**STEP 3**

|  |        |      |  |  |  |
|--|--------|------|--|--|--|
| Choose either certified or non-certified: <b>Blank or NC</b><br>Certified sensors must be chosen for use in potentially flammable atmospheres. Non-certified sensors require additional protection when used in potentially flammable atmospheres. |        |      |  |  |  |
| MSH-P/   | CO2P / | NC / |  |  |  |

**STEP 4**

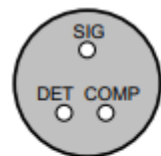
|   |        |      |     |  |  |
|---|--------|------|-----|--|--|
| Choose either 3,4 or 5 pins: <b>3, 4 or 5</b><br>Select 3 pins sensors when replacing pellistors in an existing design, or when the data communications facility will not be used. Use 4 or 5 pins sensors for new designs and when using the data communications facility. |        |      |     |  |  |
| MSH-P/  | CO2P / | NC / | 5 / |  |  |

**STEP 5**

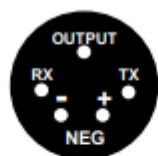
|  |       |      |     |     |  |
|--|-------|------|-----|-----|--|
| Choose either Bridge or Voltage output: <b>B or V</b><br>Select Bridge output sensors when replacing pellistors in an existing design. Use Voltage output sensors for new designs. |       |      |     |     |  |
| MSH-P/   | CO2 / | NC / | 5 / | V / |  |

**STEP 6**

|  |       |      |     |     |   |
|--|-------|------|-----|-----|---|
| Choose either Positive or Negative version: <b>P or N</b><br>Select the version that is compatible with existing designs, or the most convenient for new designs. Refer to the diagram below for more information.<br>The <b>ONLY</b> difference between Positive and Negative sensors is the location of the power supply pins.<br>The direction of the output voltage with gas is determined in Stage 3. |       |      |     |     |   |
| MSH-P/   | CO2 / | NC / | 5 / | B / | P |

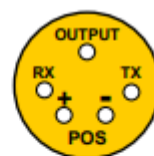


Typical Pellistor Pinout



Premier Negative Polarity Option

Use where the DET pin of the existing pellistor is connected to the Negative of the pellistor bridge supply.



Premier Positive Polarity Option

Use where DET pin of the existing pellistor is connected to the Positive of the pellistor bridge supply.

Note – On the 3 pin version of the sensor, the RX and TX connections are pads, not pins.

## Stage 2: Specify the target gas and range.

For Hydrocarbon sensors and Dual Gas, choose from the following list:

| PLATINUM HYDROCARBON SENSORS       |   |                     |   |
|------------------------------------|---|---------------------|---|
| GAS TYPE                           | SENSOR RANGE  | SENSOR TYPE         | COMMENTS  |
| METHANE                            | 0 – 5% volume   | HC                  | Fully characterised for methane.  |
| METHANE                            | 0 – 100% volume   | HC                  | Fully characterised for methane   |
| METHANE                            | 0-5-100% volume   | HC                  | High resolution measurement of methane from 0 to 5% volume with resolution of 0.01 % and 0.1% for 5-100% volume.                                |
| PROPANE                            | 0 – 2% volume   | HC                  | Fully characterised for propane.<br>Cross-reference factors available many hydrocarbon gasses.<br>Please refer to TDS0050 for more information. |
| PROPANE                            | 0 – 100% volume   | HHC                 | Fully characterised for propane   |
| METHANE & PROPANE                  | 0-5-100% vol. CH <sub>4</sub><br>0-2% Vol. C <sub>3</sub> H <sub>8</sub>                                | HC                  | Fully characterised for methane and propane   |
| METHANE / PROPANE / CARBON DIOXIDE | 0-5-100% vol. CH <sub>4</sub><br>0-2% Vol. C <sub>3</sub> H <sub>8</sub><br>0-5% Vol. CO <sub>2</sub>   | HC/CO <sub>2</sub>  | Fully characterised for methane, propane and carbon dioxide   |
| METHANE / PROPANE / CARBON DIOXIDE | 0-5-100% vol. CH <sub>4</sub><br>0-2% Vol. C <sub>3</sub> H <sub>8</sub><br>0-100% Vol. CO <sub>2</sub> | HC/HCO <sub>2</sub> | Fully characterised for methane, propane and carbon dioxide   |

**Note:** Please do not hesitate to contact us if you require a non-standard gas range.

For Carbon Dioxide sensors, choose from the following list:

| PLATINUM CARBON DIOXIDE SENSORS |                 |                  |                         |
|---------------------------------|-----------------|------------------|-------------------------|
| GAS TYPE                        | SENSOR RANGE    | SENSOR TYPE      | COMMENTS                |
| CARBON DIOXIDE                  | 0 – 500 ppm     | CO <sub>2</sub>  | 10 ppm resolution       |
| CARBON DIOXIDE                  | 0 – 1000 ppm    | CO <sub>2</sub>  | 10 ppm resolution       |
| CARBON DIOXIDE                  | 0 – 5000 ppm    | CO <sub>2</sub>  | 10 ppm resolution       |
| CARBON DIOXIDE                  | 0 – 10,000 ppm  | CO <sub>2</sub>  | 10 ppm resolution       |
| CARBON DIOXIDE                  | 0 – 2% volume   | CO <sub>2</sub>  | 0.01% volume resolution |
| CARBON DIOXIDE                  | 0 – 5% volume   | CO <sub>2</sub>  | 0.01% volume resolution |
| CARBON DIOXIDE                  | 0 – 10% volume  | MCO <sub>2</sub> | 0.01% volume resolution |
| CARBON DIOXIDE                  | 0 – 20% volume  | HCO <sub>2</sub> | 0.1% volume resolution  |
| CARBON DIOXIDE                  | 0 – 50% volume  | HCO <sub>2</sub> | 0.1% volume resolution  |
| CARBON DIOXIDE                  | 0 – 100% volume | HCO <sub>2</sub> | 0.1% volume resolution  |

**Note:** Please do not hesitate to contact us if you require a non-standard gas range.

For Nitrous Oxide sensors, choose from the following list:

| PLATINUM NITROUS OXIDE SENSORS |               |                   |  |
|--------------------------------|---------------|-------------------|--|
| GAS TYPE                       | SENSOR RANGE  | SENSOR TYPE       | COMMENTS                                     |
| NITROUS OXIDE                  | 0 – 1000 ppm  | N <sub>2</sub> OP | 20 ppm resolution (±100ppm zero suppression) |
| NITROUS OXIDE                  | 0 – 1% volume | N <sub>2</sub> OP | 0.01% volume resolution                      |

**Note:** Please do not hesitate to contact us if you require a non-standard gas range.

For Refrigerant gas sensors, choose from the following list:

| PLATINUM REFRIGERANT SENSORS |                |             |                         |
|------------------------------|----------------|-------------|-------------------------|
| GAS TYPE                     | SENSOR RANGE   | SENSOR TYPE | COMMENTS                |
| R32                          | 0 – 15% volume | R32P        | 0.05% volume resolution |

**Note:** Please do not hesitate to contact us if you require a non-standard gas range.

### Stage 3: Specify the output voltage:

#### a) Bridge output sensors

The output voltage for a "Bridge" type sensor has a default setting of half the supply voltage for "zero gas". The output is designed to act in the same way as pellistors, for this reason the output of a POSITIVE sensor will fall when gas is detected. The output of a NEGATIVE sensor will rise when gas is detected. These are the default settings, if required; the user can specify the opposite direction. Similarly, if an output voltage for "zero gas", other than half the supply voltage, is required this can be specified when ordering.

Pellistor outputs usually vary from 100-200mV for 5% volume methane. An example of a typical pellistor-replacement sensor would therefore be specified as follows:

**MSH-P/HCP/3/B/N      0-5% volume methane = 0-100mV rising**

**The output voltage is dependent upon the sensor supply voltage. The factory default supply voltage used is 3.1V. If a different supply voltage is to be used, this should be specified when ordering so that the output voltage can be set accordingly. For example:**

**MSH-P/HCP/3/B/P      0-5% volume methane = 0-100mV falling, power supply = 3.3V**

#### a) Voltage output sensors

The output voltage for a "Voltage" type sensor can be specified when ordering with limits of 0.01V to 2.7V. A typical setting would be:

**MSH-P/HCP/3/V/N      0-5% volume methane = 0.4V – 2.4V**

**We recommend avoiding choosing 0V for "Zero" gas because the fault output condition of -250% FSD cannot be detected if the output is already at zero.**