



Technical data sheet TDS0052

PREMIER 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	Hydrocarbon, High Resolution methane or Carbon dioxide	Certified or Non-Certified	3 or 4 or 5 pins	Bridge or Voltage output	Positive or Negative configuration	Optional filter
MSH-P/ MSHia-P/	HC,HHC, HR or CO ₂ ,HCO ₂	Blank or NC	3 or 4 or 5	B or V	P or N	Blank or F

Example:

MSH-P/	CO ₂ /	NC /	5 /	V /	P
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In addition to the ordering code, the gas type and range must be specified along with the required output voltage.

For example: MSH-P/CO₂/5/V/P 0-5% volume CO₂ = 0.4 – 2.4V
MSH-P/HC/3/B/N 0-5% volume methane = 100mV rising

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



Dynamant Limited

Premier House · The Village · South Normanton · Derbyshire · DE55 2DS · UK.
Tel: 44 (0)1773 864580 · Fax: 44 (0)1773 864599
email: sales@dynamant.com · www.dynamant.com

Stage 1: Specify the ordering code.

STEP 1

Choose the basic part number : either **MSHia-P** for mining M1 applications or **MSH-P** for all other applications

MSH-P/					
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STEP 2

Choose either hydrocarbon standard range: **HC**, high range **HHC**, or High Resolution methane **HR**
or **carbon dioxide** standard range: **CO2** or high range **HCO2**

MSH-P/	CO2 /				
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Refer to the table on page 4 for further information on sensor type selection.

STEP 3

Choose either certified or non-certified: **Blank** or **NC**

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/	CO2 /	NC /			
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STEP 4

Choose either 3,4 or 5 pins: **3**, **4** or **5**

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/	CO2 /	NC /	5 /		
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STEP 5

Choose either Bridge or Voltage output: **B** or **V**

Select Bridge output sensors when replacing pellistors in an existing design. Use Voltage output sensors for new designs.

MSH-P/	CO2 /	NC /	5 /	B /	
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STEP 6

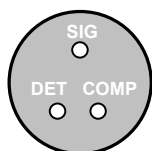
Choose either Positive or Negative version: **P** or **N**

Select the version that is compatible with existing designs, or the most convenient for new designs. Refer to the diagram below for more information.

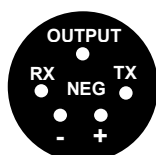
The **ONLY** difference between **P**ositive and **N**egative sensors is the location of the power supply pins.

The direction of the output voltage with gas is determined in Stage 3.

MSH-P/	CO2 /	NC /	5 /	B /	N
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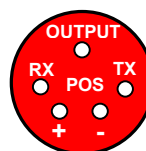


Typical Pellistor Pinout



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.

On the 4 pin version of the sensor, the Output connection is a pad, not a pin.

Stage 2: Specify the target gas and range.

For Hydrocarbon sensors, choose from the following list:

PREMIER 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 – 100% volume	HR	High resolution version measures methane from 0 to 100% volume with resolution of 0.01 % for 0-10% methane and 0.1% for 10-100% volume.
PROPANE	0 – 2% volume	HC	Fully characterised for propane. Cross-reference factors available for: Butane, Pentane, Hexane, Ethanol, Ethylene, Propylene, Ethane, Cyclopentane, Isopropanol, Methanol, Toluene, Acetone, Methyl ethyl ketone (MEK) and Xylene , see Note 1
PROPANE	0 – 100% volume	HHC	Fully characterised for propane
PROPYLENE	0 – 2% volume	HC	Fully characterised for propylene
BUTANE	0 – 2% volume	HC	Fully characterised for butane
PENTANE	0 – 2% volume	HC	Fully characterised for pentane
HEXANE	0 – 1% volume	HC	Sensor output linearised for hexane, see Note 1
ETHYLENE	0 – 3% volume	HC	Sensor output linearised for ethylene, see Note 1
ETHANE	0 – 3% volume	HC	Fully characterised for ethane
ETHYLENE OXIDE	0 – 3% volume	HC	Fully characterised for ethylene oxide
ETHANOL	0 – 5% volume	HC	Sensor output linearised for ethanol, see Note 1
METHYL BROMIDE	0 – 25,000 ppm	HC	Sensor output linearised for methyl bromide, see Note 1

Notes:

- 1 Temperature performance may vary from the specifications on the hydrocarbon sensor data sheets. Refer to data sheet TDS0050 on the Dynamet website for further information.
- 2 “Fully characterised” sensors provide an output that has been linearised and temperature compensated for the target gas.

For Carbon Dioxide sensors, choose from the following list:

PREMIER CARBON DIOXIDE SENSORS			
GAS TYPE	SENSOR RANGE	SENSOR TYPE	RESOLUTION
CARBON DIOXIDE	0 – 500 ppm	CO2	10 ppm from 0 to 250 ppm, then 20 ppm up to full scale
CARBON DIOXIDE	0 – 1000 ppm	CO2	20 ppm from 0 to 500 ppm, then 40 ppm up to full scale
CARBON DIOXIDE	0 – 2000 ppm	CO2	50 ppm from 0 to 1000 ppm, then 100 ppm up to full scale
CARBON DIOXIDE	0 – 5000 ppm	CO2	50 ppm from 0 to 2500 ppm, then 100 ppm up to full scale
CARBON DIOXIDE	0 – 10,000 ppm	CO2	100 ppm from 0 to 5000 ppm, then 200 ppm up to full scale
CARBON DIOXIDE	0 – 2% volume	CO2	0.025% vol from 0 to 1% vol, then 0.05% vol up to full scale
CARBON DIOXIDE	0 – 5% volume	CO2	0.025% vol from 0 to 2.5% vol, then 0.05% vol up to full scale
CARBON DIOXIDE	0 – 10% volume	HCO2	0.05% vol from 0 to 5% vol, then 0.1% vol up to full scale
CARBON DIOXIDE	0 – 20% volume	HCO2	0.1% vol from 0 to 10% vol, then 0.2% vol up to full scale
CARBON DIOXIDE	0 – 30% volume	HCO2	0.15% vol from 0 to 15% vol, then 0.3% vol up to full scale
CARBON DIOXIDE	0 – 60% volume	HCO2	0.3% vol from 0 to 30% vol, then 0.6% vol up to full scale
CARBON DIOXIDE	0 – 100% volume	HCO2	0.5% vol from 0 to 50% vol, then 1% vol up to full scale

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/HC/3/B/N 0-5% volume methane = 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/HC/3/B/N 0-5% volume methane = 100mV rising, power supply = 3.3V

a) Voltage output sensors

The output voltage for a “Voltage” type sensor can be specified when ordering with limits of 0V to 2.8V. A typical setting would be:

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

Avoid choosing 0V for “Zero” gas because the fault output condition of -100% FSD cannot be detected if the output is already at zero.