

The GDS Red Line 3000 sensor uses proven non-dispersive single beam dual-wave length infrared principles to detect and monitor the presence of gases. This non-poisoning sensing technique relies on the target gas having a unique well-defined absorption signature. This is used to identify the presence of the target gas and is highly specific. Using a suitable infrared source, an analysis of the optical absorption through the gas allows the concentration of the target gas to be determined.

GDS Technologies use a novel dual wavelength NDIR design incorporating two filters and a matched twin element detector. The 'sample' filter selects a wavelength region absorbed by the gas to be measured while the 'reference' filter selects a region of no absorption by any gas likely to be present. Gas absorption measurement is made by electronic signal proportioning, using a dedicated microprocessor. This technique provides unrivalled long term measurement stability because variations of instrument signal levels, resulting for example from source ageing or optical contamination, are inherently compensated for, since both the sample and reference channels will be affected equally and therefore will not change the ratio.

All sensor driving is internal to the transmitter and full fault monitoring of the sensor and transmitter is continuous.

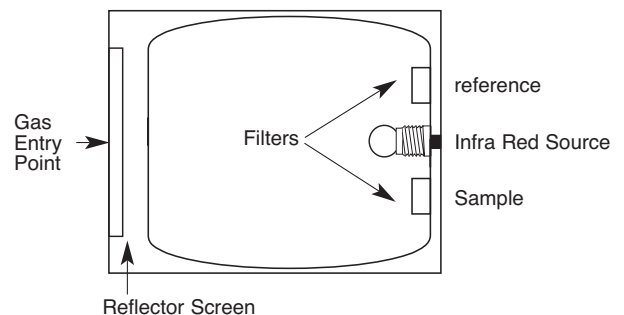
The sensor signal is used to provide a linear output in voltage and 4-20mA format, calibration is by means of 4 and 20mA span potentiometers with the signal being internally linearised without the need for user adjustments.

Internal indicators are included for designating the transmitter status.

These include:-

- Device Active
- Indication of sensor source pulsing
- Indication of the calibration mode
- Fault diagnostics

The 4~20mA output provides a fault indication by reducing the output to below 3mA, with the recovery from fault condition being automatic.



General Data

This information relates to the device operating continuously.

Carbon Dioxide Sensor

Operation – continuous diffusion

Measuring Range – Standard

Others available

Repeatability

Warm up time to zero

Response time to target gas T90

Long term zero drift

NDIR (dual wave-length)

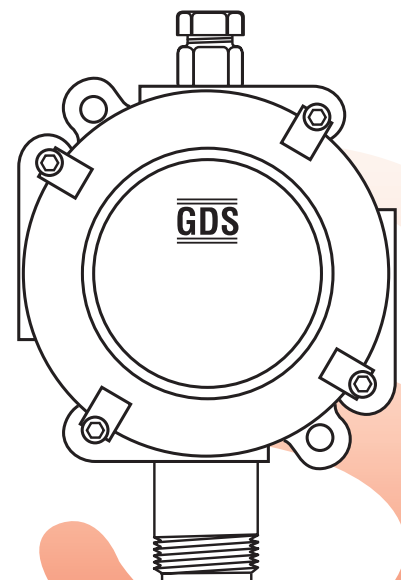
0~2% Vol

± 2%

< 20 seconds

< 25 seconds

± 25 ppm CO₂/ month

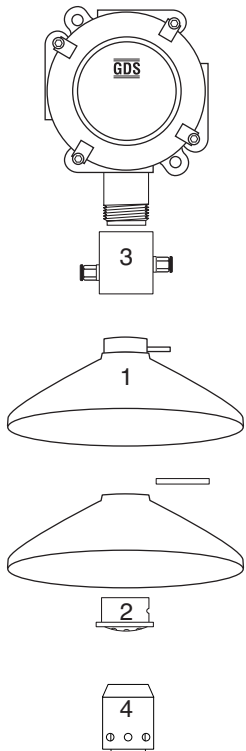


Input voltage – 3 wire device (polarity protected)	12 to 35V DC – 24v DC nominal
Output	4~20mA (link selectable as sink or source)
Voltage output 1~5V, maximum current draw	5mA
Maximum current consumption	130mA
Resolution	0.15% of span
Maximum loop resistance in source mode	250R
Output resolution	0.02mA
Maximum offset drift	±20uA
Over-range output	21.3mA (typical)
Fail signal	4~20mA reduced to 3mA
Fail indicator	Open collector output to 0V

Mechanical Data

Certification	EExd IIC T6 IIGD F1 Sensor – Cert No 03ATEX1176X 3000 Enclosure – Cert No 03ATEX1168X
Replaceable plug in sensor	In-situe
Sensor accessory mounting thread	33mm ø 1.25 pitch – 6 full threads
Enclosure- Type 3000C	Cast iron – hot dipped galvanised
Gas Sensor – Type F1	Stainless steel – 316 S16
Weight	3.95Kg
Cable Entry	One – 20 mm 1.5 pitch Options 25 mm - ¼ NPT
Mounting Detail	Two M5 (138 mm CRS) 35° from vertical
Approximate dimensions-terminal enclosure	126 mm dia. 83 mm deep
On Board Indicators: -	
Green LED	System healthy
Three red LED's	System diagnostics

Environmental Data



IP53 + Water Shield IP64
 Operating Conditions
 0 ~100% RH (non-condensing)
 -10 ~ +50°C
 Storage Conditions
 0~100% RH (non-condensing)
 -20 ~ +60°C

Accessories:-

- 1 - 003-010 Collector Cone + universal fitting
- 2 – 003-020 Test Gas Applicator
Spray Deflector
- 3 – 008-311 Flow Block
- 4 – 003-035 Water Shield
- 5 – 003-090 Duct Mount Kit



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