

The GDS Red Line 9000 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 ratioing, 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.

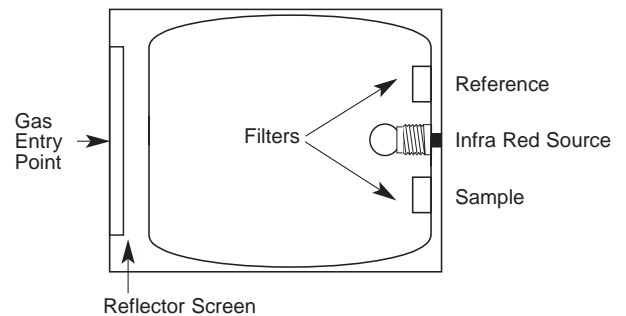
All sensor driving is internal to the transmitter and full fault monitoring of the sensor and transmitter is continuous.

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

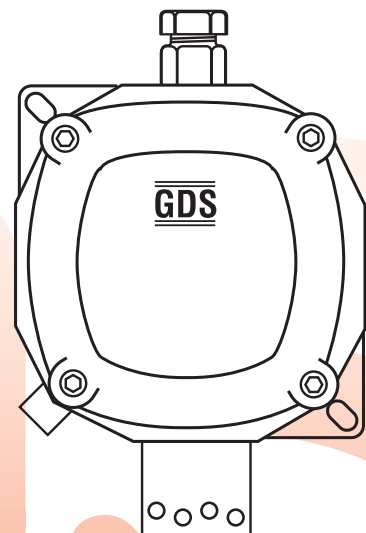
NDIR (dual wave-length)  
0~2% Vol

± 2%

< 20 seconds

< 25 seconds

± 25ppm CO<sub>2</sub>/ month



## Electrical Data

ref C420

Certification	CE – C509
Input voltage – 3 wire device (polarity protected)	12 to 35V DC – 24v DC nominal
Maximum current consumption	130mA
Voltage output 1~5V, maximum current draw	5mA
Resolution	0.15% of span
Output	4~20mA (link selectable as sink or source)
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

Ineternal plug in sensor	(NDIR)
Processor and terminal enclosure – material	GRP
Dimensions	122mm x 122mm x 76mm
Weight	0.8Kg
Mounting Detail	Two M5 (145 mm CRS) 45° from vertical
<u>On Board Indicators:</u> -	
Green LED	System healthy
Three Red LED's	System fault indicators
Cable Entry	One – 20 mm 1.5 pitch

## 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:-

003-040	Collector Cone + universal fitting
003-003	Universal fitting – Test Gas Applicator Weather Cone
008-312	Flow Block
003-036	Duct Mount Probe

### **GDS Technologies Ltd**

Fusion Point, Ash Lane,  
Garforth, Leeds UK LS25 2GA  
Tel +44 (0)113 286 0166  
Fax +44 (0)113 287 8178  
sales@gds-technologies.co.uk  
www.gds-technologies.co.uk

