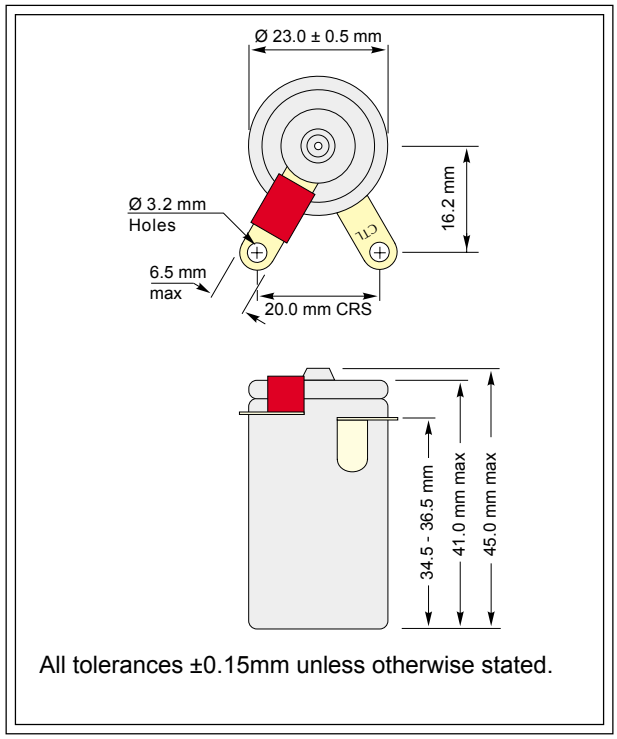
C/S O2 Sensor

N.B. The specification is based on measurements made with cylinder gases using a flow rate of 400 mls min $^{-1}$. Conditions at 20°C, 50%RH, and 1013mBar unless otherwise noted.

Performance Characteristics

Nominal Range	0-25% Oxygen
Max Overload	30% Oxygen
Expected Operating Life	Nine months in Air
Output Signal	1.10 ± 0.17mA in Air
T_{95} Response Time	<20 seconds
Temperature Range	-20°C to +50°C
Temperature Coefficient	0.2% signal/°C
Pressure Range	Atmospheric ± 10%
Pressure Coefficient	0.01% signal/mBar
Operating Humidity	0 to 99% RH non-condensing
Long Term Output Drift	<5% signal loss/year
Maximum Load Resistor	100Ω
Storage Life	Six months in original container
Recommended Storage Temperature	0-20°C
Warranty Period	9 months from date of despatch (This amounts to a variation of condition 6 of our standard terms and conditions which otherwise apply)



All tolerances ±0.15mm unless otherwise stated.

Linearity

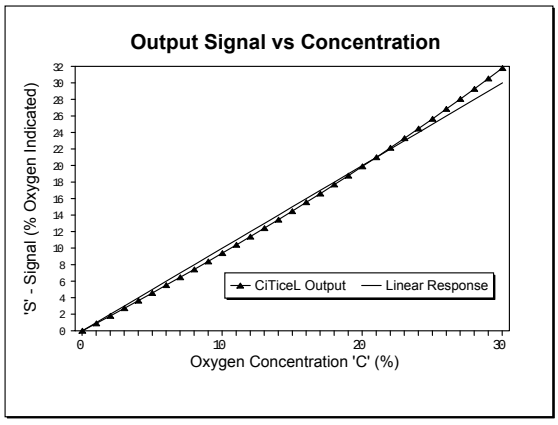
The output signal of an Oxygen sensor follows the relationship:

$$S = K \log_e 1/(1-C)$$

where:

S = Output signal;
C = Fractional oxygen concentration;
K = a constant for the sensor.

For most applications the deviation from a linear response will be insignificant, and no compensation needed. For example, the graph opposite shows the output of a sensor calibrated in air (20.9% O_2). In this case the maximum error in the 0-25% range is ≈0.5% at around 10% O_2.



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Temperature Behaviour

The output of an Oxygen sensor varies slightly with gradual changes in temperature. The graph below shows the behaviour of a batch of 20 sensors. Output was measured at a range of temperatures and expressed as a percentage of the signal at 20°C. The graph shows the upper and lower limits observed.

For rapid fluctuations in temperature a transient response will occur. Sensor output will drop sharply for rapid increases and will rise sharply for rapid decreases. These responses are transient and should die away in about 20 seconds.