



# 3MHL mV Output CiTiceL<sup>®</sup>

## Performance Characteristics

<b>Sensor Type Used</b>	3HL
<b>Expected Operating Life</b>	Two years in air
<b>Output Signal Standard</b>	1mV/ppm ( $\pm 5\%$ )
<b>High Output</b>	10mV/ppm ( $\pm 5\%$ )
<b>Maximum Range</b>	0-100ppm
<b>Resolution</b>	0.5ppm
<b>Maximum Zero Output</b>	0 $\pm$ 1mV
<b>Maximum Zero Shift (+20°C to +40°C)</b>	1.5ppm equivalent
<b>Temperature Range</b>	-20°C to +50°C
<b>Pressure Range</b>	Atmospheric $\pm$ 10%
<b>Pressure Coefficient</b>	No data
<b>T<sub>90</sub> Response Time</b>	$\leq$ 120 seconds (typically 100)
<b>Relative Humidity Range</b>	15 to 90% non-condensing
<b>Long Term Output Drift</b>	<2% of full signal/month
<b>Repeatability</b>	2% of signal
<b>Output Linearity</b>	Linear

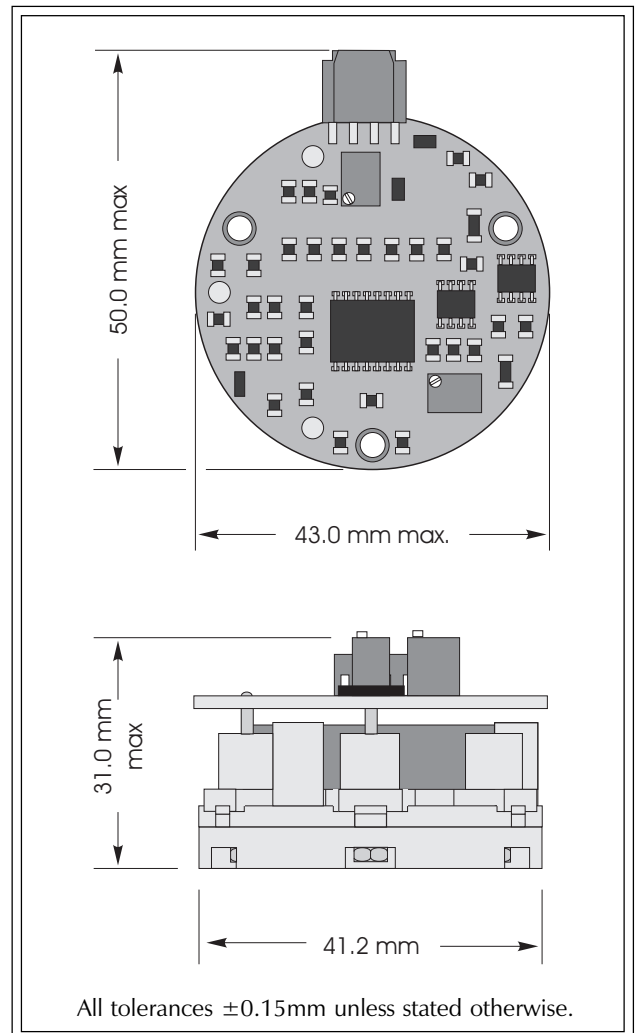
N.B. All performance data is based on conditions at 20°C, 50%RH, and 1013mBar

## Physical Characteristics

<b>Weight</b>	38g (with connector)
<b>Position Sensitivity</b>	None
<b>Storage Life</b>	Six months in CTL container
<b>Recommended Storage Temperature</b>	0-20°C
<b>Warranty Period</b>	12 months from date of despatch

## Electrical Properties

<b>Power Supply Required</b>	7 to 18V d.c. single ended or $\pm$ 3.5 to $\pm$ 9V d.c. dual
<b>Power Consumption</b>	250 $\mu$ A @ 9V d.c.
<b>Calibration</b>	Via built-in span and zero potentiometers





**Distributed by:**  
 Shawcity Ltd  
 91-92 Shrivenham Hundred Business Park  
 Watchfield, Oxfordshire, SN6 8TY  
 Tel: 01793 780622  
 Email: sensororders@shawcity.co.uk  
 www.shawcity.co.uk

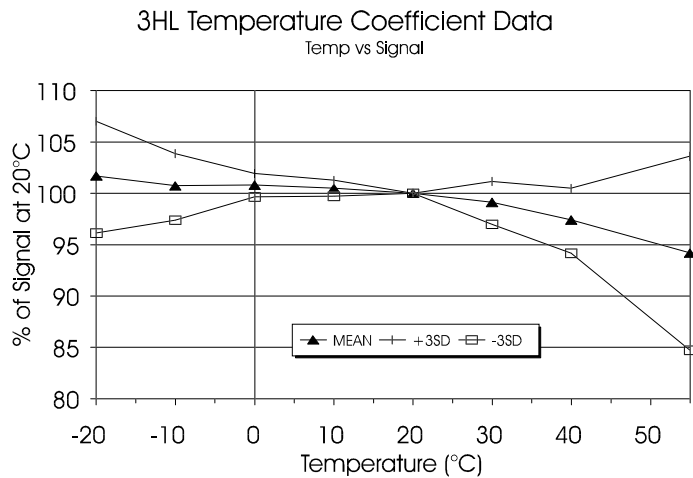
## Start Up

Hydrogen Chloride CiTiceLs require biased operation (i.e. with a bias potential between the sensing and reference electrodes, see page TOX-8). **This potential must be maintained at all times, otherwise very long start up times will result when the instrument is switched on.** When supplied with a mV output, these sensors are in a ready-to-work condition as each is despatched from City Technology with a 9V battery to supply the bias potential. The battery may be used to maintain the bias throughout storage, but must be removed before installation. After installation it is recommended the sensor remains powered at all times, even when the instrument is switched off.

### Temperature Dependence

The output of a CiTiceL can vary with temperature. The graph here shows the variation in output with temperature for 3HL CiTiceLs based on a sample of about 10 sensors. The results are shown in the graph as a mean for the batch, and expressed as a percentage of the signal at 20°C.

In general, the range in values observed for sensors of this type will fall within a range three times the standard deviation above or below the mean. Assuming therefore this sample is typical, then the temperature behaviour of all 3HL CiTiceLs will fall in the band +3SD to -3SD.



Note: A program of data acquisition is under way on larger numbers of sensors to achieve a more statistically based relationship. In the meantime this graph should only be used for guidance.

### Cross-sensitivity Data

CiTiceLs may exhibit a response to certain gases in a sample other than the target gas. 3HL CiTiceLs have been tested with a number of commonly cross-interfering gases and the results are given below. The table shows the typical response to be expected from a sensor when exposed to a given test gas concentration (relevant to safety, e.g. TLV levels).

Gas	Conc.	3HL	Gas	Conc.	3HL
Carbon monoxide:	300ppm	<3ppm	Chlorine:	1ppm	0ppm
Hydrogen sulphide:	15ppm	≈10ppm	Hydrogen:	100ppm	<0.5ppm
Sulphur dioxide:	5ppm	≈2ppm	Hydrogen cyanide:	10ppm	≈-1ppm
Nitric oxide:	35ppm	0ppm	Ethylene:	100ppm	0ppm
Nitrogen dioxide:	5ppm	0ppm	**For details of other possible cross-interfering gases contact City Technology.**		

### Ordering Information

Standard mV HCl CiTiceL.....MLT60-014  
 High Output mV HCl CiTiceL.....MLT60-024

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