







CDH300 CiTipeL® Detector Head

Performance Characteristics

Gases Detected	Most combustible gases or vapours
Range	0-100% LEL
Operating Voltage	2.0 ± 0.1 V d.c.
Detector Operating Current	300mA in recommended circuit
Poison Resistance	Highly resistant
Output Sensitivity	12 to 16 mV/%methane
T₉₀ Response Time	<15 seconds
Linear to	0-5% methane
Long Term Sensitivity Drift	<2% signal/month
Long Term Zero Drift	<2% LEL _{methane} /month
Electrical Connection	Three wire, 15cm length
Warranty Period	12 months from date of despatch

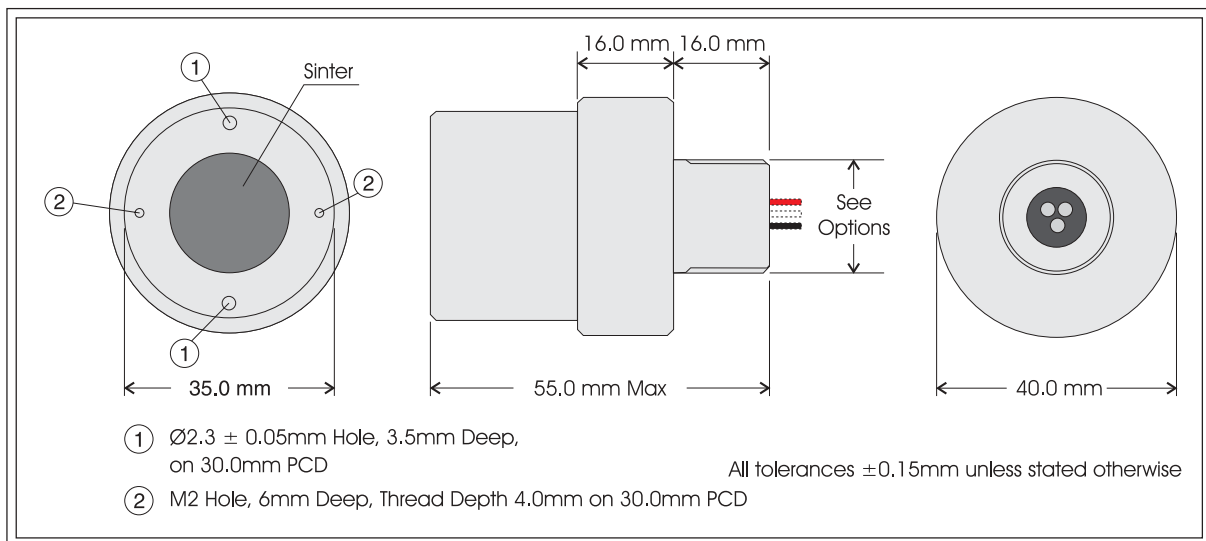


Product Approval

Approval Body:	CANADIAN STAND'S ASSOC'N
Test Standard:	CSA Std C22.2 No 30-M1986 Explosion-Proof Enclosures for Use in Class 1 Hazardous Locations Class 1, Groups A, B, C, D.
	
Product Categories:	Class 1, Groups A, B, C, D.
Certificate Number:	LR 103143
Approval Body:	SIRACERTIFICATIONSERVICE
Test Standard:	EN 50014:1997 (amendments A1 & A2) EN 50018:2000
	
Product Categories:	EEx d IIC T6,  II2G,  0518
Certificate Number:	01 ATEX 1204X

Special conditions for safe use

The CDH Series Gas Sensing head shall only be installed in a suitably certified increased safety enclosure.
The CDH Series Gas Sensing head shall not be used as a safety related device.





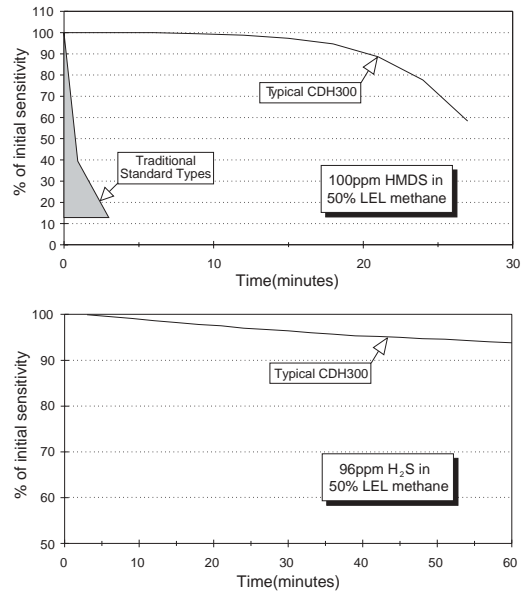
Poison Resistance

The graphs opposite show the effects of typical silicone and sulphur containing compounds on a 300P CiTipeL. Hexamethyl-disiloxane (HMDS) is chosen as an example of a particularly virulent poison the effects of which are irreversible. Hydrogen sulphide (H₂S) is also a commonly encountered poison.

The graphs show the results of accelerated tests on unprotected sensors - in practice it is extremely unlikely continuous levels of even a few ppm of HMDS would be encountered. Similarly 100ppm H₂S is approximately seven times the Short Term Exposure Limit in the UK.

From the graph, the 300P will operate for significantly longer in an environment containing silicone oil vapours than a traditional standard sensor. The effect of 100ppm H₂S is also very small, and upon removal of H₂S the sensor will return to its original sensitivity. In practice this means the 300P can operate for months or years in an environment where a traditional sensor may need replacing after a matter of days or weeks.

Accelerated Poisoning Tests



Relative Sensitivity

The table shows the variation in response of a CDH300 CiTipeL on exposure to a range of gases and vapours at the same %LEL concentration. The figures are experimentally derived and expressed relative to the methane signal (=100).

Note: The results are intended for guidance only. For the most accurate measurements an instrument should be calibrated using the gas under investigation.

Combustible Gas/Vapour	%LEL Relative Sensitivity	Combustible Gas/Vapour	%LEL Relative Sensitivity
Methane	100	Methane	100
Propane	55	Acetone	35
n - Butane	50	Methyl Ethyl Ketone	20
n - Pentane	40	Toluene	35
n - Hexane	30	Ethyl Acetate	30
n - Heptane	35	Hydrogen	80
n - Octane	30	Ammonia	100
Methanol	70	Cyclohexane	40
Ethanol	40	Leaded Petrol	50
iso - Propyl Alcohol	35	Unleaded Petrol	40

*Each sensitivity has been rounded to the nearest 5%

Options available

The CDH300 CiTipeL Detector Head is available with a choice of thread sizes for attachment to a junction box or suitable alternative (see drawing). The standard options available are given below. (Note: Metric threads are for use outside of North America).

Order Codes

Other thread dimensions are available on request.

With ½" ANPT taper connection	CDH300-A
With ¾" ANPT taper connection	CDH300-B
With 20mm metric connection	CDH300-C
With 16mm metric connection	CDH300-D

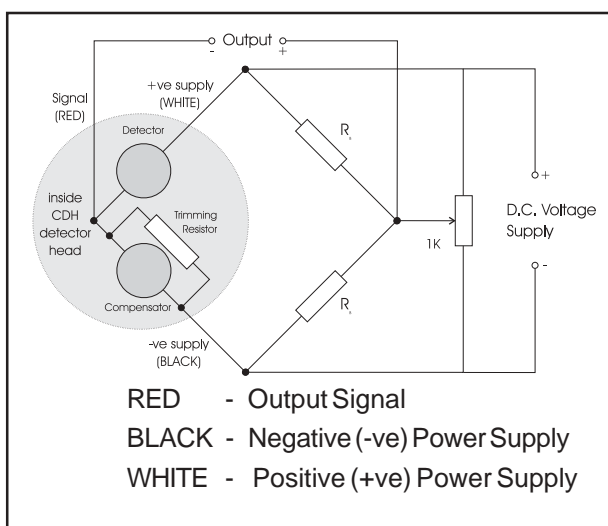


Instructions specific to hazardous area installations (reference European ATEX Directive 94 / 9/ EC, Annex II, 1.0.6.)

The following instructions apply to equipment covered by certificate number Sira 01ATEX1204X;

1. The equipment may be used with flammable gases and vapours with apparatus groups IIA, IIB and IIC and with temperature classifications T1, T2, T3, T4, T5 and T6.
2. The equipment is certified for use in ambient temperatures of -20°C to +40°C.
3. The equipment has not been assessed as a safety related device (as referred to by Directive 94 / 9 / EC Annex II, clause 1.5).
4. Installation of the equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-14)
5. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-17).
6. Repair of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-19).
7. The CDH Series Gas Sensing Head shall only be installed in a suitably certified increased safety enclosure. This may be achieved by screwing the Gas Sensing Head into the de-energised enclosure until the maximum number of threads are engaged. Electrical connection of the Sensing Head to a suitable circuit should be made as described in Figure com7.

Figure com7
CiTipeL Detector Heads:



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8. It is recommended that confirmation of adequate sensor performance be conducted on a regular basis by means of a defined, sensor calibration procedure. The calibration frequency will depend upon the environment in which the sensor is operated and on the perceived level of risk from the build up of flammable atmospheres.

Combustible Gas CiTipeL[®] Specification



9. The certification of this equipment relies upon the following materials used in its construction;

Enclosure material:	316 stainless steel, which contains less than 6% magnesium.	
Sinter:	316 stainless steel 316L S30	
Cement:	DW30	CW2248/HY956EN
Manufacturer	Flogates & Hikley	Ciba-Geigy
Type of compound	Ceramic cement	Epoxy resin
Colour	Off white	Beige (natural)
Filler type and %	40% silica	55.2% trihydrated Al ₂ O ₃
Other additives	25% MgO	8.3%
	35% MgSO ₄	
Surface treatments	None	None
Temperature index	Stable to 475°C	170°C
City Tech reference	RM462	RM497

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Aggressive substances: e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

Suitable precautions: regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

10. The CDH Series Gas Sensing Head is available in several formats depending upon the operating voltage of the sensing elements. The Certification marking is shown below using the CDH300 Gas Sensing Head as an example:



11. Certain substances are known to have a detrimental effect on catalytic elements as used in the CDH Series Gas Sensing Head.

Poisoning: some compounds will decompose on the catalyst and form a solid barrier over the catalyst surface. This action is cumulative and prolonged exposure will result in an irreversible decrease in sensitivity. The most common of these substances are: lead or sulphur containing compounds; silicones; phosphates.

Inhibition: certain other compounds, especially hydrogen sulphide and halogenated hydrocarbons, are absorbed or form compounds that are absorbed by the catalyst. The resultant loss of sensitivity is temporary and in most cases a sensor will recover after a period of operation in clean air.

In applications where it is suspected that poisons or inhibitors may be present, suitable protection for the CDH Series Gas Sensing Head should be provided.

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Performance characteristics on this data sheet outline the performance of newly supplied sensors. Output signal can drift below the lower limit over time.