

Discovery

Multisensor Detector - Carbon Monoxide/Heat



Product overview

Product	Multisensor Detector - CO/Heat
Part No.	58000-305
Digital Communication	XP95, Discovery and CoreProtocol® compatible

Compliance



Product information



CAUTION: Product Usage

CO/Heat multisensor detectors should not be used in place of Carbon Monoxide alarms used for warning purposes and conforming to BS 7860 or UL 2034.

The Discovery Carbon Monoxide (CO) / Heat Multisensor Detector provides early warning of fire by detecting the presence of CO or heat or a combination of both.

- Early warning of carbon based smouldering fires
- Good detection of flaming fires
- Ideal for protecting small volume sleeping risk areas
- Resistance to false alarms caused by steam, dirt and dust

Technical data

All data is supplied subject to change without notice. Specifications are typical at 24 V, 25°C and 50% RH unless otherwise stated.

Detection principle	CO: ambient Carbon Monoxide level Heat: temperature sensitive resistance								
Supply Wiring	Two wire supply, polarity sensitive								
Terminal functions	<table> <tr> <td>L1</td><td>Loop in and out negative</td></tr> <tr> <td>L2</td><td>Loop in and out positive</td></tr> <tr> <td>+R</td><td>Remote indicator positive connection (internal 2.2kΩ resistance to supply +ve)</td></tr> <tr> <td>-R</td><td>Remote indicator negative connection (internal 2.2 kΩ resistance to supply -ve)</td></tr> </table>	L1	Loop in and out negative	L2	Loop in and out positive	+R	Remote indicator positive connection (internal 2.2kΩ resistance to supply +ve)	-R	Remote indicator negative connection (internal 2.2 kΩ resistance to supply -ve)
L1	Loop in and out negative								
L2	Loop in and out positive								
+R	Remote indicator positive connection (internal 2.2kΩ resistance to supply +ve)								
-R	Remote indicator negative connection (internal 2.2 kΩ resistance to supply -ve)								
Operating voltage	17 - 28 V dc								
Communication protocol	XP95, Discovery and CoreProtocol compatible								
Modulation voltage	5-9 V peak to peak								
Quiescent current	470 µA average, 1mA peak								
Power-up surge current	1 mA								
Maximum power-up time	10 seconds								
Alarm current, LED illuminated	3.5 mA								
Remote output characteristics	Connects to a positive line through 4.5 kΩ (5 mA maximum)								
Clean air analogue value	25 ± 2								
Alarm level analogue value	55								
Alarm indicator	Two red LEDs, illuminated red in alarm. Optional remote LED								
Storage temperature	+ 10°C to +30°C								
Operating temperature	0°C to 50°C - continuous -20°C to +55°C - transient, >35% relative humidity								
Humidity	15% to 95% RH (no condensation or icing)								
Effect of temperature on CO cell	None								
Effect of wind on CO cell	None								
Maximum CO cell life	5 years								
Operating pressure	Atmospheric pressure ± 10%								
Transport pressure	If air freighted this detector should be carried in a pressurised hold								
Vibration, impact and shock	EN 54-5								
IP Rating	IP43								
Standards and approvals	EN 54, CPR, LPCB, VdS, VNIIP, CCMG								
Dimensions	100 mm, diameter x 54 mm height								
Weight	105 g detector								
Materials	Housing: White flame-retardant polycarbonate Terminals: Nickel plated stainless steel								

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All information in this document is given in good faith but Apollo Fire Detectors Ltd cannot be held responsible for any omissions or errors. The company reserves the right to change the specifications of products at any time and without prior notice.

Application

CO detectors are suitable when there is a risk of a deep-seated, smouldering fire. These typically produce large amounts of CO. These detectors should be used in an enclosed space with a floor size of not more than 50 m² and where there is a likelihood of stratification.

The use of a heat-sensitive element, the thermistor, to create a CO/Heat multisensor widens the scope of the detector to cover fire risks which might not produce sufficient quantities of CO but would create heat.

If the protected area is an escape route or corridor, CO/Heat multisensor detectors should be used for supplementary detection and not as the main means of detecting fires.

They should not be used if the protected area is exposed to sources of CO, e.g. vehicle exhausts, hydrogen vapour or alcohol vapour as emitted by some cleaning agents.

Siting and spacing

CO/Heat multisensor detectors should be sited and spaced according to the recommendations of BS 5839: Part 1 or other applicable local code of practice for designing a fire detection system.

Carbon Monoxide is a gas which spreads by diffusion and it may reach a detector faster than smoke would. But it is just as possible that the opposite would occur and this should be borne in mind when designing a fire detection system.

If it is thought that the CO/Heat multisensor detector might be operated at times purely as a heat detector the siting and spacing should be as for a normal heat detector.

False alarms

CO detectors are less susceptible than smoke detectors to false alarms from sources such as toast, steam, cooking, plumbing work and hairspray. Heat detectors are also less susceptible to false alarms with the exception of exposure to heat, in particular sudden increases in heat.

Vehicle exhausts, open fires and gas fires are amongst the sources of CO which may trigger a false alarm in a CO/Heat multisensor detector.

Operating modes

The Discovery CO/Heat Multisensor Detector has five operating modes which are a combination of response and time to alarm.

Mode	CO sensitivity (ppm)	Temperature sensitivity	Response type	Min: time to alarm (seconds)
1	30	>21°C increase	Multisensor	20
2	33	No response to heat	CO	30
3	40	>21°C increase	Multisensor	20
4	45	>21°C increase	Multisensor	20
5	No response to CO	A1R*	Heat rate of rise Static limit of 58°C	

* Response is A1R to EN 54-5 with a fixed upper threshold of 58°C

Protocol usage

The Discovery CO/Heat multisensor detector operates only with the Discovery protocol - for details please refer to the table that follows:

Output Bits	
2	Alarm LEDs illuminated
1	CO sensor remote test
0	Remote indicator illuminated
Interrupt	No
Input Bits	
2	LED status, 1 = On
1	Test status, 1 = On
0	Remote LED status, 1 = On
Analogue Value	
1	CO sensor fault
2	Heat sensor fault
8 or lower	Fault
25 ± 2	Clear air value
55 or higher	Alarm or remote test successful
Flag Setting	
XP95 flag	Yes
Alarm flag	Yes

Precautions when investigating alarms

It is important to remember that CO is a colourless, odourless gas, which is not directly detectable by human senses. If a CO/Heat Multisensor Detector is in an alarm condition it is possible that a dangerous level of CO exists around the detector. Extreme care must be taken when investigating alarms even if no combustion products can be seen or smelled.

Because of this danger it is imperative that CO/Heat Multisensor Detectors are correctly identified at the control panel so that personnel investigating the alarm may take the relevant precautions.

Maintenance and service

The electro-chemical cell used in the Discovery CO fire detector has a more limited life than would normally be expected from a smoke detector. In a typical environment the life of the cell is five years.

High temperature or low relative humidity can however reduce the life significantly. The limits given in the section 'Technical Data' should be carefully observed.

It is essential that systems using CO fire detectors be correctly maintained and that the maintenance schedule includes functional testing of the CO fire detectors.

CO aerosol test gas (Part No. 29600-235) is available for this purpose. The test gas should be used with smoke detector tester (Part No. 29600-100). Testfire detector tester can also be used for this purpose. If there is any doubt over the sensitivity of a Discovery CO fire detector it should be returned to Apollo for servicing and calibration.

Health and Safety guidelines

This product contains a sealed electro-chemical cell and in normal usage represents no chemical hazard in the sense of COSHH and the Health and Safety at Work etc. Act 1974. Chemical hazard can however arise if the notes on storage, handling and disposal that follow are not observed.

For maximum life the product should be stored before installation in clean, dry conditions between 0°C and 20°C. It should not be exposed to temperatures outside of the range -40°C to +60°C or to organic vapours.

The electro-chemical cell contained in this product is fitted into sockets on the printed circuit board. To avoid damage to the cell do not remove it.

The electro-chemical cell contains sulphuric acid in a relatively concentrated state. In the event of leakage (which may be caused by mechanical damage or use outside the operating specification for the cell), the cell should be removed from the detector using protective gloves. Avoid contact with any liquid. If skin or eye contact with the electrolyte occurs wash immediately with plenty of water and obtain medical advice. All traces of electrolyte should be washed away with copious amounts of clean water. The cell should be disposed of according to local waste management requirements and environmental legislation. It should not be burnt as it may release toxic fumes.

EMC Directive 2014/30/EU

The Discovery CO/Heat Multisensor Detector complies with the essential requirements of the EMC Directive 2014/30/EU, provided that it is used as described in this datasheet.

A copy of the Declaration of Conformity is available from the Apollo website: www.apollo-fire.co.uk.

Conformity of the Discovery CO/Heat Multisensor Detector with the EMC Directive, does not confer compliance with the directive on any apparatus or systems connected to them.

Construction Products Regulation 305/2011/EU

The Discovery CO/Heat Multisensor Detector complies with the essential requirements of the Construction Products Regulation 305/2011/EU.

A copy of the Declaration of Performance is available from the Apollo website: www.apollo-fire.co.uk

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