



Merlin Gas Detector



Installation & Operation Manual

Please read this manual carefully and retain for future use.

At S&S Northern, we supply a full range of remote gas detectors including carbon monoxide (CO), natural gas (NG) and liquid petroleum gas (LPG) that are compatible with our range of Merlin control panels.

The information contained within this manual should be referenced for typical installation and operation only. For specific requirements that may deviate from the information in this guide – contact your supplier.

Contents

INSTALLATION	3
Planning.....	3
Typical Location and Positioning.....	3
Fixing	4
Board Overview	4
Wiring the Detector.....	5
Audible Alarm Switch	5
Testing the system.....	5
Trouble Shooting	6
Specification	6
OPERATION	7
First Power Up	7
Service & Maintenance	7
Bump Testing	8
End of Life.....	8
IMPORTANT WARNING STATEMENTS	11
Manufacturer's Warranty.....	11
Installation Details.....	12

INSTALLATION

Planning

Our detectors should be installed in areas at risk of gas leaks e.g. over boilers, valves or meters. Take in to account the design of the air flow patterns within the zone area.

Detectors should be installed in the correct orientation, as recommended by the manufacturer, and ease of access should be accounted for to allow for any bump tests, recalibration and other forms of maintenance.

Areas to avoid

Avoid conditions of any other environmental factors that could potentially impede the accuracy and operation of the detectors such as; condensation; vibration; temperature, pressure, the presence of other gases, electromagnetic interference and draft zones.

Area of coverage

Consider the coverage required and function of the area. Emphasis should be placed on airflow patterns and correct placement, not perceived detecting ranges. The target gas will only be identified when contact is made with the sensing element itself.



Multiple detectors may be required to adequately protect property and persons.

Typical Location and Positioning

Locations for detectors will vary based on the intended application and target gas, they should be located near identified sources of a potential gas leaks/ pockets where hazardous gas could quickly accumulate and areas of identified consequential risk.

The composition of the target gas and its density relative to air are used as the basis for the recommended height of sensors. Generally, the installation height of a sensor for a heavy gas (such as propane) would be close to the lowest point in the area, and for a light gas (such as methane) would be close to the highest point in the area.

These recommended heights may vary based on air flow and temperature conditions in addition to the proposed application and location – this is particularly apparent with oxygen depletion sensors, and the target gas that they are used for.

Target Gas	Typical Detector Position
Natural Gas/Methane (NG/CH ₄)	High Level - 300mm (1ft) from ceiling
Liquid Petroleum Gas (LPG)	Low Level - 300mm (1ft) from ground level
Carbon Monoxide (CO)	Breathing Zone - 1700mm (5ft 6") from ground level
Hydrogen (H)	High Level - 300mm (1ft) from ceiling

Max number of detectors per zone is 3.

GDP2: Two zones / GDP4: Four zones / 'S' panel range: 1 Zone.

Fixing

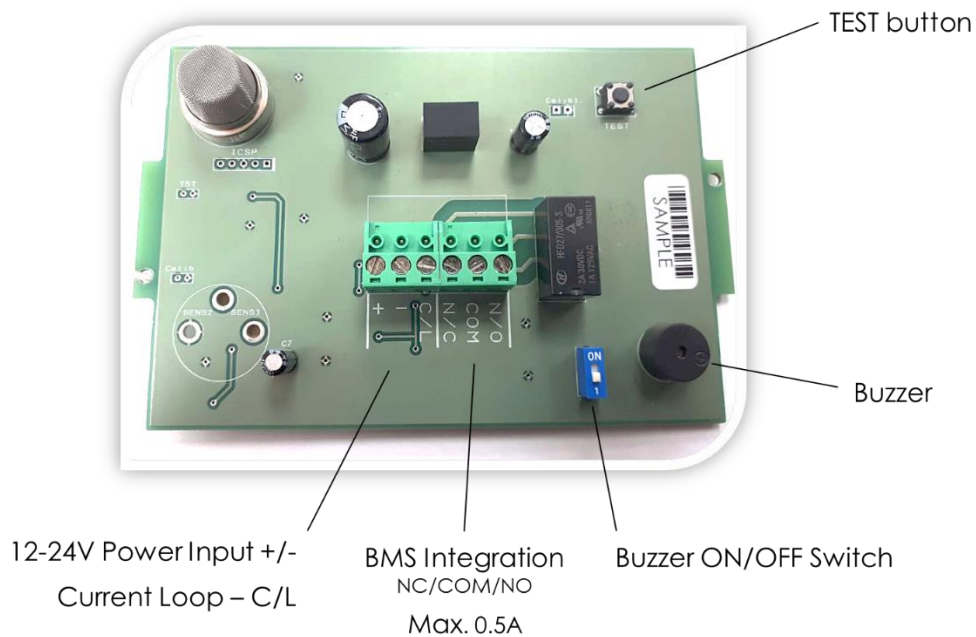
Unpack all the parts!

1. Carefully remove the rear cover from the unit by unscrewing the hex screws located at the bottom of the case. To do this – use the socket wrench provided.
2. Using the rear cover - mark the screw holes to the wall. Ensure the wall surface is flat to prevent base distortion.
3. There is a pre-fractured area for cable entry provided on the inside of the rear cover which may be cut away as required.
4. After executing the mounting and the connections – replace the rear cover ensuring the two hex screws are re-installed and secured.
5. Make a note of the installation date on the label located on the side of the unit.



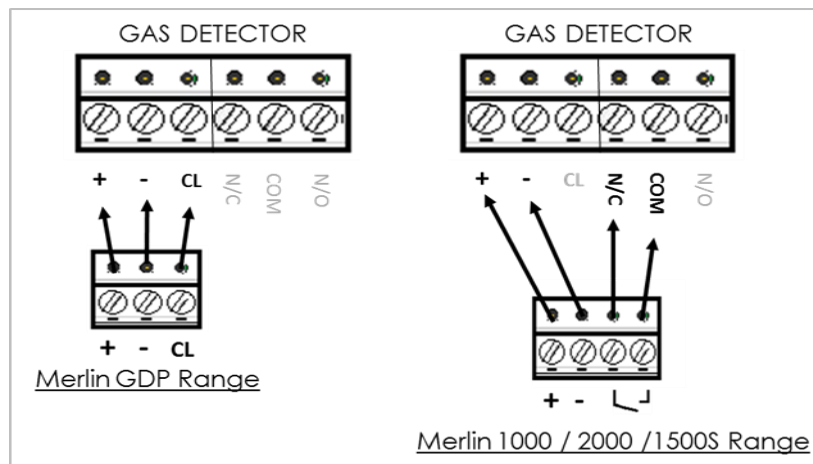
Be careful when creating access for cables – Damage to boards will void any warranty.

Board Overview



Do not attempt to remove the Circuit Board! This will void any warranty.

Wiring the Detector



Building Management Systems (BMS)

If you are connecting to Merlin 'S' range you will need to use [NC/COM] terminals as an alarm relay. These are volt free connections to building management systems.

If you are using our 'GDP' range you will need to use the [C/L] terminal as an alarm relay. A relay will change state when in alarm or when gas is detected.

BMS terminals can be used in conjunction with other external relays that affect other devices and controls such as purge fans and audible alarms etc.

Audible Alarm Switch

There is a switch on the Detector circuit board.

The user can choose whether to have an audible alarm when dangerous gas levels are detected. The alarm will continuously sound – there are no provisions to silence the alarm, gas levels must drop to a safe value for the alarm to stop.

The buzzer measures approx. 65 dB from a distance of 300mm/1ft (tested in quiet conditions).

Testing the system

There is a [TEST] button on the Detector circuit board.

When the test button is pressed and held for 3 seconds – the detector will simulate an open circuit to ensure alarms (low and then high), and other external devices connected operate as intended in the event of a gas leak.



It is recommended testing your detectors with a calibrated gas. Contact your supplier.

Trouble Shooting

Fault.	Possible Cause/Correction.
Detector not responding.	<ul style="list-style-type: none"> ○ Incorrect wiring. ○ Exceeded zone detector capacity. ○ Sensor exceeded expected life span.
LED flashing and alarm beep.	<ul style="list-style-type: none"> ○ Sensor fault. Contact your supplier

Specification

Product:	Gas Detector		
Model:	CO / NG / LPG / H2		
Visual Indicators	Power (Green), Low gas concentration (Amber) High gas concentration (Red)		
Initial Stabilisation Time	60 Seconds approx.		
Power Input Voltage	12-24V / 7-30VDC		
Relay Output	0.5A Switching Current (resistive load).		
Consumption	90mA Max (24V)		
Accuracy @ 25°C / 77°F	± <10%		
Fuses	N/A		
Operating Temp	0 – 50°C 30-85%RH Non-Condensing		
Test Conditions	25° ±5°C / 77° ±41°F		
Audible Alarm Buzzer (dB)	65 dB (300mm distance in quiet conditions)		
Gas Sensor Type	NG: Semi-conductor	Measuring Range	NG: 300-10,000 PPM
	LPG: Semi-conductor		LPG: 300-10,000 PPM
	H: Semi-conductor		H: 100-10,000 PPM
	CO: Electro-Chemical		CO: 10-10,000 PPM
Gas Level Pre- Alarm	NG: 8% LEL	Gas Level Alarm	NG: 10% LEL
	LPG: 8% LEL		LPG: 10% LEL
	H: 8% LEL		H: 10% LEL
	CO: 20 PPM		CO: 20 PPM @ 2 HOURS
	O2: 18.5 – 19.5%		50 PPM @ 1 HOUR
Expected Sensor Life	NG: 10 Years		100 PPM @ 10 MINS
	LPG: 10 Years		300 PPM @ 1 MINS
	H: 10 Years		
	CO: 5 Years		
Dimensions (H x W x D)	95.3 x 133 x 38mm / 3.75 x 5.23 x 1.5"		

OPERATION

First Power Up

On connecting power, the detector enters 'sensor stabilisation' phase for approximately 60 seconds – during this period the device is not yet ready for gas detection.

- Power

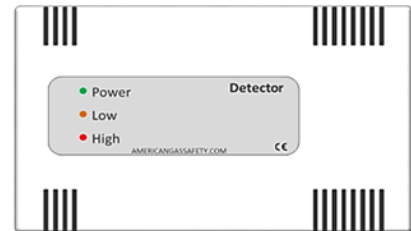
Detector is powered when green LED is on.

- Low (**Attention!**)

When the detector has reached a low level alarm – the LED will illuminate amber.

- High (**Danger!**)

When a high concentration of gas is detected, the alarm will sound and LED will illuminate Red.



High (**Flashing & alarm beeping**).

There is a fault – contact your supplier.



At dangerous gas levels, the alarm will continuously sound if the buzzer dip-switch is ON.
There are no provisions to silence this alarm.
Only when gas levels are at a safe level will the audible alarm stop.

Service & Maintenance



It is recommended that detectors are inspected and serviced at least annually from the date of installation for optimum performance and protection due to sensitivity drifts.

Keep your detector in good working order follow these basic principles;

- DO carefully remove any accumulated dust from the outer enclosure once a month.
- NEVER use detergents or solvents to clean your device – this may permanently or temporarily damage the gas sensing elements.
- NEVER spray air fresheners, hair spray, paint or other aerosols near the device.
- NEVER paint the device. Paint will seal vents and interfere with the device.



High concentrations of alcohol found in many products may damage, deteriorate or affect the gas sensing elements – such as; wine; deodorants; stain removers; thinners etc.

Other gases and substances to avoid; Corrosives (i.e. chlorine & hydrogen chloride); Alkali metals; Basic or acidic compounds; Silicones; Tetraethyl lead; Halogens and halogenated compounds.

A detector may visually appear in good order, but its sensitivity can be inhibited by external factors. Regular 'bump tests' are important to make sure the detector is able to detect a release of gas as early as possible. A 'bump test' takes seconds and is often completed alongside a scheduled fire alarm test. We recommend this is done at least weekly to reduce the risk of a detector not performing, however the frequency should be determined from a risk assessment by the end user.

Bump Testing

What is bump testing?

'Bump testing' is a term used for checking a gas detector is functioning correctly by exposing it to the target gas. A known concentration of the target gas is applied to the sensor to trigger an alarm condition and ascertain the detector is working safely.

Why is it important?

A detector may visually appear in good order, but its sensitivity can be inhibited by external factors. Dust, humidity, temperature fluctuations, cleaning products, contaminants or sensor drift (ageing) can cause a decline in sensitivity and eventual failure. Regular 'bump tests' are important to make sure the detector is able to detect a release of gas as early as possible.

How often?

A 'bump test' takes seconds and is often completed alongside a scheduled fire alarm test. Current British standards recommend that for new installations - it may be prudent to carry out a bump test frequently (perhaps weekly), following a successful initial period and as confidence grows in the installation concerned, the frequency could be reduced. Please remember, 'bump testing' does not remove the need to have gas detectors inspected, calibrated and serviced periodically by a trained engineer.

For more help and advice on bump testing, calibration and service – contact us.

End of Life

The expected lifecycle will depend on the type of gas your detector is targeting and may vary depending on environmental conditions.

- Natural Gas /Methane: 10 Years
- Liquid Petroleum Gas: 10 Years
- Hydrogen: 10 Years
- Carbon Monoxide: 5 Years

At the end of this time, contact your supplier and replace the unit immediately.

NOTES

NOTES

IMPORTANT WARNING STATEMENTS

Please take the time to thoroughly read this user's guide which should be retained for future reference.

The expected lifetime of gas sensor elements is 3-10 years upon initial power up dependant on your target gas and environmental factors.

The device will display a message to indicate this time and should immediately be replaced.

It is recommended that this device be commissioned upon installation and serviced annually.

Do not apply lighter gas or other aerosols to the device – this will cause extreme damage.

High concentrations of alcohol found in many products may damage, deteriorate or affect the gas sensing elements.

This device is designed to detect the gas type displayed on the screen only from any source of combustion or dangerous level. It is NOT designed to detect smoke, fire or other gases and should NOT be used as such.

This device provides early warning of the presence of gas, usually before a healthy adult would experience symptoms. This early warning is possible provided your alarm is located, installed and maintained as described in this guide.

Never ignore your device when in alarm.

This device requires a continual supply of electrical power – it will not work without power.

This device should not be used to substitute proper installation, use and/or maintenance of fuel burning appliances including appropriate ventilation and exhaust systems.

This device does not prevent dangerous gasses from occurring or accumulating.

Actuation of your alarm indicates the presence of dangerous levels of gas.

Seek fresh air supply and contact your local gas emergency service should you suspect a gas leak.

This unit may not fully safeguard individuals with specific medical conditions. If in doubt, consult a doctor/physician.

Your product should reach you in perfect condition, if you suspect it is damaged, contact your supplier.

Manufacturer's Warranty

Three (3) Year Warranty

Warranty coverage:

The manufacturer warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of three (3) years from date of purchase or one (1) years for oxygen detectors.

The manufacturer's liability hereunder is limited to replacement of the product with repaired product at the discretion of the manufacture. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only.

Warranty disclaimers: Any implied warranties arising out of this sale, including but not limited to the implied warranties of description, merchantability and intended operational purpose, are limited in duration to the above warranty period. In no event shall the manufacturer be liable for loss of use of this product or for any indirect, special, incidental or consequential damages, or costs, or expenses incurred by the consumer or any other user of this product, whether due to a breach of contract, negligence, strict liability in tort or otherwise. The manufacturer shall have no liability for any personal injury, property damage or any special, incidental, contingent or consequential damage of any kind resulting from gas leakage, fire or explosion. This warranty does not affect your statutory rights.

Warranty Performance: During the above warranty period, your product will be replaced with a comparable product if the defective product is returned together with proof of purchase date. The replacement product will be in warranty for the remainder of the original warranty period or for six months – whichever is the greatest.

Information on waste disposal for consumers of electrical & electronic equipment.



When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Please contact your supplier or local authority for details of recycling schemes in your area.

Installation Details

Please pass this manual to the system owner / user.

Date of Installation:	
Installation Location:	
Organisation:	
Stamp/ Signature of the installer:	
Replacement Date:	

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