

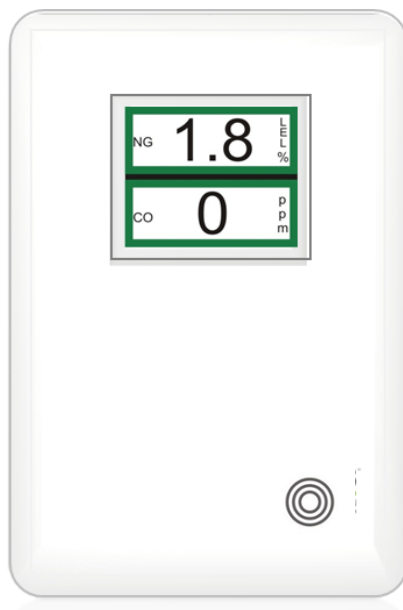


**S&S™**  
NORTHERN  
**Gas Safety Products**

**Mini Merlin**

Dual Gas Monitor

Methane (Natural Gas) & Carbon Monoxide



**User Guide**



Please read this guide carefully and retain for future use.

## Table of contents

1. About your new Mini Merlin device.....	3
2. Carbon Monoxide (CO) – General Information .....	4
3. Methane / Natural Gas (NG) – General Information.....	5
4. Features .....	6
5. Technical Specification.....	7
6. Installation & Location.....	8
7. Control Board .....	9
8. Power On & Off .....	10
9. Building Management System Integration.....	10
10. Audible Alarm Characteristics .....	10
11. Maintenance .....	10
12. Manufacturer’s Warranty.....	12

## 1. About your new Mini Merlin device

Your new Mini Merlin is a dual gas sensor carefully designed and tested to monitor levels of natural gas- Methane (NG) and Carbon Monoxide (CO) in the air.

If there is a dangerous build-up of gas or unsafe levels of carbon monoxide at the sensor, this device can shut off the gas supply via a gas safety valve.

This device has additional features for resetting systems, as well as audible and visual alarms - It can also be integrated with a Building Management System (BMS).

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



### Important Warning Statements

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

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

The expected lifetime of gas sensor elements is 5 years upon initial power up. The device will display a message to indicate this time and should immediately be replaced.

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

This device is designed to detect carbon monoxide and methane from any source of combustion. 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 methane or carbon monoxide, 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 methane or carbon monoxide from occurring.

Actuation of your alarm indicates the presence of dangerous levels of Methane or CO. 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.

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



#### Information on waste disposal for consumers of electrical & electronic equipment. (EEE)

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.

## 2. Carbon Monoxide (CO) – General Information

Carbon monoxide (CO) is a poisonous, colourless, odourless, and tasteless gas. Although it has no detectable odour, CO is often mixed with other gases that do have an odour. So, you can inhale carbon monoxide right along with gases that you can smell and not be aware that CO is present.

### **SYMPTOMS OF CARBON MONOXIDE POISONING**

The following symptoms are related to CO poisoning and should be discussed with ALL members of the household or person/s frequenting monitored areas.

#### **Mild Exposure:**

Slight headache, nausea, vomiting, fatigue, flu-like symptoms.

#### **Medium Exposure:**

Severe headache, drowsiness, confusion, increased heart rate.

#### **Extreme Exposure:**

Unconsciousness, convulsions, cardio-respiratory failure, death.

If you experience even mild symptoms of CO exposure – consult your doctor immediately.

### **CARBON MONOXIDE PPM LEVELS**

This device is equipped with a digital display that shows levels of CO (displayed in PPM: parts per million).

#### **Dangerous levels:**

Generally above 100ppm. This should be treated as an urgent situation.

#### **Medium levels:**

Generally between 50ppm to 100ppm. This should be cause for concern and should not be ignored or dismissed.

#### **Low levels:**

Maximum acceptable indoor level of CO is <9ppm.

Anything above this level may cause possible health effects with long-term exposure.

### **POSSIBLE SOURCES OF CARBON MONOXIDE**

Inside your home, appliances used for heating and cooking are the most likely sources of CO. Vehicles running in attached garages can also produce dangerous levels of CO.

CO can be produced when burning any fossil fuel, such as gasoline, propane, natural gas, oil and wood. It can be produced in any fuel burning appliance that is malfunctioning, improperly installed or insufficiently ventilated.

- Automobiles, gas stoves, water heaters, portable fuel burning heaters, fireplaces.
- Blocked chimneys or flues, corroded or disconnected vent pipes.
- Vehicles and other combustion engines running in open or closed garages.
- Burning charcoal or fuel in grills in an enclosed area or near the home.

### 3. Methane / Natural Gas (NG) – General Information

Methane gas comes from the earth and it comes from our bodies. Methane is non-toxic and it can be harnessed as an energy source. However, methane is highly explosive and it can cause death by asphyxiation. It is important to understand how to deal with the hazards associated with methane.

Although methane on its own isn't poisonous, it has the potential to become poisonous when mixed with other substances. That potential exists when natural gas (NG), which is 97% methane, is burned in houses, offices and businesses. The burning of natural gas without proper ventilation can produce carbon monoxide, a deadly gas that is difficult to detect.

#### **SYMPTOMS OF METHANE EXPOSURE**

Methane gas is relatively non-toxic and associated with being a simple asphyxiator displacing oxygen in the lungs. However Methane is extremely combustible.

Exposure to high levels of Methane can cause:

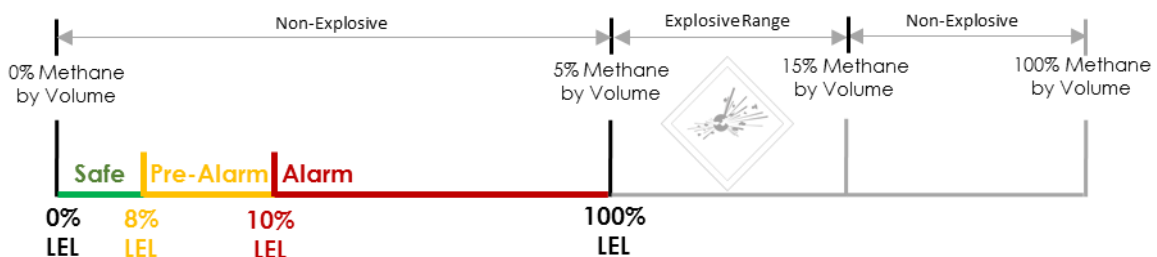
- Suffocation
- Loss of consciousness
- Headache and dizziness
- Nausea and vomiting
- Weakness
- Loss of co-ordination
- Increased breathing rate

#### **METHANE LEL% LEVELS**

The LEL (Lower Explosive Limit) of methane is considered to be 5% BV (by volume of air).

So we call 5% BV (by volume) the same as 100% of the LEL (Lower Explosion Limit).

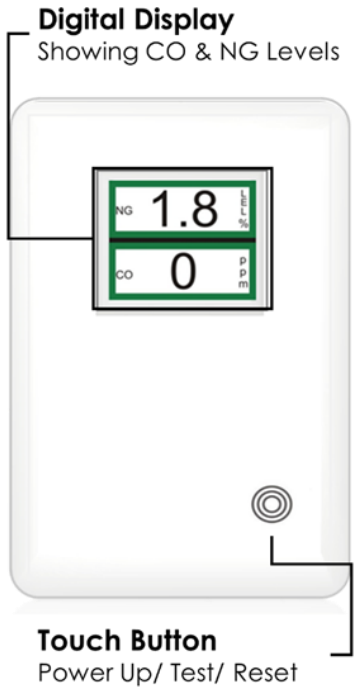
Your device is equipped with a digital display that shows the level of natural gas in the area referred to as LEL% (a percentage of the LEL) and will alarm based on the following principle of gas detection.



In simplified terms, a level of 8% LEL or less on your device is generally considered safe and acceptable.

For more information, please visit our website or contact your supplier.

**4. Features**



**GAS LEVEL INDICATOR**  
See 5: Technical Specification for levels



**GREEN**  
Levels are safe



**YELLOW**  
Levels are at low level alarm.  
Attention required.



**RED**  
Levels are dangerously high.  
Urgent attention is required.



**REMOTE SHUT OFF**

If this device is integrated with external remote shut off devices.

When activated, the digital display will indicate that it/they are activated and will shut off the gas supply if installed and configured to do so.



**END OF LIFE**

This indicates that the device requires immediate replacement.

The gas monitoring elements are expected to last for 5 years from initial installation and power up depending on environmental factors.



**POWER UP**

Press and hold for 3 seconds when electrical supply is connected.

**RESET**

To reset after a gas alarm - press the touch button once.

**TEST**

Press and hold for 3 seconds when powered to test screen colouration, audible alarm and gas/BMS relay.

## 5. Technical Specification

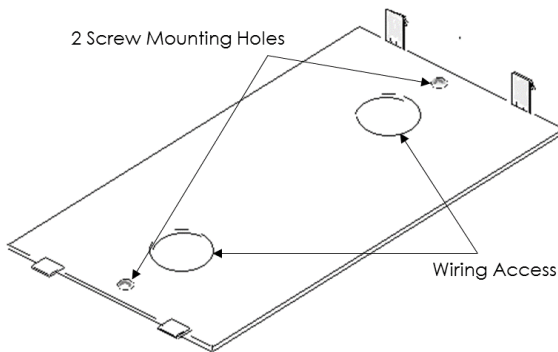
<b>Power Supply</b>	100-240VAC, 50-60Hz (Max 3.1VA without load)
<b>Gas Sensor Type</b>	<b>NG:</b> semiconductor <b>CO:</b> electrochemical
<b>Typical Sensor Measuring Range</b>	<b>NG:</b> 500 ~ 10,000ppm
	<b>CO:</b> 0 ~ 1000ppm
<b>Accuracy @ 25 °C (77 °F)</b>	± 1ppm ± 5% reading
<b>Initial Power Up Time</b>	One minute
<b>Low Level Alarm (pre-alarm)</b>	<b>NG</b> 8%LEL by volume
	<b>CO</b> 30ppm
<b>High Level Alarm</b>	<b>NG</b> 10%LEL by volume
	<b>CO</b> 30 ppm for 2 hours 50 ppm for 1 hour 100 ppm for 10 minutes 300 ppm for 1 minute
<b>Volt free BMS relays output</b>	0.5A switching current (resistive load)
<b>Operating Conditions</b>	-32 - 122 °F; (0 - 50 °C) 0 - 95%RH, Non Condensing
<b>Net Weight</b>	8.54oz (242g) approx
<b>Dimensions</b>	95(W)x140(H)x30(D)mm
	3.7(W)x5.5(H)x1.2(D)inch
<b>Installation Standard</b>	Wall mountable
<b>Model No:</b>	Mini Merlin CH4CO

## 6. Installation & Location

This device is designed for surface mounting using 2 mounting screws (not supplied) and **MUST** be installed by a competent person. Mark the location of the two holes needed on the wall using the back plate as a template. Placing at eye level allows for optimum monitoring of the digital display screen, or as guide, 5 foot (1.5 meters) from ground level.

### Back Plate

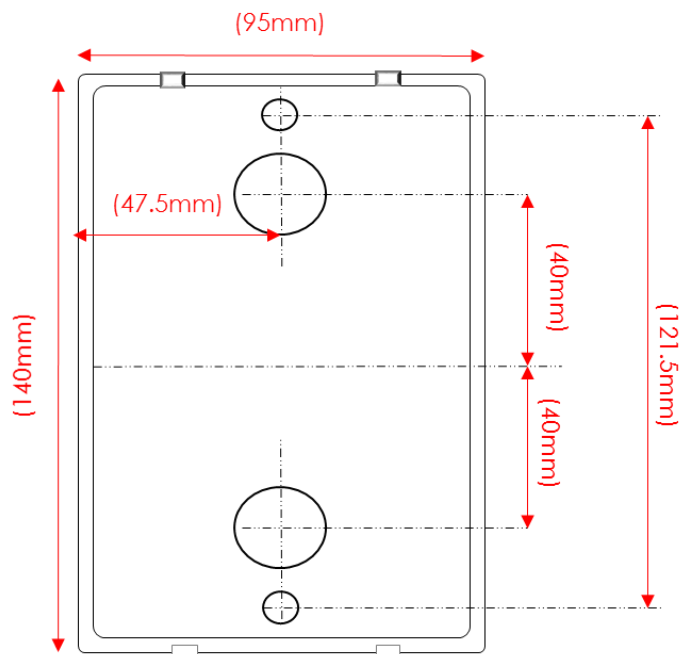
Removing the back plate gives access to the printed circuit board (PCB).



### Do not attempt to remove the Circuit Board!

This will void any warranty you may hold.

There are also two 'knock outs' for electrical wiring access.



### Recommended Installation Locations

The device should be mounted near the boiler or gas fired appliance/s such as domestic and commercial boiler rooms and basements.

When choosing your location, make sure you are able to hear the alarm from all areas.

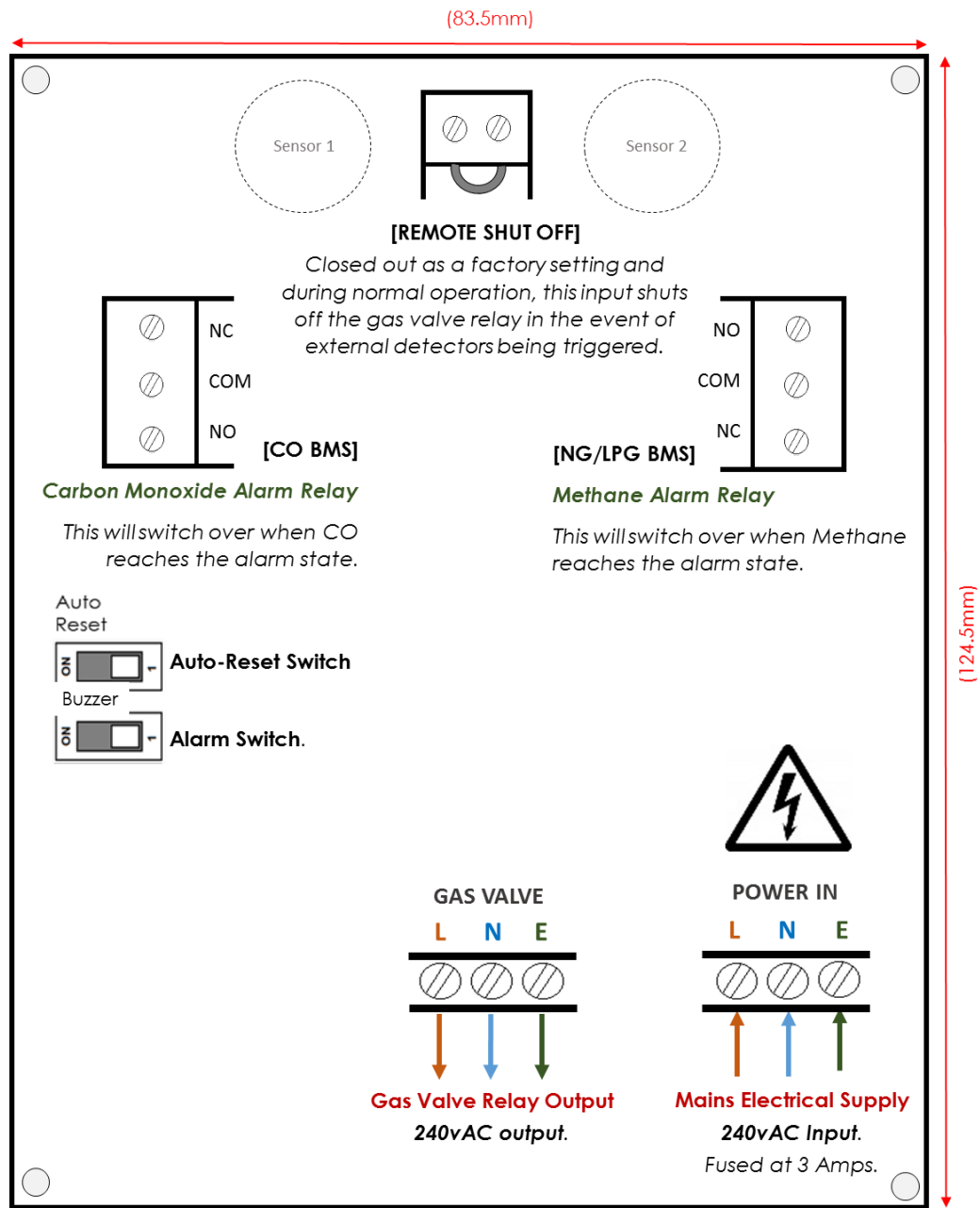
- ✓ **DO** place the device at eye level to optimise monitoring of the digital display.
- ✓ **DO** place out of reach of children.
- ✗ **AVOID** installation within 2 meters (6 feet) of heating or cooking appliances.
- ✗ **AVOID** installation near any ventilation openings, i.e. vents, chimneys, windows etc.
- ✗ **AVOID** installation near ceiling fans, windows or areas exposed to direct weather.



**DO NOT OBSTRUCT THE VENTS LOCATED ON THE DEVICE ITSELF**



# 7. Mini Merlin Circuit Board



		<b>Switch Options</b>	
		OFF	ON
<b>Auto Reset Switch</b>	<b>DEFAULT</b> When the power is restored after a power loss, the unit must be restarted manually		This will instruct the unit to restart automatically when power is restored.
<b>Buzzer Switch</b>	The audible alarm will not sound at any level but the digital display gas level indicators will remain active.		<b>DEFAULT</b> The alarm will sound every 15 seconds during pre-alarm gas levels and continuously when gas levels are high. .

## 8. Power On & Off

### How to turn your device ON

- Supply 240vAC mains to the [L N E POWER IN] terminal.
- Press and hold the touch button on the front of the unit for 3 seconds.
- After initial warm up, the screen will show both NG and CO levels in the area.

### How to turn your device OFF

- Remove or Switch Off the mains power supply.

## 9. Building Management System Integration

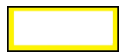
This device can be integrated with a Building Management System (BMS), a home alarm system, or be used as part of a boiler low voltage safety limit to make or break a circuit on both gases separately, (valve open or valve closed) depending on the system.

These switches can be used for a variety of purposes including triggering alarm contacts, operating and external relay for multiple appliance shut-down and generating status signals for a BMS system.

## 10. Audible Alarm Characteristics



**NO ALARM** – Gas concentration levels are safe.



**PRE-ALARM** – ALARM will 'Beep' every 15 seconds / Attention required.



**ALARM** – Continuous ALARM sound / Immediate attention required.

## 11. Maintenance

### TESTING

To test your device, press and hold the Touch Button for 3 seconds – this will test the audible alarm, gas indicators and BMS relays.

To keep your device in good working order, you must follow these steps:

- ✓ DO regularly verify your device is operating as intended by testing at least once a week.
- ✓ 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.



## 12. Manufacturer's Warranty

### 3 Year Limited 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. 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.

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