



**SS&S™**  
NORTHERN

# Gas Safety Products

## Merlin 1000BH

Gas proving and detection system



## User Guide



Please read this guide carefully and retain for future use.

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# 1 General Information

The Merlin 1000BH is a gas pressure proving & gas detection panel for use in various applications.

The system comprises a control panel and a gas pressure sensor. The Merlin 1000BH can receive connections from remote emergency shut-off buttons, two gas detectors, fire panel and heat detector. It also can be integrated with a 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.

## 1.1 Panel Mounting

The control panel is designed for surface mounting using 4 mounting screws. Removing the cover on the panel gives access to the circuit board, this should be removed before drilling entry holes into the case.



### Important Warning Statements

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

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

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.

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.

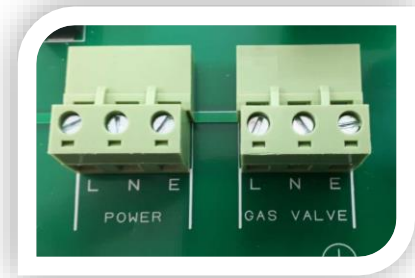
## 2 Circuit Board Terminals

### 2.1 POWER

A 100-240VAC electrical supply should be externally fused at 3 Amps and be connected to the terminals marked [LNE POWER]

### 2.2 GAS VALVE

A gas solenoid valve should be powered using the terminals marked [LNE GAS VALVE].

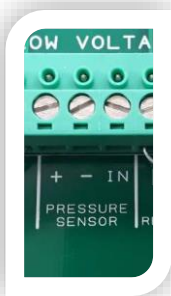
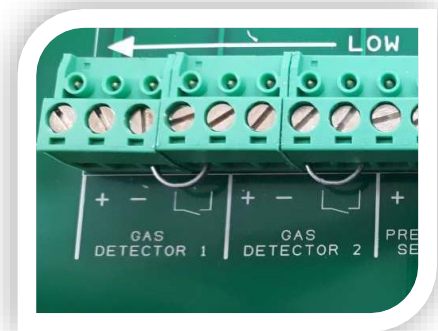


### 2.3 GAS DETECTOR 1 & 2

The terminals detailed on the circuit board as [GAS DETECTOR 1] and [GAS DETECTOR 2].

These connections are [+ -] and [⏏ -] these can be wired to a Merlin gas detector. Natural gas, Carbon monoxide or LPG.

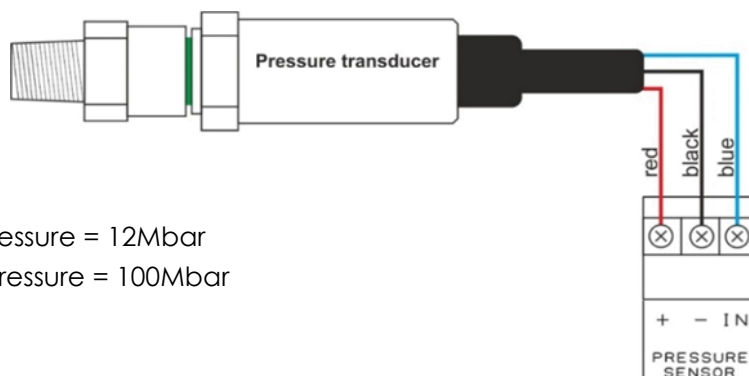
Please refer to the detector manual for more information. If no detector is being used leave the link in. Other detector types are available.



### 2.4 PRESSURE SENSOR

The terminals marked [+ - IN].

These wire to the gas pressure sensor which is screwed into the downstream port on the gas solenoid valve.



Min Operating Pressure = 12Mbar

Max Operating Pressure = 100Mbar

**ENSURE THIS IS WIRED AS PICTURED & SCREWED TO THE DOWNSTREAM PORT OF THE GAS SOLENOID VALVE**



## 2.5 EM REMOTE

The terminal for remote emergency shut-off buttons is marked as [EM REMOTE].

These connections are linked out as a factory setting.  
Remote emergency shut-off buttons should be volt free.

## 2.6 BMS OUT

Terminals are available on the circuit board for connections to Building Management systems.

This is a relay that changes state in alarm or when gas is on/off and can be used in conjunction with the [12VDC] output and other external relays that affect other devices and controls such as purge fans, audible alarms etc.

Marked on the circuit board as [BMS OUT] Normally Closed (N/C),  
Common (COM) Normally Open (N/O).  
These are volt free connections.



## 2.7 FIRE PANEL

The terminal for fire alarms is detailed on the circuit board as [FIRE PANEL].

These connections are linked out as a factory setting.  
Fire alarms should be volt free and wired to the Merlin 1000BH using two-core cable.

## 2.8 TEMP SENSOR

The terminal for heat detectors is detailed on the circuit board as [TEMP SENSOR].

These connections are linked out as a factory setting.

Heat detectors should be volt free and wired to the Merlin 1000BH using two-core cable.



## 2.9 12VDC

This is a permanent 12v DC output when there is power at the panel.

This is normally used to power a PM2 current monitor. (Supplied separately)

## 3 Operation & Setup Guidance

### 3.1 How to turn the system on and off

Turn the key switch to ON position.

Turn the key switch to OFF position or remove power.

### 3.2 Using the Emergency Shut Off

The Emergency shut off button is located on the front of the panel.

There is also a facility for remote shut off buttons to be wired in series.

The Emergency shut off button(s) will cut off the gas supply when activated.

To reinstate the system, the Emergency shut off button(s) will need to be reset and the panel restarted.

### 3.3 Building Management System Connection

The Merlin 1000BH can be integrated with a BMS to make or break a circuit on gas on/gas off, (valve open or valve closed). This will tell the BMS whether or not electrical power is being sent to the solenoid.

There is a dip-switch located on the inside facia of the Merlin 1000BH labelled [BMS SEL].

This is factory set in the 'OFF' position which signals the BMS on gas on/gas off. When switched to the 'ON' position, the 1000BH will only signal the BMS on a fault, i.e. gas detected, EM Stop pressed, etc.



### 3.4 Gas Fill and Prove Time

Gas fill and prove times are adjustable. There are two dip-switches located on the inside facia of the Merlin 2000S labelled "Fill Time" and "Prove Time". They are factory set in the 'off' position.

Fill and prove time can be changed by turning the relevant dip switch to on position.



FILL TIME is the amount of time the gas valve is open to fill the gas line.

**Off** – 5 seconds

**On** – 10 seconds

PROVE TIME is the amount of time the system tests the gas line for any leaks.

**Off** – 30 seconds

**On** – 50 seconds

Once the settings has been changed please remove power for 10 seconds.

### 3.5 Auto Reset

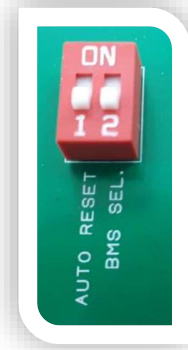
The Merlin 1000BH has a built-in auto reset feature.

There is a dip-switch located on the inside facia of the Merlin 1000BH labelled [Auto Reset]. This is factory set in the 'OFF' position.

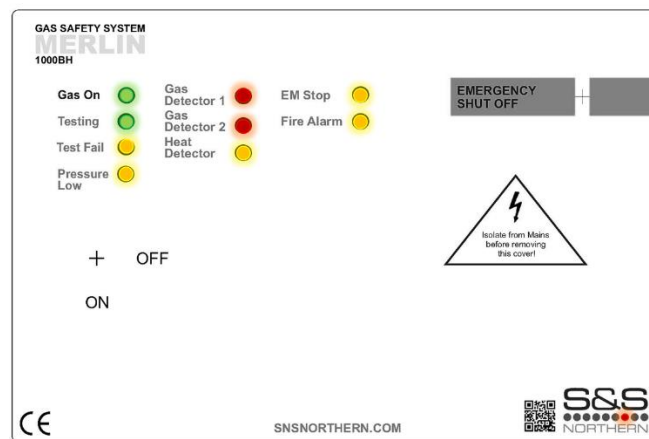
When the power is restored after the power cut, the panel has to be restarted manually.

On installation, this can be switched to the 'ON' position if required.

This will instruct the system to restart automatically when power is restored after the power cut.



## 4 Panel LED Status



When the system is connected to the mains supply, the red dot of the S&S logo located in the bottom right corner of the panel will illuminate.

#### ● Gas on

When the key switch is turned on, the Merlin 1000BH will check the installation for gas leaks.

If gas proving is successful, the gas valve will open and the green 'Gas On' LED will illuminate.

ON = Gas On

OFF = Gas Off

#### ● Testing

This LED will illuminate GREEN for approximately 30 seconds when the panel is checking the integrity of the gas installation upon start up.

GREEN = proving the gas line, do NOT operate any appliances

#### ● Test Fail

Under normal working conditions this LED is off. When the panel detects a gas leak on start-up, the LED will illuminate AMBER. Gas valve will remain closed.

OFF = OK

ON = gas proving failed

- **Pressure Low**

Under normal working conditions the LED is off. The LED will illuminate AMBER when pressure of the gas supply drops below 12mBar for 10 secs. The gas valve will close.

OFF = OK

ON = gas supply pressure low.

- **Gas Detector 1/ Gas Detector 2**

Under normal working conditions this LED is off. If the external Merlin detector connected detects gas this will show RED and the Gas valve will turn off.

OFF = OK

ON = Gas detected.

- **Heat Detector**

Under normal working conditions this LED is off. If the temperature of the boilers reaches 72 Degrees Celsius or higher (Heat detector required), the LED will show AMBER and the Gas valve will turn off.

OFF = OK

ON = High temperature detected (72 Degrees Celsius or higher)

- **EM Stop**

If an emergency shut off button (either remote or on the panel) is pressed, the LED will illuminate AMBER and the gas will be turned off. The EM Stop button must be re-set before restarting the system.

OFF = OK

ON = EM Stop button pressed.

- **Fire Alarm Panel**

If a fire alarm panel has been triggered, the LED will illuminate Amber and the gas will be turned off. The Fire alarm panel must be re-set before restarting the system.

Off = OK

ON = Fire alarm panel triggered.

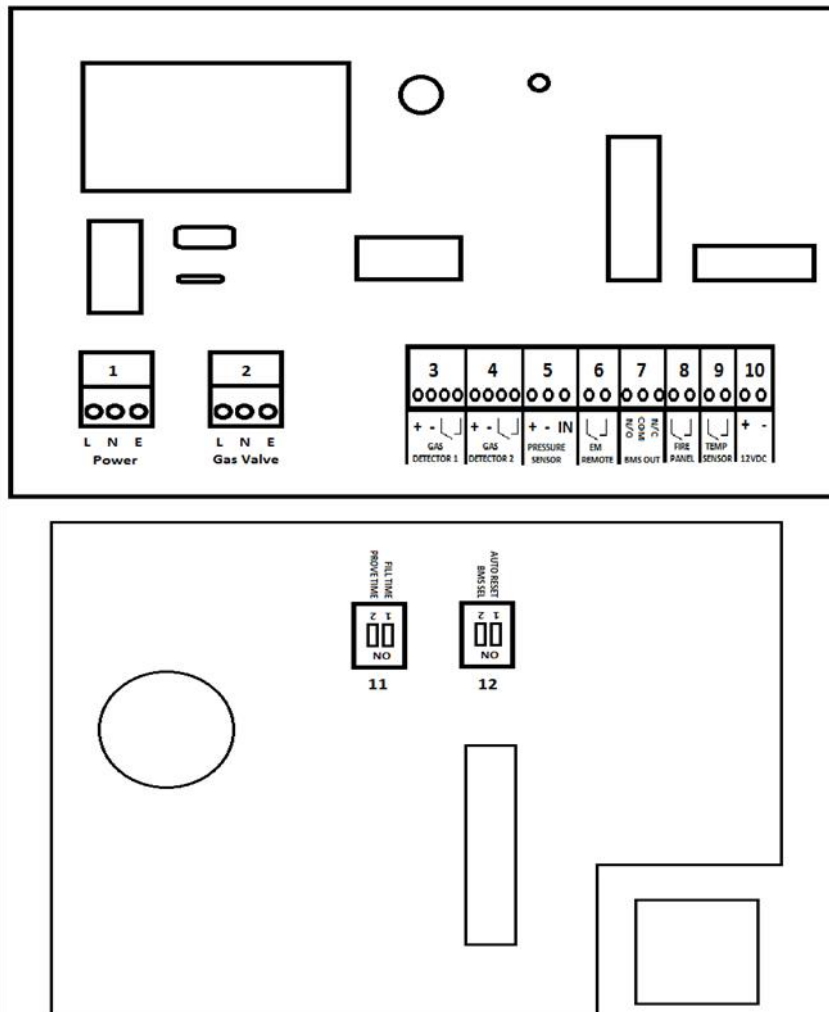
## 5 Maintenance

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

- ✓ 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 panel
- ✗ 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.



## 6 1000BH Wiring Spec



1. **POWER:** Mains supply 100-240VAC.
2. **GAS VALVE:** Gas Solenoid Valve Power Output, 230VAC, Max 3A.
3. **GAS DETECTOR 1:** 12V power supply. VOLT FREE INPUT (detectors sold separately).
4. **GAS DETECTOR 2:** 12V power supply. VOLT FREE INPUT (detectors sold separately).
5. **PRESSURE SENSOR:** Red + positive / Black – negative / Blue IN.
6. **EM REMOTE:** Remote emergency stop buttons and Fire Alarm input wired in series (purchased separately). VOLT FREE INPUT
7. **BMS OUT:** Normally Closed, Common and Normally Open.
8. **FIRE PANEL:** (Supplied by others). VOLT FREE INPUT
9. **TEMP SENSOR:** (purchased separately). VOLT FREE INPUT
10. **12VDC:** Permanent 12VDC output when there is power at the panel.
11. **GAS & PROVE TIME SWITCH**
12. **AUTO RESET & BMS SELECTION SWITCH**





## 7 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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