

Gas Safety Products

Merlin 1000BH Gas Proving/Gas Detection System



Installation, operating and maintenance

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Table of contents

1	General information	3
2	Installation	3
2.1	Panel Mounting..	3
2.2	Mains Supply.....	3
2.3	Gas solenoid valve.....	3
2.4	Gas Detector.....	3
2.5	Gas Pressure Transducer.....	3
2.6	Remote emergency shut off buttons.....	3
2.7	BMS Connections.....	3
2.8	Fire Alarm.....	3
2.9	Heat Detector.....	3
2.10	12v DC.....	3
2.11	Internal Buzzer.....	3
3	Operation Instructions	4
3.1	How to turn the system on and off	4
3.2	Explanation of LED status.....	4
3.2.1	Power LED	4
3.2.2	Gas on LED.....	4
3.2.3	Testing LED	4
3.2.4	Test Fail LED	4
3.2.5	Pressure Low LED	4
3.2.6	Gas Detector 1/ Gas Detector 2 LED	4
3.2.7	Heat Detector LED.....	4
3.2.8	EM Stop LED	5
3.2.9	Fire Alarm Panel	5
3.3	Using the emergency shut off	5
3.4	BMS integration	5
3.5	Gas fill and prove time	5
3.6	Auto reset.....	5
	1000BH Wiring Diagram	6

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.

It is recommended that the user reads this guide before using the system. Please do NOT attempt to operate the unit until the contents of this document have been read and are thoroughly understood.

2 Installation

- 2.1 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. The PCB should be removed before drilling entry holes into the case.
- 2.2 Mains Supply.** A 230volt electrical supply should be supplied to the panel. This should be externally fused at 3 Amps using a fused spur and should be connected to the terminals marked "LNE Power"
- 2.3 Gas solenoid valve.** The gas solenoid valve should be powered using the terminals on the Merlin 1000BH marked "LNE to GAS VALVE".
- 2.4 Gas Detector.** 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 Natural gas, Carbon monoxide or LPG detector. If no detector is being used leave the link in between the "↯ ↰". Other detector types are available.
- 2.5 Gas Pressure Transducer.** The terminals marked pressure sensor "+ - in ".These wire to the gas pressure transducer which is screwed into the downstream port on the gas solenoid valve. Red + positive, Black – negative and Yellow IN. Please ensure this is wired as instructed.
Minimum Operating Pressure = 12Mbar
Maximum Operating Pressure = 100Mbar.
- 2.6 Remote emergency shut off buttons.** The terminal for remote emergency shut-off buttons is detailed on the circuit board as "EM Remote". These connections are linked out as a factory setting. Remote emergency shut-off buttons should be volt free and wired to the Merlin 1000BH using two-core cable.
- 2.7 BMS Connections.** Terminal connections are available on the circuit board for connections to Building Management systems etc. Detailed on the circuit board as "BMS OUT N/O, Com and N/C" these are volt free connections.
- 2.8 Fire Alarm.** 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.
- 2.9 Heat Detector.** 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.
- 2.10 12v DC.** This is a permanent 12v DC output when there is power at the panel.
- 2.11 Internal Buzzer.** Operates at 65dB measured 30cm from closed panel.

Note: all low voltage connections should be made using a screened cable. To avoid electrical interference this should not be in the same conduit as mains cable as per the low voltage directive.

3 Operation Instructions

3.1 How to turn the system on and off

1. Turn the key switch to on position.
2. To turn the system off, turn the key switch to off position.

3.2 Explanation of LED status

3.2.1 Power LED

When the system is connected to the mains supply, the Red LED of the S&S Logo located in the bottom right corner of the panel will illuminate. When no power is present, this LED will not light up.

RED = OK

OFF = No power to 1000BH, a loose ribbon connection or the fuse may not be intact.

3.2.2 Gas on LED

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.

GREEN = Gas On

OFF = Gas Off

3.2.3 Testing LED

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

3.2.4 Test Fail LED

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

AMBER = gas proving failed

3.2.5 Pressure Low LED

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

AMBER = gas supply pressure low.

3.2.6 Gas Detector 1/ Gas Detector 2 LED

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

RED = Gas detected.

3.2.7 Heat Detector LED

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

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

3.2.8 EM Stop LED

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

AMBER = EM Stop button pressed.

3.2.9 Fire Alarm Panel LED

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

AMBER = Fire alarm panel triggered.

3.3 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.

3.4 BMS integration

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 230V 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.

3.5 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 1000BH 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: Off – 5 secs, On – 10 secs

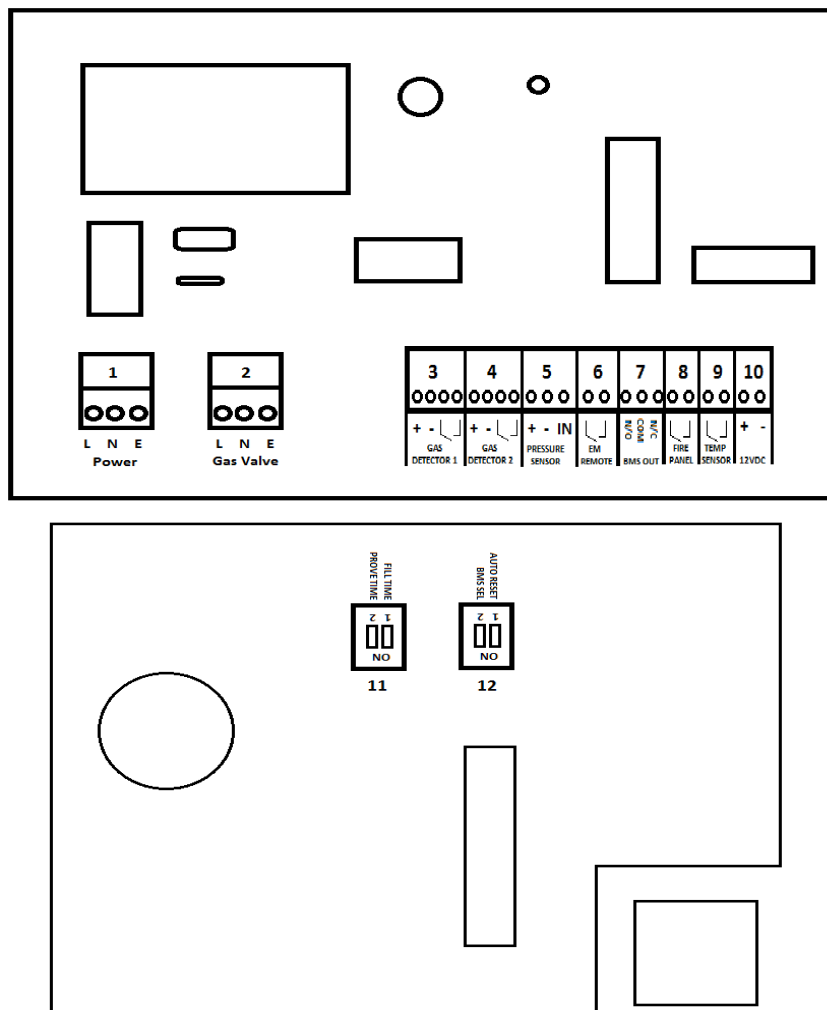
Prove time: Off – 30 secs, On – 50 secs

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

3.6 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.

1000BH Wiring Diagram



1. Mains Input 230VAC.
2. Gas Solenoid Valve Power Output, 230VAC, Max 3A.
3. Methane, CO or LPG Detector, 12V power supply and **volt free input** (purchased separately).
4. Methane, CO or LPG Detector, 12V power supply and **volt free input** (purchased separately).
5. Gas pressure transducer, power supply and returned signal (supplied).
6. Remote EM Stop buttons and Fire Alarm input wired in series (purchased separately). **VOLT FREE INPUT**
7. BMS output contacts. Normally Closed, Common and Normally Open. Max.1A @ 230VAC.
8. Fire panel (Supplied by others). **VOLT FREE INPUT**
9. Fusible Links (purchased separately). **VOLT FREE INPUT**
10. Permanent 12VDC output when there is power at the panel.
11. Gas prove & fill time.
12. BMS Selection & Auto Reset.

Please note, Mains wires and low voltage wires should not be run in the same conduit as per the **LOW VOLTAGE DIRECTIVE**

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