

Gas Safety Products

Merlin 1000VW+ Gas Interlock, Gas Proving, Electric & Water Isolation System



Installation, operating and maintenance



Read these instructions carefully before operating or servicing

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1 General information

The Merlin 1000VW+ is an Electric and Water utilities isolation panel with gas proving and ventilation interlocking.

The system comprises of a control panel and a gas pressure sensor.

The Merlin 1000VW+ can receive connections from a remote air pressure differential switch or external current monitor, as well as remote emergency shut-off buttons, gas detectors and a CO2 monitors. It can also be integrated with a BMS and fire alarm.

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 230-volt 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 IN"

2.3 Gas solenoid valve The gas solenoid valve should be powered using the terminals on the Merlin 1000VW+ marked "LNE to VALVE".

2.4 Electric Contactor An electrical output will be supplied to an electrical contactor. This will be internally fused at 3 Amps and should be connected to the terminals marked "LNE Electric Contactor".

2.5 Water Valve The water solenoid valve should be powered using the terminals on the Merlin 1000VW+ marked "LNE WATER VALVE".

2.6 BMS Connections Terminal connections are available on the circuit board for connections to Building Management systems etc. Detailed on the circuit board as "BMS N/C, Com and N/O" these are volt free connections.

2.7 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 Blue (IN). Please ensure this is wired as instructed.

Minimum Operating Pressure = 12Mbar

Maximum Operating Pressure = 100Mbar.

2.8 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 1000VW+ using two-core cable.

2.9 Gas Detector The terminals detailed on the circuit board as "Gas Detector". These connections are "+, -" and "┌ ┐" these can be wired to a Merlin Carbon Dioxide, Natural gas, Carbon monoxide or LPG detector. If no detector is being used leave the link in between the "┌ ┐". Other detector types are available.

2.10 FS 123 This terminal switches when the key is turned on and off. This can be linked to a fan switch (panel supplied separately) which can provide power to the fans when the control panel is switched on.

2.11 Fan PD Switch This terminal can be wired to a fan pd switch or current monitor to shut off the system in the event of a fan failure. If no fan interlock is required, leave the terminal link in.

2.12 12v DC This is a permanent 12v DC output when there is power at the panel.

2.13 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 should not be in the same conduit as per the low voltage directive.

3 Operation Instructions

3.1 How to turn the system on and off

1. Turn the fans on (only when interlocked with vent).
2. Turn the key switch to the on position.
3. Gas, electric and water will flash for 10 seconds.
4. Press relevant service button to turn required utility on.
5. Turn the key switch to the off position to turn the panel off.

Please Note: All services can be turned on or off only within 10 seconds of the key switch being turned on. After 10 seconds, all utility buttons will be disabled. The user must turn the key off and back on to adjust any services.

3.2 Explanation of LED status

3.2.1 Gas on LED

When the key switch is turned on, the Merlin 1000VW+ will check the installation for gas leaks. If gas proving is successful, the gas valve will open and the blue 'Gas' LED will illuminate.

BLUE = Gas On

OFF = Gas Off

3.2.2 Electric on LED

When Electric service is turned on, the Electric LED will illuminate BLUE.

BLUE = Electric On

FLASHING = Electric Off, Electric button enabled

OFF = Electric Off, Electric button disabled

3.2.3 Water on LED

When water service is turned on, the Water LED will illuminate BLUE.

BLUE = Water On

FLASHING = Water Off, Water button enabled

OFF = Water Off, Water button disabled

3.2.4 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.

3.2.5 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

3.2.6 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 seconds. The gas valve will close.

OFF = OK

AMBER = gas supply pressure low.

3.2.7 Time Out

Under normal working conditions this LED is off. This LED will illuminate AMBER when auto-shut down has occurred.

OFF = OK

AMBER = auto-shut down

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 CO₂/Gas Detected 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.

3.2.10 Fan Fault LED

Under normal working conditions, this LED is off. If a fan fault is present for more than 20 seconds, the LED will illuminate RED.

OFF = OK

RED = the gas supply has been shut off due to a ventilation fault.

WHEN A FAULT IS FOUND YOU WILL NEED TO CONTACT YOUR SERVICE/MAINTENANCE COMPANY. YOU SHOULD NOT ATTEMPT TO CARRY OUT A REPAIR OR RECTIFY THE FAULTS UNLESS YOU ARE QUALIFIED TO DO SO.

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 1000VW+ 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 the room has use of the gas supply.

There is a dip-switch located on the inside facia of the Merlin 1000VW+ labelled 'BMS Selection'. This is factory set in the 'off' position which signals the BMS on gas on/gas off. When switched to the 'on' position, the 1000VW+ will only signal the BMS on a fault, i.e. CO₂ high level detected, gas detected, EM Stop pressed, etc.

3.5 Fire Alarm Integration

The Merlin 1000VW+ can be integrated with a fire alarm to close the gas supply automatically in the event of a fire. The volt free fire alarm signal can be wired in series with any remote emergency shut off buttons.

If there is no remote emergency stop buttons installed wire this directly to the terminal marked 'EM REMOTE'.

3.6 Fan Switch Integration

There is the facility to connect a Fan Switch (FS1 or FS2 sold separately).

The Fan Switch provides the facility to turn on the fan(s) when the key switch on the Merlin 1000VW+ is in the on position and turn the power off to the fan(s) when the key switch on the Merlin 1000VW+ is in the off position. There is a dip-switch located inside the fascia of the Merlin 1000VW+ labelled EM Selection. This is factory set in the 'off' position which instructs the system to shut down the fan(s) and gas supply on activation of the Emergency shut off button(s).

On installation, this can be switched to the 'on' position if required. This will instruct the system to leave the fans on and only shut off the gas supply on activation of the Emergency shut off button(s). Note: This option is not available if Fan Switch is not installed.

3.7 Gas Fill and Prove Time

Gas fill and prove times are adjustable. There are two dip-switches located on the inside fascia of the Merlin 1000VW+ 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 seconds, On – 10 seconds

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

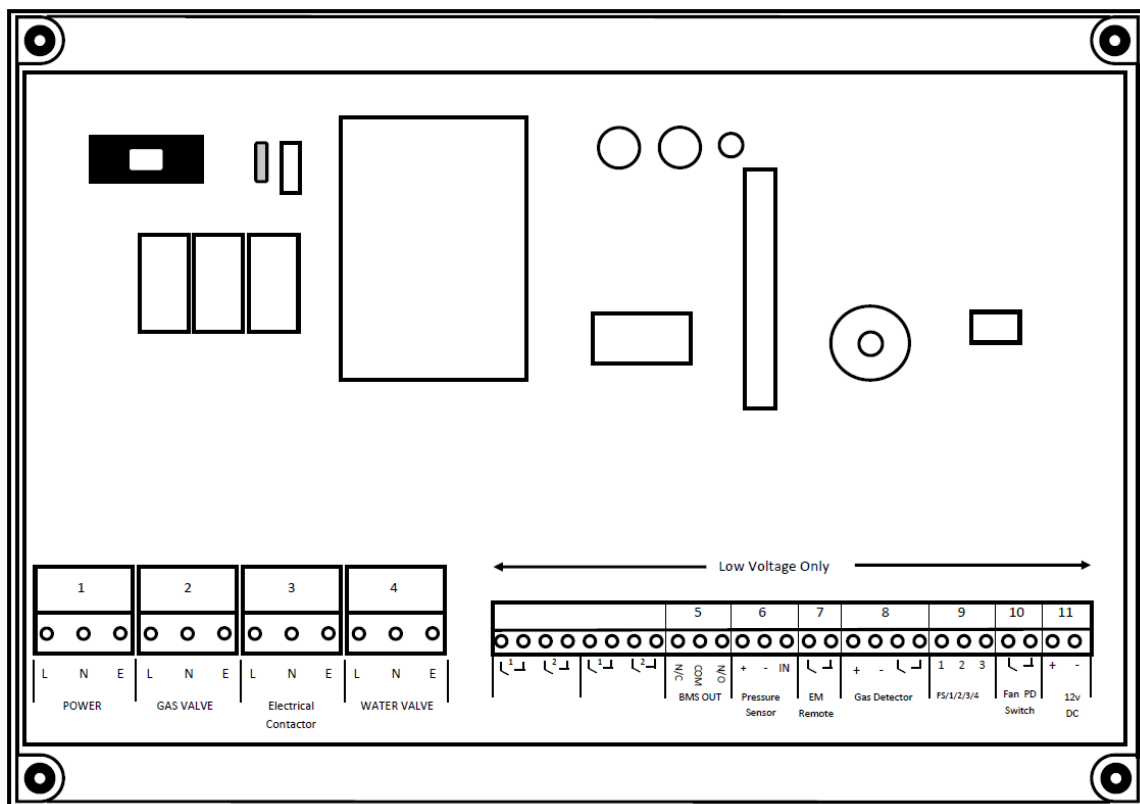
Once the settings have been changed please remove power from the fuse spur for seconds.

3.8 Auto Reset

The Merlin 1000VW+ has a built-in auto reset feature. There is a dip-switch located on the inside fascia of the Merlin 1000VW+ 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.

1000VW+ Wiring Diagram



1. Mains Input 230VAC Single Phase.
2. Gas Solenoid Valve Power Output, 230VAC, Max 3A.
3. Electric Contactor Power Output, 230VAC, Max 3A.
4. Water Valve Power Output, 230VAC, Max 3A.
5. BMS output contacts. Normally Closed, Common and Normally Open. Max.1A @ 230VAC.
6. Gas pressure transducer, Red + positive, Black – negative and Blue IN.
7. Remote EM Stop buttons and Fire Alarm input wired in series (purchased separately). **VOLT FREE INPUT**
8. Natural Gas, CO or LPG Detector, power supply and **volt free input** (purchased separately). Carbon dioxide monitors can be wired in series.
9. Fan Switch output (purchased separately). For wiring instruction, see Fan Switch user manual.
10. Fan interlock input **VOLT FREE INPUT**
11. Permanent 12VDC output when there is power at the panel.

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

**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.

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