AGS
AMERICAN GAS SAFETY

Gas Safety Products

Merlin 1000SW+

Gas, Electrical & Water Utility Isolation Controller

User Guide

📖 Please read this guide carefully and retain for future use.

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1   General Information

The Merlin 1000SW+ is a gas shut off, gas detection, water & electrical isolation utility controller.

The system comprises of a control panel and a gas pressure sensor. The Merlin 1000SW+ can receive connections from remote emergency shut-off buttons, gas detectors and a CO2 monitor. 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.

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. The PCB should be removed before drilling entry holes into the case.

A flush mount kit is available, comprising of a mounting bracket and decorative surround strip. Contact your supplier for more information.

⚠

Important Warning Statements

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   LINE VOLTAGE

A 110-120VAC electrical supply should be externally fused at 3A and connected to the terminals marked [LINE VOLTAGE LNE].

2.2   VALVE OUT

The 110-120VAC gas solenoid valve should be powered using the terminals on the Merlin 1000SW+ detailed [VALVE OUT LNE].

2.3   ELECTRIC CONTACTOR

An electrical output can be supplied to an electrical contractor. This should be fused at 3A and connected to the terminals marked [ELECTRIC CONTACTOR LNE].

2.4   WATER VALVE

An electrical output can be supplied to a water supply valve. This should be fused at 3A and connected to the terminals marked [WATER VALVE LNE].

2.5   BMS OUT

Terminal connections are available on the circuit board for Building Management systems etc.
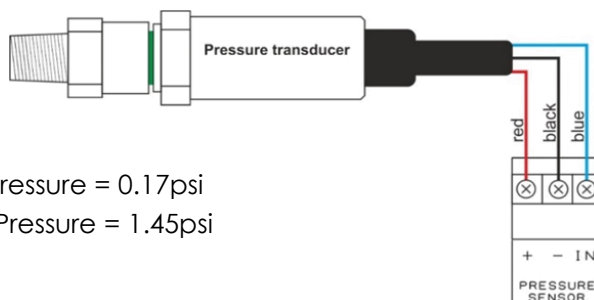
Detailed on the circuit board as [BMS OUT - N/C, COM and N/O] (Normally Closed / Common / Normally Open).
These are volt free connections.

This is a relay that changes state in alarm or when the 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 and audible alarms etc.

2.6   PRESSURE SENSOR

This terminal is connected to the gas pressure transducer as shown which is then screwed into the downstream port on the gas solenoid valve.

Min Operating Pressure = 0.17psi
Max Operating Pressure = 1.45psi

ENSURE THIS IS SCREWED TO THE DOWNSTREAM PORT OF THE GAS SOLENOID VALVE.

2.7   EM REMOTE

This terminal is for remote emergency shut-off buttons and detailed on the circuit board as [EM REMOTE].
This is linked out as a factory setting.

Remote emergency shut-off buttons should be volt free and wired to the Merlin 1000SW+ using a plenum security cable, white, 18/2 (18AWG 2 conductor), stranded, CMP or similar.

2.8   GAS DETECTOR

These connections can be wired to a Merlin gas detector (LPG, natural gas or carbon monoxide).

If no detector is being used leave the link in between the "⤙⤐".

Refer to your gas detector guide for further information.
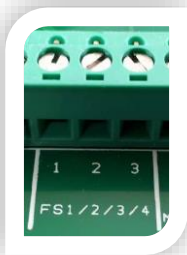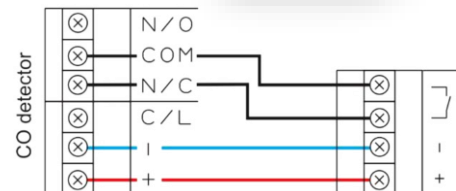
2.9   FS1/2/3

This terminal switches when the key is turned on and off.

This can be linked to a fan switch (supplied separately) which can provide power to the fans when the control panel is switched on.

2.10   CO2 MONITOR

This terminal can be connected to a CO_2 monitor to shut off the system in the event of a high concentration of CO_2.
If no CO2 monitor is connected, the panel will 'beep' upon power up and the CO2 LED will flash 3 times to indicate that this terminal has been disabled.

Refer to your CO_2 monitor guide for further information.

2.11   12v DC

This is a permanent 12v DC output when there is power at the panel and can be used to create a relay switch with the BMS relay output.

Contact your supplier for more information.

3   Installation & Operation

3.1   System On and Off

➢ Turn the key switch to on position.
➢ Gas, electric & water will flash for 10 seconds.
➢ Press relevant service button to turn required utility on.
➢ 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   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 on the circuit board.

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   BMS Integration
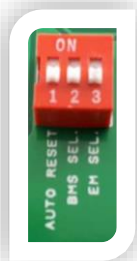
The Merlin 1000SW+ can be integrated with a BMS to make or break a circuit on gas on/gas off, (valve open or valve closed).

This will tell the BMS whether or not power is being sent to the solenoid.

There is a dip-switch located on the inside facia of the panel labelled [BMS SEL]. This is factory set to 'OFF' which signals the BMS on gas on/gas off.

When switched to 'ON', the 1000SW+ will only signal the BMS on a fault, i.e. high CO_2 level detected, gas detected, emergency stop pressed, etc.

3.4   Auto shut-down / Timeout facility

The Merlin 1000SW+ has an auto-shut down feature after a selected time.

There are two dip-switches located on the inside facia of the panel labelled [TIME1] & [TIME2].

Upon installation, these can be configured to select the required timeout/ shut-down period.

TIME 1	TIME 2	Timeout Period (Hours)
OFF	OFF	2
ON	OFF	4
OFF	ON	8
ON	ON	Disabled

They are factory set to 'OFF' for a 2 hour timeout.

Note: Upon timeout/auto-shut down the gas supply will be turned off.

On auto-shut down the gas supply will be turned off.

There are two dip-switches located on the circuit board labelled [ELECTR] and [WATER]. They are factory set in the 'off' position. On installation, they can be switched to the 'on' position. This will instruct the system to also turn off Electric and/or Water services when performing auto-shut down.

3.5 Fire Alarm Integration

The Merlin 1000SW+ 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 are no remote emergency stop buttons being installed, wire this directly to the 1000SW+ 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 1000SW+ is 'ON' and turns the power off to the fan(s) when the key switch on the Merlin 1000SW+ is in the OFF position. There is a dip-switch located inside the facia of the Merlin 1000SW+ labelled [EM SEL].

This is factory set to 'OFF' which instructs the 1000SW+ to shut down the fan(s) and gas supply on activation of the emergency shut off button(s).

Upon installation, this can be switched to 'ON' - 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 Auto reset

The Merlin 1000SW+ has an auto reset feature.

There is a dip-switch located on the inside facia of the Merlin 1000SW+ labelled [AUTO RESET]. This is factory set to 'OFF'. When the power is restored after the power cut, the panel has to be restarted manually.

Upon installation, this can be switched to 'ON' if required - this will instruct the system to restart automatically when power is restored after the power cut.
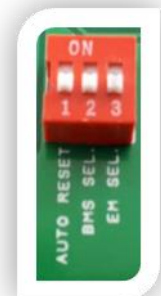
3.8 Gas fill and prove time

Gas fill and prove times are adjustable.

There are two dip-switches located on the inside facia of the Merlin 1000SW+ labelled [FILL TIME] and [PROVE TIME]. They are factory set to 'OFF'.

FILL TIME is the amount of time the gas valve is open to fill the gas line.
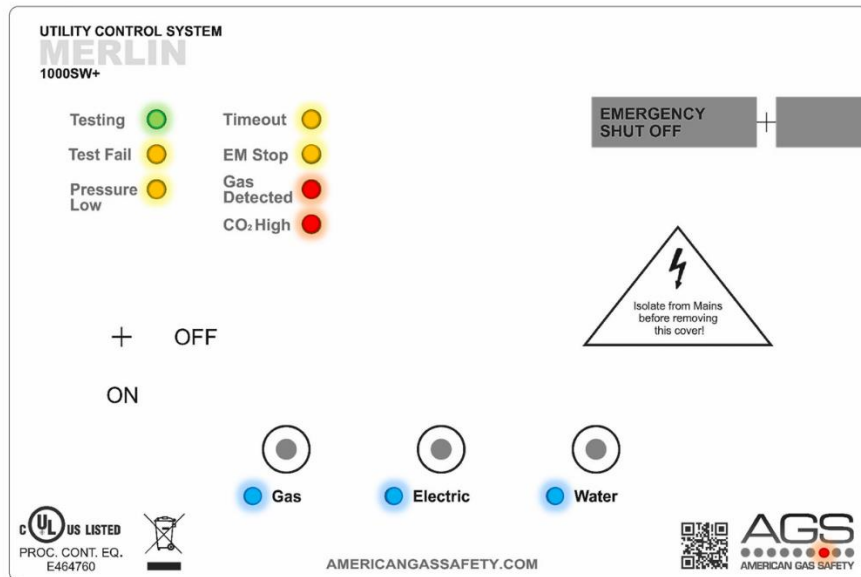
Off – 5 seconds
On – 10 seconds

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 have been changed please remove mains power for 10 seconds.

4   Panel LED status

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

- **Gas**

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

- **Electric**

When Electric service is turned on, the Electric LED will illuminate BLUE.
ON = Electric On
FLASHING = Electric Off, Electric button enabled
OFF = Electric Off, Electric button disabled.

- **Water**

When water service is turned on, the Water LED will illuminate BLUE.
ON = Water On
FLASHING = Water Off, Water button enabled
OFF = Water Off, Water button disabled.

- **Testing**

This LED will illuminate GREEN for approximately 30 seconds when the panel is checking the integrity of the gas installation upon start up.
ON = 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 0.17psi for 10 secs. The gas valve will close.

OFF = OK

ON = gas supply pressure low.

- **Timeout**

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

OFF = OK

ON = auto-shut down

- **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.

- **Gas Detected**

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.

- **CO_2 High**

Under normal working conditions this LED is off. If the concentration of CO_2 in the air is at alarm level (relevant detector required), the LED will show RED and the Gas valve will turn off.

OFF = OK

ON = the concentration of CO_2 is at alarm level.

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 permenantly 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   1000SW+ Wiring Spec
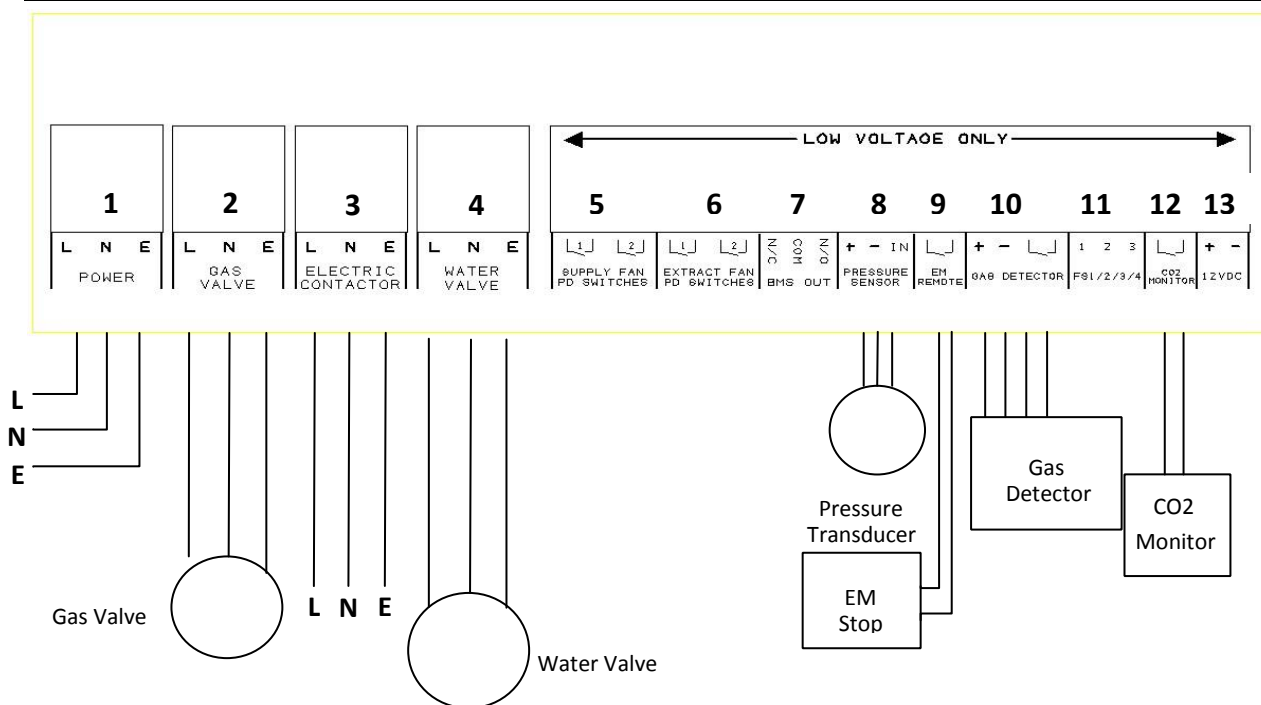
1. LINE VOLTAGE: Mains Input 110-120VAC Single Phase.
2. VALVE OUT: Gas Solenoid Valve Power Output, 110-120VAC, Max 3A.
3. ELECTRIC CONTACTOR: Power Output, 110-120VAC, Max 3A.
4. WATER VALVE: Power Output, 110-120VAC, Max 3A.

5. SUPPLY FAN PD SWITCHES: Disabled on this system.
6. EXTRACT FAN PD SWITCHES: Disabled on this system.
7. BMS OUT: Normally Closed, Common and Normally Open.
8. PRESSURE SENSOR: Gas pressure transducer, power supply and returned signal (supplied).
9. EM REMOTE: Remote emergency stop buttons and Fire Alarm input wired in series (purchased separately). **VOLT FREE INPUT**
10. GAS DETECTOR: Power supply and **VOLT FREE INPUT** (detectors purchased separately).
11. FS 1/ 2/ 3: Fan Switch output (purchased separately).
12. CO2 MONITOR: (purchased separately). **VOLT FREE INPUT**
13. 12VDC: Permanent output when there is power at the panel. **50mA max**

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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