

MERLIN RANGE

The **Merlin 3000GD** is an energy efficient method of interlocking the ventilation system with the gas solenoid valve. By ensuring the fans are only extracting the amount of air necessary for the amount of appliances being used the Merlin 3000GD panel minimizes the amount of heat being unnecessarily extracted from the kitchen. This not only provides reduced energy costs, due to reduced heat loss and fan running costs, but also makes the working conditions in the kitchen more comfortable and less noisy when few appliances are being used.



Merlin 3000GD

With simple calibration the panel works out the minimum and maximum amounts of gas available in a kitchen and the minimum and maximum ventilation rates required to handle that volume of gas. Once calibrated the panel ensures the fans run at speeds equivalent to the amount of gas being used. This reduces the amount of heat being extracted from a kitchen unnecessarily and ensures fans are not running at maximum speed when not required. When the kitchen is operating at maximum capacity the fans will of course be on their high setting when the kitchen is operating at minimum capacity the fans will be extracting at low speed.

The Merlin 3000GD is specifically designed for use in commercial kitchens to meet **BS6173: 2001**, which is now a requirement for new commercial kitchens or when a commercial kitchen is having a major refurbishment.

The Merlin 3000GD panel combines modern digital gas proving technology, along with reliable ventilation/ gas interlocking techniques in one clear concise panel. Combining these features provides initial capital cost savings and reduced installation time.

Gas pressure proving may be a requirement to meet **BS6173: 2001**. The standard requires that when a commercial kitchen is having a major refurbishment, or when a new commercial kitchen is being fitted out, if any of the catering equipment does not have a flame failure device fitted, a gas pressure proving system should be used to ensure, at startup, the downstream gas line has no leaks and all gas appliances are in the “off” position.

If the Merlin 3000GD detects there is a drop in the gas pressure due to an appliance being open, or a gas leak, within the 30 second start up period, the gas solenoid valve will not be allowed to open and the panel will show “test fail”. Appliances must be checked to be in the closed position and the panel put through another testing procedure. Assuming the system is found to be sound the panel will go to “gas on” and the gas solenoid valve will open.

Ventilation/ gas Interlock ensures the gas solenoid valve cannot be opened until any fans connected to the panel are operating. This is to protect the kitchen users from harmful byproducts of natural gas and is a requirement of **BS6173: 2001**. If at any time the fan fails a signal will be sent to close the gas solenoid valve, the panel will read “fan fail” and the LED relating to the fan that has failed will flash.

Unique Design

A main factor when designing the Merlin 3000GD was to make installation easy and cost effective. No calibration of the gas-proving device is required because there are no mechanical moving parts. The gas pressure proving is carried out using digital electronic proving technology.

Wiring of the system is straightforward as there is only one panel, combining both Gas pressure proving and Ventilation/ gas interlock. All electrical connections (excluding the gas solenoid valve) for airflow switches, power monitor, remote emergency stops and the gas pressure-proving sensor are either low voltage or volt free. (See wiring diagrams)

Pressure Low

When the incoming gas pressure drops below 12mb, for more than 10 seconds, the gas valve will shut and the “pressure low” LED will illuminate. This indicates the incoming gas pressure is at a level where the flame is weak and could simply blow out allowing gas to leak into the work environment. The inlet gas pressure is constantly monitored from start up.

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Ventilation/Gas Interlock

It is possible to interlock the fans and gas solenoid valve either with a power monitor, which looks for current going to the fan motor, or air pressure differential switches.

Air Pressure Differential Switch (Volt Free)

We only supply the highest quality airflow switches for increased longevity and reliability. Connections between the Merlin 3000GD and the air pressure differential switch are made with two-core wiring.

Power Monitor

The power monitor (PM2) is a separate box, which can be mounted wherever suitable. It is powered by 12v from the Merlin 3000GD. The live feed between the fan controller and the fan is wired into and straight out of the PM2. A two-core low voltage connection should be made between the power monitor and the Merlin 3000GD. Once current is recognised as going between the fan controller and the fan the gas valve will be allowed to open.

Incorporated in the Merlin 3000GD is a ten second delay. In the event of interruptions to airflow, or in the event of the PM2 being used current to the fan, for less than 10 seconds the delay will allow the gas solenoid valve to remain open, preventing nuisance tripping. Should the airflow be interrupted for 10 seconds or more the "fan fail" LED will illuminate and the gas solenoid valve will close.

Gas Pressure Sensor

The Gas pressure sensor screws directly into the downstream port of the gas solenoid valve. This makes the sensor easier to install and less vulnerable to damage than systems that require copper connections between the gas valve and the sensor. This also reduces installation costs as no copper brazing or brass connections are required.

The electrical connection between the 3000GD panel and the gas pressure sensor is made by 3 core low voltage connections. There are no distance limitations between where the Merlin panel is situated and the gas valve located. A terminal connection is located on the pressure sensor for wiring connections to be made on site. The gas pressure sensor should be fixed to the downstream port on the gas solenoid valve.

The Merlin 3000GD, pressure sensor and Gas solenoid valves come with a three year warranty.

References to BS6173: 2001

“Appliances shall be interlocked with any mechanical ventilation system that is fitted to enable the safe operation that appliance. Where appliances are not fitted with full flame safeguards, e.g. some second-hand appliances, the system shall also be fitted with a system to prove closure of all valves prior to the establishment or restoration of the gas supply.”



The Gas pressure sensor (Low Voltage)

Key features of the Merlin 3000GD

- Allows Compliance with BS 6173:2001 for commercial kitchens
 - Reduces energy costs by ensuring fans run proportional to gas usage
 - Prevents excessive heat being extracted unnecessarily giving cost savings on heating and reduced emissions
 - Gas Proving for when kitchen appliances are not fitted with flame failure devices.
 - Clear LED display for system indications.
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- Low Pressure monitoring for incoming gas supply.
- Works with most Gas Solenoid Valves.
- Interlocking with fans using either air pressure differential switches or fan current monitors (PM2) see miscellaneous section.
- Easy installation.
- Key operation giving user full control.
- All Merlin panels carry a three year warranty
- Merlin systems are designed to comply with the latest CE requirements and low voltage directives