



## Merlin PM2+

### Dual Current Monitor



## User Guide



Please read this guide carefully and retain for future use.

The Merlin PM2+ Current Monitor is a dual fan current monitor and is to be used in conjunction with the Merlin systems: the unit can be used as an alternative to an air pressure differential switch.



The information contained within this manual should be referenced for typical installation and operation only. For specific requirements that may deviate from the information in this guide – contact your supplier.

# Content

<b>Important Warning Statements .....</b>	<b>3</b>
<b>Installation.....</b>	<b>4</b>
General Information.....	4
Fixing - Mounting .....	4
Board Connections.....	4
Current Monitoring Setup.....	5
Adjust Thresholds.....	5
General Board Overview .....	6
General Maintenance .....	6
<b>Specification .....</b>	<b>6</b>



## Important Warning Statements

**Before any installation, use or maintenance read this manual carefully.**

**The information contained within this manual 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.**

**If this device is used in a manner not specified by the manufacturer, the safety provided by the device may be impaired.**

**This device is designed for indoor operation only.**

**The internal fuse should be replaced only with the same type. Anti-surge fuse 3.15A 250Vac 5x20.**

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

**This device requires a continual supply of electrical power – it will not work without power.**

**Your product should reach you in perfect condition, if you suspect it is damaged, contact your supplier.**

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## Manufacturer's 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.

**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.

**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.



### 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. Please contact your supplier or local authority for details of recycling schemes in your area.

# Installation

## General Information

The Merlin PM2+ Current Monitor is a dual fan current monitor and is to be used in conjunction with the Merlin systems: the unit can be used as an alternative to an air pressure differential switch.

The PM2+ is designed for use with fans up to 18A running current (min 0.15A / 35W).

The PM2+ current monitor checks for a current running between the fan speed controller and the fan and sends a signal to the Merlin gas interlock system dependant on whether or not the fan is in operation.

- ⚠ 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.

## Fixing - Mounting

Unpack all the parts!

Designed for surface mounting, it must be installed by a licensed, insured contractor.

1. Carefully remove the front cover from the unit by unscrewing the four bolts located at each corner. To do this – use the socket wrench provided.
2. Mark the four screw holes located on the back of the enclosure to the wall. Ensure the wall surface is flat to prevent base distortion.
3. After executing the mounting and the connections – replace the front cover and insert the security caps over the four bolts.

## Board Connections

### POWER

A 12/24vdc electrical supply should be supplied using the [+ - 12/24vdc Power] terminal.

### FAN 1 LIVE & FAN 2 LIVE

Located at the bottom of the main circuit board there are two terminals for fan current monitoring, and these are marked up as [FAN 1 LIVE IN / OUT] & [FAN 2 LIVE IN / OUT]. The live feed from the fan speed controller is taken through these contacts. Each will monitor its own independent fan. From a fan controller the live feed is taken to the [IN] terminal and the [OUT] terminal should wire to the fan motor.

Merlin panels (1500S & 2000S) are supplied from the factory with links in the terminals marked [SUPPLY FAN PD SWITCHES & EXTRACT FAN PD SWITCHES] & [FAN1 PD SW & FAN2 PD SW].

If only one fan is being monitored the relevant link should be taken out of the terminal connection.

If both fans are monitored – both links should be removed and a connection should be supplied to the terminals marked [FAN# PDS OUT] on the Merlin PM2+ panel.

There is an option to set a minimum and maximum running current for the fans to operate. If the current goes above the or below these parameters the PM2+ will switch relay for NC (normally closed) to NO (normally open) for relevant [FAN# PDS OUT] and on the main Merlin panel the relevant supply/ extract fans LED will begin to flash for ~10 seconds before the Fan Fault alarm will be illuminated and the gas solenoid valve connected will be isolated.

## Current Monitoring Setup

### Minimum & Maximum Fan Current.

F1! 10.0A  
F2 OFF

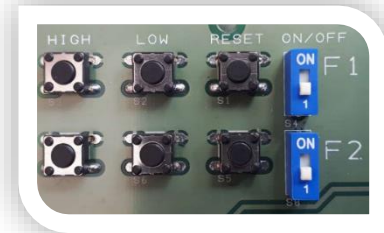
1. Turn Fan 1 (**F1**) switch to ON position.
2. The LCD screen will show Fan 1 current.
3. ! - means Fan 1 has not yet been calibrated.

F1 LOW  
SAVED

4. Set Fan 1 minimum operating current.
5. Press and hold the F1 LOW button.
6. LCD screen will display: F1 LOW SAVED.

F1 HIGH  
SAVED

7. Set Fan 1 maximum operating current.
8. Press and hold the F1 HIGH button.
9. LCD screen will display: F1 HIGH SAVED.



Please repeat steps to set min & max current of Fan 2.

F1 LOW!  
F2 10.5A

If the measured current falls below or rises above 10% of the permitted current, the LCD display will show a 'LOW!' or 'HIGH!' message next to the relevant fan and the gas solenoid valve connected will be isolated. To adjust this threshold – see following section.



**IF YOU ARE ONLY INTERLOCKING WITH ONE FAN, PLEASE LEAVE THE REMAINING [F] SWITCH TO THE '1' or 'OFF' POSITION TO PREVENT NUISANCE TRIPPING.**

## Adjust Thresholds

The PM2+ has a factory set 10% dropout threshold for low and high values for both fans. However, it is possible to alter between a 10% to a 40% dropout threshold if required.

1. Switch F1 and F2 switch OFF.
2. LCD will display 'F1 and F2 OFF'
3. To change the LOW threshold, press and hold F1 and F2 LOW buttons together
4. The LCD screen will display 'Offset L F1 10%'
5. Select different thresholds by pressing the F1 LOW button
6. After 5 seconds of inactivity the LCD screen will display the new low offset value for F1 (fan 1).
7. Once Fan 1 threshold has been set the LCD screen will prompt setting fan 2 'Offset L F2 10%'.
8. Repeat step 4, 5, 6 as above for Fan 2.
9. Once this has been setup the LCD screen will display the new low offset value for F2 (fan 2).
10. Repeat to adjust HIGH threshold as follows
11. To change the high threshold, press and hold F1 and F2 HIGH buttons together
12. The LCD screen will display 'Offset H F1 10%'
13. Select different thresholds by pressing the F1 HIGH button
14. After 5 seconds of inactivity the LCD screen will display the new high offset value for F1 (fan 1).
15. Once Fan 1 threshold has been set the LCD screen will prompt setting fan 2 'Offset H F2 10%'.

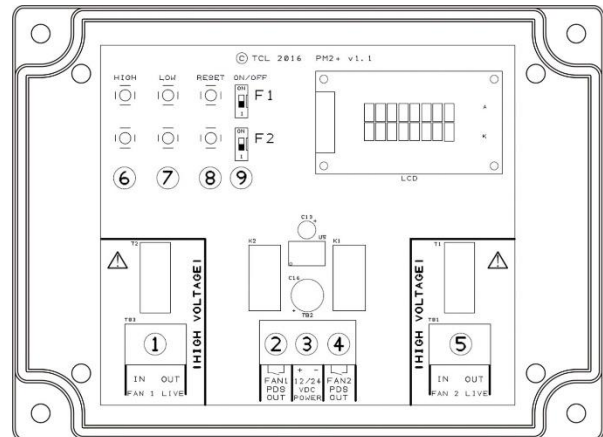
Once you have completed setting the thresholds, switch F1 and F2 switches to ON.

You will now need to set up the fans, see section above.

Threshold Value		Max Fan Running Current
10%	-	18A
20%	-	16.5A
30%	-	15A
40%	-	14A

## General Board Overview

1. FAN1 IN/OUT **MAX 18AMPS**
2. FAN1 NO/NC to Merlin panel PD SWITCH terminal.
3. POWER IN 12-24vdc
4. FAN2 NO/NC to Merlin panel PD SWITCH terminal.
5. FAN2 IN/OUT **MAX 18AMPS**
6. Fan Current Monitor High Button
7. Fan Current Monitor Low Button
8. Fan Current Monitor Reset Button
9. Fan Current Monitor On/Off switches.



**Be careful when creating access for cables – Damage to circuit boards will void any warranty!**

**Any damage attempting to remove the circuit board parts may void any warranty!**

**Take care when making connections to high voltage connectors!**

**All Class 2 wiring is to be installed within flexible tubing to maintain segregation between circuits!**

**Wiring of different circuits shall be separated by means of routing, clamping or barrier!**

## General Maintenance

Keep your device in good working order - follow these basic principles;

- Remove any dust/debris from the outer enclosure regularly using a slightly damp cloth.
- Never use detergents or solvents to clean your device.
- 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.

## Specification

General	
Product:	PM2+
Indicators	N/A
Mounting	Wall Mounting
Electrical	
Power Voltage Input Range	12 or 24vdc
Terminal Wire ratings	Copper 18AWG (0.75mm <sup>2</sup> ) Min. 25 x screw terminals.
Fuse	3.15A
Construction	
Dimensions (H x W x D)	140 x 190 x 62 mm/ 5.51 x 7.48 x 2.44"
Housing Material	Polylac - PA765
Environmental	
Ingress Protection	IP65 (Pre-installation)
Storage Conditions	Dry. Cool. Flat
Operating Conditions	-10 ~ 50°C / 14 ~ 122°F 30 ~ 80% rf
Compliance	
CE	EN 61326-1 / BS EN IEC 61010-1

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**Installation Details**

Please pass this manual to the system owner / user.

Date of Installation:	
Installation Location:	
Organisation:	
Stamp/Signature of the installer:	

**We recommend all S&S Northern gas detection equipment be commissioned by competent/trained engineers to ensure correct installation and operation. The Merlin range of gas detectors are calibrated when manufactured, however, we strongly recommend the detectors response and alarm signals are tested and validated once installed. This will ensure the equipment performs as intended and is free from any unforeseen damage caused by transit/installation.**

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