

Automatic Fan Controllers with  
Current and Temperature Sensing Options  
for Kitchen & Bathroom Appliances

## **Installation Instructions**



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Ventmiser and Cookermiser are patented devices.



# VENTMISER CMSM

## TWIN & MULTI-INPUT AUTOMATIC FAN CONTROLLER

Automatic Fan Controllers with Current and Temperature Sensing Options for Kitchen & Bathroom Appliances

### Installation Instructions

#### Description

VENTMISER CMSM twin and multi-input automatic fan controllers comprise of a main controller with the optional choice of either or both current and temperature sensors which detects when a cooker, shower or other moisture producing appliances are in use.

**Twin-input unit - normally used to control local extract fans. Multi-input unit is ideal for controlling MEV and MVHR.**

At the dictates of the input signal/signals the onboard microprocessor will automatically turn on an extract system or boost a central ventilation system such as a MEV or MVHR.

**Multi-input automatic fan controllers** incorporate a load potentiometer and time potentiometer for each group of three current and each group of three temperature sensors.

Both variants - the twin and multi-input units incorporate a manual override input which can receive a signal from one or several push buttons.

**For electric showers and cookers** a current sensor is used to detect the flow of current.

**For conventional showers** (fed from a hot water system) a temperature sensor is used to detect the presence of hot water in the hot water pipe to the shower mixer.

Both current and temperature sensors are normally supplied with a cable lengths as follows:

**Twin-input unit:** 4, 6 and 12 metre lengths.

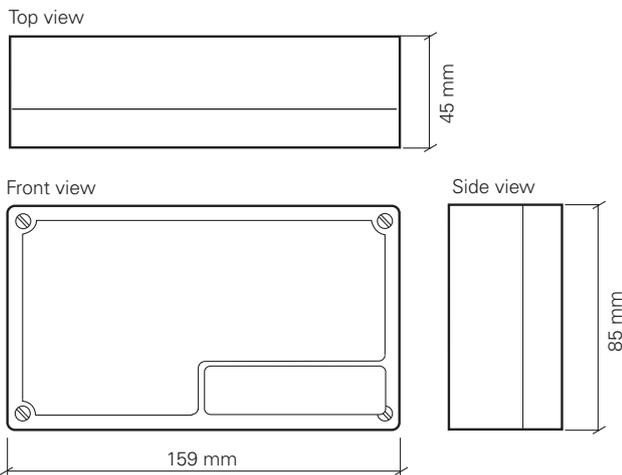
**Multi-input unit:** 4, 6 and 12 metre lengths.

**VENTMISER CMSM Twin and multi-input automatic fan controllers** are robust, with the main printed circuit board (PCB) mounted in a stylish white, fire retardant (V0 rated) ABS enclosure.

**Controllers** are suitable for 230V single phase 50 Hz extractor fans up to 2 amps or 500 watts. The control unit has a change over relay rated at 10amps (resistive load).

#### Dimensions

Fig 1. Dimensions for twin and multi-input controllers.



#### Installation

**Installation must be carried out by a qualified electrician conforming to all statutory and governing regulations.**

##### Safety

1. Isolate the feed to the electric cooker/shower at the distribution board by turning off the breaker or removing the fuse.
2. Isolate the fused spur serving the extractor fan at the distribution board by turning off the breaker or removing the fuse.
3. Test electrical tester in a live socket to prove functionality, then test both the electric shower feed and the fused spur serving the fan to ensure they are at zero voltage and safe to work on.

**Once items 1 – 3 have been carried out, proceed as follows:**

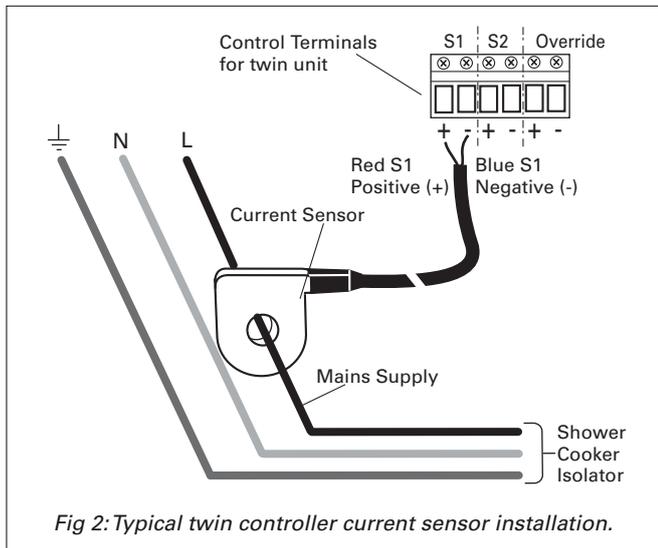
4. Establish a suitable position for the main control unit, and secure to wall, or timber. **N.B the control unit must be sited well away from the shower or bath as prescribed in the current IEE regulations. Remember the enclosure is not water proof.**
5. Wire live neutral and earth from fused spur into the controller as indicated in figure 4 and 5. (i.e. "LIVE IN", "NEUTRAL IN" & EARTH).
6. Wire live neutral and earth from the controller to the fan as indicated in figure 4 and 5. (i.e. "N.O./LIVE OUT", "NEUTRAL OUT" & EARTH).

#### Current Sensing (For Cookers)

- 7a. Remove the cooker switch by removing the screws (check that there is still no voltage, using tester). Carefully pull the switch away from the back box and decide upon the best possible position within the backbox to mount the sensor. Disconnect the live conductor from the switch and carefully thread the sensor over same. Slide the sensor over the conductor to a position where it will not be trapped. Reconnect the live conductor back into the terminal from where it was removed.

#### Current Sensing (For Showers)

- 7b. Where used for current sensing to an electric shower, find a suitable position to fit the current sensor, this could be in a local isolator, at the distribution board or inside the shower unit. Once the position has been determined, (check that there is still no voltage using tester). Disconnect the live conductor from the switch or shower and carefully thread the sensor over same. Slide the sensor over the conductor to a position where it will not be trapped. Reconnect the live conductor back into the terminal from where it was removed.
8. From wherever the sensor is fitted, find a suitable route to run the sensor control wiring to the main controller. If fitted in a shower unit **ensure that you do not damage the waterproof integrity in any way.** At all times ensure the wire does not get damaged by trapping of the cable when re-instating casings or covers to isolators.
9. Wire the cable into the terminals as indicated in the wiring diagrams.
10. Test out all wiring, ensure that fan has a good earth by carrying out a continuity test between the fused spur and the fan.



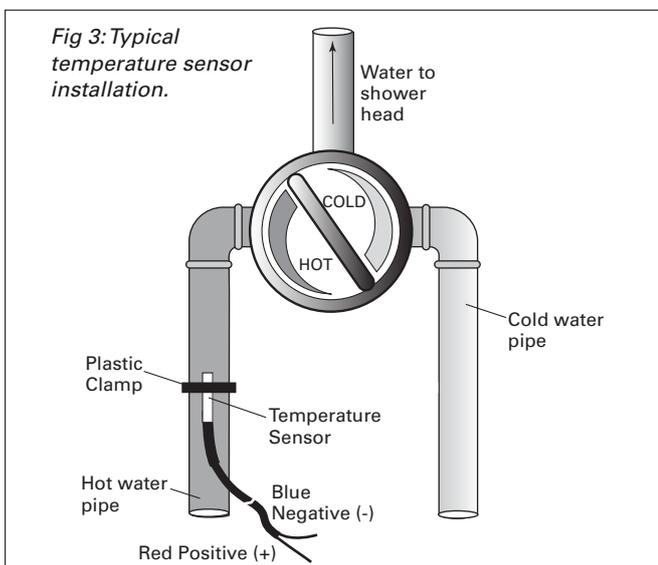
11. Turn on the breaker and switch to the fused spur, the healthy LED should flash/blink.
12. Turn down the Load Pot to the mid position and Time Pot to minimum.
13. Turn on the breaker and the cooker/shower isolating switch.
14. Turn on the cooker/shower to low power and the current load LED should light up. After approximately five seconds the run LED should light up and the fan should run.
15. Adjust the load pot if necessary. Anti-clockwise to increase the sensitivity and clockwise to decrease the sensitivity.

**Safety: Take care not to touch the mains terminals whilst the controller front cover is not in place when adjusting the time and load pots.**

16. Now set the time pot by turning it clockwise. It has a range of 1 to 25 minutes for optimum performance and energy conservation, a 20 minute overrun time is probably the best starting point. **N.B. the overrun time serves two functions: the first to ensure the fan does not cycle with the cooker/shower thermostat. Second to clear residual steam and condensation following and after showering has finished.**
17. Turn off the fused spur and fit the front cover plate to complete the installation.

### Temperature Sensing

18. Where used for temperature sensing to a normal shower, the sensor must be fitted to the hot water dead leg. Find a position, on the pipework which must be uninsulated copper. Remove any paint or corrosion from the pipe, apply thermal grease to the flat part of the sensor then firmly secure the sensor to the pipe using the clip provided. It is most important that good thermal conductivity is obtained. (see fig. 3 below).



19. From wherever the sensor is fitted, find a suitable route to run the sensor control wiring to the main controller. At all times ensure the wire does not get damaged by trapping of the cable.
20. Wire the cable into the terminals as indicated in the diagrams.
21. Test out all wiring, ensure that fan has a good earth by carrying out a continuity test between the fused spur and the fan. Either wire the fan for high speed operation or turn the fan on to high speed and fix the setting.
22. Turn on the breaker and switch to the fused spur, the healthy LED should flash/blink.
23. Turn down the load pot to the mid position and time pot to minimum.
24. Turn on the shower wait 30 seconds after the hot water is being delivered, if the load LED does not light up, then turn the load pot very slightly in an anticlockwise direction, do not turn the pot below the 50% position as this will allow the fan to run when not required. If a lower setting is needed first check that the temperature of the hot water is above 60°C as it should be to kill off legionella, if it is at this temperature then the integrity of the conduction of heat from the pipe to the sensor should be carefully checked.
25. Now set the time pot by turning it clockwise. It has a range of 1 to 25 minutes for optimum performance and energy conservation, a 20 minute overrun time is probably the best starting point. **N.B. the overrun time should be set to ensure the fan clears all residual steam and condensation after showering has finished.**
26. Turn off the fused spur and fit the front cover plate to complete the installation.

### Installing a manual fan push switch (momentary) e.g. MK - Reference: K4878P-WHI

27. Turn off the fused spur to the control unit and remove the front cover.
28. Wire the cable into the terminals as indicated in the wiring diagram figure 4 (i.e. **VERRIDE**).
29. Run the cable to suitable location for the override switch and fix securely.
30. Test the operation of the switch. Push and hold until the fan starts running, this will give an override time of approximately 25 minutes. Push and hold the switch until the fan turns off, this will disable the override during the 25 minute period.
31. Turn off the fused spur and fit the front cover to complete the installation.

### Special Notes regarding Temperature Sensing

- a) There will be an inevitable delay between hot water being delivered at point of use and the controller sensing the temperature, this is due to the time taken by the conduction of heat from the water through to the outside of the pipe and then to the clamp on sensor. This time delay will vary with ambient conditions, hot water temperature and pipe wall thickness. it is most important therefore that great care is taken when fixing the sensor to maximise the heat conduction process.

Please pay particular attention to cleaning the pipe, applying the thermal grease and clamping the sensor.

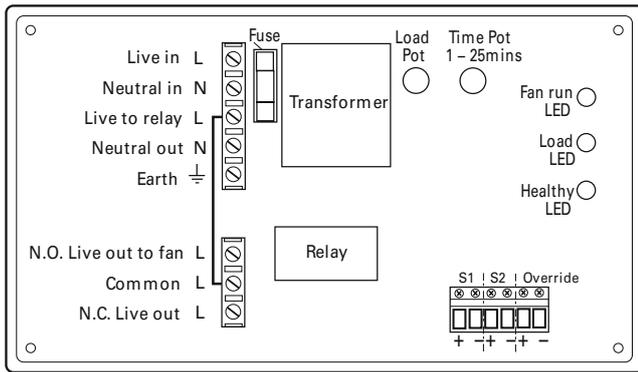
- b) Similarly there will be a delay in the unit turning off the fan as it will take time for the dead leg to lose heat, again this will vary with ambient conditions, hot water temperature and pipe wall thickness.

The time of this natural cooling process should be taken account of when setting the run on timer. As a guide, at an ambient temperature of 21°C and a hot water temperature of 50°C. the cooling down process will be 5 – 10 minutes and this should be taken into account when setting the overrun timer.

- c) The temperature sensor must be fitted to the copper pipe. With plastic plumbing systems a section of copper tube must therefore be installed to receive the sensor.

## Twin input controller wiring diagram and further information

Fig 4: Internal layout of Ventmiser twin input control.



Where a current sensor is being used with a temperature sensor the current being sensed must exceed 2.5 amps. An additional controller is required for sensing current values less than 2.5 amps, alternatively the multi sensor unit should be used.

**In applications where the controller is being used to switch only, do not directly power the fan from the controller, whether 240, 24 or 12V, the link wire must be removed between Live and the common terminals.**

**In these circumstances the common should be used as Live in & N.O. Live out should be used to turn on the fan.**

### Additional sensor

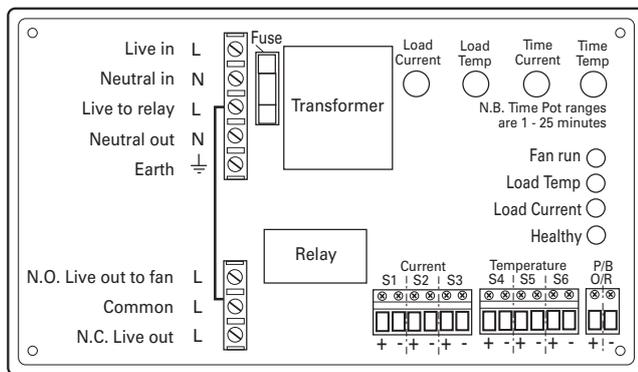
An additional sensor may be installed into S2.

### Additional push buttons

Additional push buttons may be installed. These must be wired in parallel and connected into the O/R terminal.

## Multi input controller wiring diagram and further information

Fig 5: Internal layout of Ventmiser multi input control.



**In applications where the controller is being used to switch only, do not directly power the fan from the controller, whether 240, 24 or 12V, the link wire must be removed between Live and the common terminals.**

**In these circumstances the common should be used as Live in & N.O. Live out should be used to turn on the fan or take a fan to boost.**

Where used for boosting MEV & MVHR the N.C. terminal is generally used to provide low/trickle speed and the N.O. to provide boost.

### Sensors

Current sensors should be installed into S1, S2 & S3.

Temperature sensors should be installed into S4, S5 & S6.

### Additional push buttons

Two push buttons may be installed. These must be wired in parallel and connected into the O/R terminal. If further inputs are required we suggest these are wired in parallel to a larger terminal block outside the enclosure.

## Trouble shooting

Problem	Action to determine the fault
<b>1. The healthy LED does not blink.</b>	Check that there is 240 volts between Live and Neutral
<b>2. The load LED does not illuminate.</b>	Momentarily short down live to neutral on S1 or S2 for twin input unit or S1 - S6 for multi unit. The load LED should illuminate <b>N.B. Prolonged shorting down of these terminals will damage the PCB.</b>

## Electrical Wiring

Wiring should be via a switched spur with a 3 Amp fuse.

Ventmiser can be used for a variety of applications, please contact us for further information and advice.



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