Procon
OVERHEAT THERMOSTAT

FOR INSTALLERS

INSTALLATION MANUAL

Manual version 1.0.5

Firmware version 1.0.0

For safe and correct use, please read this installation manual thoroughly before installing the PROCON OVERHEAT THERMOSTAT.

Preface

Safety warnings

⚠ **Caution:**

Do not expose to rain or moisture.

⚠ **Operating Temperature:**

The product has been designed to operate between -20° C and +60° C

⚠ **Shielded Signal Cables:**

Use only shielded cables for connecting peripherals to any Procon OVERHEAT THERMOSTAT device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment.

⚠ **CE Notice:**

This product has been determined to be in compliance with 2014/30/EU (EMC Directive), 2014/35/EU (Low Voltage Directive) and 2011/65/EU (RoHS Directive).

⚠ **UKCA Notice:**

This product has been determined to be in compliance with SI 2016 No. 1091 (Electromagnetic Compatibility Regulations 2016), SI 2016 No. 1101, (Electrical Equipment (Safety) Regulations 2016) and SI 2012 No. 3032 (The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012).

Disclaimer

⚠ **Warranty:**

All products manufactured on behalf of Mitsubishi Electric UK are warranted against defective materials for a period of three years from the date of delivery to the original purchaser.

⚠ **Warning:**

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

If the equipment is used in a manor not specified by the manufacturer, the protection provided by the equipment may be impaired.

Amendment Register

Document Version	Latest Firmware Version	Date	Author	Notes
1.0.0	1.0.0	18/06/24	SC/IB	Initial version.
1.0.1	1.0.0	21/08/24	SC	Added additional safety information & technical details
1.0.2	1.0.0	05/09/24	HY	Various amendments
1.0.3	1.0.0	04/12/24	IB	Various amendments
1.0.4	1.0.0	10/12/24	HY	Various amendments
1.0.5	1.0.0	05/11/25	JF	Various amendments

Contents

1. Safety precautions

- **Before installing the unit, make sure you read all the "Safety precautions"**
- **The "Safety precautions" provide very important points regarding safety. Make sure you follow them**

Symbols used in the text

⚠ Warning:

Describes precautions that should be observed to prevent danger of injury or death to the user.

⚠ Caution:

Describes precautions that should be observed to prevent damage to the unit.

⚠ Warning:

- **Ask the dealer or an authorised technician to install the unit**
  - Improper installation by the user may result in electric shock, or fire
- **Use the specified cables for wiring. Make the connections securely so that any outside forces acting on the cables are not applied to the terminals**
  - Inadequate connection and fastening may generate heat and cause a fire
- **Never repair the unit. If the controller must be repaired, consult the dealer**
  - If the unit is repaired improperly, electric shock, or fire may result
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard", "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result
- **Keep the electric parts away from any water - washing water etc…**
  - Contact may result in electric shock, fire or smoke
- **To dispose of this product, consult your dealer**

⚠ Caution:

- **Safely dispose of the packing materials**
  - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries
  - Tear apart and throw away plastic packaging bags so that children will not play with them - If children play with a plastic bag which has not been torn apart, they face the risk of suffocation

2. Overview

The Procon OVERHEAT THERMOSTAT is a controller that interfaces with VL-500CZPVU-L/R-E MVHR equipment, CP-500CM-L/R Cooling Module, and sensors and switches in the building to provide cooling where the indoor temperature is above a defined activation point.

There are two versions available, named OHT and OHT-MP

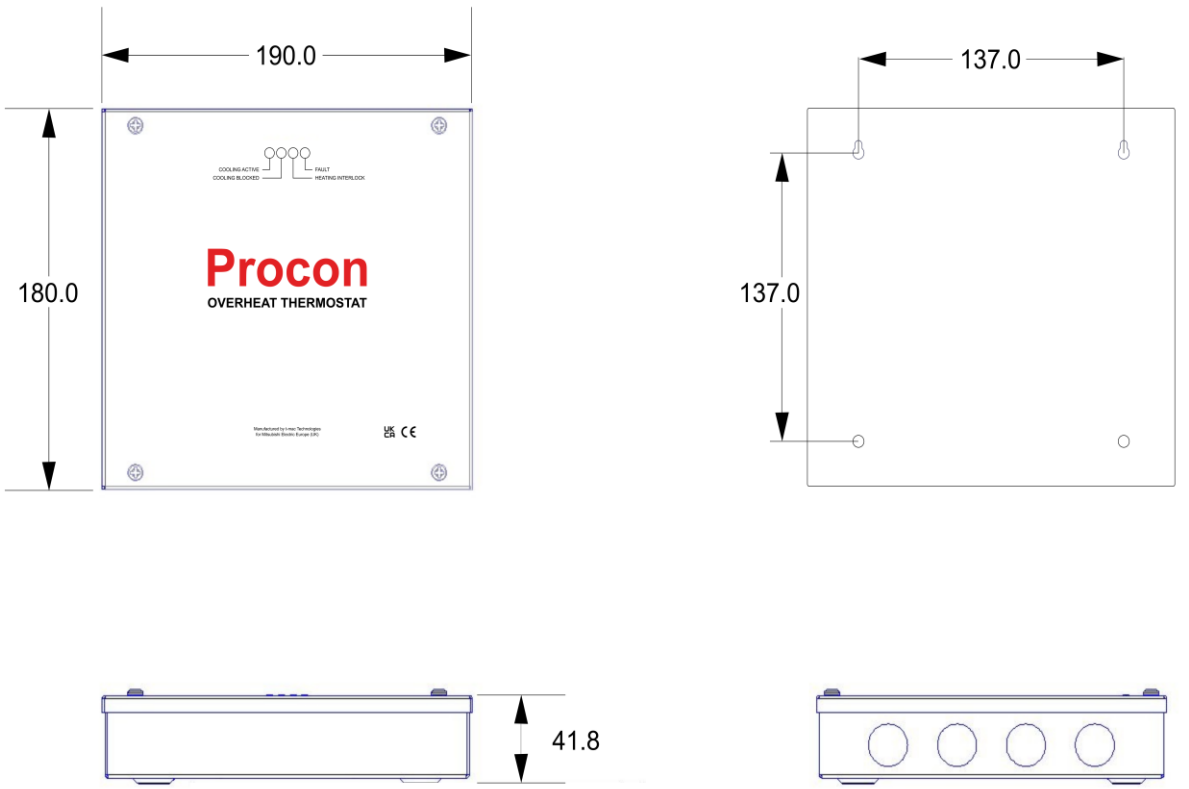
The OHT version connects to CN105 of the VL-500CZPVU-L/R-E MVHR in order to receive power and communicate with the MVHR.

The OHT-MP version is required when the CN105 terminal is not available on the VL-500CZPVU-L/R-E MVHR. This version contains a mains power transformer and requires different connections to the MVHR. Details can be found in the inputs/output section.

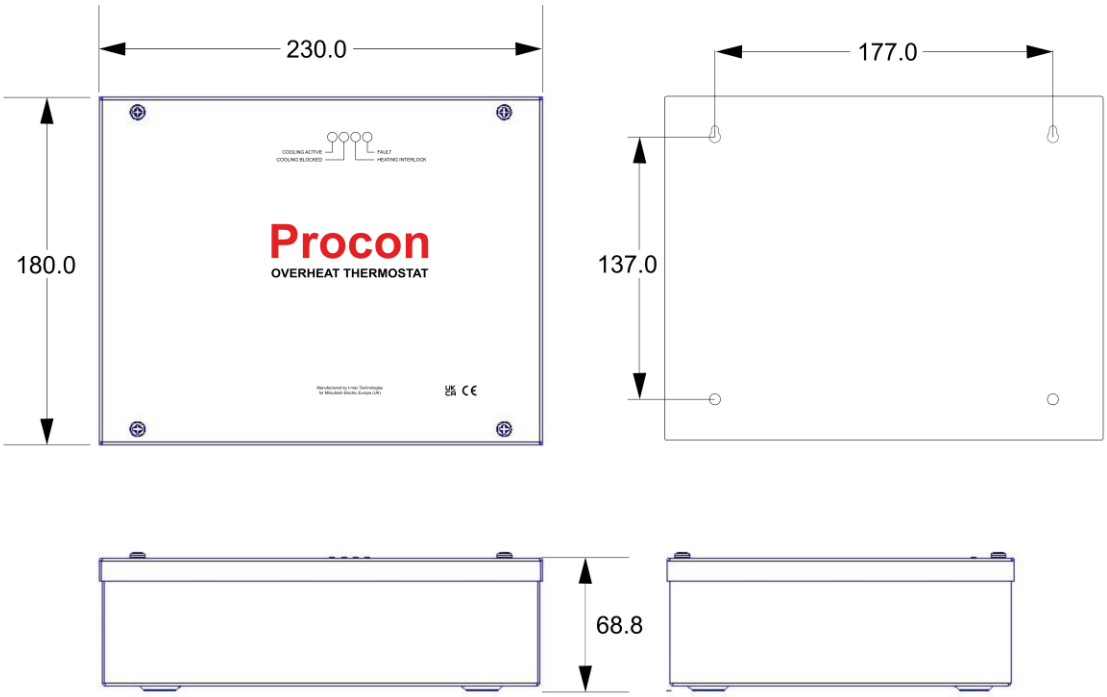
Figure 1 shows the OVERHEAT THERMOSTAT (OHT) dimensions.

Figure 2 shows the OVERHEAT THERMOSTAT mains powered (OHT-MP) dimensions.

[Fig. 1 – Overheat Thermostat (OHT)]



[Fig. 2 – Overheat Thermostat Unit - Mains Powered (OHT-MP)]



3. Getting Started

3.1. Unpacking

The OVERHEAT THERMOSTAT is supplied with the following components:

- Procon OVERHEAT THERMOSTAT unit.
- Room Temperature Sensor.

Please contact your supplier if any of these items are missing.

3.2. Before switching ON

Please carefully read the Installation section before switching the unit ON. Check all connections are secure.

4. Installation

4.1. Physical connection

The OVERHEAT THERMOSTAT has four fixing holes in the base of the enclosure for mounting. These can be used to attach the unit in place. Please secure the OVERHEAT THERMOSTAT before powering the unit on.

4.2. Mounting the Overheat Thermostat

Remove the enclosure lid by removing the 4 x M4 pozi screws on each side of the front face. The 4 x wall mounting holes are located on the rear metal face as shown in Fig. 1 and Fig. 2 above. Suitable wall mount fixings should be used for the weight of the unit.

Choose a location where the LED lights will be visible when required.

This equipment is not suitable for use in locations where children are likely to be present.

Any un-used open knockouts must be blanked with a solid 20mm diameter grommet

4.3. Powering the Overheat Thermostat

⚠ Both versions OHT/OHT-MP electrical boards contain the hardware for both power options. Do NOT power an OHT/OHT-MP with more than 1 method simultaneously as irreparable damage will occur.

4.3.1. Powered via VL-500CZPVU-L/R-E - OHT

The DC powered OVERHEAT THERMOSTAT (OHT) is powered via the supplied cable, when connected to the CN105 terminal from the Mitsubishi Electric VL-500CZPVU-L/R-E.

The OHT cannot be used as a standalone device and must be connected to the Mitsubishi Electric VL-500CZPVU-L/R-E unit as it contains the over current protection for the device.

The CN105 terminal can be found on the electrical box accessible from underneath the MVHR unit. For more information on how to access the terminal, see section 5.2 of the VL-500CZPVU-L/R-E Installation manual.

OHT will only power on when the MVHR receives power. “AC Comms” LED on the OHT electrical board will flash to show successful power/communication.

If using this power method, for connection to the VL-500CZPVU-L/R-E MVHR, follow 4.4.5.1 in this manual.

4.3.2. Mains Powered Unit – OHT-MP

The mains powered OVERHEAT THERMOSTAT (OHT-MP) contains an internal power supply which is rated at 100-240VAC, 0.7A, 50/60Hz (+/- 10%),

A 13A switched fuse spare fitted with a 5A fuse should be provided in-line with the mains supply and be in close proximity to the OVERHEAT THERMOSTAT unit. It must be clearly labelled as the disconnecting device for the OVERHEAT THERMOSTAT. The supply should also be fed via a 6amp type B circuit breaker in the distribution box.

The construction of the connections of the conductors should be such that, if the cord were to slip in its anchorage, the protective earth conductor would be the last to take the strain.⚠ Ensure that the mains cable supplying the OVERHEAT THERMOSTAT is rated to the following specification:

- 1.5mm^2 - 3 core flexible flex blue, brown, yellow/green
- External diameter 8.0mm
- BS EN 50525

Recommended cable: CEF Part Code: 3183B1.5W050

⚠ This apparatus must be earthed via the 3 way mains terminal block shown in Figure 3 below.

Connect Live (L), Neutral (N) and Earth (E) to the 3 way terminal block located on the left side of the enclosure, as indicated below:

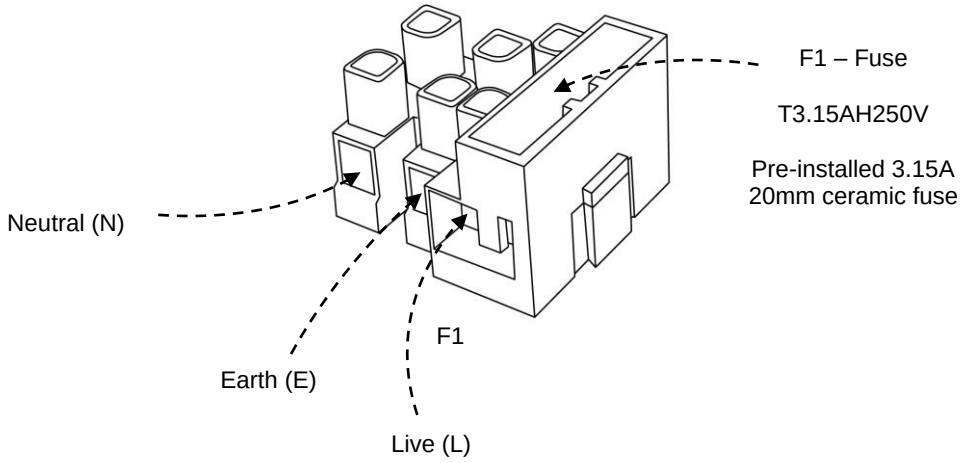


Figure 3: Mains terminal block connection

⚠ The mains cable should be secured to the metal enclosure using the supplied M20 locking gland.

⚠ **Warning:**
Electrical work should be done by qualified electrical engineers / electrician in accordance with "Engineering Standards for Electrical Installation" and supplied installation manuals. Dedicated circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.

⚠ **Caution:**
Do not use anything other than the correct capacity breaker and fuse. Using fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.

- **Be sure to take power from the special branch circuit**
- **Install the unit to prevent any of the control circuit cables coming into direct contact with power cables**
- **Ensure that there is no slack on all wire connections**

- **Never connect the power cable to leads for the transmission cables. This will damage the transmission cables**
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If using this power method, for connection to the VL-500CZPVU-L/R-E MVHR, follow 4.4.5.2 in this manual.

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4.4. Inputs and Outputs

4.4.1. Room Temperature Sensors

At least 1 and up to 4 room air temperature sensors can be connected. The temperature sensors must be of type 10K3A1 with resistance values as per the following table. The highest temperature value of all connected sensors will be used.

The temperature sensor cable should be screened, twin twisted pair 0.75mm^2 to 1mm^2.

If no sensors are connected or they are faulty, the fault LED on the OHT/OHT-MP will illuminate and if using the OHT version it will use the VL-500CZPVU-L/R-E MVHR's return air temperature sensor as a backup value. Note: The backup value is not available if using OHT-MP.

10K3A1	
Temperature (°C)	Resistance (Ohms Ω)
-10	55298
-5	42314
0	32650
1	31030
2	29500
3	28054
4	26688
5	25396
6	24173
7	23016
8	21921
9	20885
10	19904
11	18974
12	18092
13	17257
14	16465
15	15714
16	15001
17	14325
18	13623
19	13053
20	12494
21	11943
22	11420
23	10923
24	10450
25	10000
26	9572
27	9165
28	8777
29	8408
30	8056
35	6530
40	5325

45	4367
50	3601

4.4.2. Occupancy Sensor Input (Optional)

Connect to an occupancy sensor to disable cooling when the building is unoccupied. The input is NO type. 5V @ 11.5mA

4.4.3. Heating Interlock Input (Optional)

Connected to the heating system to block cooling if heating is active. This is to prevent heating and cooling at the same time. The input is NO type. 5V @ 11.5mA

4.4.4. Force Cooling Input (Optional)

Connected to a switch to allow cooling to be forced on at maximum capacity by occupant or during installation for testing. The input is NO type. 5V @ 11.5mA

Connection to CP-500CM-L/R Cooling unit

4.4.5. CP-500CM-L/R-E connection

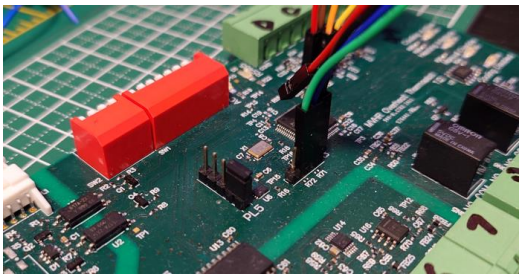
Connect the cable supplied from CP-500CM-L/R to OHT/OHT-MP terminals CN1/CN2/CN3, corresponding to the wiring colours shown on the wiring diagram.

Connection to VL-500CZPVU-L/R-E Lossnay MVHR

4.4.6. VL-500CZPVU-L/R-E Connection

Depending on the model of the Overheat Thermostat dictated by the powering method (OHT or OHT-MP), the correct option for the connection to the MVHR must be chosen below.

A jumper on terminal PL5 of the OHT/OHT-MP upon powering up will determine the control mode it will operate in. The jumper will come pre-set depending on the OHT/OHT-MP model. Check it is set as below.

OHT & OHT-MP


4.4.6.1. Option 1 (Optimal) – (OHT):

When using the OHT version powered via its connection to the CN105 terminal on the VL-500CZPVU-L/R-E MVHR, the same cable will also handle the communication and provide optimal control of the MVHR.

4.4.6.2. Option 2 (OHT-MP):

12VDC

As the 12V power input connector is used then it is prohibited to use the CN105 cable/connection.

Fan Speed Boost Output

Connect to TM201 pins 3-4 on the VL-500CZPVU-L/R-E MVHR to boost the fan speed during cooling operation. The MVHR will need to be commissioned to function correctly, with the required airflow settings corresponding to the MVHR external input speed request. See VL-500CZPVU-L/R-E manual for details. Recommended setting is SPEED 4, with no delay and no overrun (overrun is built into the OHT-MP logic). The connections should be Normally Open (NO).

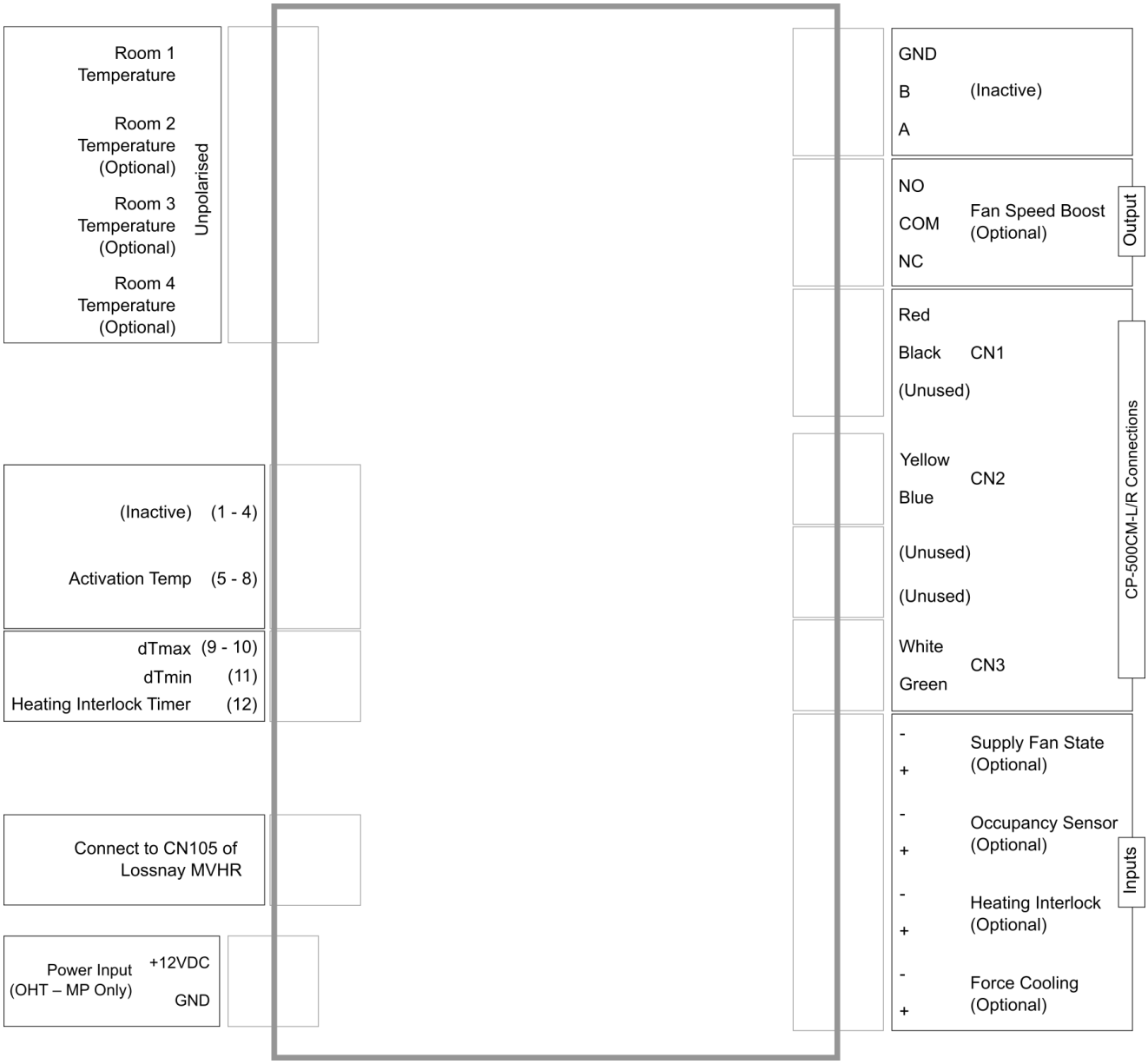
Supply Fan State Input

Connect to the output on TM3 pins 9-10 on VL-500CZPVU-L/R-E MVHR y. The MVHR output must be set to supply fan monitoring via the onboard controllers function settings. See VL-500CZPVU-L/R-E manual for details. 5V @ 11.5mA

MVHR Heat Exchange Mode Setting

When using OHT-MP the VL-500CZPVU-L/R-E MVHR must be kept in Heat exchange mode at all times. Details on how to restrict the mode can be found in the VL-500CZPVU-L/R-E manual.

4.4.7. Inputs and Outputs Diagram



4.5. Configuration

⚠ **Note:**
The OVERHEAT THERMOSTAT must be restarted if any changes are made to the following configuration settings.

Note:
The OVERHEAT THERMOSTAT is not designed for occupant intervention. All configuration settings must only be performed by a qualitied professional and for the designed operation.

The configuration is done using the 12x DIP switches.

Configuration (dipswitch 1)

Ensure dipswitch 1 is ON for OHT/OHT-MP to operate correctly.

Activation Temperature (dipswitch 5-8)

When the temperature goes above the activation temperature, the request for cooling begins.

	Dipswitch number			
Activation Temperature (°C)	5	6	7	8
19	OFF	OFF	OFF	OFF
20	ON	OFF	OFF	OFF
21	OFF	ON	OFF	OFF
22	ON	ON	OFF	OFF
23	OFF	OFF	ON	OFF
24	ON	OFF	ON	OFF
25	OFF	ON	ON	OFF
26	ON	ON	ON	OFF
27	OFF	OFF	OFF	ON
28	ON	OFF	OFF	ON
29	OFF	ON	OFF	ON
30	ON	ON	OFF	ON
31	OFF	OFF	ON	ON
32	ON	OFF	ON	ON
33	OFF	ON	ON	ON
34	ON	ON	ON	ON

dTMax (dipswitch 9-10)

The temperature difference above the activation temperature that the CP-500CM-L/R cooling module should run at 100% capacity.

	Dipswitch number	
dTMax (°C)	9	10
1	OFF	OFF
2	ON	OFF
3	OFF	ON
4	ON	ON

dTMin (dipswitch 11)

The temperature difference below activation temperature that the ***CP-500CM-L/R*** cooling module will deactivate cooling. The OHT/OHT-MP is designed to overshoot the cooling in order to prevent compressor cycling whilst maintaining overheating mitigation.

	Dipswitch number
dTMin (°C)	11
-1	OFF
-2	ON

Heating interlock timer (dipswitch 12)

When interlocking with a heating system, it may be necessary to change this setting to prevent any clashing of heating/cooling systems.
There is a timer built in to allow for any cycling heating signals, where the OHT/OHT-MP cooling will be blocked for the set time after each new heating interlock input signal is received. This helps ensure that the cooling is kept OFF during winter seasons even when the activation set point is required to be set at a low level.

	Dipswitch number
Timer	12
30 minutes	OFF
24 hours	ON

Example of settings

Activation temperature = 22°C
dTMax = 4°C
dTmin = -1°C

Cooling sequence will begin when the indoor temperature increases above 22°C. If the temperature continues to increase, the capacity of the ***CP-500CM-L/R*** cooling module will increase, reaching 100% at 26°C.

Cooling will continue until the space reaches 21°C, and remain off unless the space temperature increases above 22°C again.

4.6. LEDs

	Cooling Active	Cooling Blocked	Heating Interlock	Fault
Conditions for LED to be On	The temperature reaches the activation temperature	Occupancy sensor input is active (the building is unoccupied)	Heating interlock is active	CP-500CM-L/R Fault
	Force cooling input is active	Cooling is required but the system cannot enter cooling mode due to MVHR fan status.	Heating system activated within last 3 minutes or 24hrs depending on setting. Cooling will be blocked.	Temperature sensor fault
State when LED is ON	Cooling active	Cooling is blocked	Cooling is blocked	Cooling is blocked

If OHT/OHT-MP is requesting cooling, but CP-500CM-L/R is inactive

The compressor in CP-500CM-L/R contains its own anti-cycling protection in order to maximise the compressor life. If the compressor has recently turned OFF, it can take up to 10 minutes to reactivate again even if the OHT/OHT-MP is asking for cooling.

5. OHT/OHT-MP Function explanations

During cooling operation, the OHT/OHT-MP will operate the MVHR in PURGE/SPEED 4 and HEATEX mode. The required design air flow rate must be commissioned onto PURGE/SPEED 4. Details on how to do this can be found in the VL-500CZPVU-L/R-E MVHR manual.

To ensure overheating mitigation is maintained, the user will not be able to reduce the air flow speed or change the MVHR mode whilst cooling is activated.

Activation sequence timing

To protect the CP-500CM-L/R module, the cooling start/stop sequence will strictly follow the below sequence:

When OHT/OHT-MP starts the Cooling, increased airflow will switch ON first, Cooling activation will wait 75 seconds then switch ON.

When OHT/OHT-MP stops the Cooling, Cooling will switch OFF first, and the airflow will wait 1 minute then switch to speed 1 and previous mode

6. Technical specification

Parameter	Min.	Typ.	Max.	Comments
Environmental				
Operating temperature	-20°C		60°C	
Indoor or outdoor use				Indoor
Altitude		< 2000m		
Relative humidity				90% non-condensing
Pollution degree		2		

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

MITSUBISHI ELECTRIC UK

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