QHC18MR 18kW and QHC24MR 24kW Heater Controller 3 Channel (Receiver) Remote & Manual Operation

Safety Instructions and Operation Manual

901253   **QHC18MR 18kW**
901255   **QHC24MR 24kW**

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Contents

Important Information

Please carefully read all instructions provided before using this appliance. The controller must be installed and used as instructed.

This Operation Manual contains the important safety information, as well as some recommendations on correct use, installation and maintenance of the appliance.

When operating the controller, observe necessary safety precautions, as improper use may result in injury or damage to property.

Ensure to keep this manual along with your sales receipt, and if possible, cardboard package and packing material in case return of the unit is necessary.

- **Unpack the controller making sure that all the items are present, there are no components left in the box.**
- **Using the detailed instructions, follow the steps to assemble your controller.**
- **Do NOT connect the controller to the power supply until the assembly is complete.**
- **Do NOT connect the controller to the power supply if any of the components are damaged in any way.**

Safety Instructions

Read these instructions before using.

WARNING

Potential fire risk if the controller is covered by any flammable materials.

- Ensure that the controller's vents and cooling fans are clean and free from obstructions to prevent overheating.
- Do **NOT** use in unventilated areas.
- Do **NOT** use where gas, petrol, paint or other flammable materials are stored.
- Always wait till the controller has cooled down completely before putting into storage.
- Improper use of the appliance can result in electric shock or fire hazard.
- If the controller malfunctions or behaves abnormally, disconnect power and seek professional assistance for troubleshooting and repair.
- Ensure that operators are aware of the potential hazards associated with the controller and are trained in its safe operation and emergency procedures.
- The unit needs to be isolated from the power and sufficiently cooled before cleaning.
- Do **NOT** immerse the controller into water when cleaning.

Cleaning & Maintenance

- Isolate the appliance from the power supply system.

- After the appliance has cooled down, the housing can be wiped clean with a damp cloth.

- Wipe the appliance only with a clean and lint-free cloth or a soft brush.

- Do **NOT** use any abrasive or hard cleaning products on any part of the controller.

- Wait until the unit is completely dry before use.

Regularly inspect the controller for any signs of damage, wear, or loose connections. If any issues are identified, disconnect the power and contact a qualified technician for repair or replacement.

For further information and guidance, visit our online help articles and videos.

https://www.heat-outdoors.co.uk/help-desk/useful-articles/heater-and-lamp-maintenance.html

Assembly Instructions

When unpacking the controller, please make sure that all the items are present, there are no components left in the box and that all the parts are not damaged.

1. Begin by removing the service hatch and remove the 4 fixing screws, 2 at the top and 2 at the bottom. Once the service hatch has been removed, you will see the Din Rail.
2. Use the cable grommets to bring the cables into and out of the controller base.
3. Connect the Mains IN as follows, Neutral blue wire to terminal #1 – **Neutral IN**, Live **Brown** wire to terminal #2 – L1 IN, Live **Black** wire to terminal #3 – L2 IN, Live **Grey** wire to terminal #4 – L3 IN.
4. There are two methods on how to connect the Infrared Heaters to the controller:

a. Connect the heater or heaters Live to O/P1 terminal #5 switched L1, the O/P has a maximum load capacity of 6kW or 32amps. O/P1 can also be referred to as Zone 1. Connect the heater Neutrals to Neutral Out terminals #8 – 13. The heater Earth is connected to Earth terminal #14. The remaining heaters should be distributed across the remaining two outputs O/P2 & O/P3.

Ensure that the load is balanced across the output terminals #5 – 7.

Do not exceed the maximum load capacity per output.

b. Connect to an external distribution box. Connect O/P1 to terminals marked **1**, O/P2 to terminals marked **2** and O/P3 to terminals marked 3. Connect the **Neutral OUT** to the **blue** terminals marked **N**. Connect the **Earth** to the **green/yellow Earth** terminals. Then connect the heaters to the other side of the terminals to the appropriate connections. Live connections to terminals **1**, **2** & **3**. **Neutral** connections to blue terminals **N** and **Earth** connections to the **Earth** terminals.

5. When all connections are complete and connected correctly, check once again that the wiring is correct as per instructions 3 and 4 above Then replace the service hatch cover and tighten the fixing screws.
6. Turn ON or reconnect the Main Power to the controller. The red neon lamp on the front panel will illuminate to indicate that the unit is **LIVE**.
7. There are auxiliary devices such as mains-operated PIR motion detectors & timer (lag) switches. These can be connected to terminals #15 – 17. External push button switches that are voltage clean or free can be connected to terminals #18 – 20. Go to pages 12, 13 & 14.
8. Remote operation ensures the Power control dial is in position **R**. Follow the instructions on page 3 for **QHVCR remote Master Controller**.
9. Manual operation moves the position of the dial through positions **M**, **1**, **2**, **3** & **4** M = 0%, 1 = 33%, 2 = 50%, 3 = 66%, 4 = 100%.

Remove the white, yellow & red wire links.

If the wire links or external push button are not fitted, then the unit will not operate when S2 is in the ON position.

Din Rail Connection
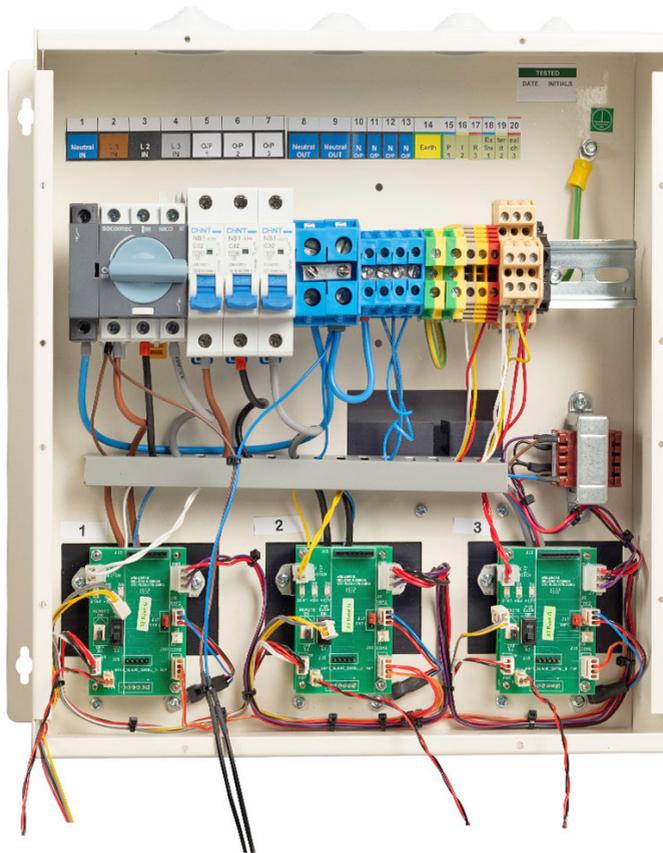
Fig 1

Only a qualified electrician should install this device.

Controller Setup Manual Operation S1 & S2

To access S2, remove both the service hatch & front panel.

S2 is found on the printed circuit boards QHPCB-A. There is a set on each board, see Fig. 3.

To switch the PIR & External Switches OFF, the **S2** Slide switch should be set to the Off position (select 2). To set up for use with PIRs & External Switches, the **S2** Slide switch must be set in the ON position (select 1), see Fig. 3.

S1 – Manual & Remote is controlled using the power control dial on the front panel. This is set by turning the Power control dial to R (remote) or M (manual) control. There is a harness from the Power control printed circuit board on the front panel down to the S1 Remote control ON/OFF header of each QHPCB-A board on the controller base, see Fig 12 page 16.
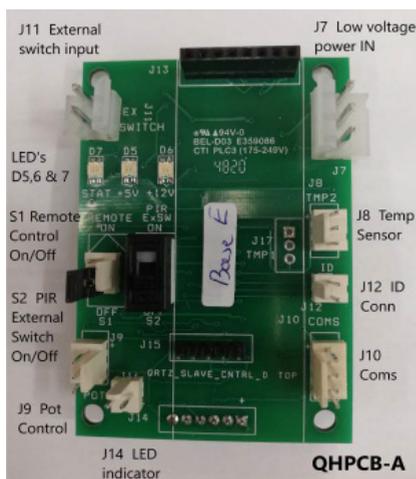
Fig 2

Fig 3

The LEDs D5, 6 & 7 on the QHPCB are bi-colour and will indicate the status of the electronic board.

The LED D7 marked STAT will flash GREEN to indicate the board is running and the phase is detected. If the D7 LED is RED, this means that the phase has not been detected and the board will not run.

The LEDs D5 (+5V) & D6 (+12V) will turn GREEN to indicate that the onboard power supply +5v & +12v are both present and running.

QHVCR Master Controller (Transmitter)
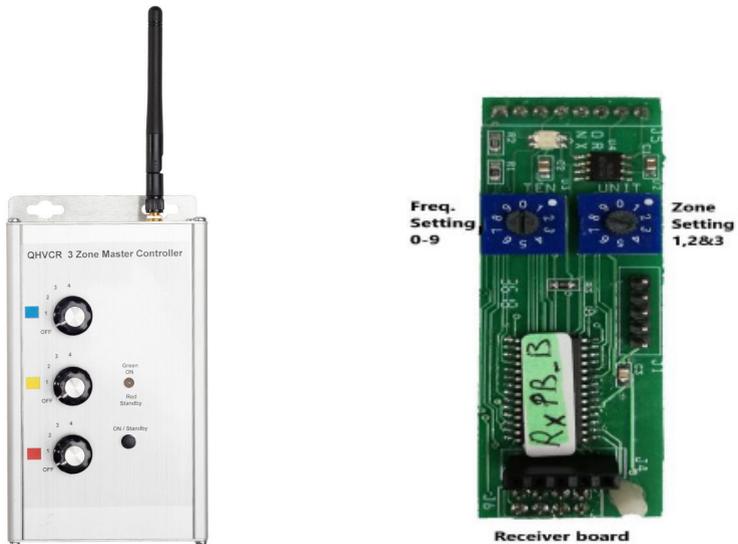
Fig 4

1. The three control dials on the QHVCR are **Blue**, **Yellow** & **Red**, one for each zone. The QHCxxMR units are preset to operate in one of these zones. Once the QHCxxMR unit is preset, it will only operate in that designated zone. The factory setting is 1, which is the Blue control dial.

2. Turn ON the QHVCR unit by pressing the ON/Standby button on the front panel. The LED indicator will flash orange – green – orange – green and remain Green to indicate that the unit is ready.

3. The QHCxxMR unit is preset to the Blue zone (1). Turn the Blue control dial to position 2. The heaters connected to the QHCxxMR units will come ON at the minimum setting 33%. Continue to turn the Blue control dial through positions 3 to 5 until you reach the desired setting.
    The settings are **1** = 0%, **2** = 33%, **3** = 50%, **4** = 66% & **5** = 100%.

4. QHCxxMR units which are preset to Yellow & Red zones are controlled by the Yellow & Red control dials respectively and will operate as above see Fig 4.

5. The QHVCR unit is powered by **3 x AAA batteries**. The unit will automatically go into standby mode if the unit is inactive for more than 30 seconds. When the unit goes into standby mode all the QHCxxMR units will remain in the settings they were set at. Therefore the heaters will remain ON.

6. To change a setting just press the ON/Standby button and proceed as described above in sections 2 & 3. However, while the QHVCR unit is ON, you can turn OFF all the heaters by pressing the ON/Standby button, which is indicated by the LED indicator flashing Red.

7. The previous settings will be remembered and will be restored when you press the ON/Stand by button again.

Please note: The QHVCR remote Master Controller can control any number of QHCxxMR controllers as long as they are within range, up to 100 meters *(see specification sheet for the QHVCR unit). The QHVCR should be wall-mounted.

*Longer antennae are available to extend the range up to 200 meters.

Pairing Programming Devices
QHVCR & QHCxxMR

Pairing devices
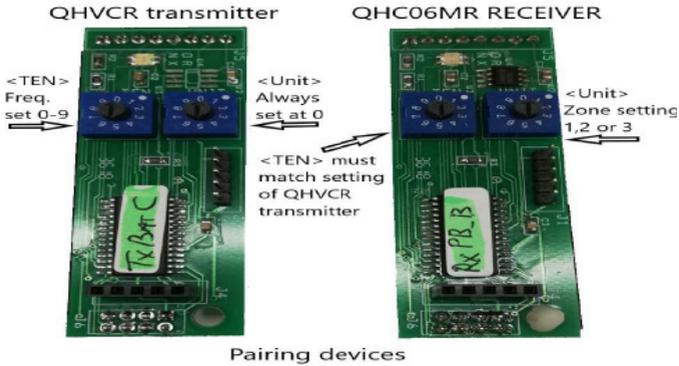
Fig 5

1. The Left Hand Side rotary switches (TEN) on both boards must be set the same. The RF frequency setting must match on both boards. There are 10 possible frequencies that can be selected from 0-9. If the settings on the LHS switch (TEN) do not match the devices will fail to operate.

When designating the transmitter and receiver, ensure both the left rotary switches are set at 0, this ensures that the transmitter marked 0 will communicate with the receiver marked 0. Set the left rotary switch to 1, so the transmitter marked 1 will communicate with a receiver also marked 1.

If the transmitter and receiver are not paired correctly they will not communicate and therefore will not operate. A transmitter marked 0 will not communicate with a receiver marked 1.

The transmitter and receiver must be set to the same number for them to communicate.

2. The Right Hand Side rotary switches (UNIT) are for setting the device to operate in a set zone. There are 3 possible zones that the controller can be set to:
Blue Zone for 1, Yellow Zone for 2, and Red Zone for 3.

Note: QHCxxMR = QHC06MR, QHC18MR, or QHC24MR

PIR Motion Detectors Connection & Operation

PIR motion detectors are passive infrared sensors and electronic devices that are triggered by infrared light from the movement of objects in their field of view.

We recommend the QHPIR is used with our QHC controllers.

When using a PIR, the S2 slide switch must be in the ON position (select 1), see Fig 3 on page 8. Connect the Switched Live Out trigger 'L' to the PIR input terminal #15, 16 or 17 for separate control of each zone. Only 1 PIR per zone can be connected.

Blue zone = #15, **Yellow zone** = #16 & **Red zone** = #17.

For a single PIR operation, a jumper link can be fitted connecting the 3 inputs (terminals 15, 16 & 17) together. By doing this, 1 PIR will turn ON all 3 zones together.

When triggered, the **PIR** will also trigger the controller and turn on the appropriate zone. The ON time will depend on the time set on the PIR. This is found on the underside of the PIR housing. Note: PIR ON time is adjustable from 5 seconds to 15 minutes.

Note: a **PIR** should not be located directly in front of an Infrared heater. The infrared light emitted from the heater will keep the PIR permanently triggered and the motion detector will fail.

Please follow the instructions provided with the PIR for installation and connection.
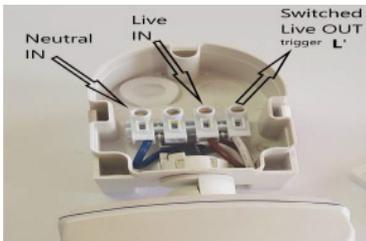
Fig 6

Fig 7

External Switch Connection & Operation

External switches can be connected to the controller via terminals #18,19 & 20 a+b. This particular terminal is a Double deck terminal. The switch must be a normally open contact switch (NO) and contacts must be voltage free.

When using External Switches, the **S2** slide switch must be in the ON position (select 1). There are 3 zones - Blue, Yellow & Red. Connect the switch contacts across the input terminals #18, 19 or 20 a+b for separate control of each zone, see fig 8. Only 1 external switch can be connected per zone.

For single external switch operation, a link bar with mount screws can be fitted connecting the 3 input (terminals #18, 19 & 20) together. In this configuration, 1 External Switch will turn ON all 3 zones together, see fig 8 & 9.

Fig 8

When the external switch contacts are closed this will trigger the controller and turn ON the appropriate zone. The external switch controls the Push ON/Push OFF or Timer function for each zone.

The Push ON/Push OFF or Timer functions are pre-programmed and must be specified prior to manufacture.
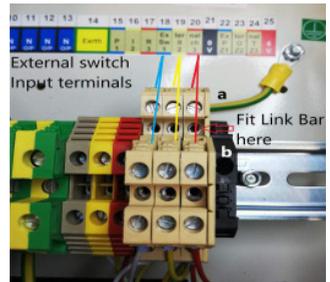
Fig 9

Using a PIR or an External switch to control several controllers at once is possible if all the outputs are required to operate as one output. Use the jumper link in the case of the PIR and the link bar for the External switch.

PIR connection example: Connect a jumper link across terminals #15, 16 & 17. This turns the 3 inputs into1 input. So, one PIR 'L' trigger input will now control all 3 outputs. If the same terminals #15, 16 & 17 on several other controllers are also connected in the same way using a jumper link, run a cable one wire between each controller connecting each set of terminals #15, 16 & 17 together. This setup will now allow several controllers to be controlled by one PIR motion detector.
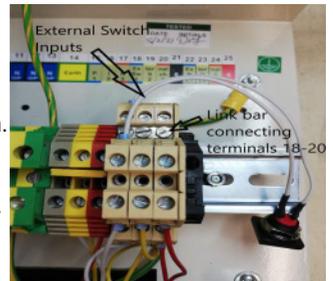
Important note: The 'L' trigger is a live connection so the correct wiring must be used.

External switch connection example: This time use the Link bar to connect across terminals #18a,19a & 20a. This connection is voltage free so standard signal wire can be used. Connecting the set of terminals on each controller together allows for one External switch to again control several controllers at once.

Jumer Link (PIR) & Link Bar (External Switch)

The Jumper Link should be fitted to inputs #15-17 (PIR) & the Link Bar should be fitted to inputs #18-20 (External switch).
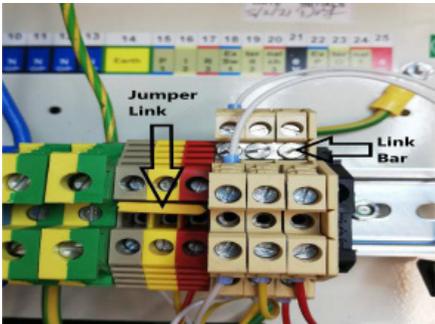
Fig 10

Over Temperature Protection

There are 3 temperature sensors and 3 LED indicators, one for each zone. The LED indicators are located on the front panel marked 1, 2 & 3. When an over-temperature situation is detected one of these will flash to indicate which zone has overheated. The controller will automatically reduce the power to the affected zone to 50%. (Note this is provided that the initial setting is already greater than 50%). With the power reduced, the temperature should return to the normal working temperature.

If however, after 30 minutes this does not happen and the over-temperature indicator is still flashing, the controller will automatically shut down (turn OFF) the affected zone, allowing the zone to cool down for another 30 minutes.The remaining unaffected zones will continue to work normally. Reset the unit by switching OFF and then back ON using the mains isolation for the controller to recover.

If the over-temperature condition persists you are advised to turn off the zone using the appropriate MCB on the front panel and call a qualified electrician to address the problem.

Fitting ID Connectors Red & Yellow
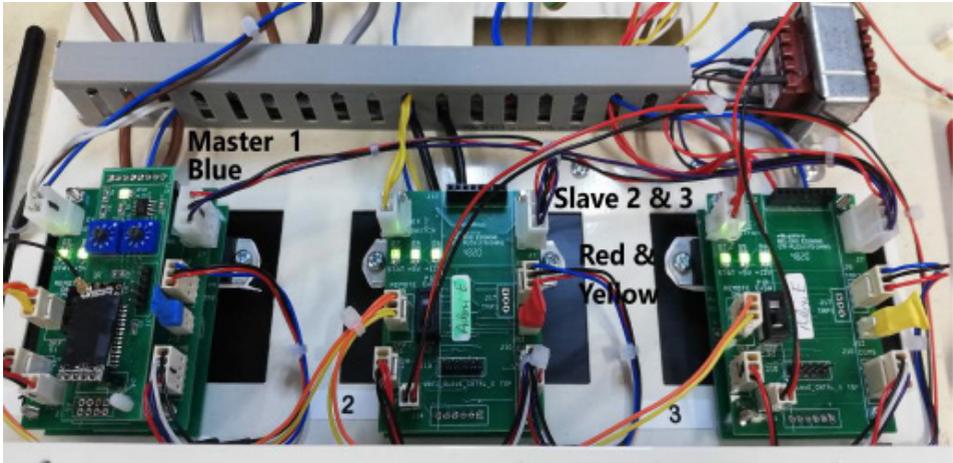
Master 1 Blue printed circuit board (PCB) is located in position 1, phase L1. This is the main board that controls the entire QHC18MR and QHC24MR controller. The **Slave 2** & **3** Red & Yellow PCBs are located in positions 2 & 3, phases L2 & L3.

The Master 1 PCB is fitted with the receiver PCB & antenna for communications with the QHVCR transmitter, also fitted is the blue ID connector header J12 ID Conn, see Fig 12. This blue ID connector is very important, if it is not fitted, the unit will not operate in remote mode. It is also important that the communications harness between all three PCBs is also fitted as it is essential for the Master to communicate with the two Slave PCBs, the harness is connected to J10 Coms, see Fig 12.

Fig 12

Technical Data

Supply voltage: Three Phase 415V AC 50/60 HzAll O/P's with Soft start

Max. Load capacity: 18 kilo Watts (QHC18MR) and 24 kilo Watts (QHC24MR). The load must be balanced across all 3 outputs max 6Kw (QHC18MR) and 8kW (QHC24MR)

Over Temperature Protection: On each O/P - LED indicators 1,2 & 3

Mains I/P:	**Neutral (Blue)**	**terminal #1**
	Live 1 (Brown)	**terminal #2**
	Live 2 (Black)	**terminal #3**
	Live 3 (Grey)	**terminal #4**
Mains O/P:	**Switched Live 1 (Brown)**	**terminal #5**
Soft start	**Switched Live 2 (Black)**	**terminal #6**
	Switched Live 3 (Grey)	**terminal #7**
	Neutral return out (Blue)	**terminal #8-13**
	Earth out (Green/Yellow)	**terminal #14**
PIR O/P:	**Live trigger input Zone 1**	**terminal #15**
Auxiliary	**Live trigger input Zone 2**	**terminal #16**
Device	**Live trigger input Zone 3**	**terminal #17**
Ext. Sw. I/P:	**Ext. SW1 Zone 1**	**terminal #18 a+b**
Auxiliary	**Ext. SW2 Zone 2**	**terminal #19 a+b**
Device	**Ext. SW3 Zone 3**	**terminal #20 a+b**
QHVC-S I/P:	**0V**	**terminal #21**
Auxiliary	**Zone 1**	**terminal #22**
Device	**Zone 2**	**terminal #23**
Optional	**Zone 3**	**terminal #24**
5V		**terminal #25**

IP Rating: IP53
Dimensions: 350mm x 330mm x 150mm

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