HOLLAND INFRAROOD TECHNIEK B.V.

RADIANT HEATING SYSTEMS

QHC24M 24kW Heater Controller 3 Channel Standard

Quick Start Guide & Instructions

Three Phase 415v / Three Zone / Manual Operation / Soft Start

Quick Start for QHC24M 24kW Heater Controller with Soft Start

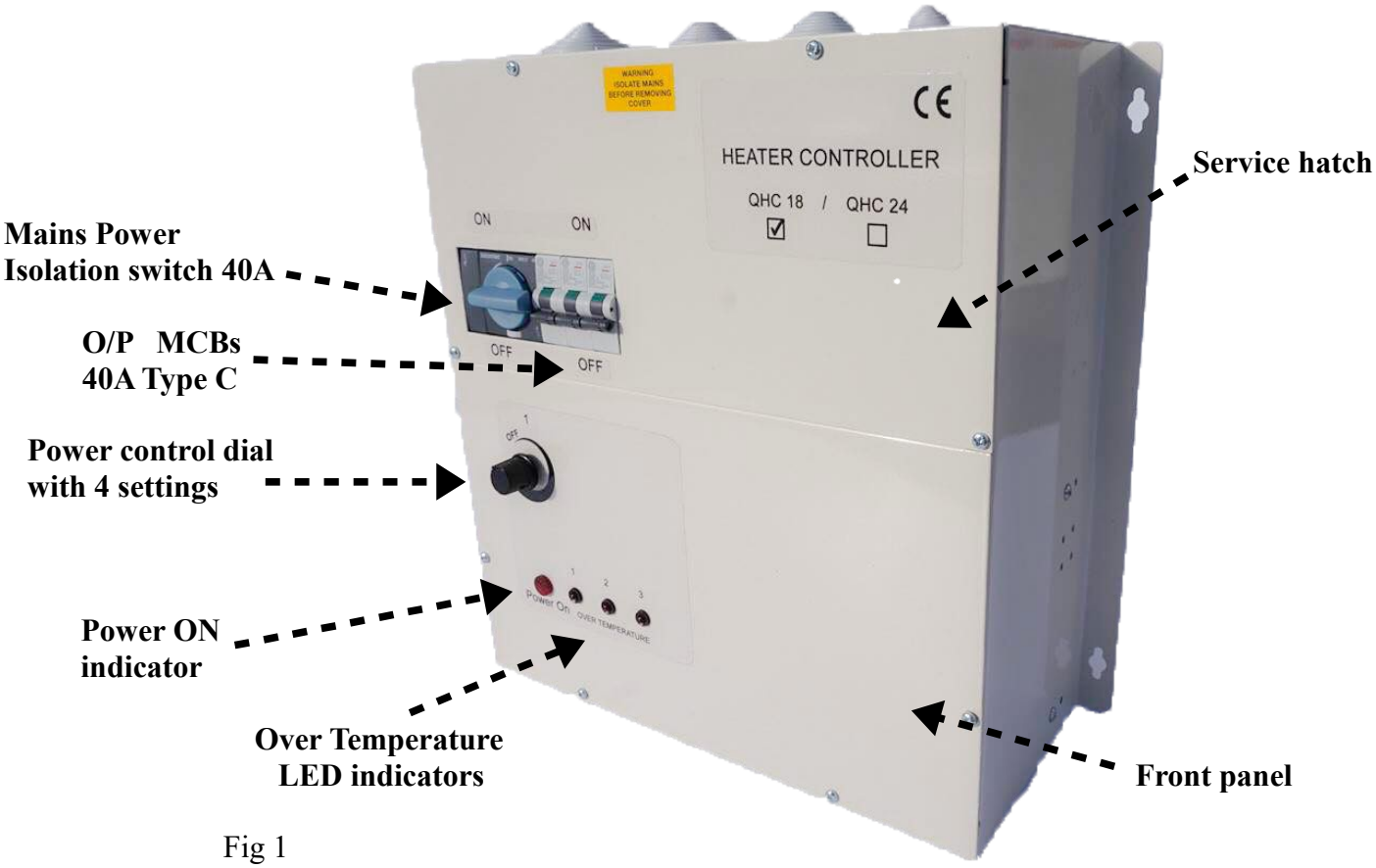


Fig 1

1) Start by removing the service hatch. Remove the 4 fixing screws, 2 at the top and 2 in the corners. There is a Din Rail revealed once the service hatch has been removed.
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 the **Earth** terminal #14. The remaining heaters should be distributed across the remaining two outputs O/P2 & O/P3.
   Please ensure that the **load is balanced across the output terminals #5 – 7**. See fig. 2
   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. See fig. 3

5) When all connections are complete and connected correctly, check once again that the wiring is correct as per 3) & 4). Then replace the service hatch cover and tighten the fixing screws.

Important only a qualified electrician should install this device.

QHC24M 24kW Heater Controller Din Rail & Connections

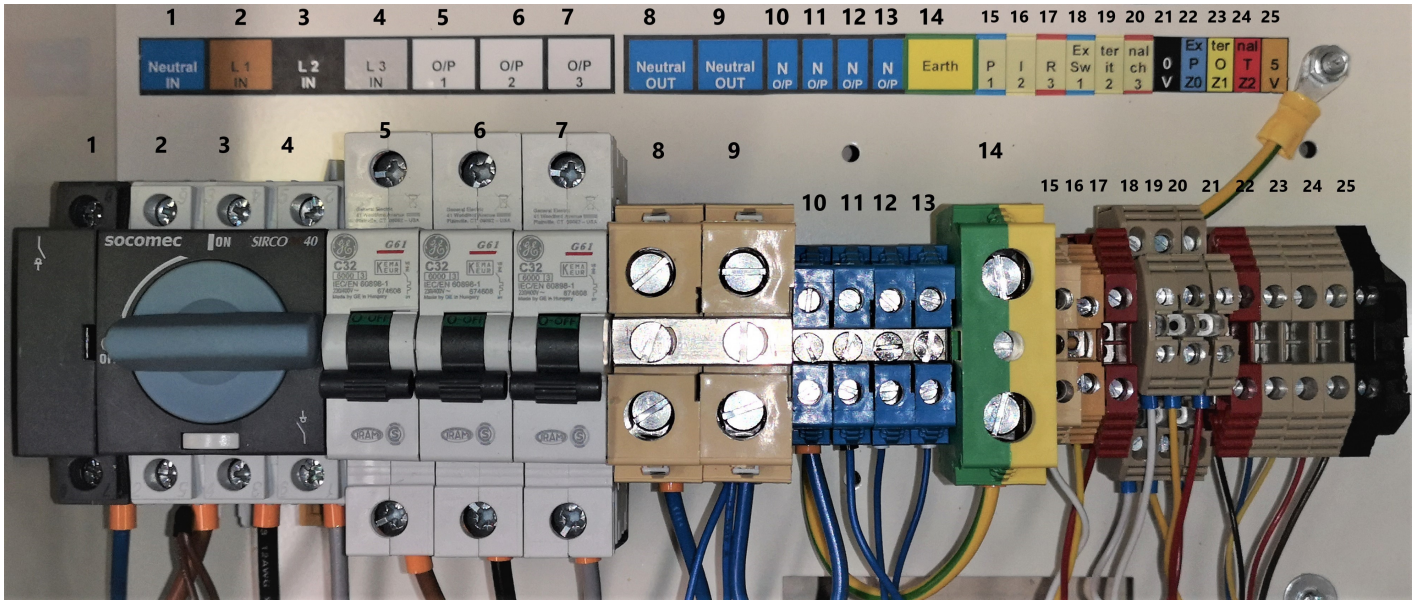


Fig 2

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. These can be connected to terminals #15 – 17. External push button switches N/O contacts which are voltage free can be connected to terminals #18 – 20. See fig's 6,7 & 8 page 4 also see fig's 9 & 10 page 5.
8) An optional auxiliary device QHVC-S3 External 3 zone variable control can be connected to terminals #21– 25. This device is hard wired to the controller and can be located 20 to 30 meters away.

Distribution Box

This item is sold separately **P/No. QHDB18**

Terminals 1 – O/P1

Terminals 2 – O/P2

Terminals 3 – O/P3

Terminals N – N out

Terminals E – Earth

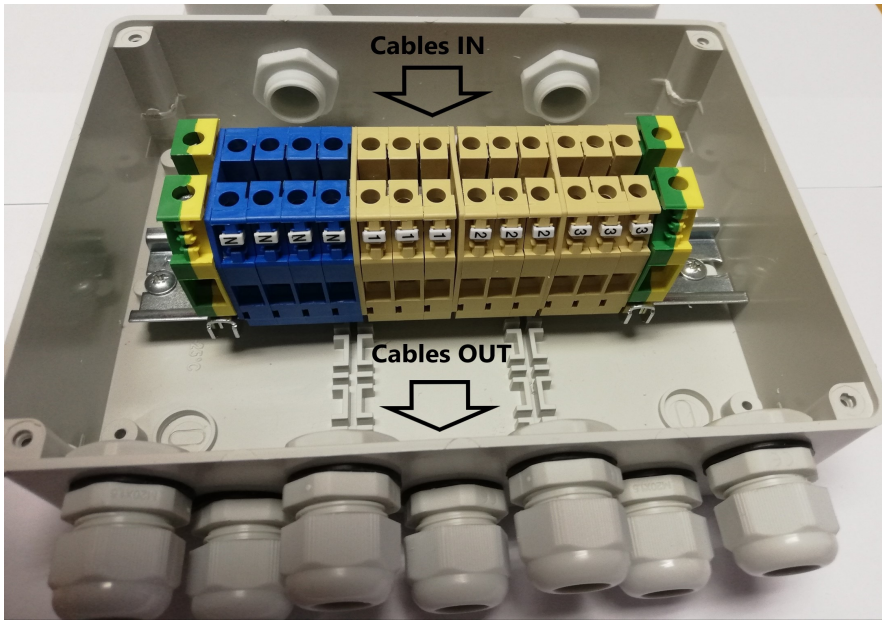


Fig 3

The cable connections required from the QHC18M to the Distribution Box are as follows,
Cables IN Neutral x 1, Output 1 x 1, Output 2 x 1, Output 3 x 1 & Earth x 1.
The wire size should be 6mm Square.
Cables OUT as per heaters being connected to the distribution box.

Controller Setup Manual Operation S1 & S1

To access S1 & S2, remove both the service hatch & front panel.

S1 & **S2** are found on the printed circuit board (PCB) QHPCB-A. There is a set on each board. See fig. 4

Default setting : Remote OFF – **S1** Jumper is in the Off position pins 2 & 3, factory set.
PIR & External Switches OFF - **S2** Slide switch is set in the Off position (select 2), factory set.
(Note: The remote setting is not available on models QHC18M or QHC24M, S1 is always set at Off)

Set up for use with PIR's & External Switches – **S2** Slide switch must be set in the ON position (select 1) See fig. 4

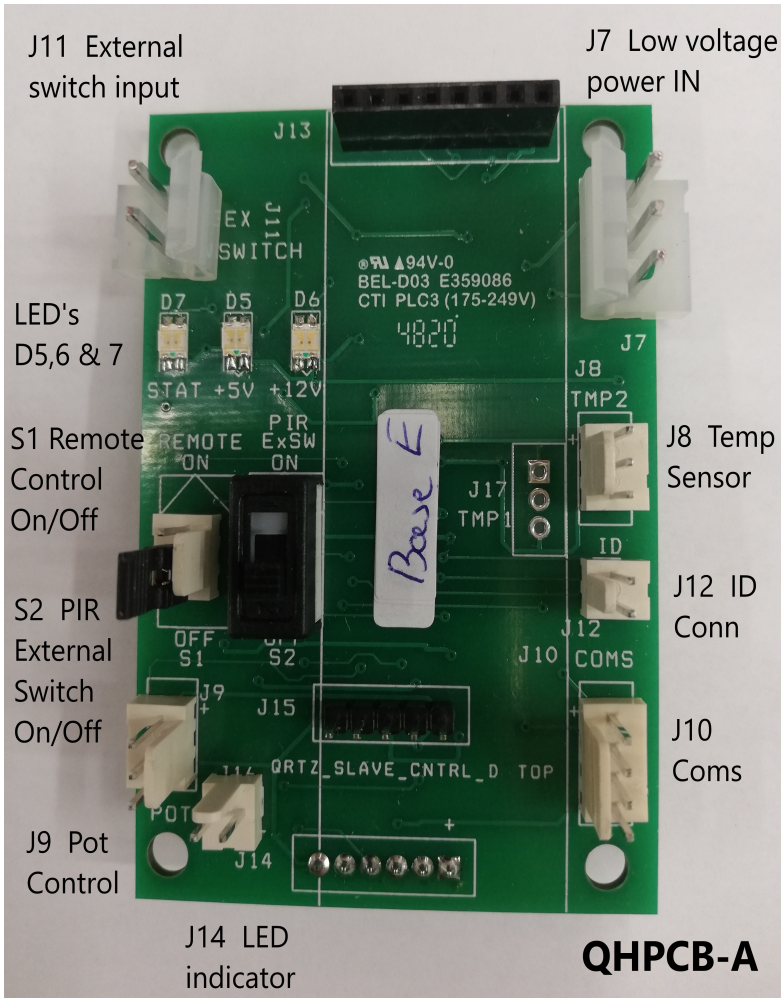


Fig 5

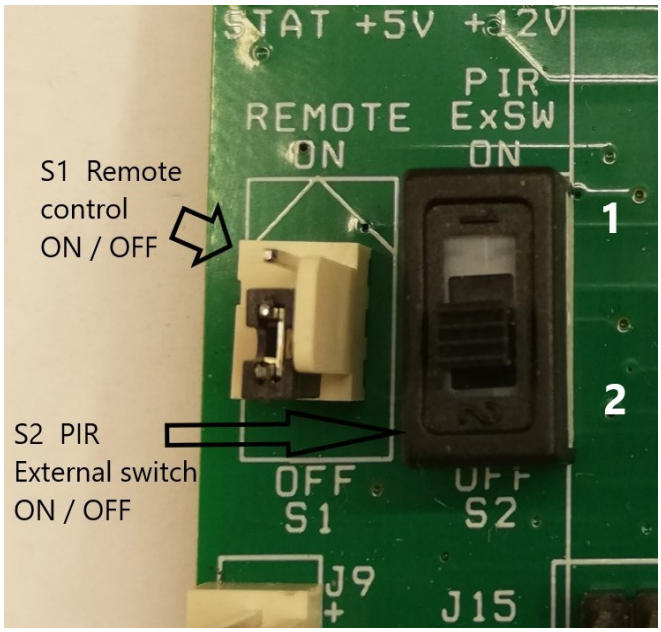


Fig 4

LED's D5,6 & 7 on the PCB
These are bi-colour LEDs and indicate the status of the electronic board.

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

LED's D5 (+5V) & D6 (+12V) are GREEN to indicate that the on board power supply +5v & +12v are both present and running. See fig. 5

PIR Motion Detectors Connection & Operation

PIR motion detectors are passive infrared sensors, an electronic device which is triggered by infrared light from the movement of objects in its field of view.

We recommend the QHPIR is used with our QHC controllers.

When using a PIR – **S2** slide switch must be in the ON position (select 1). See fig. 4
Remember there are 3 zones, Blue Yellow & Red. 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. See fig's 6, 7 & 8.

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

The **PIR** when triggered, 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 (QHPIR) for installation and connection.

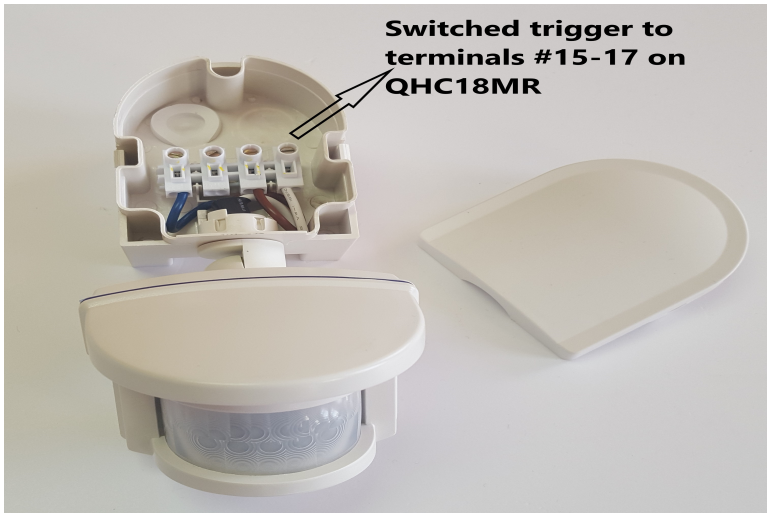


Fig 6

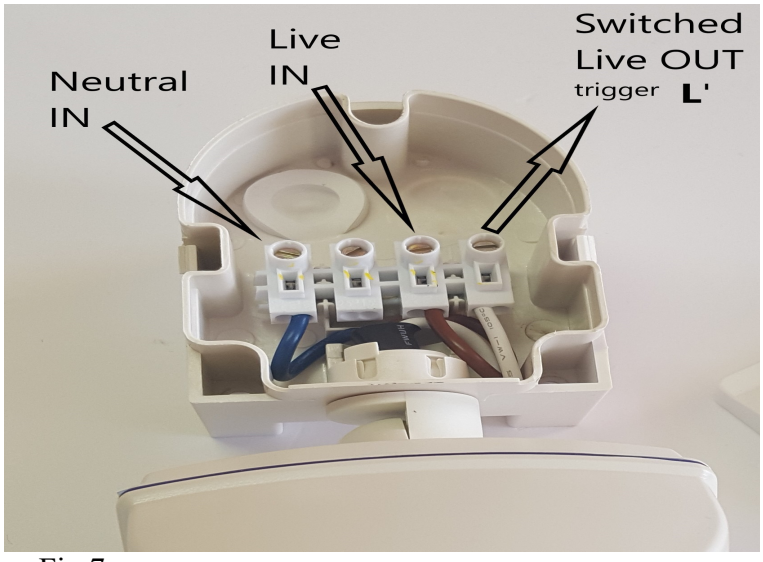


Fig 7

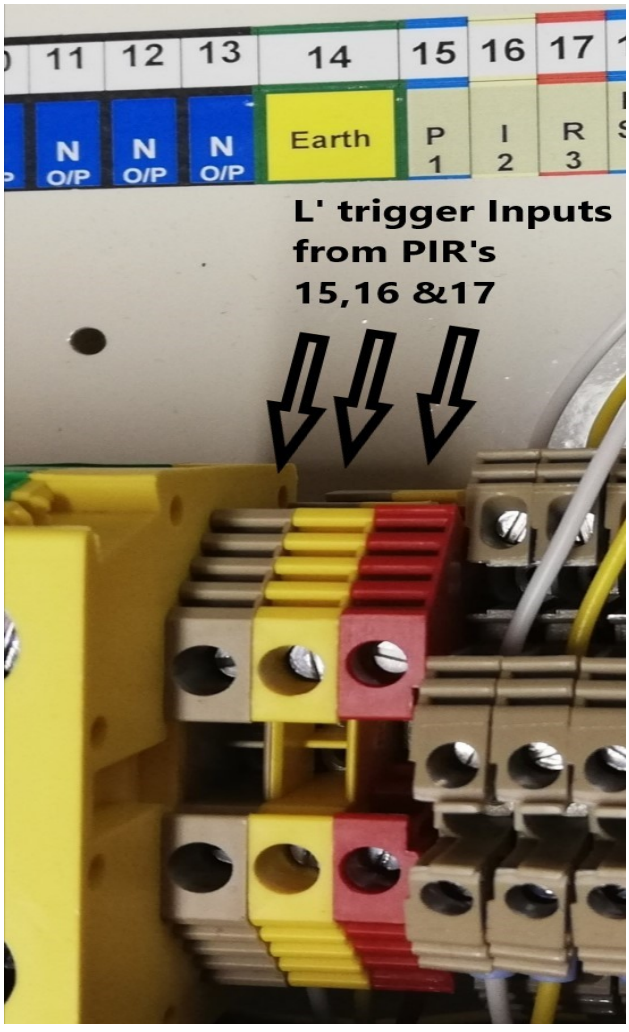


Fig 8

External Switch Connection & Operation

Push On/Push Off & Timer (10 minute) function

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.

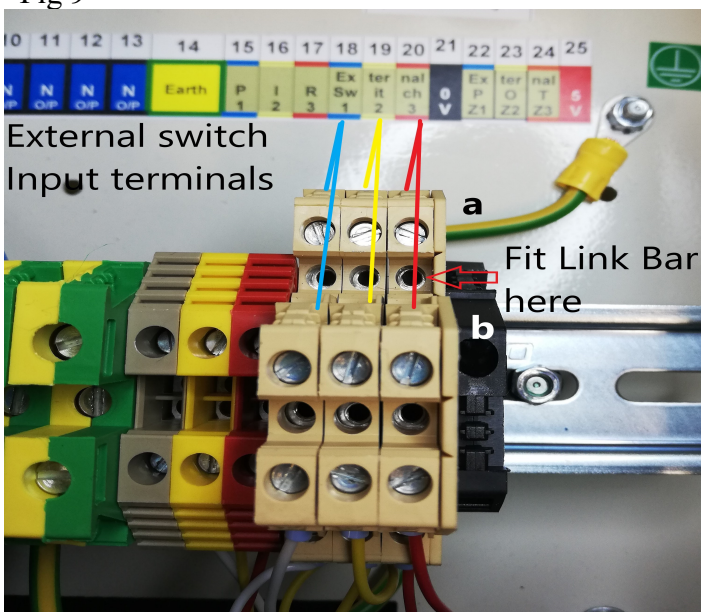
When using External Switches – **S2** slide switch must be in the ON position (select 1). See fig. 4
Remember there are 3 zones, Blue Yellow & Red. Connect the switch contacts across the input terminals #18,19 or 20 a+b for separate control of each zone. See fig. 9
Only 1 external switch can be connected per zone.

For single external switch operation, a link bar with mount screws can be fitted connecting the 3 input (terminals #18,19 & 20 a) together. In this configuration 1 External Switch will turn ON all 3 zones together. See fig. 10

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.

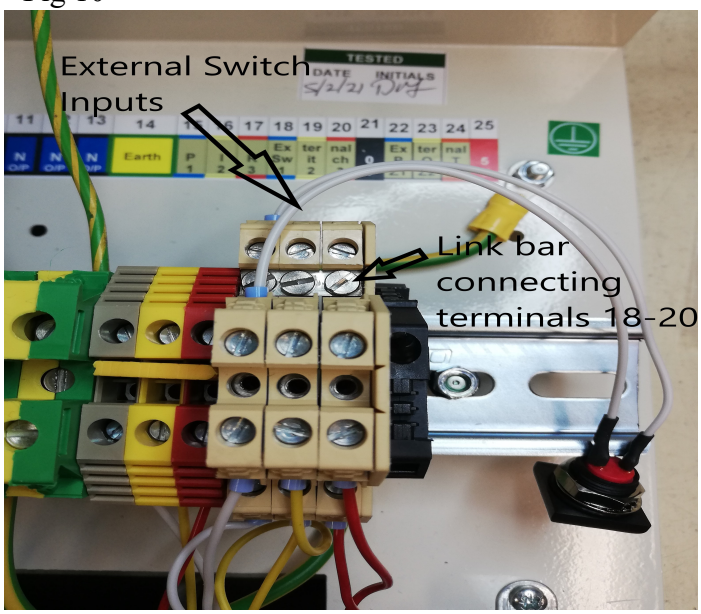
The Push ON/Push OFF or Timer functions are pre-programed and must be specified prior to manufacture.

Fig 9



External Switch Input terminals 18,19 & 20

Fig 10



Link bar fitted across the 3 inputs 18,19 & 20
Also shown above with test push switch

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 example, connect a jumper link across terminals #15,16 & 17. This turns the 3 inputs into 1 input. So, one PIR L1 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. Then 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.
Note important this L' trigger is a live connection and the appropriate wire must be used.

External switch example, this time use the Link bar to connect across terminals #18,19 & 20. 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.

QHVC-S3 Connection & Operation

The purpose of this device is to replace the control dial on the front panel to a more local position close to the operator. This allows the operator to control each zone separately & independently.
The QHVC-S3 is a hard wired device using a low voltage +5v DC supply.

The QHVC-S3 is supplied separately and must be pre-ordered when ordering the QHC18M controller. By pre-ordering, the controller will be fitted with the terminal connectors #21 to 25. See fig. 12
Use Alarm type 6 core cable A/6C, use all the coloured wires except the Green wire.

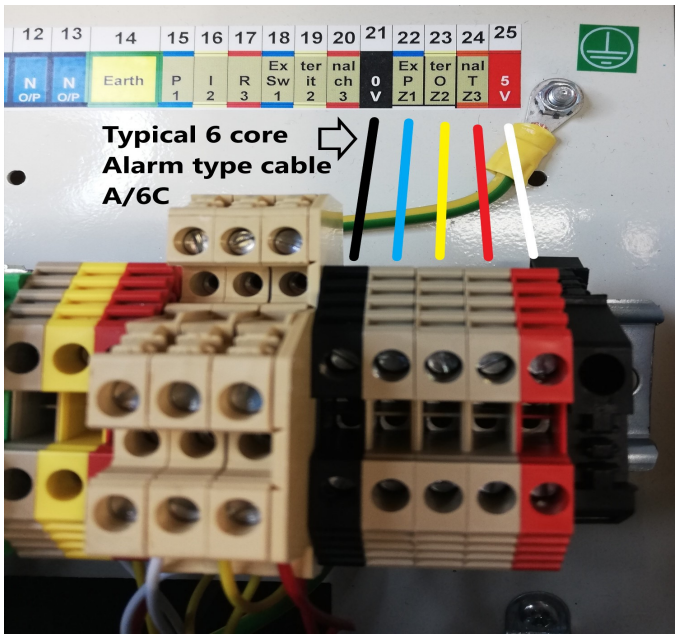
Remove the back plate from the QHVC-S3, there is a connector block which must be used to connect the Alarm cable to the QHC18M controller. The coloured wires should be connected as follows.
Black to terminal #21, Blue to #22, Yellow to #23, Red to #24 & White to #25 see fig's 11 & 12

Note: The QHVC-S3 conversion kit is use to convert a standard controller which had not been pre-ordered and the conversion is done later.
The cable harness provided must replace the one that already pre-exists in the controller. Remove the existing cable harness from the **J9 header** on each of the 3 electronic printed circuit boards and replace with the new QHVC-S3 harness, see fig 5 - **J9 Pot control.** See fig 5

Fig 11

QHVC-S3 illustration showing coloured zones

Fig 12



Terminals #21-25 shown fitted for QHVC-S

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 over heated. The controller will automatically reduce the power to the affected zone to 50%. (Note this is provided the initial setting is already greater than 50%).
With the power reduced the temperature should return to 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, allow 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.

CE RoHS **Technical Data**

Supply voltage : Three phase 415V AC 50/60 Hz **All O/P's with Soft start**

Max. Load capacity: 24 kilo Watts * (Load must be balanced across all 3 outputs max 8 kW each)

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 I/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** contacts Normally **O**pen
Auxiliary	**Ext. SW2 Zone 2**	**terminal #19 a+b** contacts Normally **O**pen
Device	**Ext. SW3 Zone 3**	**terminal #20 a+b** contacts Normally **O**pen
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
Weights : QHC24M – 12 Kg

Note : Terminal connections are the same for both the QHC24M & QHC24MR controllers.

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