

Innovation for a Better Business

Therma V R32: Generation 3. Installation Instructions.

R32 Monobloc - April 2020

Therma V R32 Installation Instructions.

Outdoor Installation.

Unpack the equipment carefully and check all components are complete. Layout all components so each may be identified.



Please retain this installation instruction document for future reference.

Therma V R32 Installation Instructions.

Outdoor Installation – Bill of Materials.

The LG controller comes packed within the Heat Pump.



Item	Image	Quantity
Installation Manual		1
Outdoor Unit UN4 Chassis (Product heating capacity : 5kW, 7kW, 9kW)		1
Outdoor Unit UN3 Chassis (Product heating capacity : 12kW, 14kW, 16kW)		1
Remote Controller		1
Remote Controller Cable		1
Drain Cap		2
Drain Nipple		1

Therma V R32 Installation Instructions.

Indoor Installation – Bill of Materials.

LG Tank Kit.

The Tank Kit allows for connection and control of the immersion heater, The Tank Kit may be pre fixed to the tank or may be wall mounted.

The LG controller has the ability to perform the sterilization process, via the Tank Kit(Relay), date, time, temperature and hold parameters may be set.

The Tank sensor has a 10m cable, this must be connected to the printed circuit board within the outdoor unit(Shown in the wiring diagram, shown below).

Items included in the Tank Kit:



DHW sensor

PHRSTA0



Relay Box

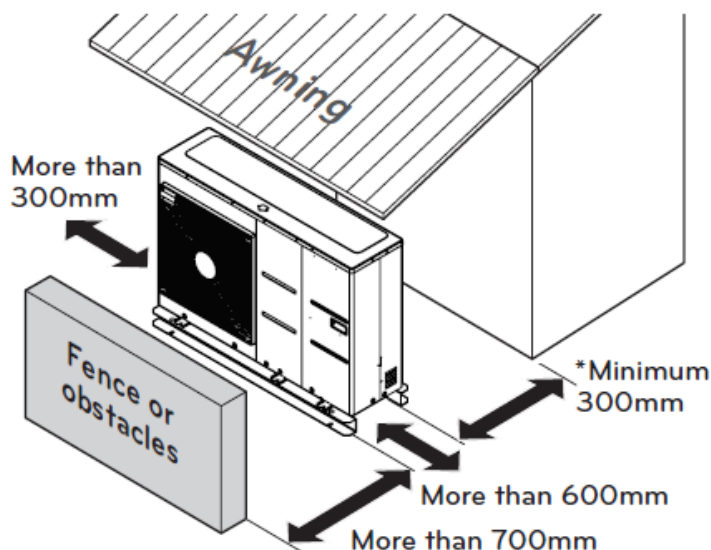
PHLTB



Link cable,
approx 400mm long.

Therma V R32 Installation Inst

Outdoor Installation.



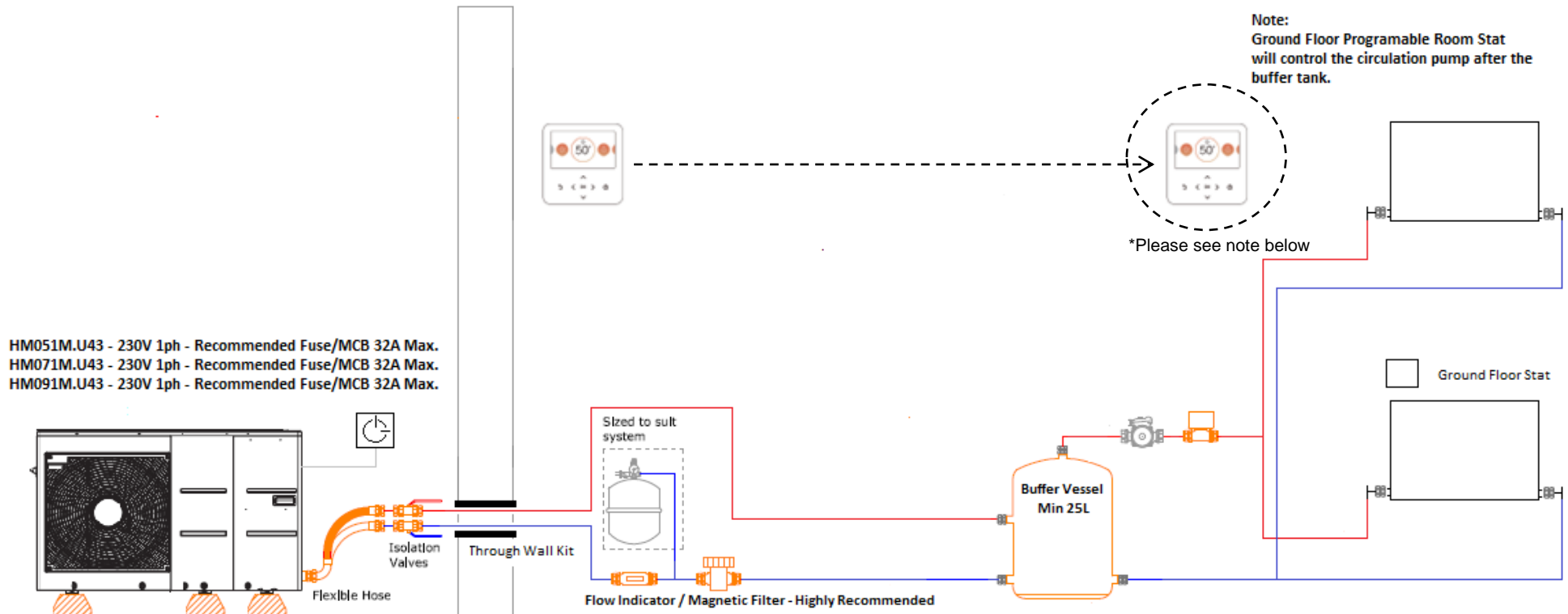
* : Please secure the space to install the shut-off valve and strainer.

- Prepare a strong and level base.
- Place on 3 anti vibration feet, & anchor to base.
- Ensure the unit is 300mm from the wall.
- The flow & return connections are 1" male.
- Fit flexi hoses, full bore isolation valves, on the back of the unit.
- **Recommend:-** Additional 400 micron "Y" strainer, external (with isolation valves on either side)
- Use a through wall insulation kit, this allows for thermal insulation within the wall.
- All pipework to be 28mm copper or 32mm multi layer composite pipe.
- Allow for condensate to feed into a soakaway, tray or soil stack.
- **Recommend:-** Magnetic Cleaner & Flow Setter.
- Water volume:- 25L for single fan unit, 50L for double fan unit (Buffer Tank - 4 Port)

Therma V R32 Installation Instructions.

Installation Schematic.

Heating Only – 5, 7 & 9kW.

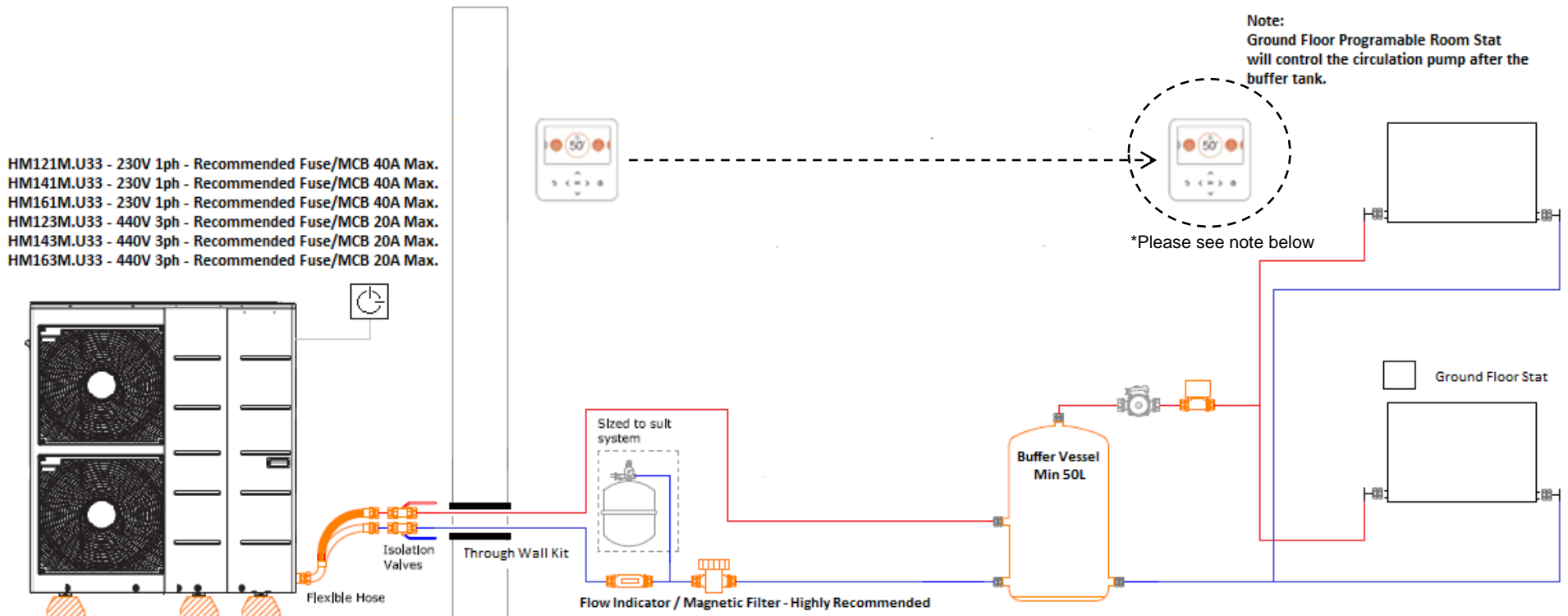


*:- It is possible to use the LG controller as a room thermostat in this application, control of the pump after the buffer tank, will be done by the heat pump : (TB_EXT_PUMP)

Therma V R32 Installation Instructions.

Installation Schematic.

Heating Only – 12, 14 & 16kW.



*:- It is possible to use the LG controller as a room thermostat in this application, control of the pump after the buffer tank, will be done by the heat pump : (TB_EXT_PUMP)

Therma V R32 Installation Instructions.

Installation Wiring.

Heating Only – 5, 7, 9, 12, 14 & 16kW.

LG R32 Monobloc - Outdoor Unit Terminal Block's 1 & 3.

Heating Only

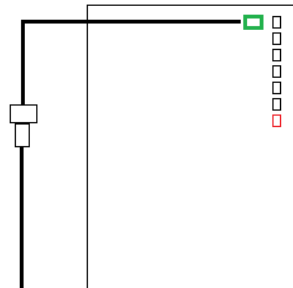
Terminal Block 1

1	2	3	4	5	6	7	8	9	10
L	L1	N	L	N	L	N	L	L1	N
			WATER TANK HEATER			3WAY VALVE (A)			

Terminal Block 3

21	22	23	24	25	26	27	28	29	30
		L	N	L	N	L	N	L1	L2
		HEATER (A)		HEATER (B)		THERMOSTAT (Default : 230V AC)			

Main PCB

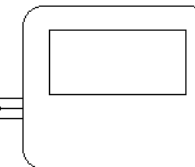


2 Pole 230V Modular Relay - Field Supplied



Please see separate document for secondary wiring controls.

LG Main Controller



DC 12V	Red
Signal	Yellow
GND	Black

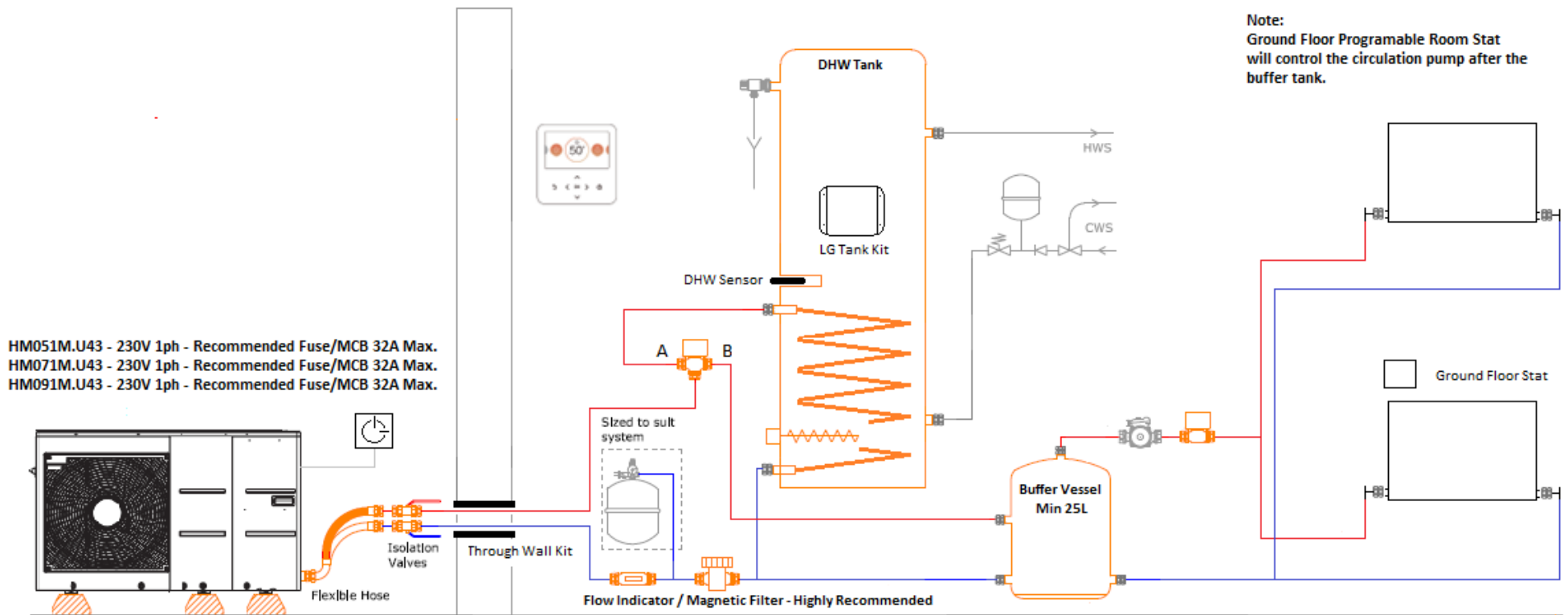
(TB_EXT_PUMP)



Therma V R32 Installation Instructions.

Installation Schematic.

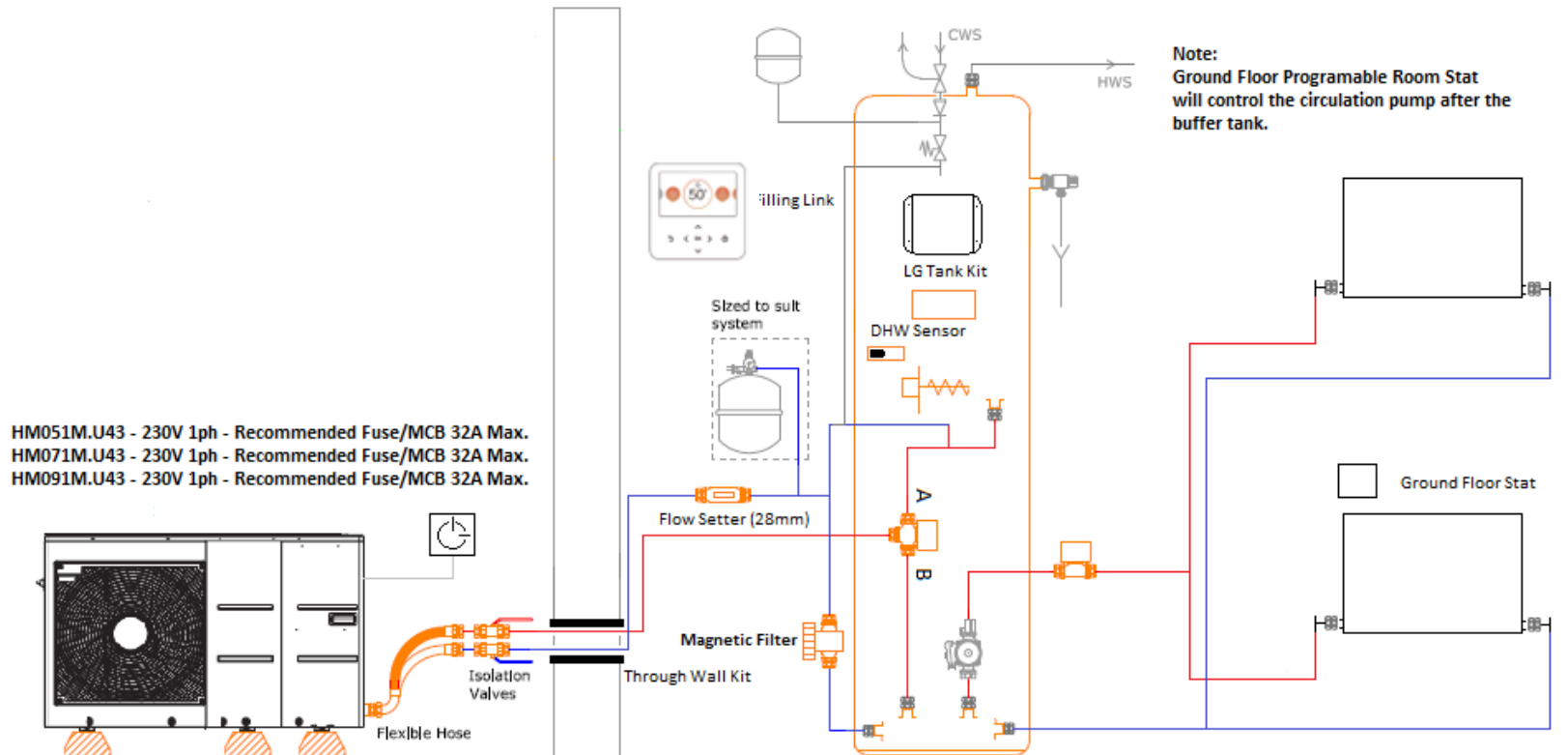
DHW & Heating with 1 Zone – 5, 7 & 9kW.



Therma V R32 Installation Instructions.

Installation Schematic.

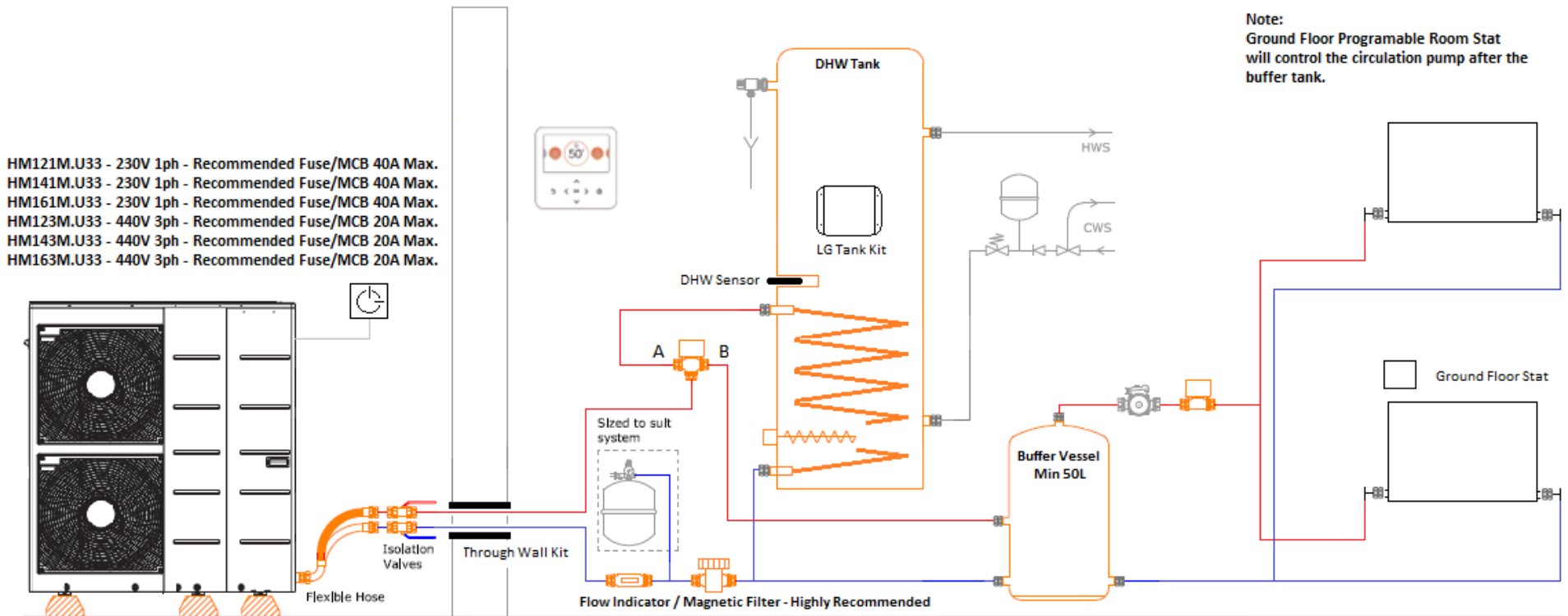
DHW Pre Plumb & Heating with 1 Zone – 5, 7 & 9kW.



Therma V R32 Installation Instructions.

Installation Schematic.

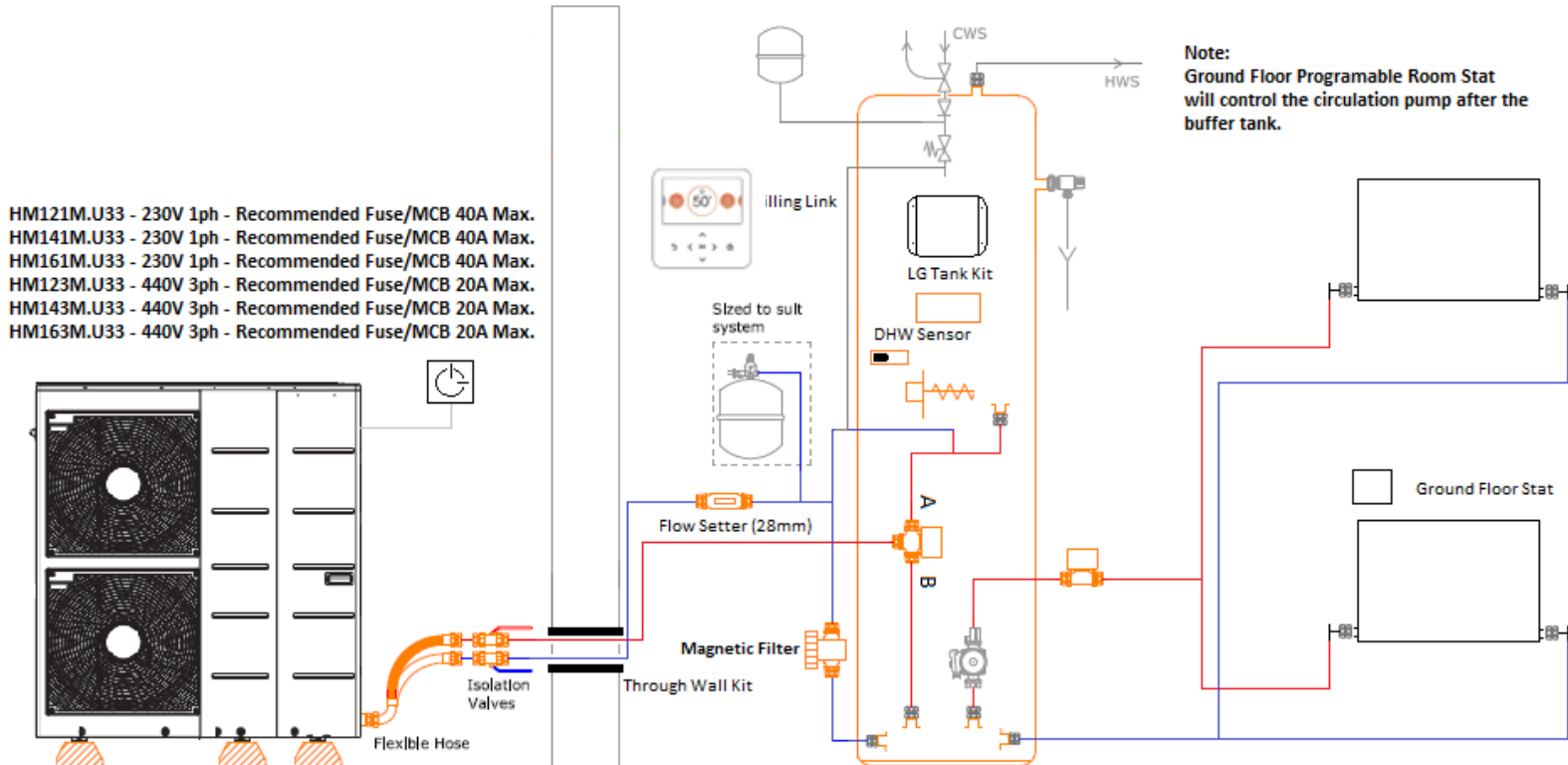
DHW & Heating with 1 Zone – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Schematic.

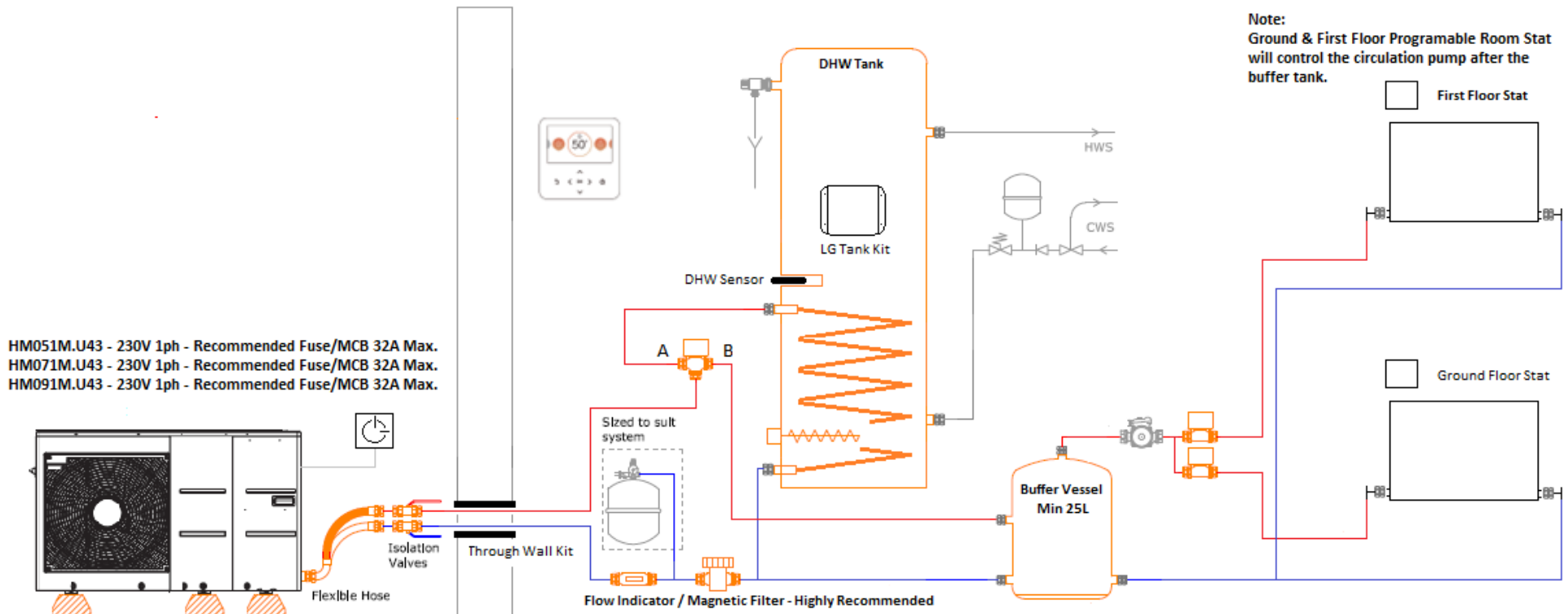
DHW Pre Plumb & Heating with 1 Zone – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Schematic.

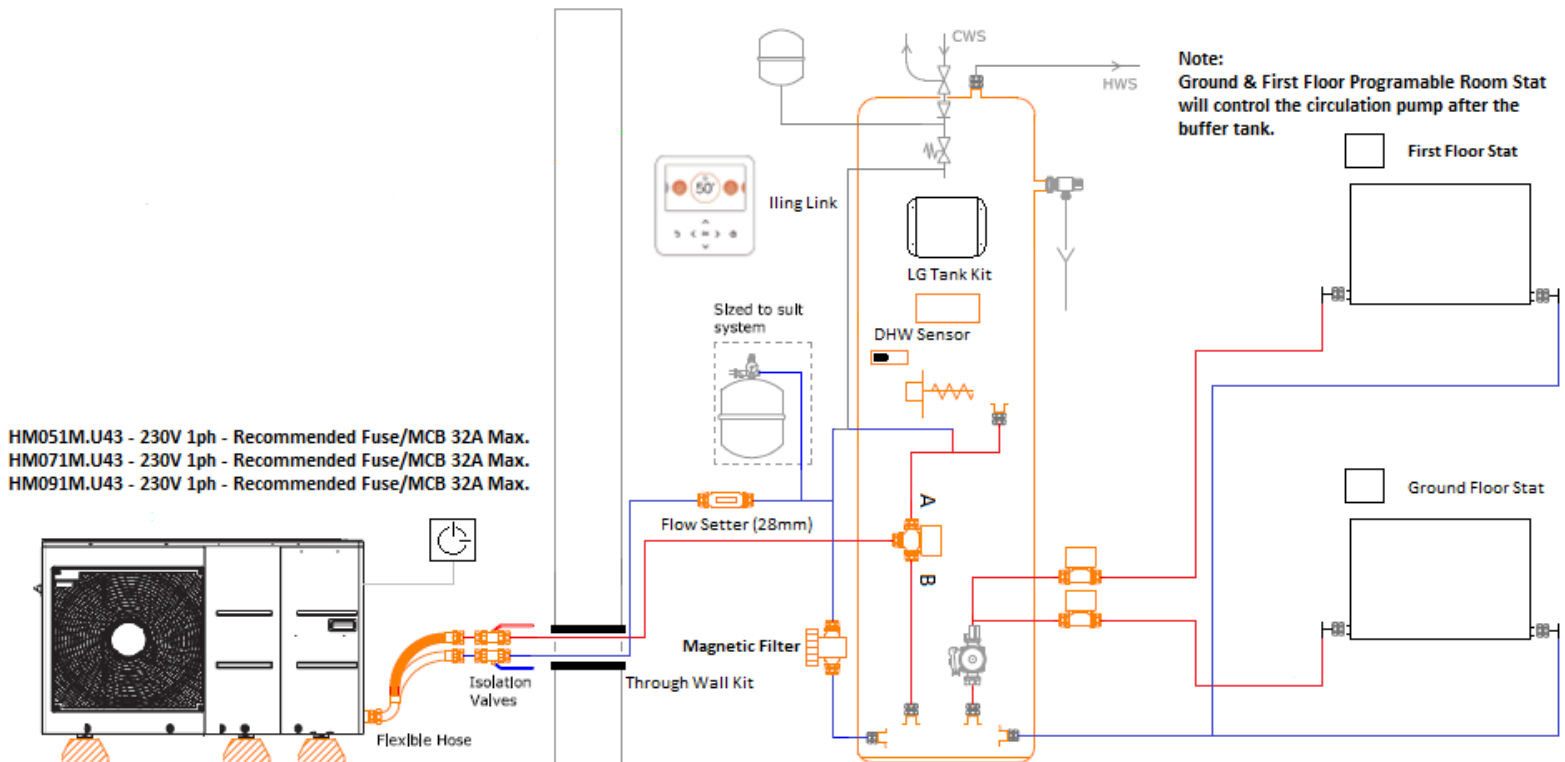
DHW & Heating with 2 Zone's – 5, 7 & 9kW.



Therma V R32 Installation Instructions.

Installation Schematic.

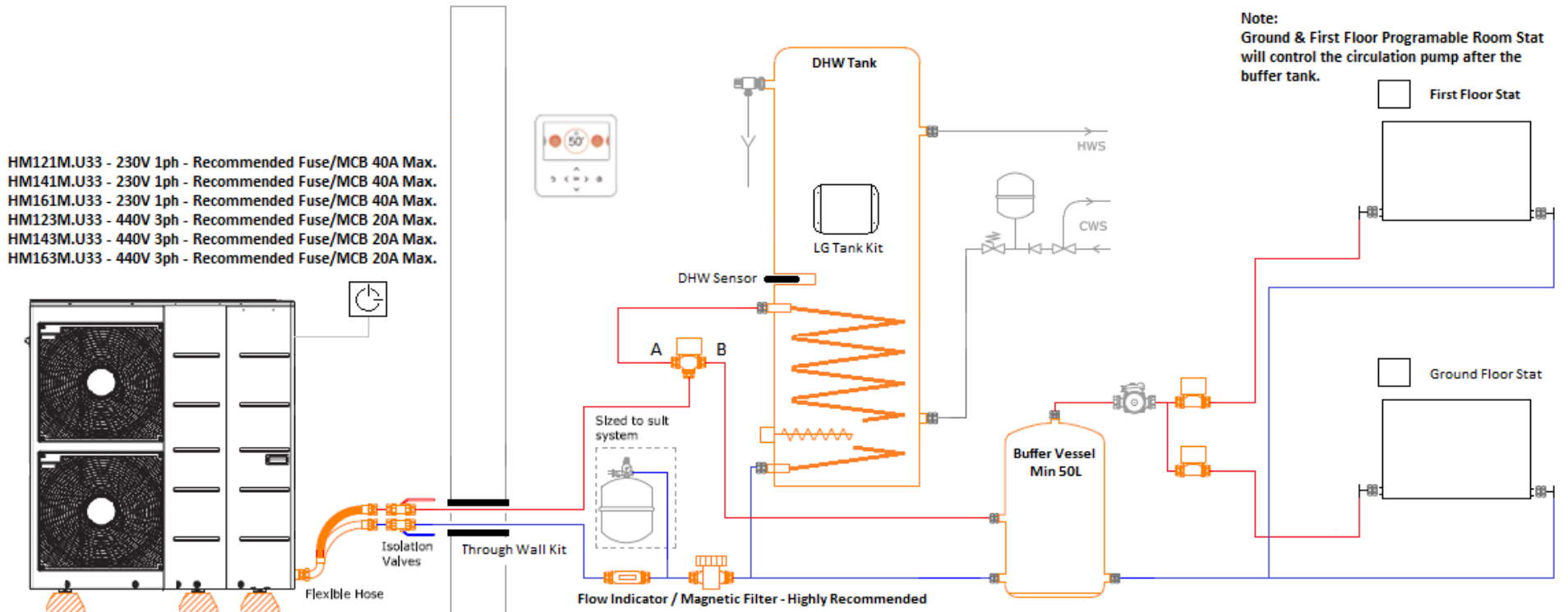
DHW Pre Plumb & Heating with 2 Zone's – 5, 7 & 9kW.



Therma V R32 Installation Instructions.

Installation Schematic.

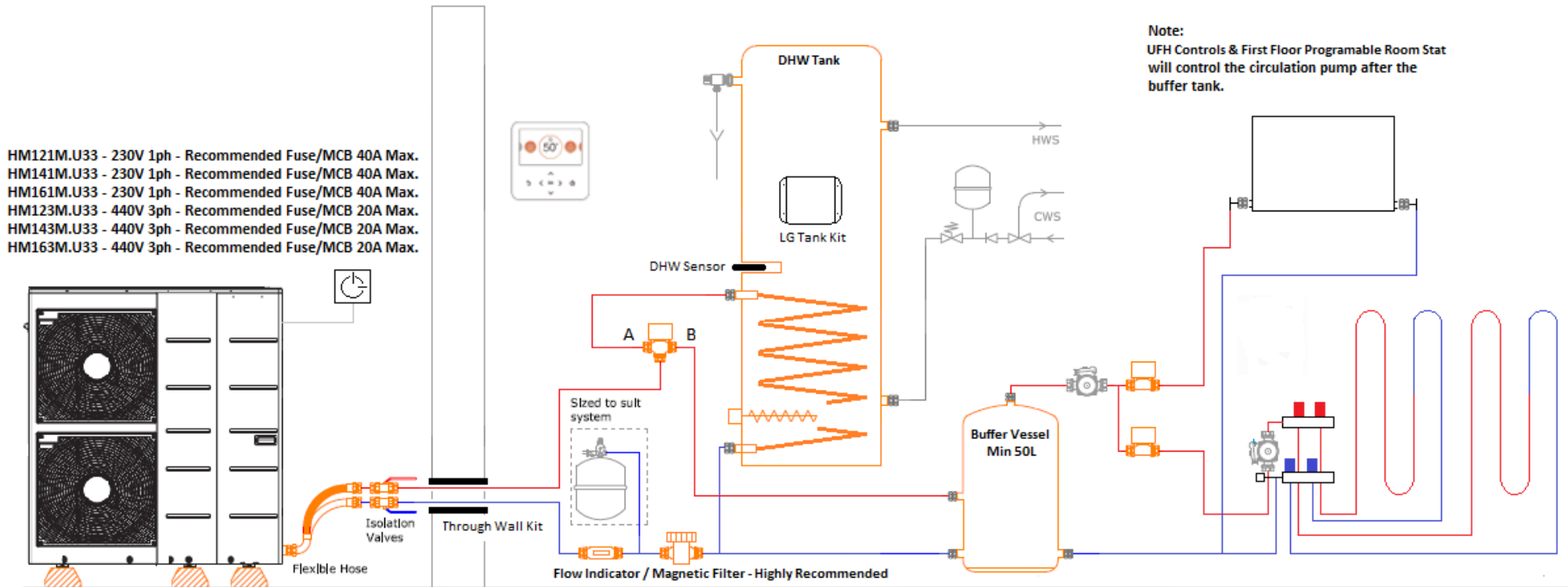
DHW & Heating with 2 Zone's – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Schematic.

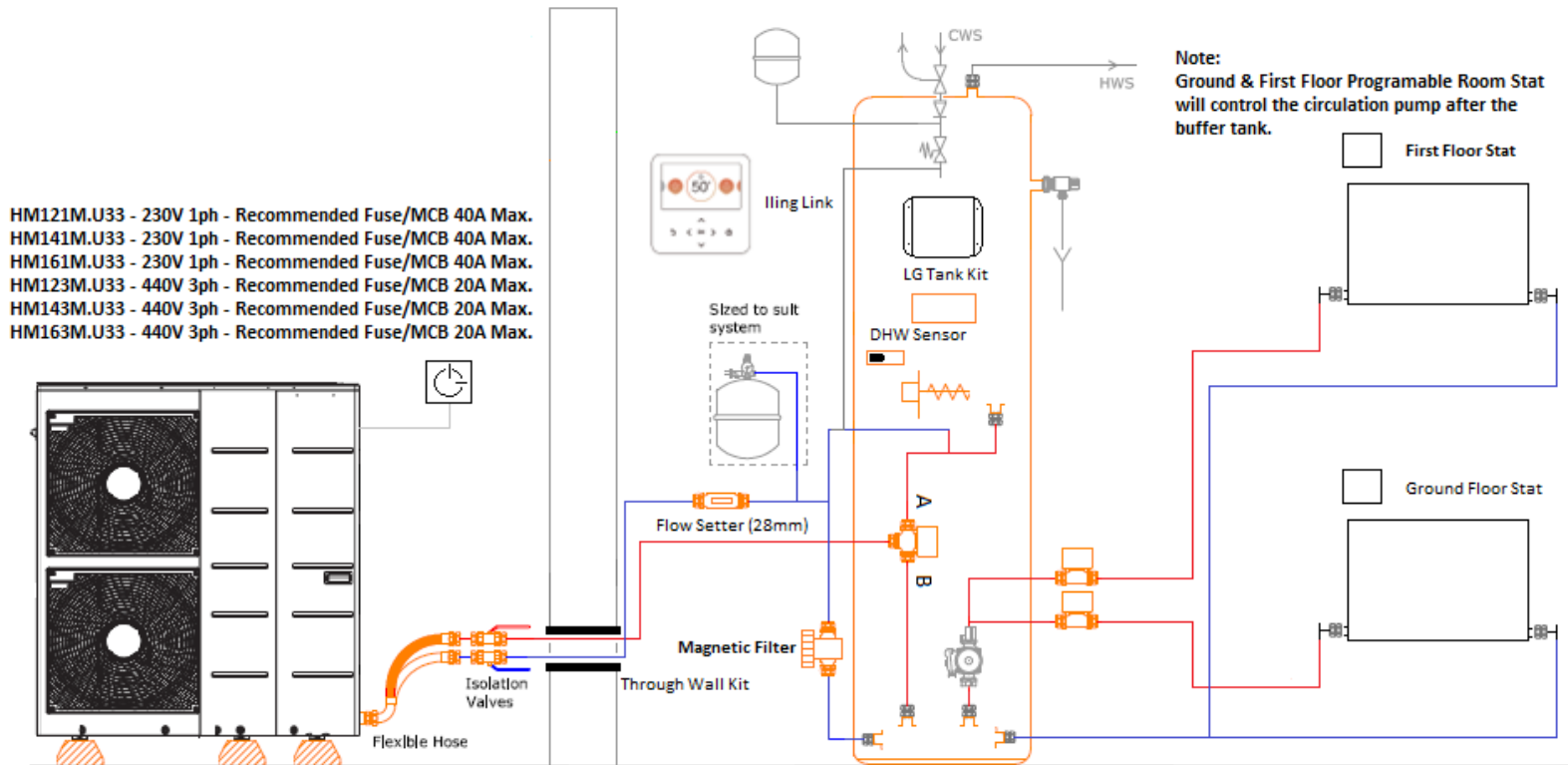
DHW & Heating, Rad's & UFH 2 Zone – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Schematic.

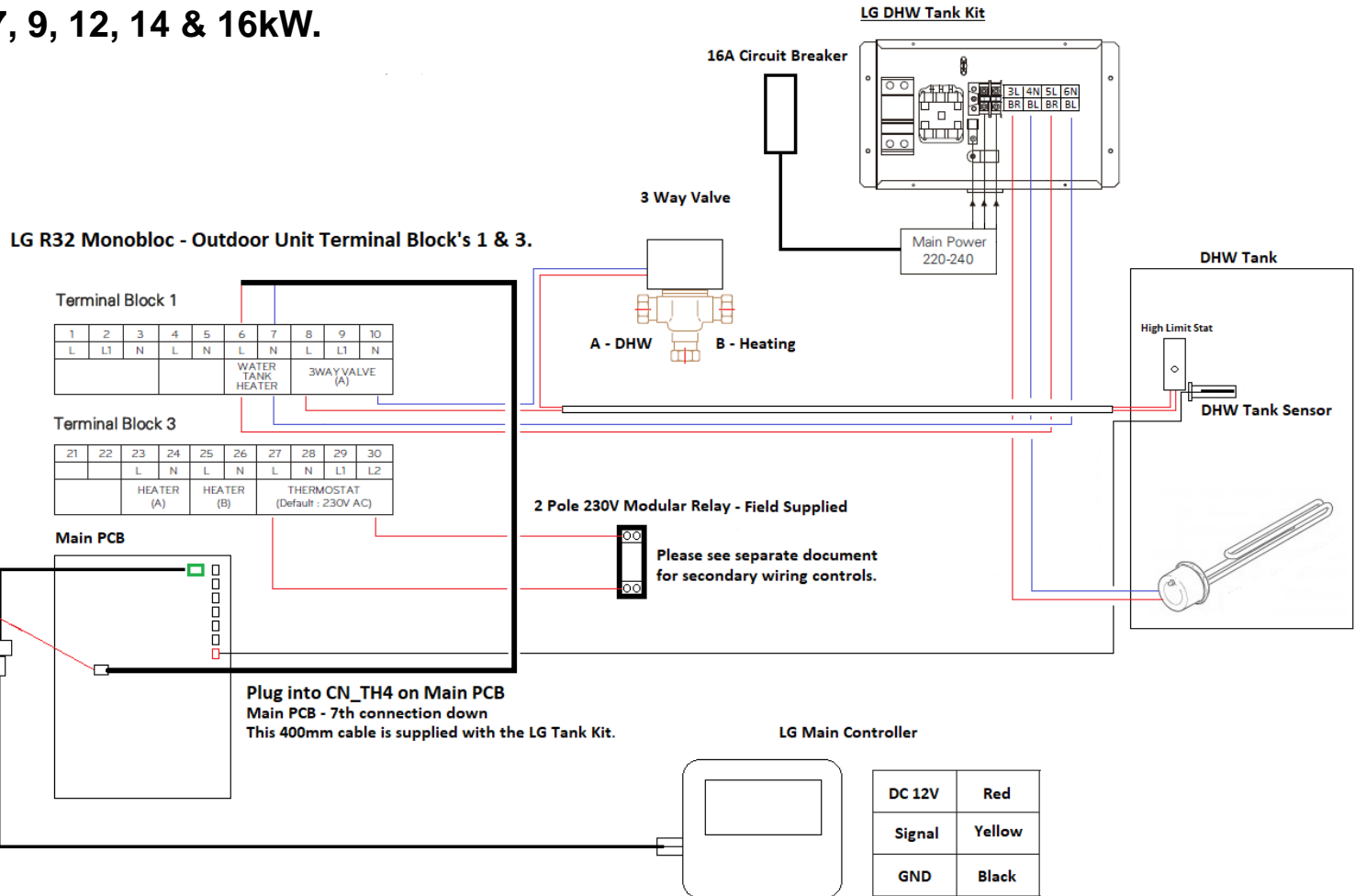
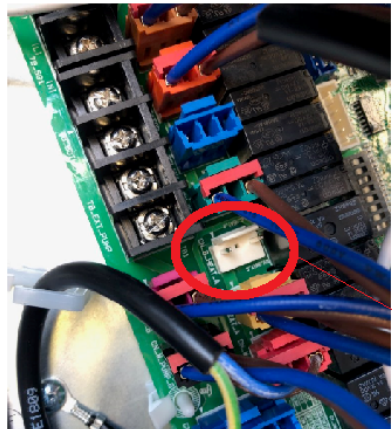
DHW Pre Plumb & Heating with 2 Zone's – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Wiring.

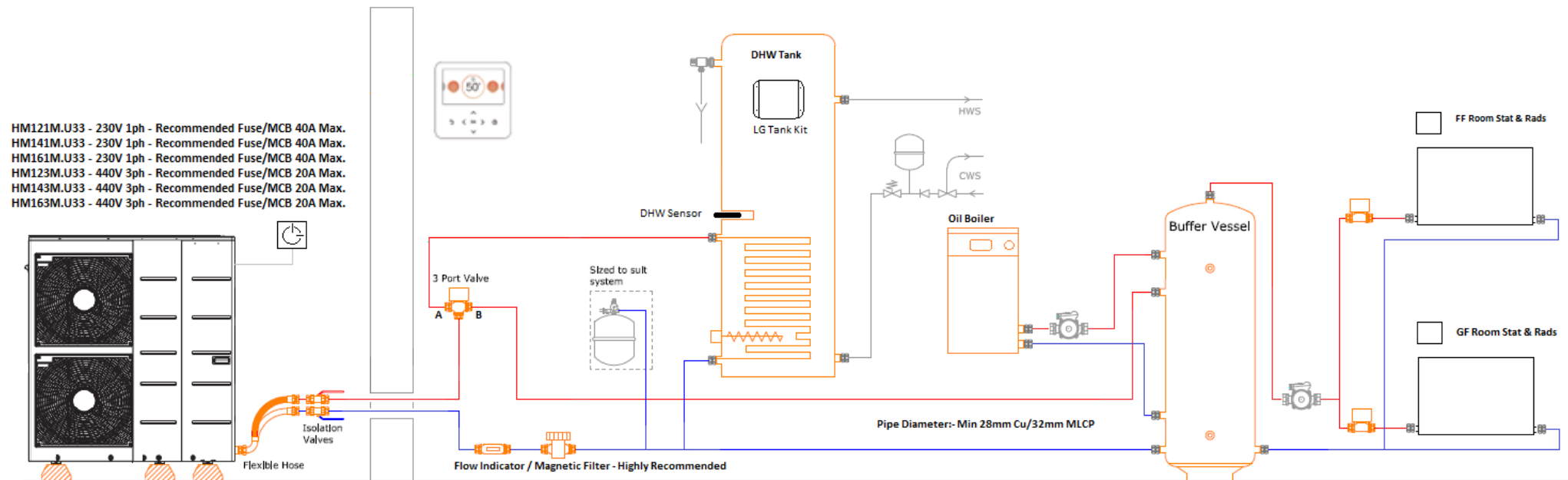
DHW & Heating 5, 7, 9, 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation Schematic.

DHW & Boiler with Two Heating Zone's – 12, 14 & 16kW.

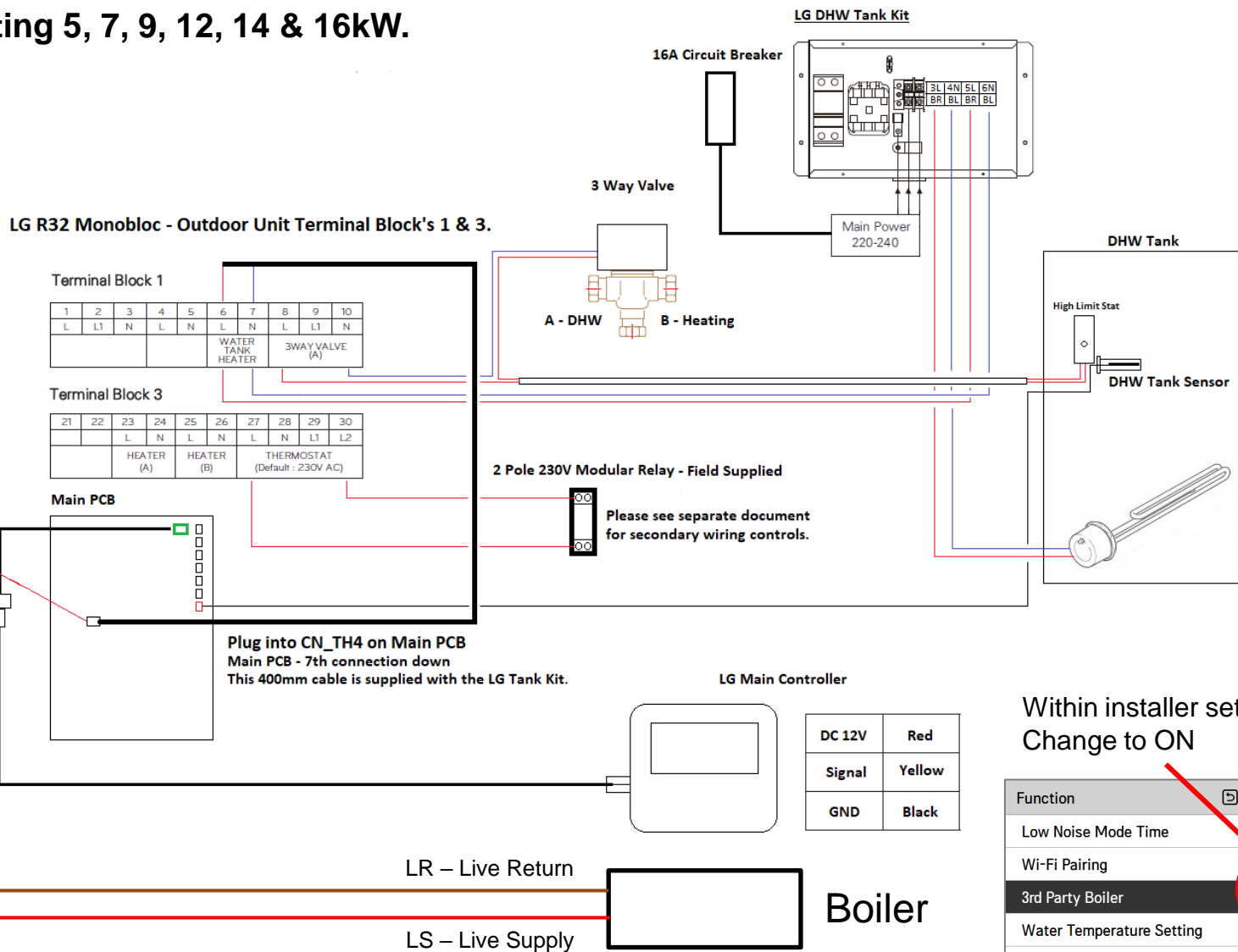
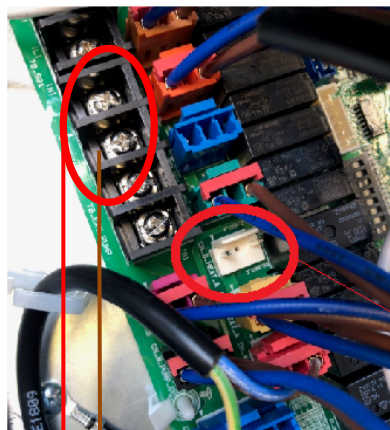


Therma V R32 Installation Instructions.

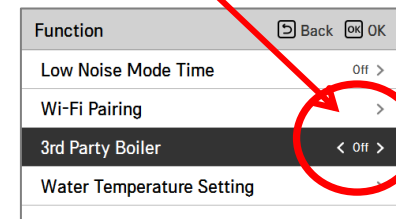
Installation Wiring.

Boiler, DHW & Heating 5, 7, 9, 12, 14 & 16kW.

(TB_EXT_BOILER)



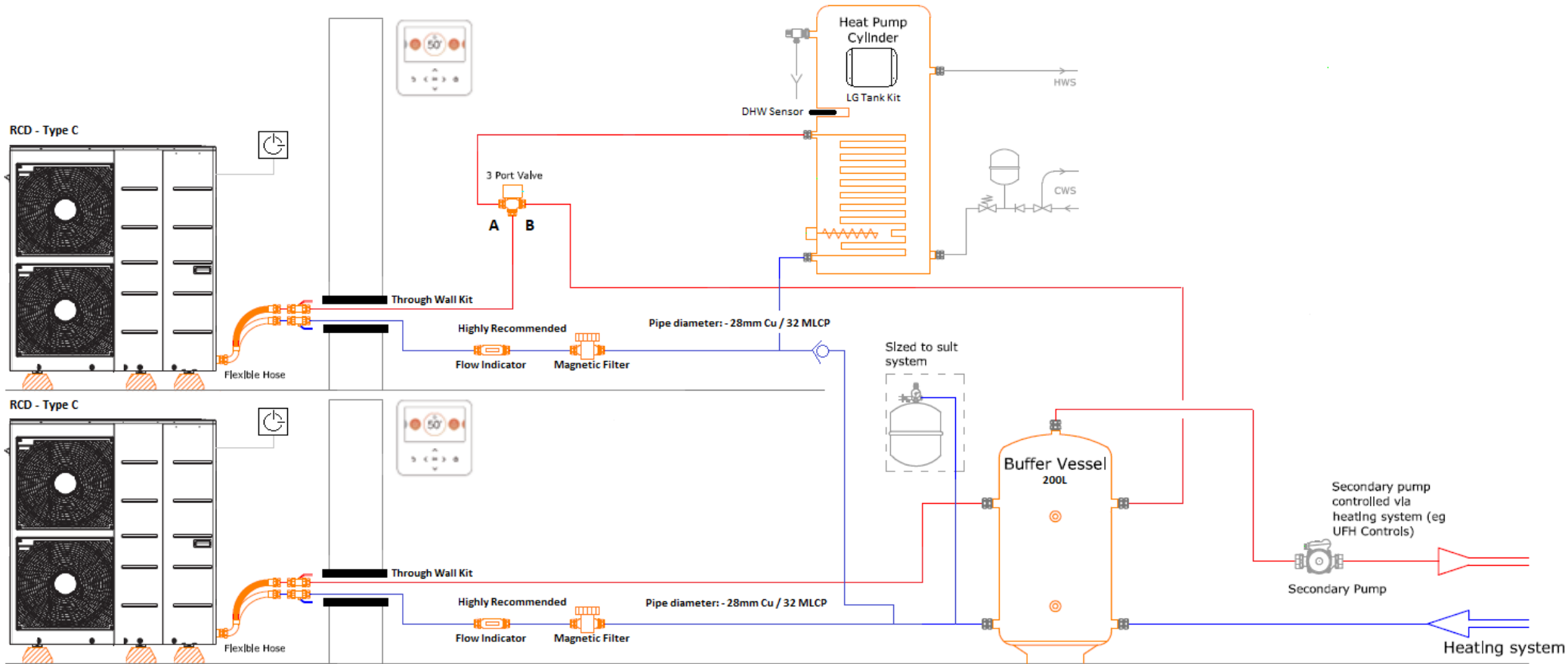
Within installer settings, Change to ON



Therma V R32 Installation Instructions.

Installation Schematic.

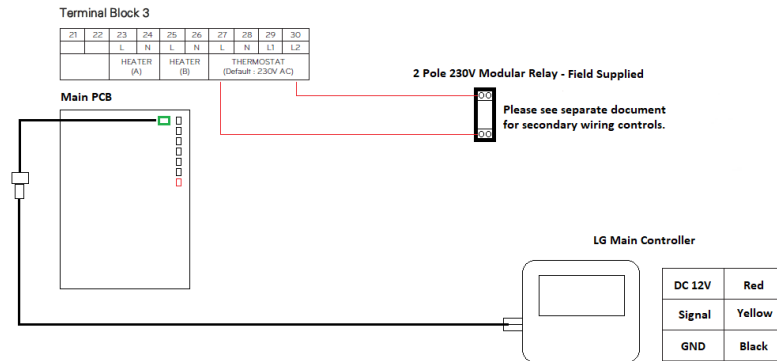
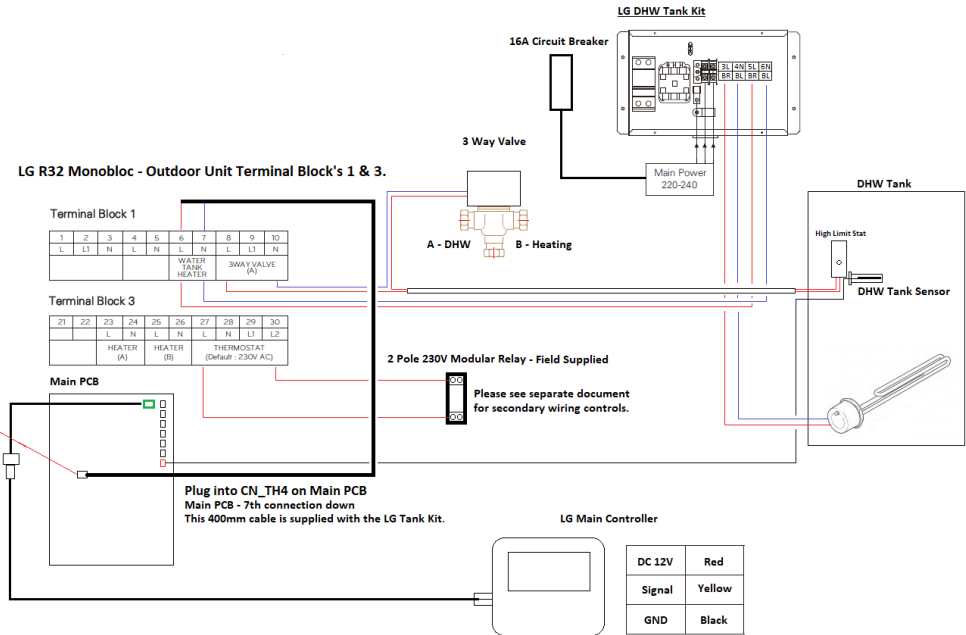
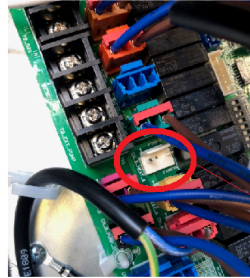
DHW with 2 Heat Pumps – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

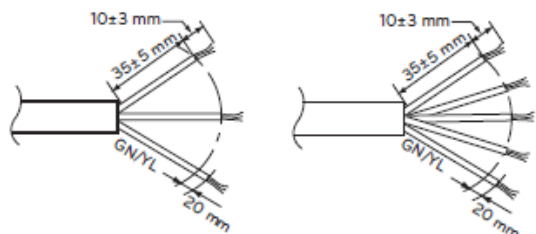
Installation Wiring.

DHW 2 Heat Pumps – 12, 14 & 16kW.



Therma V R32 Installation Instructions.

Installation – Mains Power Cable.



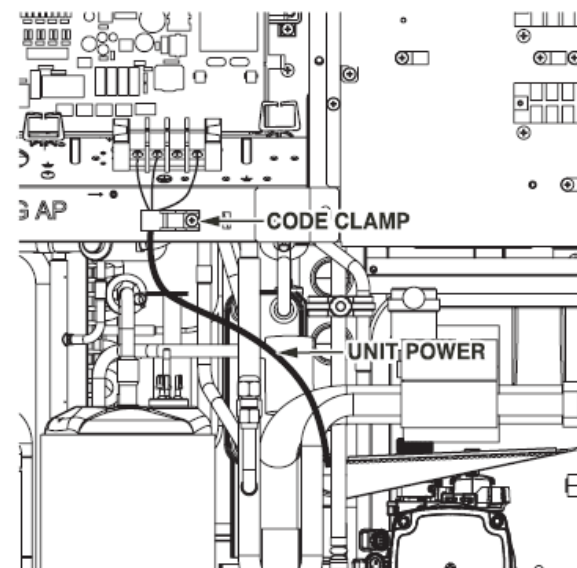
For the 1-Phase

For the 3-Phase

Model Name		Area(mm ²)	Cable Type
Phase	Capacity		
1Ø	5kW	4	H07RN-F
	7kW		
	9kW		
	12kW		
	14kW		
	16kW		
3Ø	12kW	4	
	14kW		
	16kW		

Model Name		Maximum Running Current
Phase	Capacity	
1Ø	5kW	23 A
	7kW	
	9kW	
	12kW	
	14kW	
	16kW	
3Ø	12kW	15 A
	14kW	
	16kW	

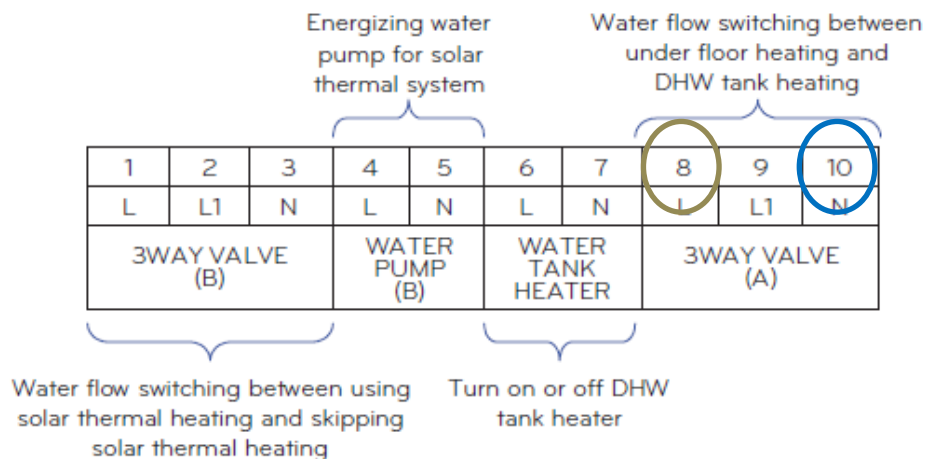
- RCD – Type C.
- Rotary Enclosed Isolation switch – IP65.
- Mandatory electricity meter fitted within an enclosed box.
- Ensure power cable does not touch refrigerant pipework.



Therma V R32 Installation Instructions.

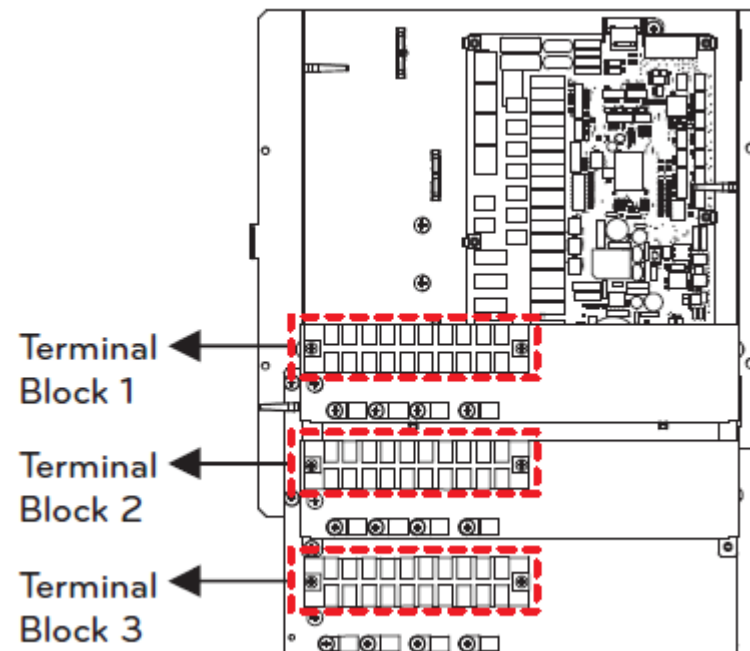
Installation – Terminal Block 1.

Terminal Block 1



Honeywell 3 Way Valve(V4044c) – 2 Wire.

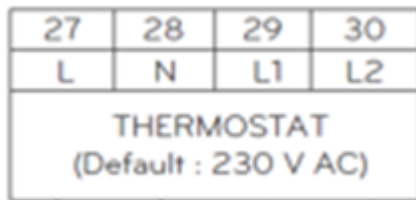
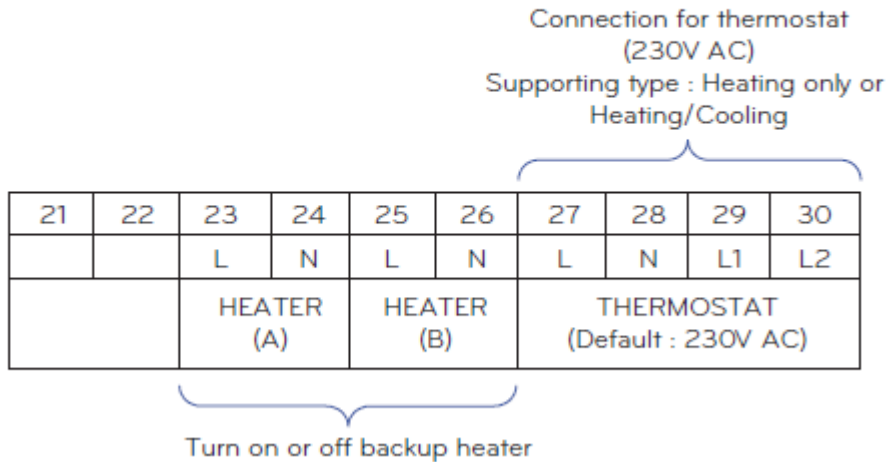
- Terminal 8 – L – Port A - DHW Cylinder.
Port B - Buffer Tank.
(230V when DHW demand)
- Terminal 10 – Neutral.



Therma V R32 Installation Instructions.

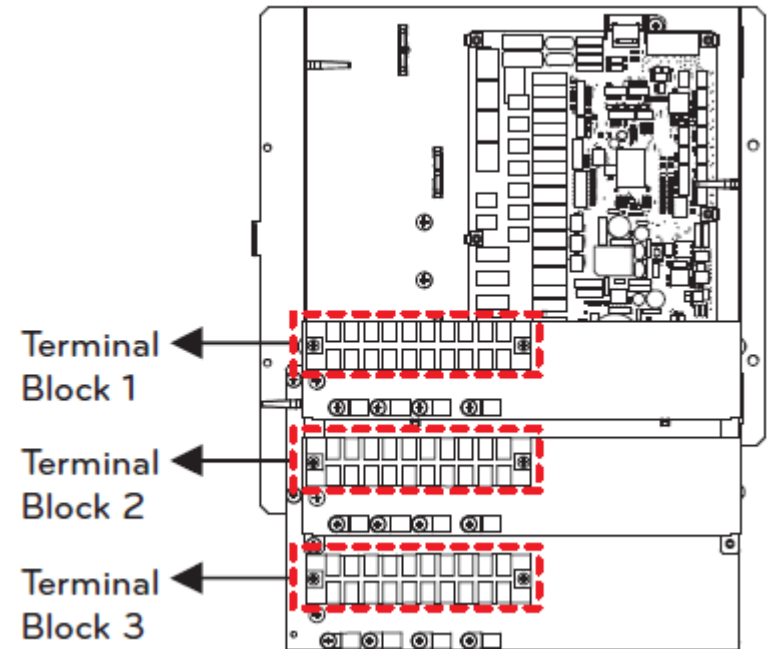
Installation – Terminal Block 3.

Terminal Block 3



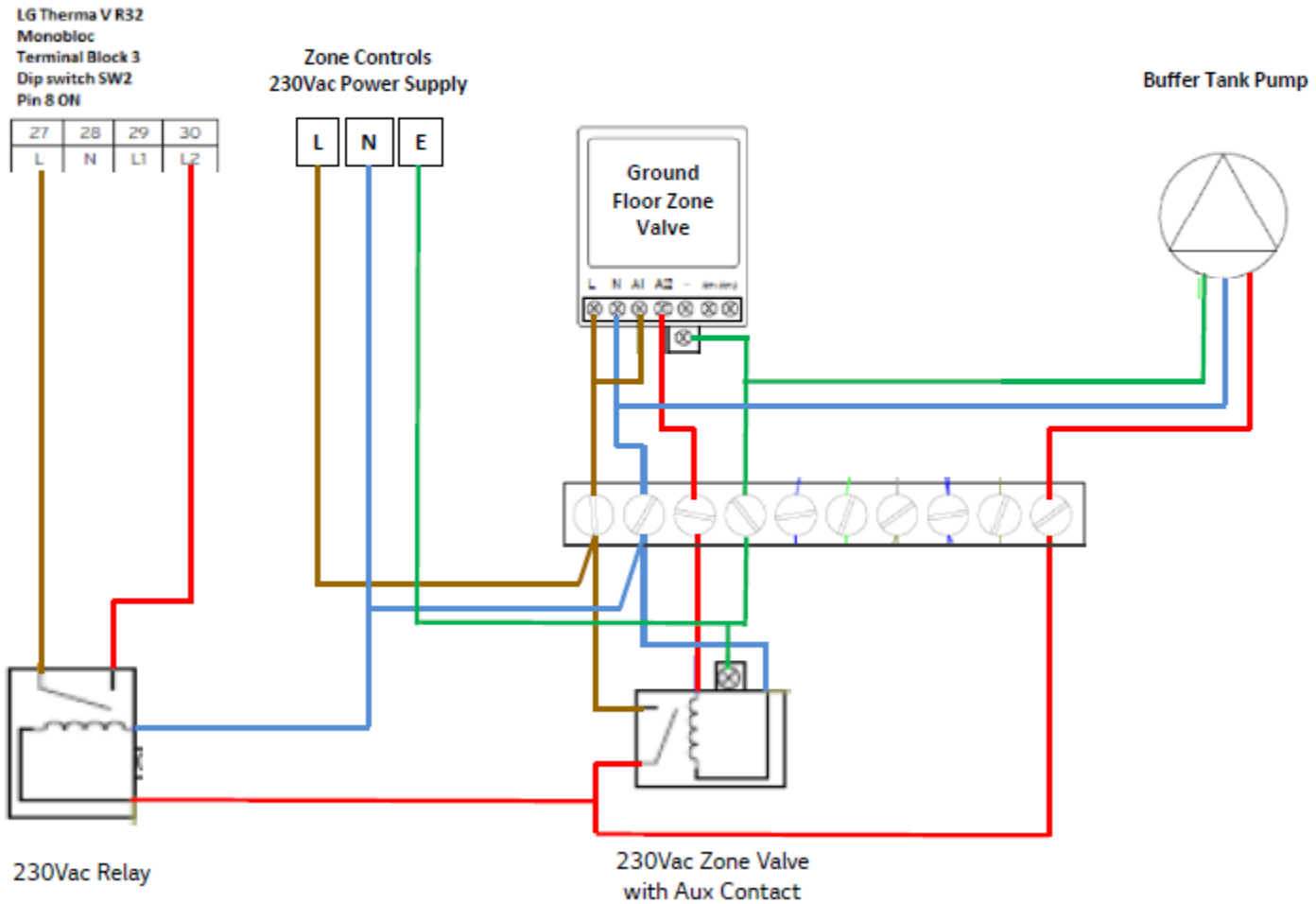
230V 2 Pole Relay

Please see wiring diagram, Slides 26 & 27.



Therma V R32 Installation Instructions.

Installation Wiring. R32 Monobloc – 1-Zone Control Schematic

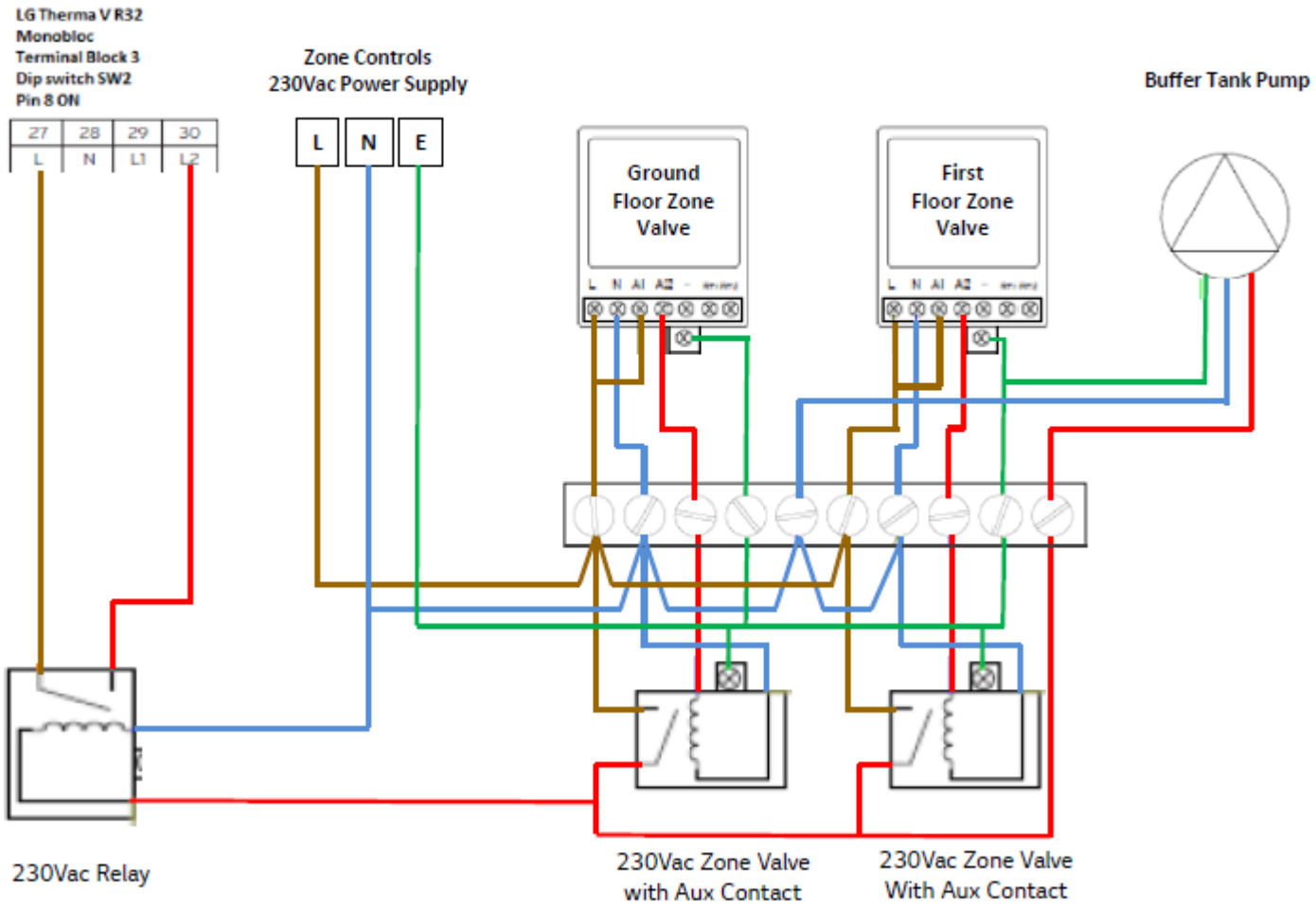


Relay Example



Therma V R32 Installation Instructions.

Installation Wiring. R32 Monobloc – 2-Zone Control Schematic



Relay Example



Therma V R32 Installation Instructions.

Installation – Antifreeze Solution Temp.

- If Antifreeze is added to the hydraulic system water then the antifreeze solution temp can be adjusted in the installer settings. (The setting is not visible normally, method is described later)
- Possible settings are displayed as below.
 - **Temperature : -5 / -10 / -15 / -20 / -25°C(Default : -5°C)**
- The values shown are not actual temperature setting but an offset that can be applied to the default value of 0°C, as shown in the previous slide. When the function is activated the default value is -5°C.
- Example if setting -10 is used;
 - entering water temp for judgment is reduced from 15°C to 5°C for protection starting
 - entering water for condition release is reduced from 18°C(15°C+ 3°C) to 8°C(5°C+ 3°C)

Therma V R32 Installation Instructions.

Installation – Antifreeze Solution Temp.

- **It is the responsibility of the installer to ensure the correct amount of antifreeze additive is applied to the water system to protect the product against water temperatures below 0°C. The correct volume of water contained in the system should be calculated, with six additional liters added for the AWHP product, as per the installation instructions.**

Guidance from this instruction is provided below :-

Antifreeze type	Antifreeze mixing ratio					
	0 °C	-5 °C	-10 °C	-15 °C	-20 °C	-25 °C
Ethylene glycol	0 %	12 %	20 %	30 %	-	-
Propylene glycol	0 %	17 %	25 %	33 %	-	-
Methanol	0 %	6 %	12 %	16 %	24 %	30 %

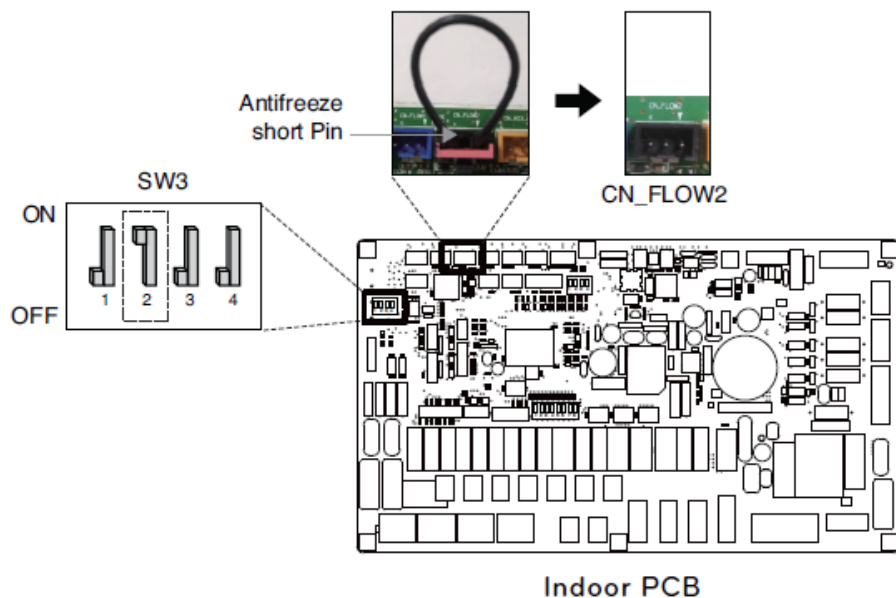
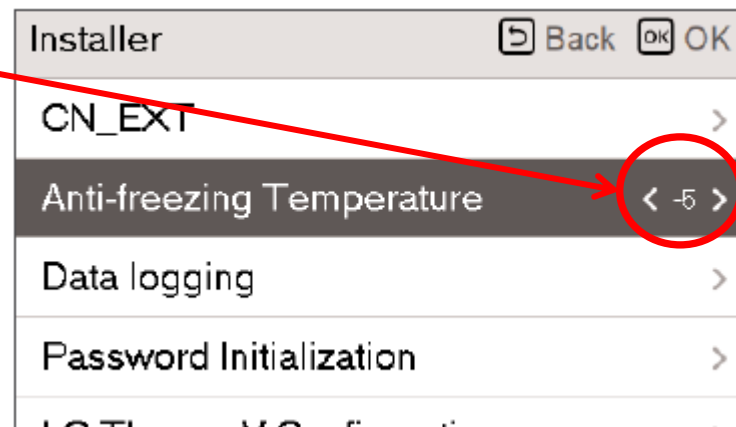
Therma V R32 Installation Instructions.

Installation – Antifreeze Solution Temp.

- Anti-freezing temperature setting is available in installer mode. Change the value from -5 to -10.

NOTE

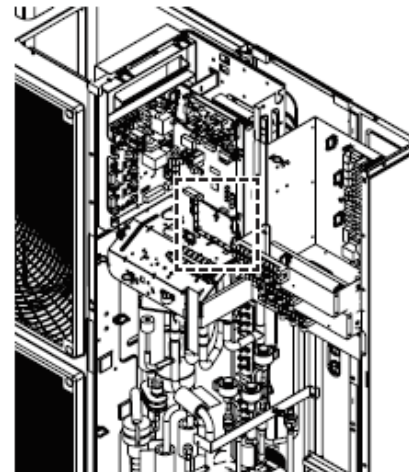
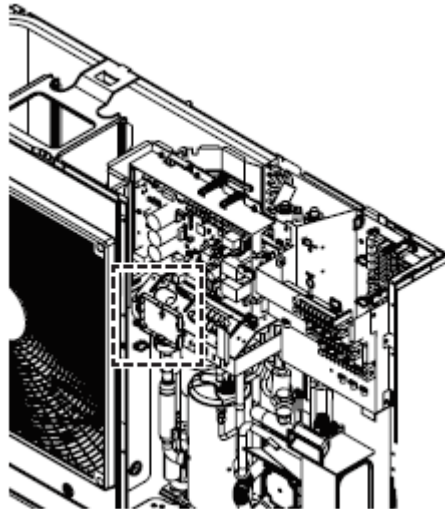
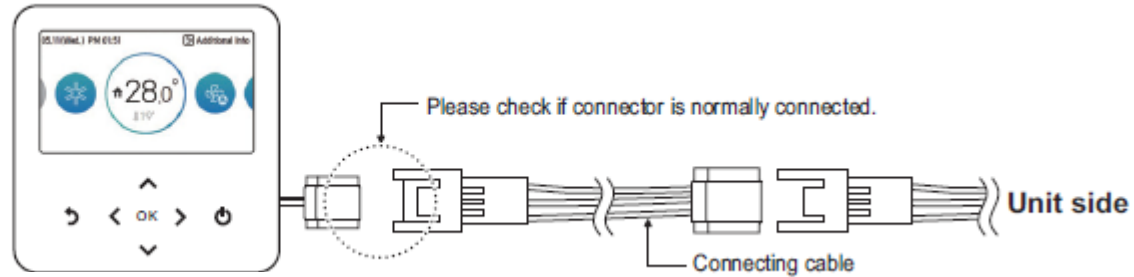
To use this function, the antifreeze short pin(CN_FLOW2, Black) of indoor PCB must be remove and switch No.2 in option SW 3 must be on.



Therma V R32 Installation Instructions.

Central Controller.

DC 12 V	Red
Signal	Yellow
GND	Black

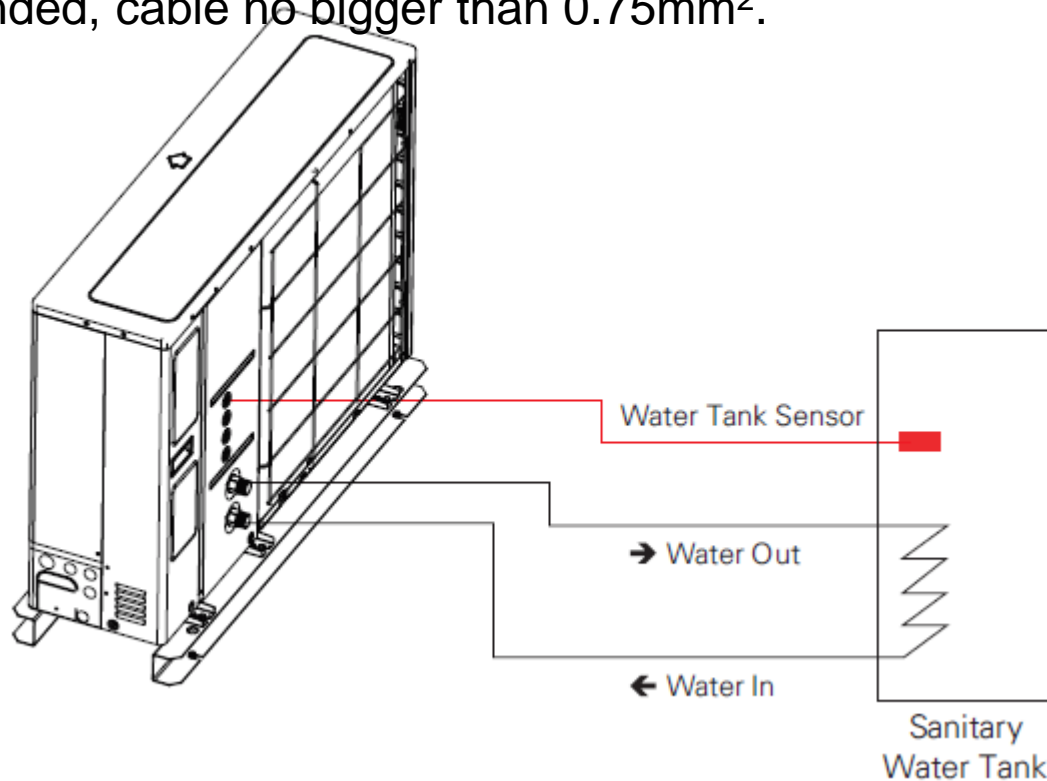


- For detailed installation instructions, refer to the manual included in the accessories.

Therma V R32 Installation Instructions.

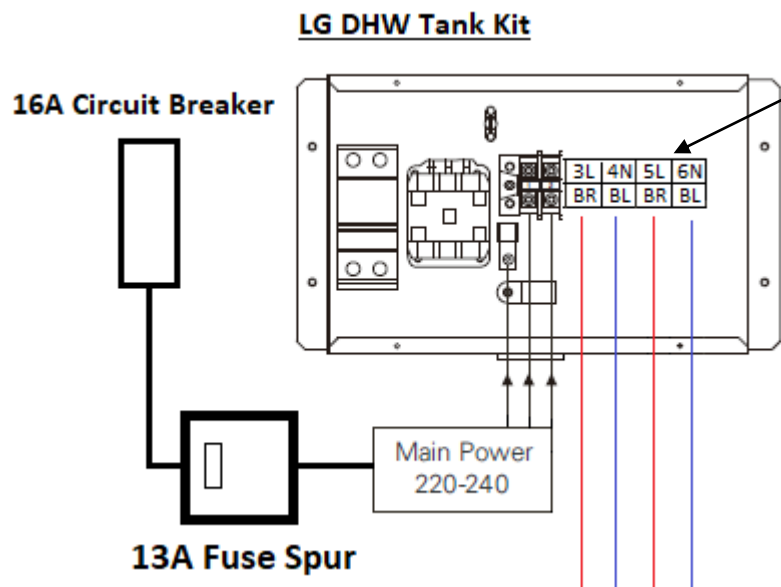
DHW Installation

- Remove lid/top of unit (5, 7 & 9kW units only).
- Feed the DHW water tank sensor into the back of the unit, shown in the diagram.
- Connect the red connector to the main PCB(Top right hand side of unit)
Terminal CN_TH4, the 7th terminal down, from the top right.
- Insert copper sensor into dry pocket tube of cylinder.
- The sensor can be cut and extended, cable no bigger than 0.75mm².



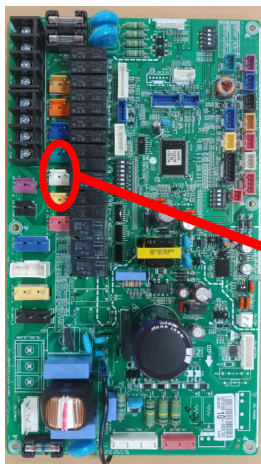
Therma V R32 Installation Instructions.

DHW Installation – Tank Heater



Wire from Heat Pump 6&7 Terminals to DHW Tank Kit Terminals 5&6.

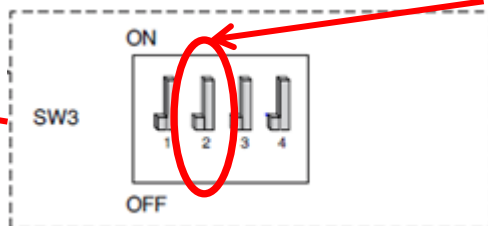
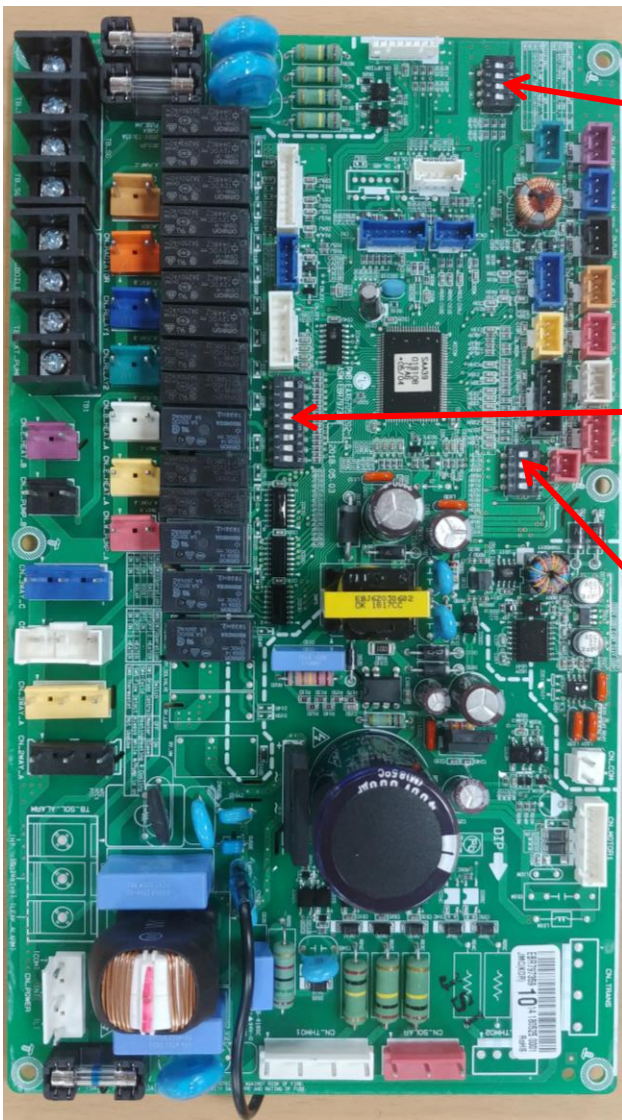
Wire from DHW Tank Kit Terminals 3&4 to immersion element in Tank.



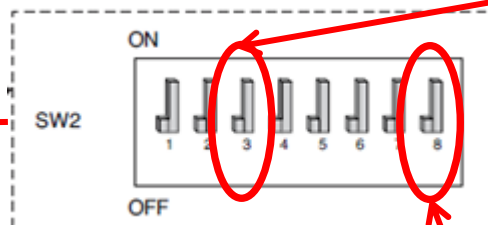
← Wire CN_B/HEAT(A) to Top Terminal's 6&7

Therma V R32 Installation Instructions.

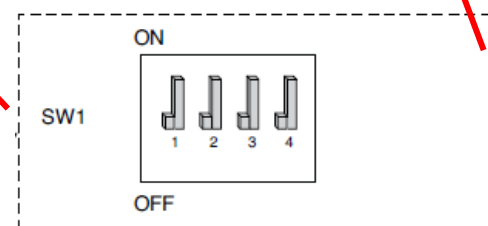
Configuration - Dip Switches



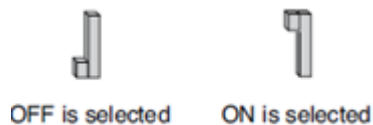
Antifreeze Logic –
Dip switch 2 On (To the right)



DHW –
Dip switch 3 On (To the right)



Room Thermostat Control (Field Supplied)
Dip switch 8 On (To the right),
*When dip switch 8 is turned on, ALL **HEATING** functions are locked from the controller.

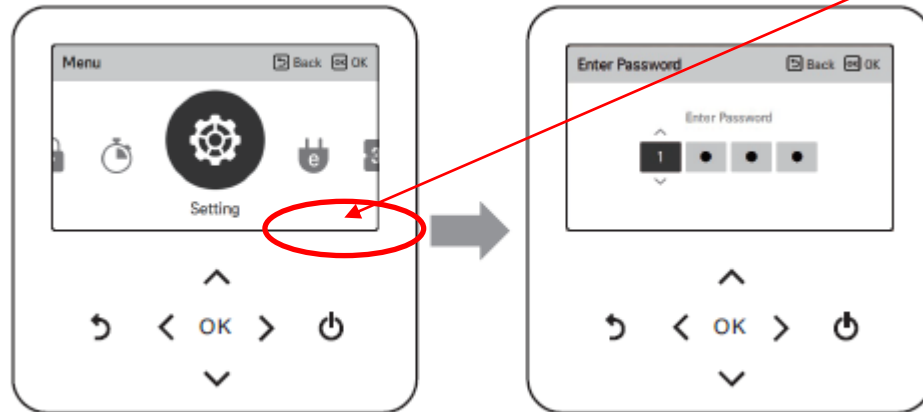


Note: - Please ensure the heat pump is turned off, before changing dip switches.

Therma V R32 Installation Instructions.

Configuration – Installer Settings.

Software Version



Press the Right arrow to select:- Menu.

Press Ok, “Settings” is shown.

Press and Hold the UP arrow button for 3 seconds.

4 square boxed are shown

Insert the Password – Shown in the bottom right corner (Software Version)

- Example:- 3 0 3 1 or 3 0 5 1

Therma V R32 Installation Instructions.

Error Codes.

CH14

First two weeks: Blocked filters and/or air pockets

Flow rate alarms are likely to occur during the first two weeks after commissioning; this is due to the formation of air-pockets which may occur and temporarily affect the flow-rate. In most cases, the air will migrate to the auto-air vents (AAV) and release without any requirement for intervention.

Equally, if any sediments are in the hydronic pipework, they will be caught by the internal strainer. Blockages in the strainer can cause CH14 alarms. In this case, the strainers will need to be cleaned

Recommendation: once the unit has been installed, advise the customers that it is quite likely and normal for a CH14 alarm to occur in the first two weeks. This will give the customer reassurance if and when the fault does arise!

If the cause was air, then a simple power reset could allow the system to continue working as normal, once the pocket of air has made its way to the AAV



Testing each mode separately can help you to deduce where the fault lies:

Fault arises during:

TANK MODE ONLY

1. Restriction in coil

HEAT MODE ONLY

1. Restriction in Heating Circuit
2. Excessive pressure drop

HEAT & TANK MODE

1. Low system water pressure
2. Strainers and Filters blocked
3. Water-pump fault
4. Flow Switch Abnormality
5. PCB Fault

Therma V R32 Installation Instructions.

Configuration – Installer Setting

Function	Description
3 Minutes Delay	Factory use only
Select Temperature Sensor	Selection for setting temperature as air temperature or leaving water temperature or air+leaving water temperature
Dry Contact Mode setting	Dry contact function is the function that can be used only when the dry contact devices is separately purchased and installed.
Central Control address	When connecting the central control, set the central control address of the unit.
Pump Test run	Water pump test run
Air cooling set temp. setting	Adjusting range of 'Setting Air Temperature' in cooling mode
Water cooling set temp. setting	Adjusting range of 'Setting Leaving Water Temperature' in cooling mode
Air heating set temp. setting	Adjusting range of 'Setting Air Temperature' in heating mode
Water heating set temp. setting	Adjusting range of 'Setting Heating Flow Temperature' in heating mode
DHW Set Temp.setting	Setting DHW set temperature
Screed drying setting	Setting for using Step 1 or 2 capacity of electric
Heater on temperature	Setting outdoor air temperature where half capacity of electric heater starts operation.
Water supply off temp. during cooling setting	Determine leaving water temperature when the unit is turned off. This function is used for preventing condensation on the floor in cooling mode
Tank disinfection setting 1	Setting start/maintain time for pasteurisation
Tank disinfection setting 2	Setting pasteurisation temperature
Tank setting 1	Setting start temperature for operation
Tank setting 2	Setting maintain temperature for operation
Heater priority	Determine electric heater and water heater on and off
DHW time setting	Determine follow time duration : operation time of domestic hot water tank heating, stop time of domestic hot water tank heating, and delay time of DHW tank heater operating
TH on/off Variable, heating air setting	Heating air temperature TH On / Off Type setting
TH on/off Variable, heating Water setting	Heating Water Outlet Temperature TH On / Off Type

Function	Description
TH on/off Variable, cooling air setting	Cooling air temperature TH On / Off Type setting
TH on/off Variable, cooling Water setting	Cooling Water Outlet Temperature TH On / Off Type
Heating temp. setting	At the leaving water control in heating mode, the control reference water temperature position setting
Cooling temp. setting	At the leaving water control in cooling mode, the control reference water temperature position setting
Pump setting in heating	Set water pump on / off delay option in heating mode
Pump setting in cooling	Set water pump on / off delay option in cooling mode
Forced operation	Water pump off After 20 consecutive hours, disable / enable the logic that drives the water pump by itself
CN_CC setting	It is the function to set whether to install (use) Dry Contact. (It is not a function for Dry Contact installation, but it is a function to set the usage of the unit's CN_CC port.)
Pump Capacity	Function to change Water Pump Capacity
Smart Grid(SG) setting	Select whether to use or not use the SG Mode function of the product, set the operation option value in SG1 step.
Seasonal auto temp setting	Set the operating temperature in Seasonal Auto mode
Modbus Address	It is function to set the address of the Modbus device that is externally linked to the product. Modbus address setting function is available from indoor unit.
CN_EXT	Function to set external input and output control according to DI / DO set by customer using dry contact port of indoor unit. Determine the use of the contact port (CN_EXT) mounted on the indoor unit PCB
Anti-freezing Temperature	This function prevents the product from freezing.
Add Zone	Install additional valve in product to control additional operation area
Use External Pump	Set up to control an external water pump
3rd Party Boiler	Configuration to control 3rd party boiler
Meter Interface	When installing the meter interface to measure energy / calorie in the product, set unit spec for each port
Pump Prerun/Overrun	Set to reach the optimum flow rate by circulating the heating water with the water pump before heat exchange. After the operation stop, additional water pump is activated to circulate the heating water.
Data logging setting	Display error history of connected unit
Password Initialization setting	It is the function to initialize (0000) the password when you forgot the password set in the remote controller.

Therma V R32 Installation Instructions.

R32 Monobloc Therma V Commissioning Sheet - Heating system set up

PARAMETER	FIELD SETTING 1		FIELD SETTING 2		FIELD SETTING 3	
Select Temperature Sensor	Air/Water/Air+Water	Water				
Dry Contact Mode Auto/Manual	Auto/Manual	N/A				
Central Controller Address	(value)	N/A				
Air Cooling Set Temp	Min (value)	N/A	Max (value)	N/A		
Water Cooling Set Temp	Min (value)	N/A	Max (value)	N/A		
Air Heating Set Temp	Min (value)	N/A	Max (value)	N/A		
Water Heating Set Temp	Min (value)	30	Max (value)	50		
DHW Set Temp	Min (value)	40	Max (value)	50		
Outdoor Temp for Auto Mode ⁽¹⁾	Min (value)	5	Max (value)	19		
Indoor Temp for Auto Mode ⁽¹⁾	Min (value)	N/A	Max (value)	N/A		
LWT for Auto Mode ⁽¹⁾	Min (value)	34	Max (value)	50		
⁽¹⁾ Only if SW2 dip switch 4 = OFF						
Heater On Temp	(value)	N/A	(value)	N/A		
Water Supply Off Temp During Cooling	Use/Not use	N/A	Stop Temp (value)	N/A		
Tank Disinfection Setting 1	Use/Not use	USE	Start date (date)	FRI	Start time (date)	14:00
Tank Disinfection Setting 2	Max Temp (value)	60	Duration Time (time)	30	Forced End Time (time)	1
Tank Setting 1	Min Temp (value)	5	Max Water Temp (value)	55		
Tank Setting 2	Hysteresis (value)	3	Priority	DHW		
Heater Priority	Main+Boost heater ON/ Boost heater only ON	Main+Boost Heater On				
DHW Time Setting	Active time (value)	60	Stop Time (value)	0	Boost Heater Delay Time (value)	60
Use Heating Tank Heater	Use*/Use Disenfect/Not Use	Use	*Cycle or Heater+Cycle	Cycle	*Delay Time	60
Th on/off Variable, Heating Air	(value)	Type 0				
Th on/off Variable, Heating Water	(value)	Type 0				
Th on/off Variable, Cooling Air	(value)	Type 0				
Th on/off Variable, Cooling Water	(value)	Type 0				
Heating and Cooling Temp Setting	outlet/inlet	Outlet				
Pump Setting in Heating	Time Setting*/Operation continue		*On (value)	N/A	*Off (value)	N/A
Pump Setting in Cooling	Time Setting*/Operation continue		*On (value)	N/A	*Off (value)	N/A

Rads – 50degC
UFH – 40degC

Therma V R32 Installation Instructions.

R32 Monobloc Therma V Commissioning Sheet - Heating system set up

Pump Capacity	(value)	100%			
Smart Grid	Not use/Use*	N/A	*Mode	N/A	
Seasonal Auto Temp ⁽²⁾ ⁽²⁾ Only If SW2 dip switch = ON	Outdoor 1, Heat (value)	N/A	Outdoor 2, Heat (value)	N/A	Outdoor 3, Cool (value) N/A
	Air 1, Heat (value)	N/A	Air 2, Heat (value)	N/A	Air 3, Cool (value) N/A
	Water 1, Heat (value)	N/A	Water 2, Heat (value)	N/A	Water 3, Cool (value) N/A
Modbus Address	(value)	N/A			
CN_EXT	Not use/ Simple Operation/ Simple dry contact/ Single emergency stop	N/A			
Add zone	Use Added Zone*/Not use	N/A	*Valve Closing Time (value)	N/A	*Hysteresis (value) N/A
Use External Pump	Not use/Use	N/A			
3rd Party Boiler	Mode	N/A	Temp (value)	N/A	Hysteresis (value) N/A
Meter Interface	Modbus Address:	Not use/(value)			
	Unit:	Port 1 Pulse/kwh (value)	Port 2 Pulse/kwh (value)	N/A	Port 3 Pulse/kwh (value) N/A
Pump Prerun/overrun	Prerun (value)	N/A	Overrun (value)	N/A	