Innovation for a Better Business

Therma V: Generation 3.

General Installation Instructions.

R32 Monobloc - April 2020

LG Business Solutions

Outdoor Installation.

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

Please retain this installation instruction document for future reference.

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

Outdoor 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 fix ed to the tank or may be wall mounted.
The LG controller has the ability to perform the sterilisation process, via the Tank Kit(Relay)

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

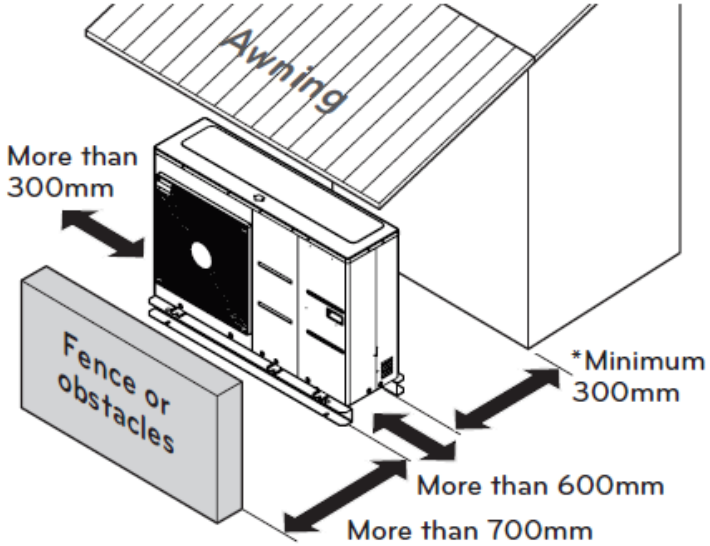
Relay Box

PHLTB

Link cable,
approx 400mm long.

Therma V R32 Installation.

Outdoor Installation.



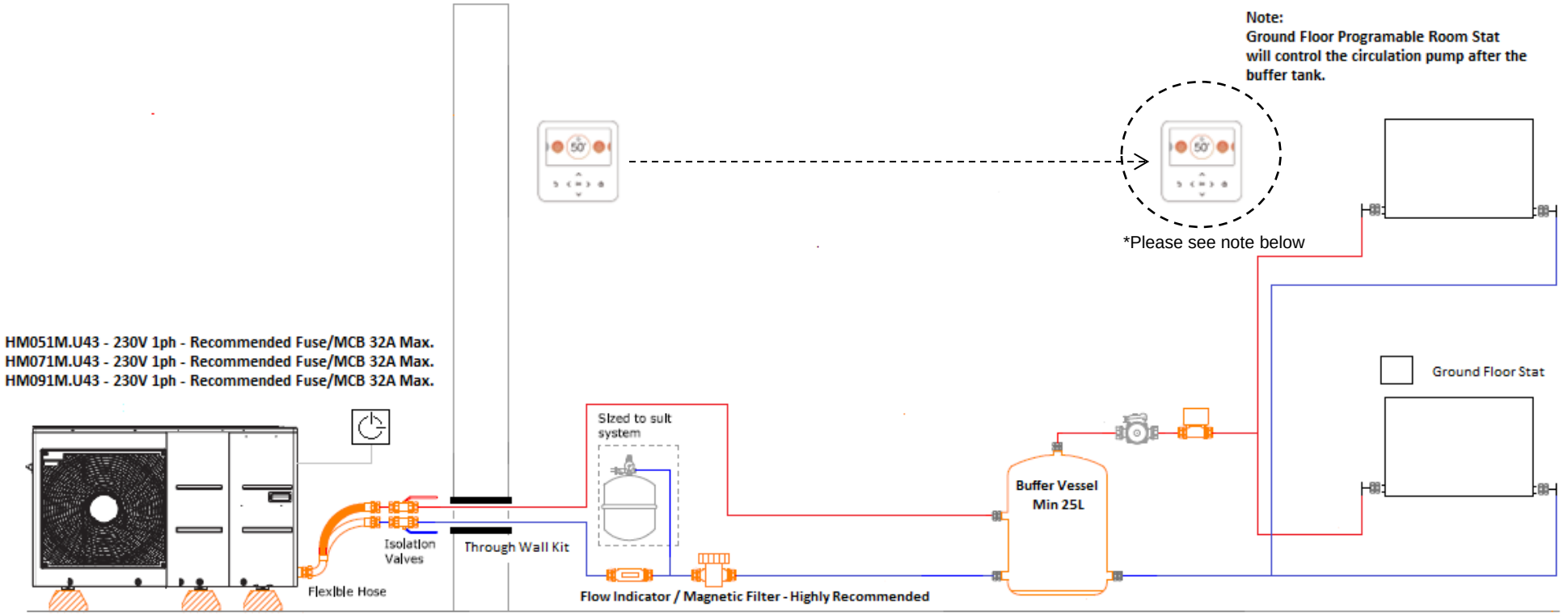
* : Please secure the space to install the shut-off valve and strainer.

Unit : mm

- 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
- 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)

Installation Schematic.

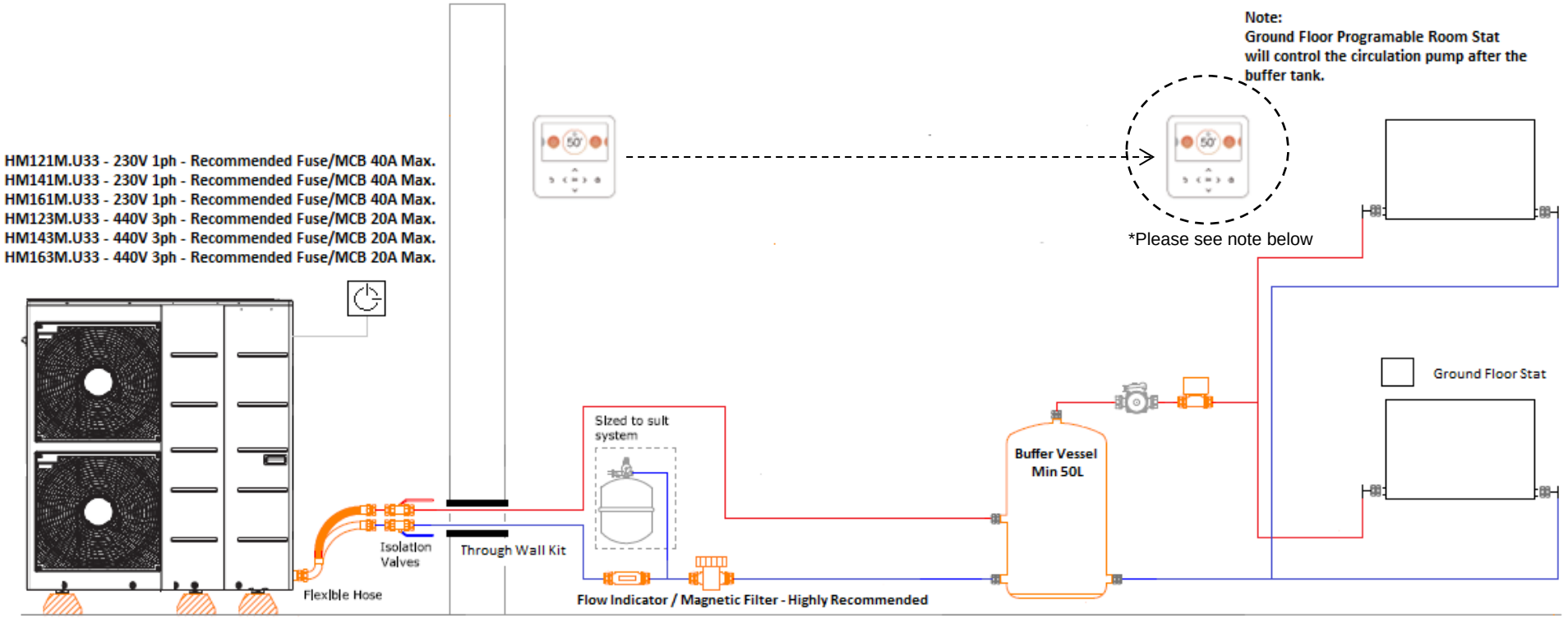
Heating Only – 5, 7 & 9kW.



*:- 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)

Installation Schematic.

Heating Only – 12, 14 & 16kW.

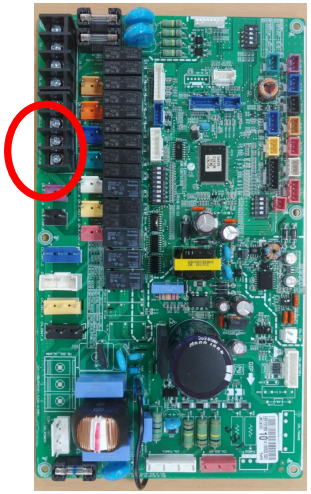


*:- It is possible to use the LG controller as a room thermostat in this application, control of the pump after the buffer tank, will be done by the heat pump : (TB_EXT_PUMP)

Installation Wiring.

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

(TB_EXT_PUMP)



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)			

2 Pole 230V Modular Relay - Field Supplied

Please see separate document for secondary wiring controls.

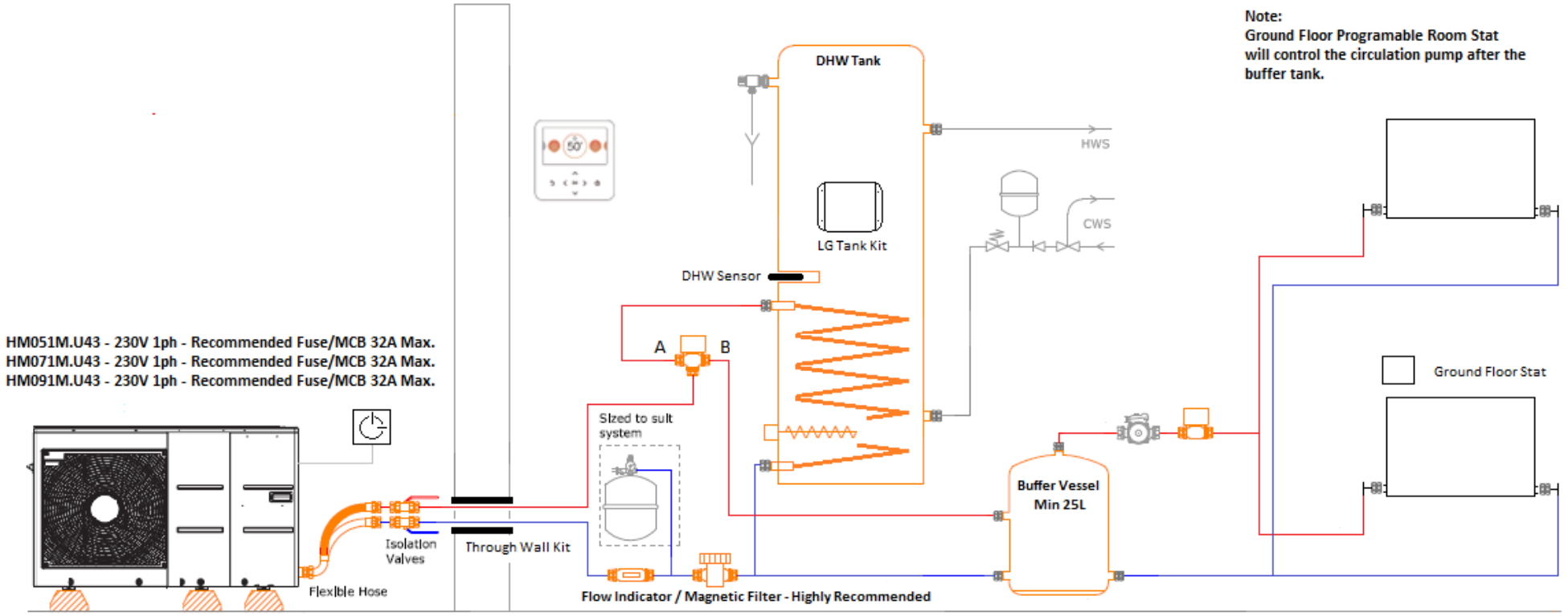
Main PCB

LG Main Controller

DC 12V	Red
Signal	Yellow
GND	Black

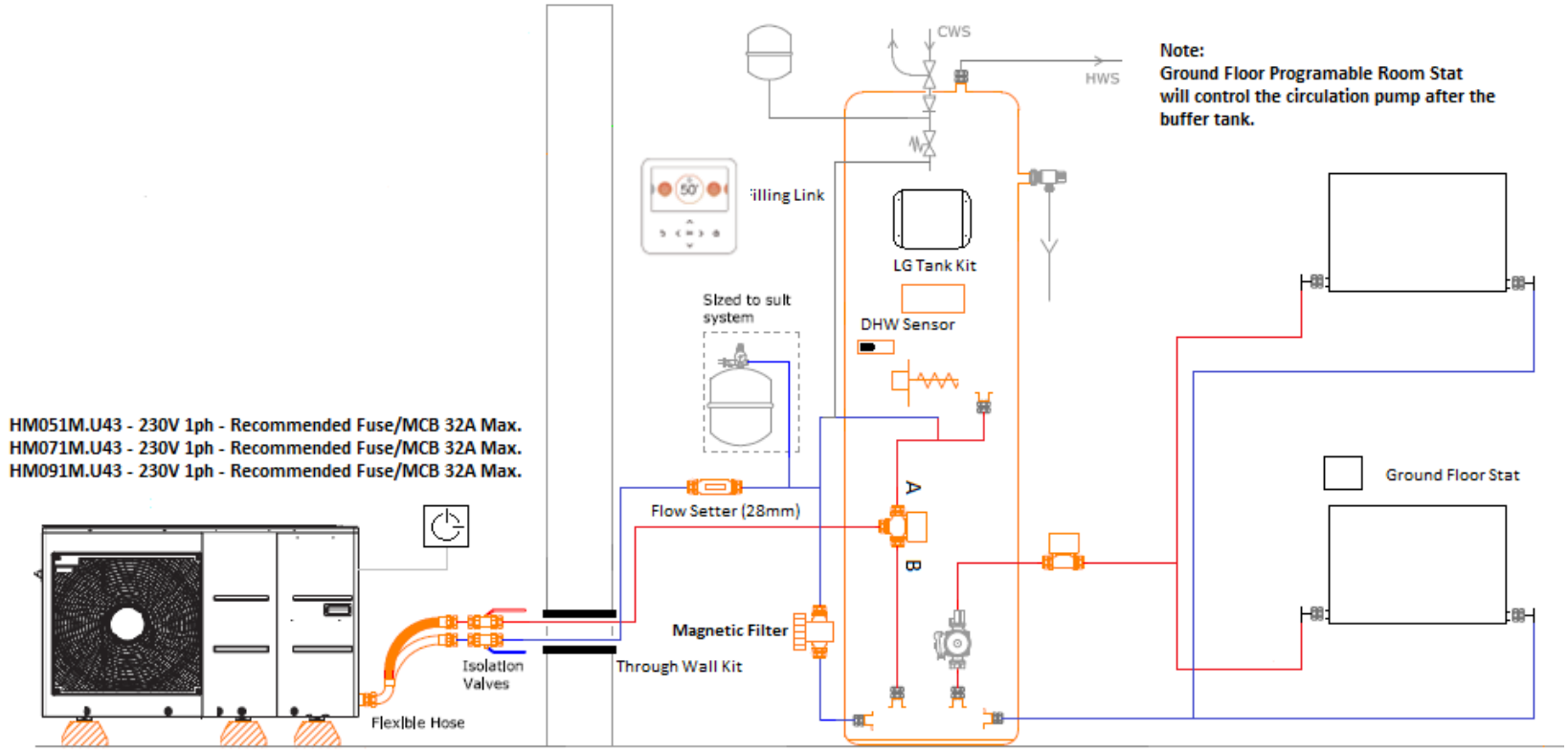
Installation Schematic.

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



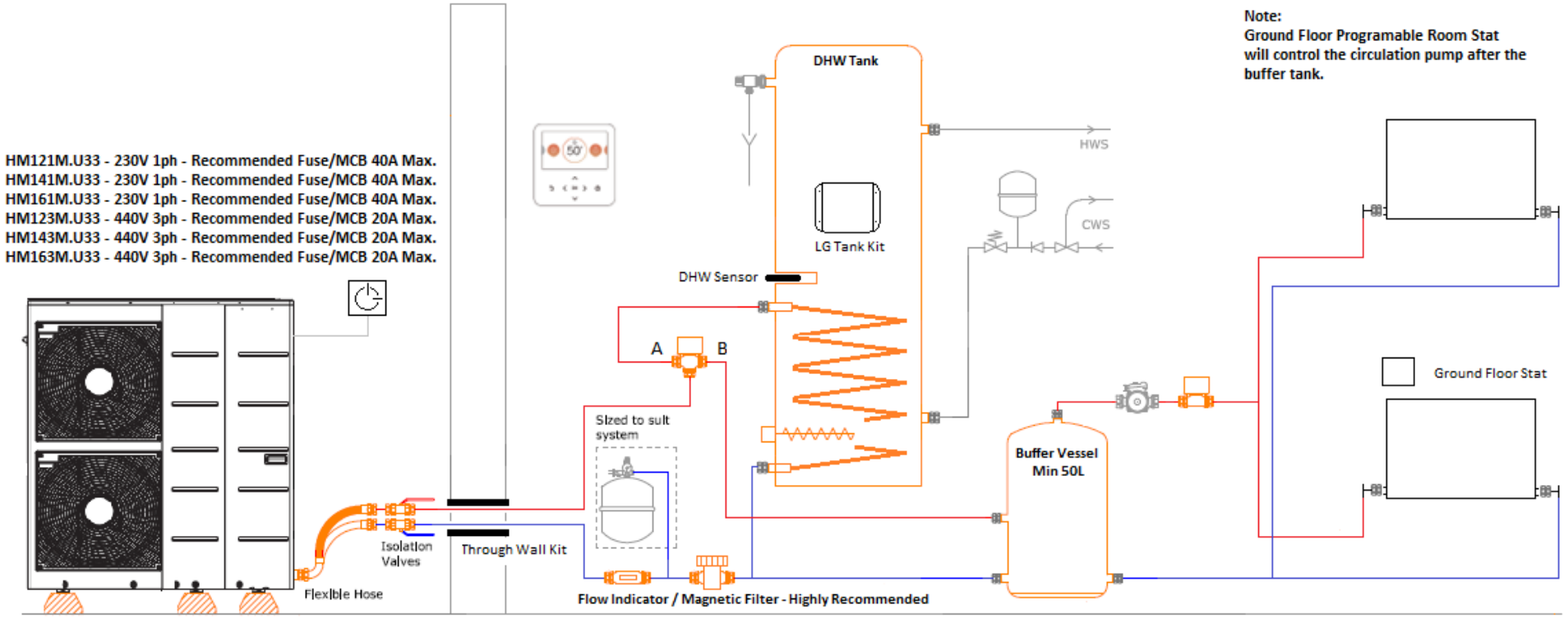
Installation Schematic.

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



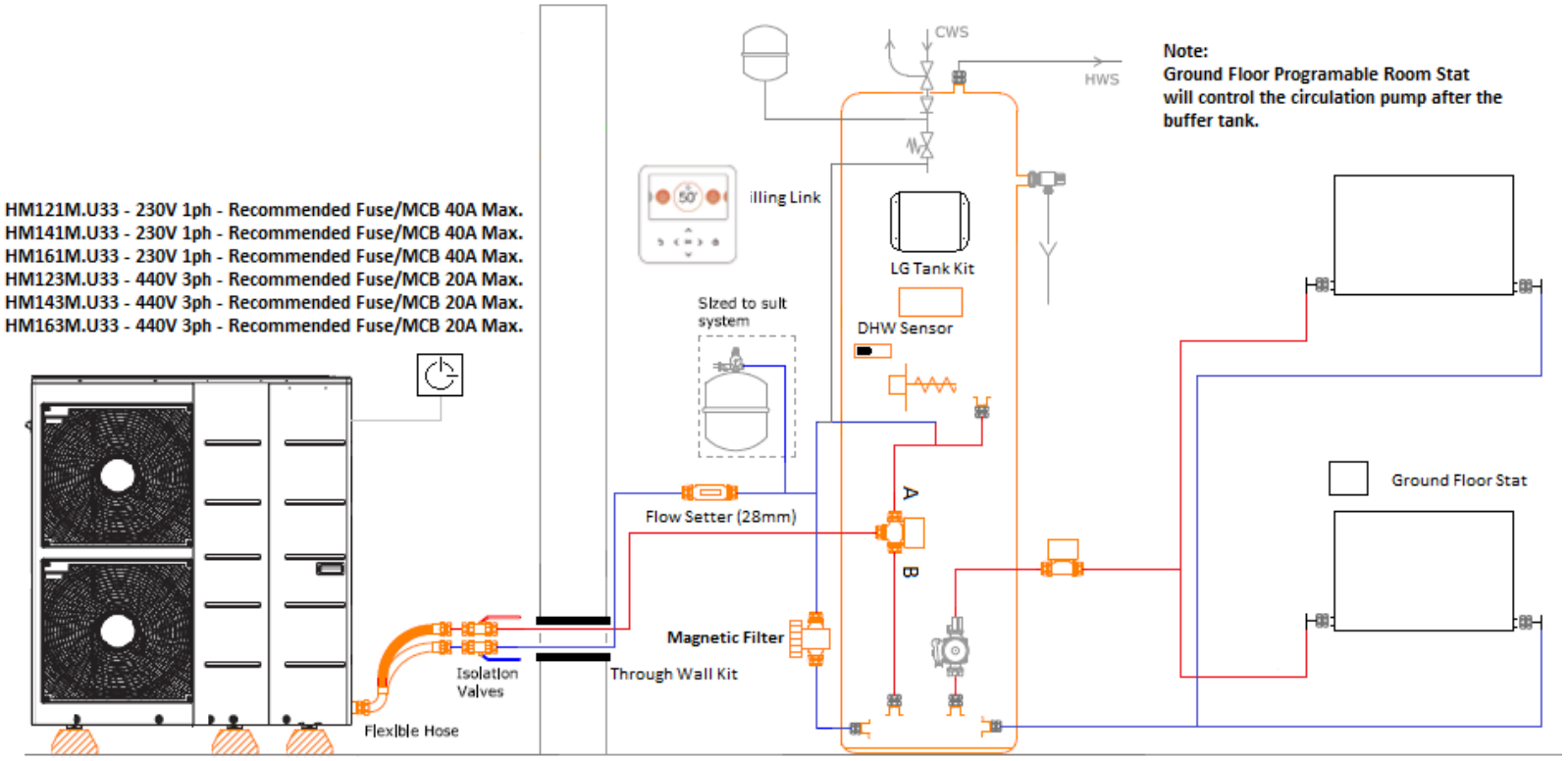
Installation Schematic.

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



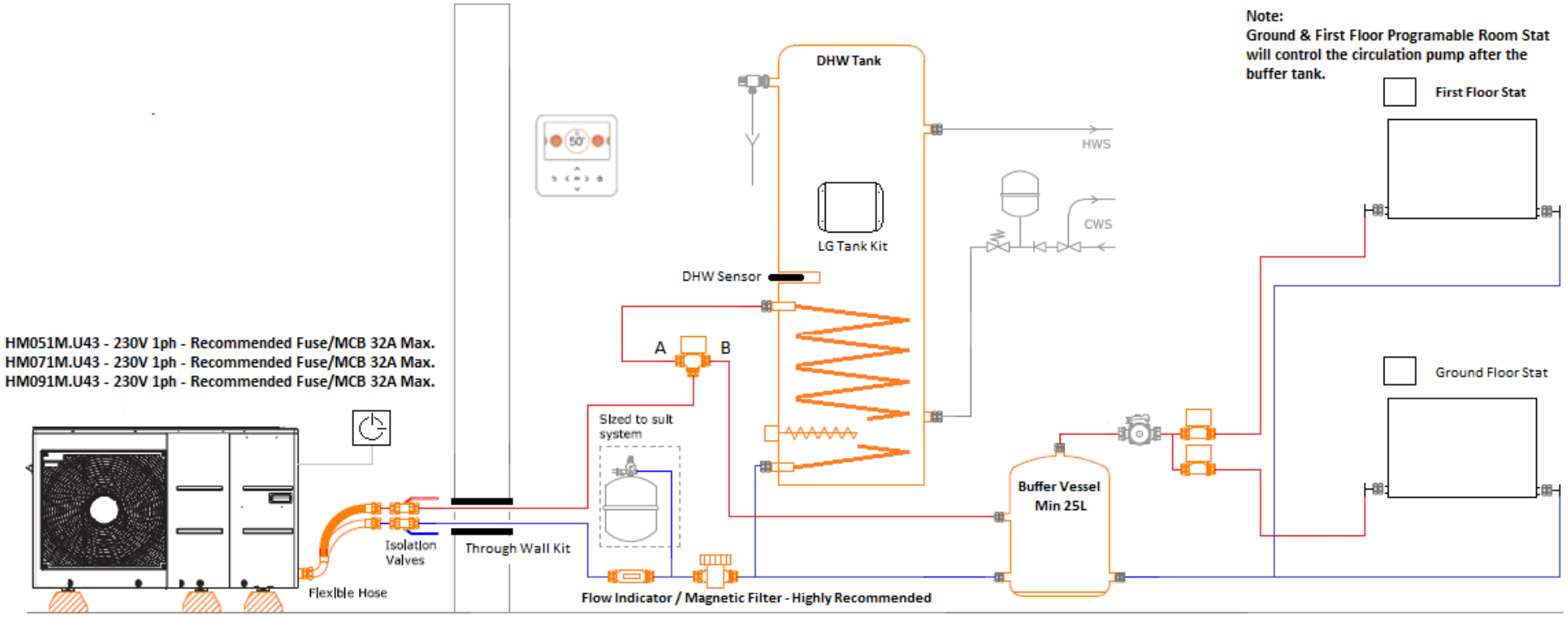
Installation Schematic.

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



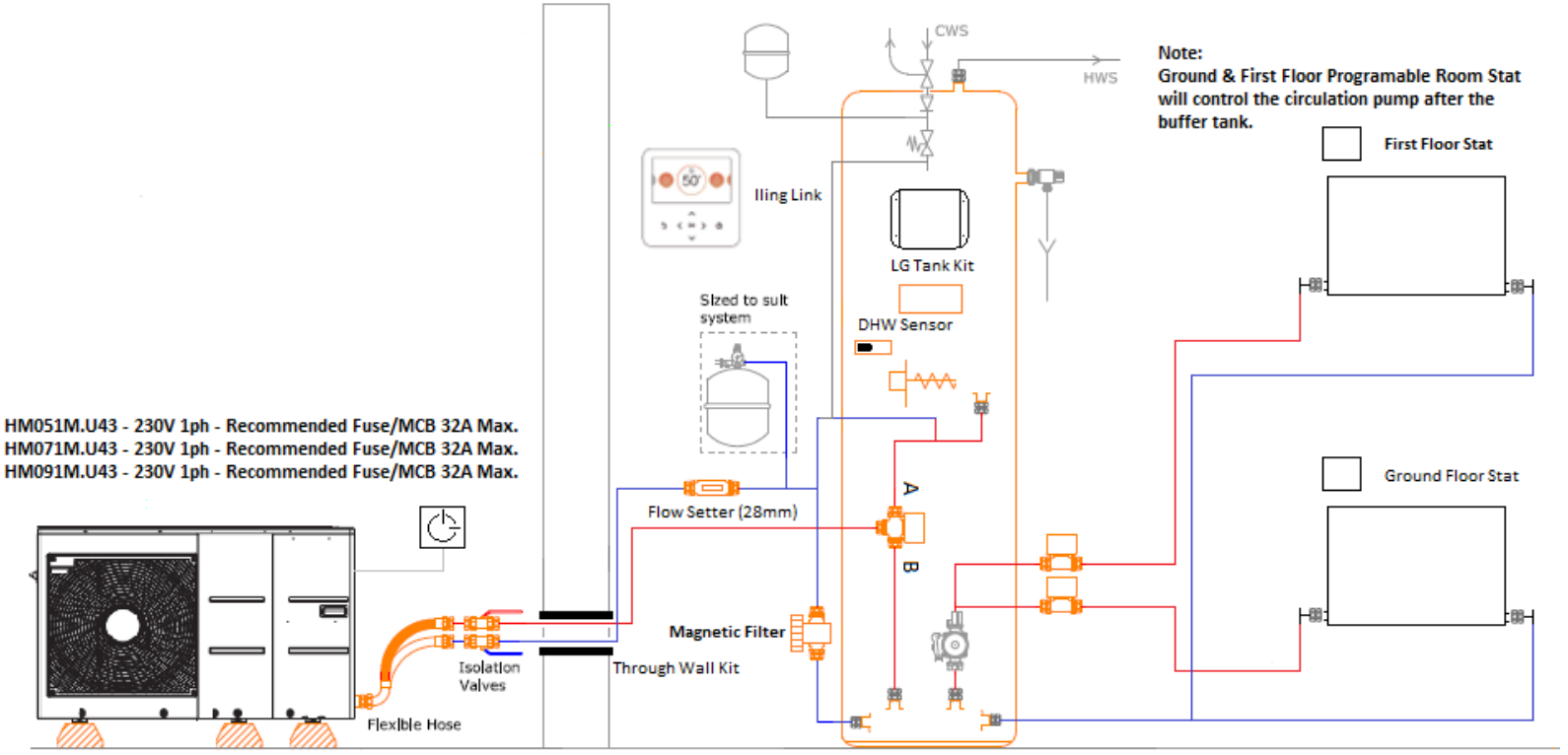
Installation Schematic.

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



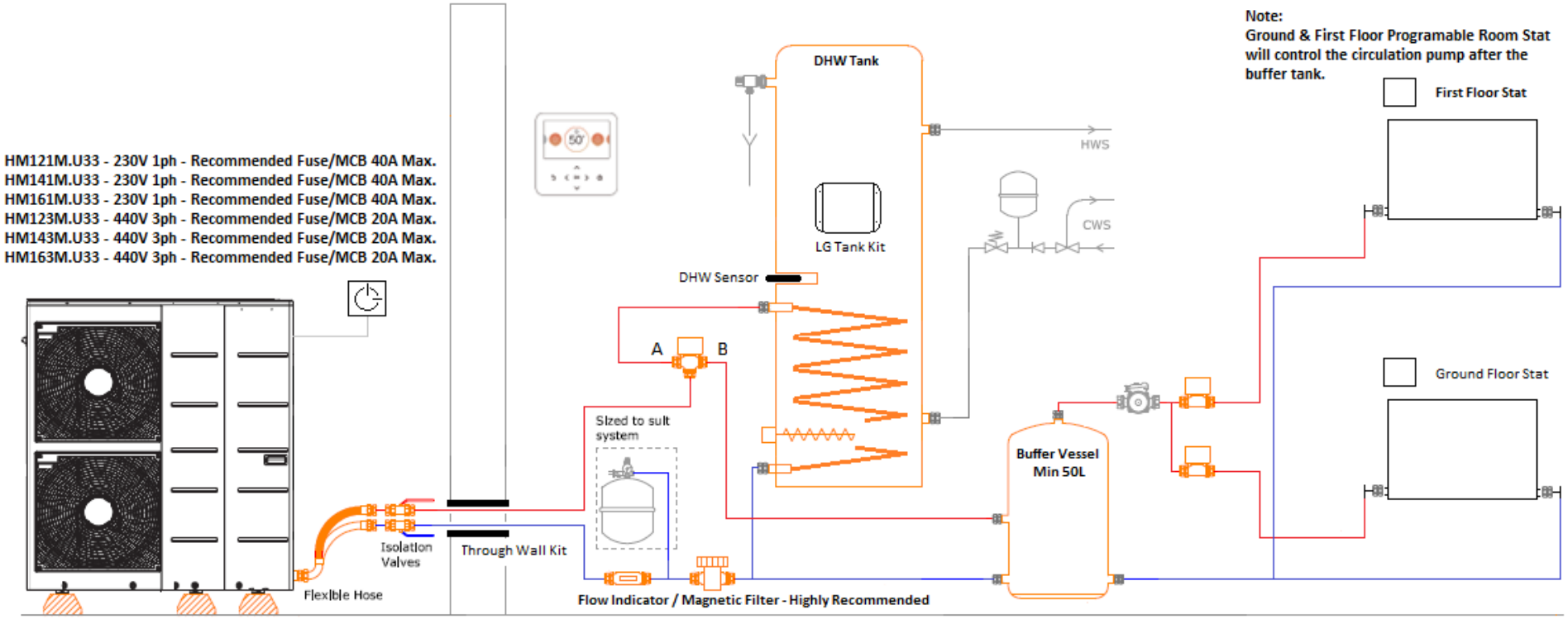
Installation Schematic.

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



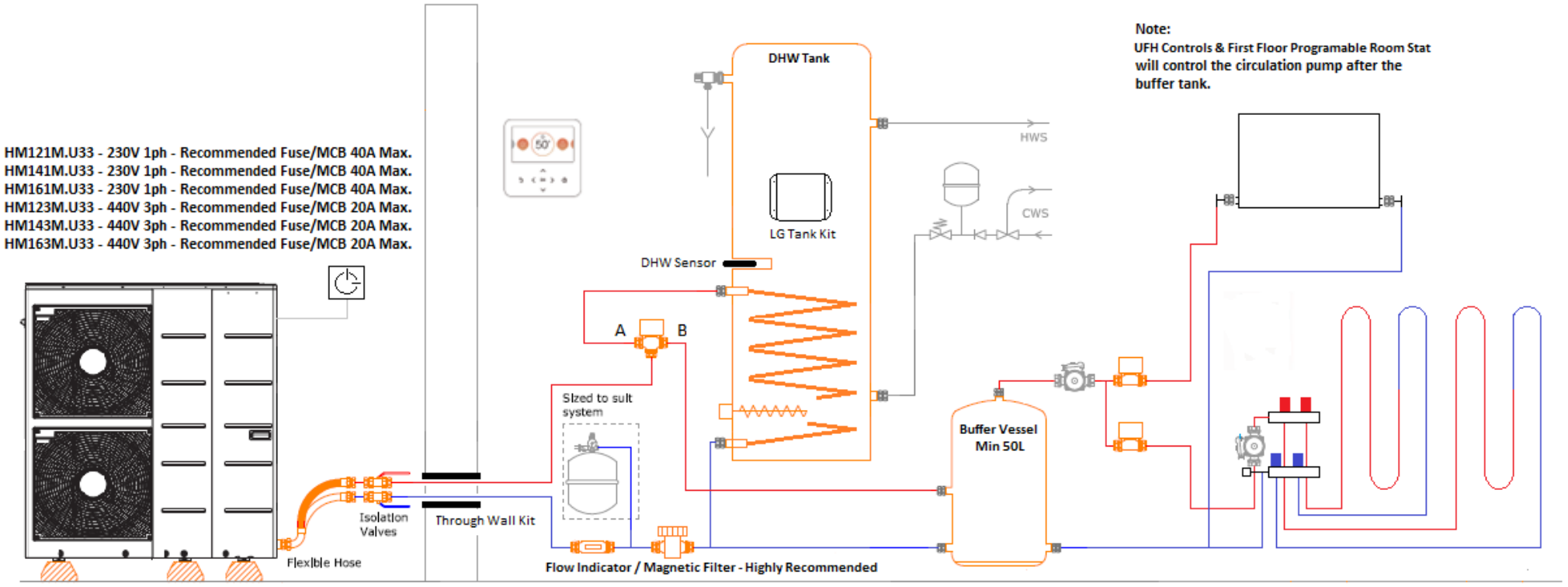
Installation Schematic.

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



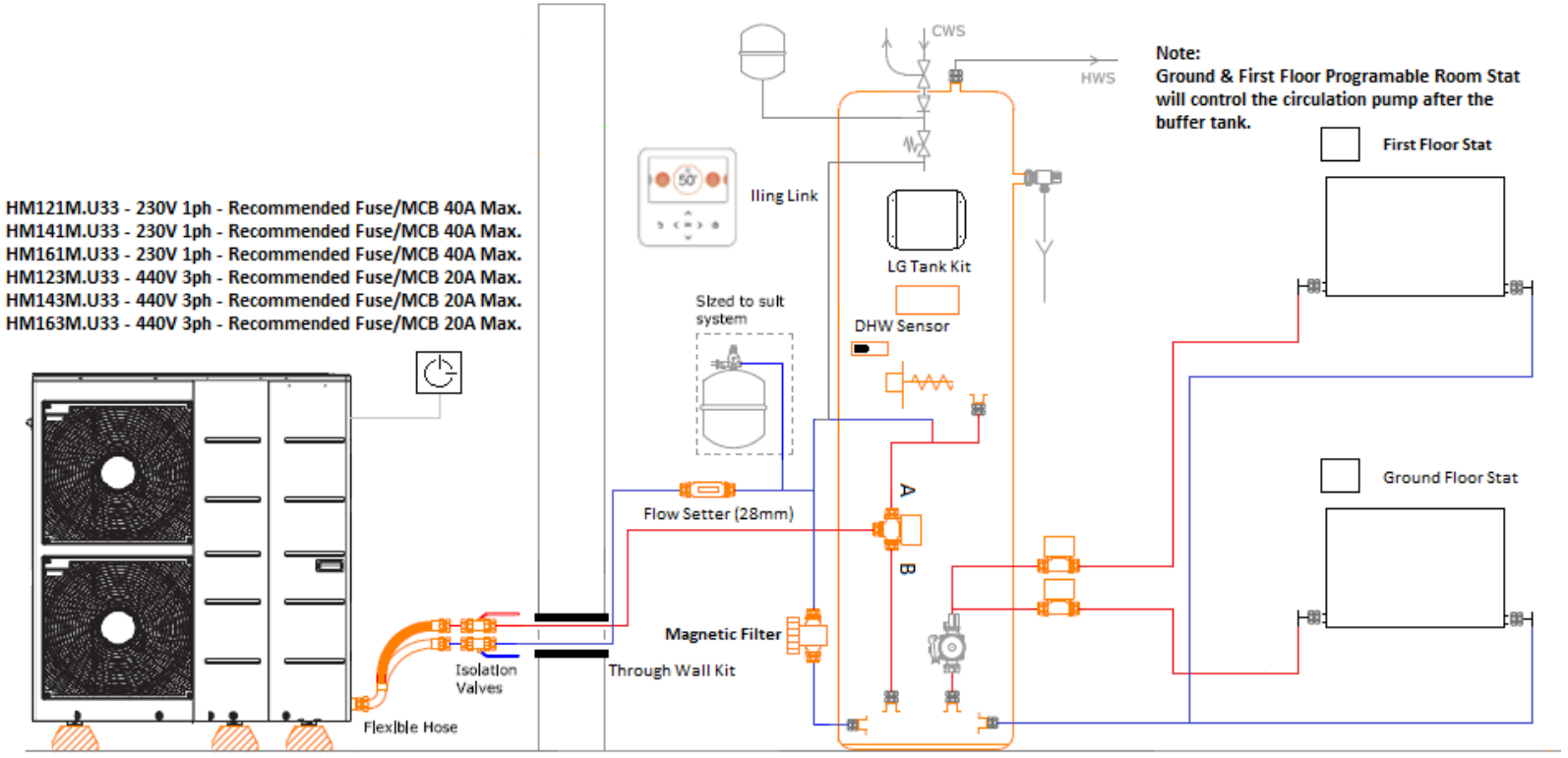
Installation Schematic.

DHW & Heating, Rads & UFH 2 Zone – 12, 14 & 16kW.



Installation Schematic.

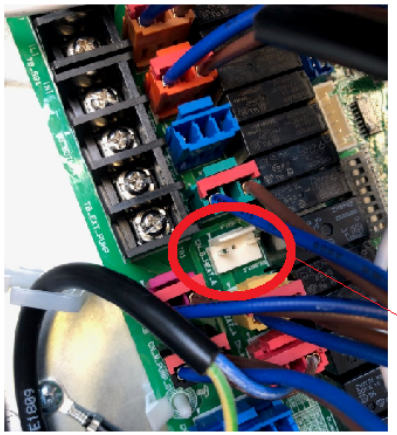
Pre Plumb DHW & Heating with 2 Zone's – 12, 14 & 16kW.

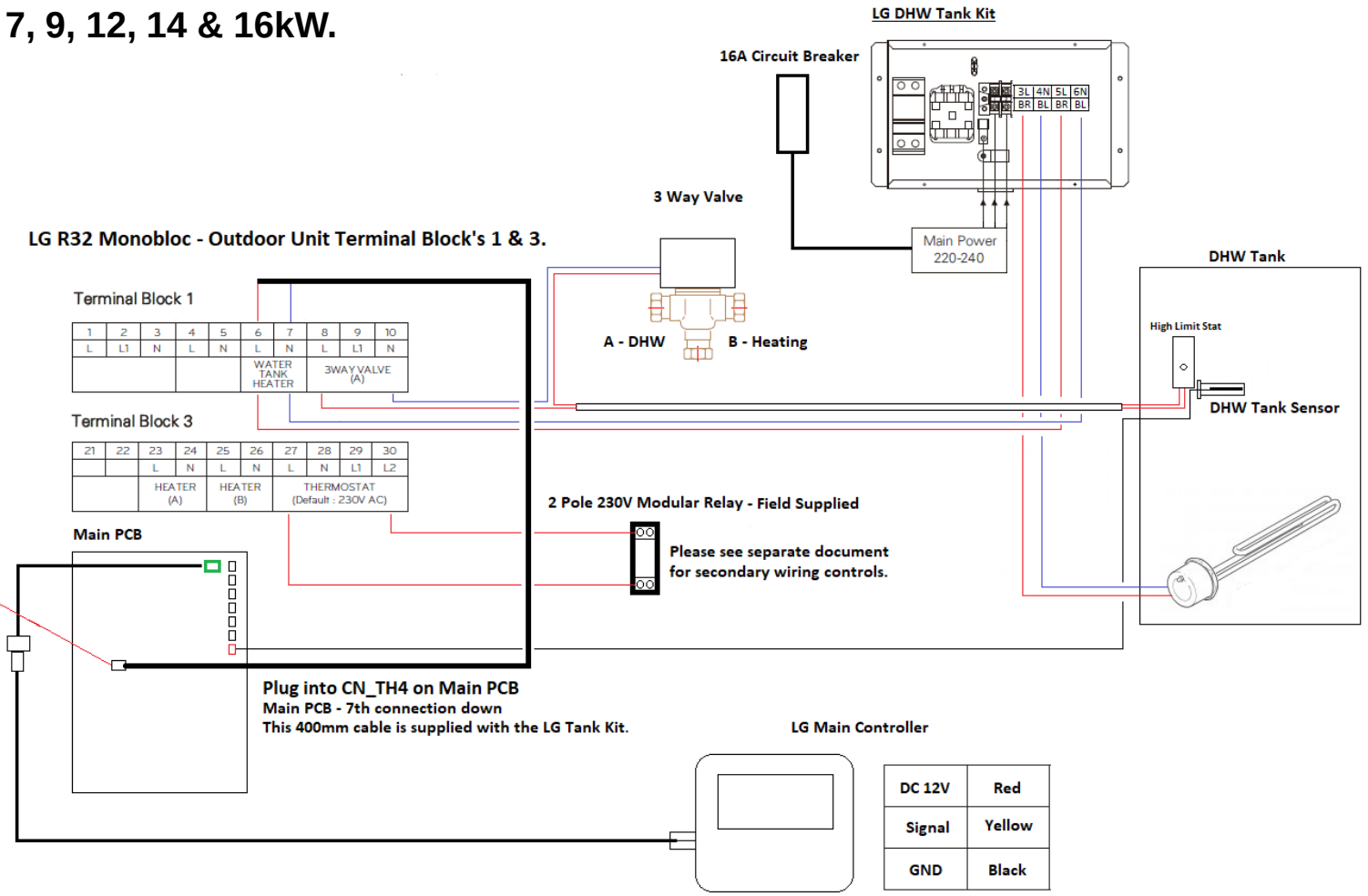


Therma V R32 Installation.

Installation Wiring.

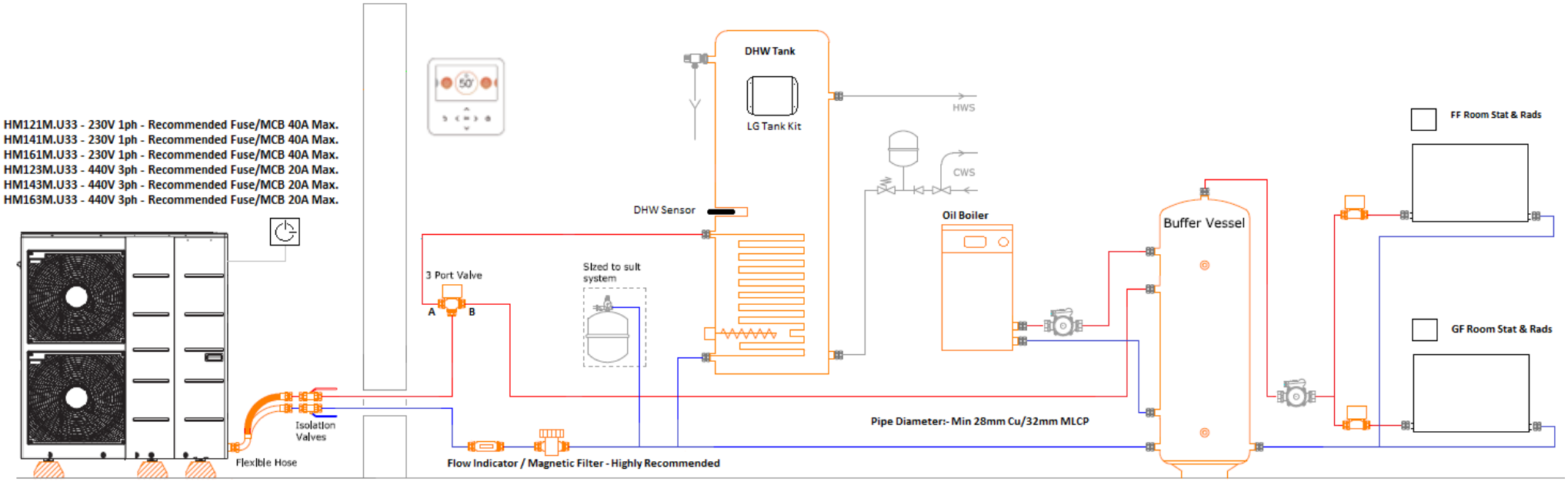
DHW & Heating 5, 7, 9, 12, 14 & 16kW.





Installation Schematic.

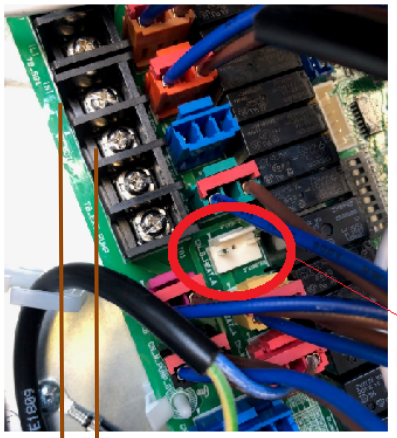
DHW, Boiler with Two Heating Zone's – 12, 14 & 16kW.



Therma V R32 Installation.

Installation Wiring.

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



LG DHW Tank Kit

16A Circuit Breaker

3 Way Valve

Main Power 220-240

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

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)			

A - DHW

B - Heating

DHW Tank

High Limit Stat

DHW Tank Sensor

2 Pole 230V Modular Relay - Field Supplied

Please see separate document for secondary wiring controls.

Main PCB

Plug into CN_TH4 on Main PCB

Main PCB - 7th connection down

This 400mm cable is supplied with the LG Tank Kit.

LG Main Controller

DC 12V	Red
Signal	Yellow
GND	Black

L - Live

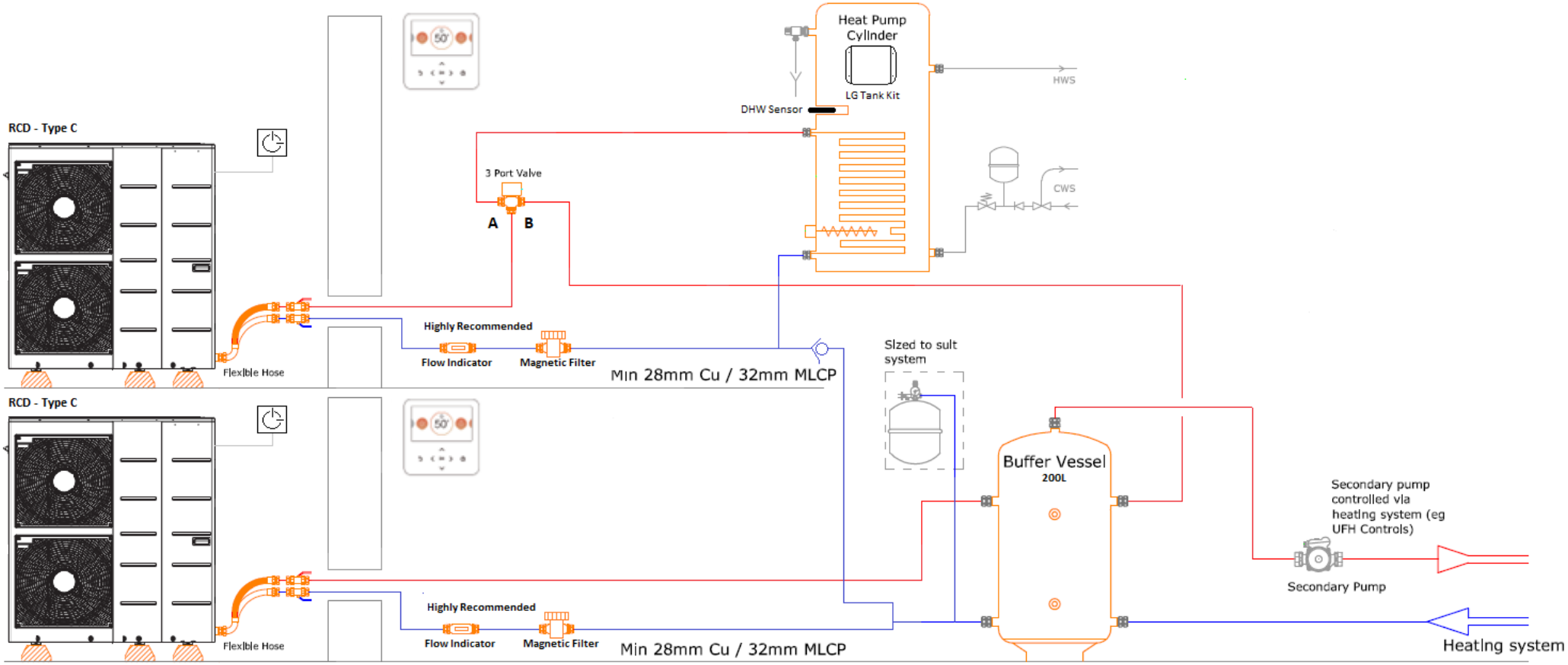
LS – Switched Live

Boiler

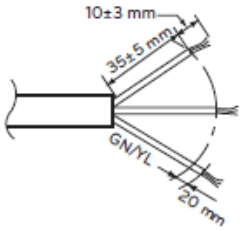
Therma V R32 Installation.

Installation Schematic.

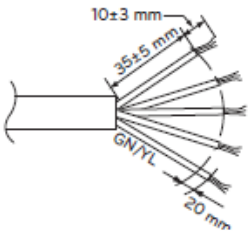
2 Heat Pumps, DHW – 12, 14 & 16kW.



Installation – Mains Power Cable.



For the 1-Phase

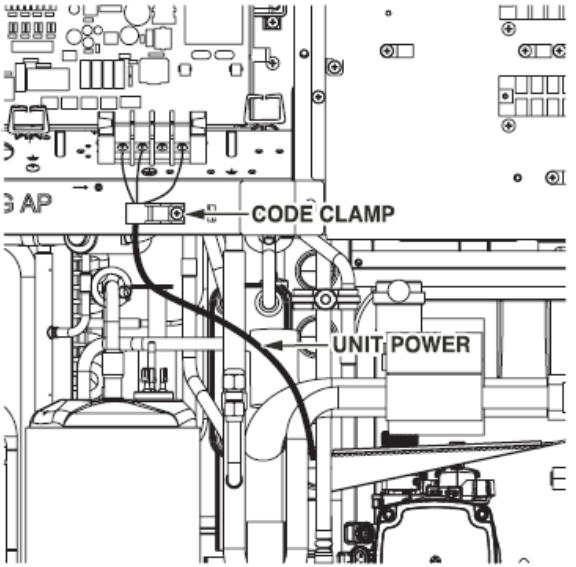


For the 3-Phase

Model Name		Area(mm²)	Cable Type
Phase	Capacity		
1Ø	5kW	4	H07RN-F
	7kW		
	9kW		
	12kW	6	
	14kW		
	16kW		
3Ø	12kW	4	
	14kW		
	16kW		

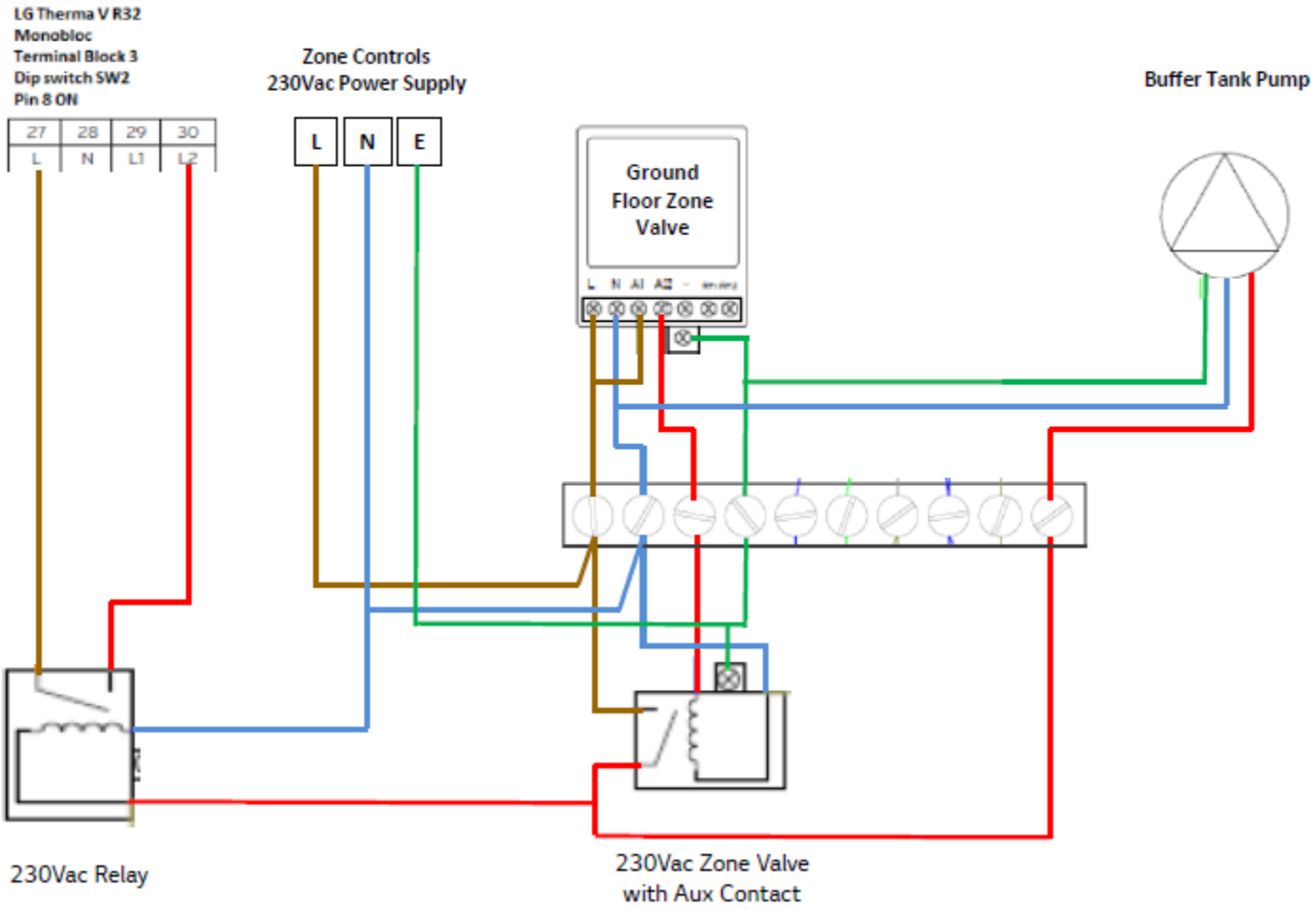
Model Name		Maximum Running Current
Phase	Capacity	
1Ø	5kW	23 A
	7kW	
	9kW	
	12kW	35 A
	14kW	
	16kW	
3Ø	12kW	15 A
	14kW	
	16kW	

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



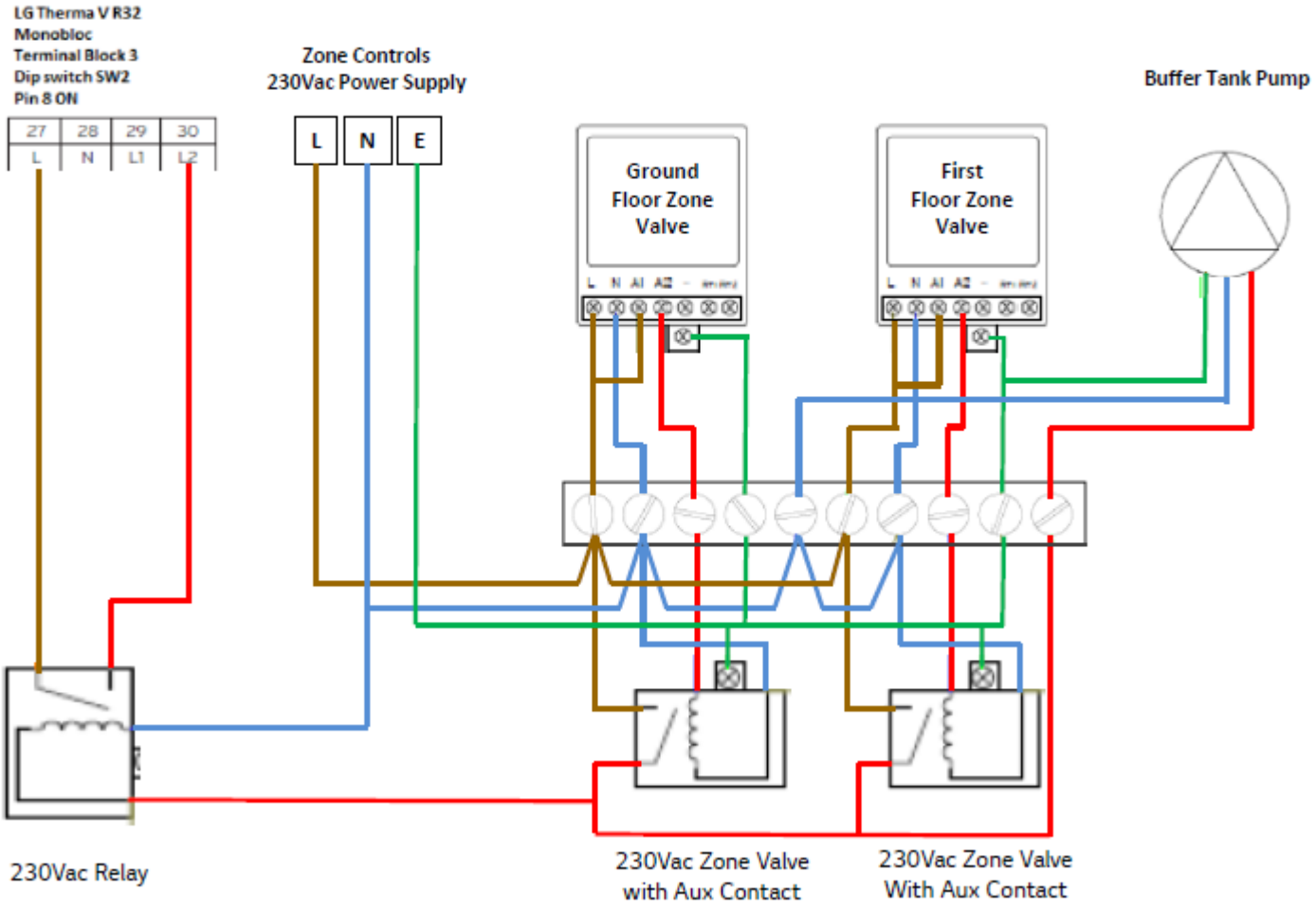
Installation Wiring.

R32 Monobloc – 1-Zone Control Schematic



Installation Wiring.

R32 Monobloc – 2-Zone Control Schematic



Installation – Frost Protection

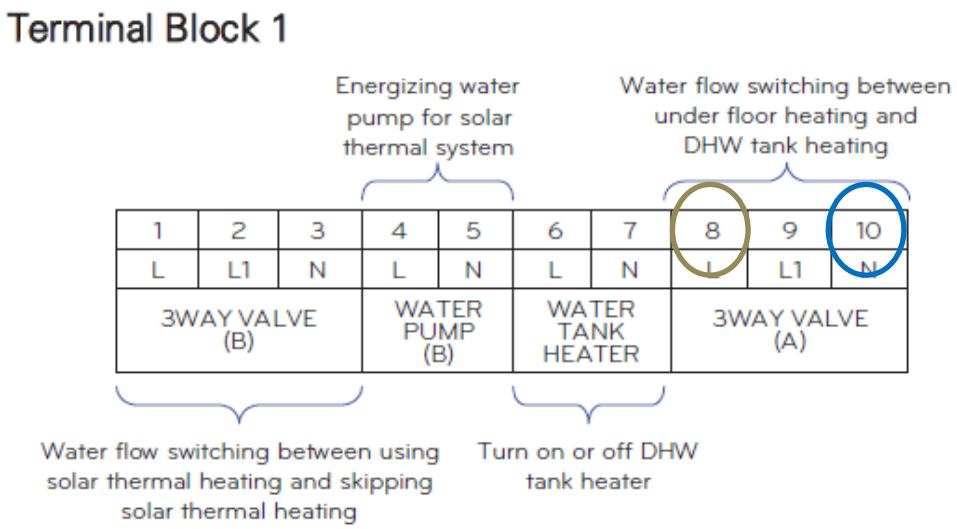
In areas of the country where entering water temperatures drop below 0 °C, the water pipe must be protected by using an approved antifreeze solution. Consult your AWHP unit supplier for locally approved solutions in your area. Calculate the approximate volume of water in the system. (Except the AWHP unit.) And add six liters to this total volume to allow for the water contained in AWHP unit.

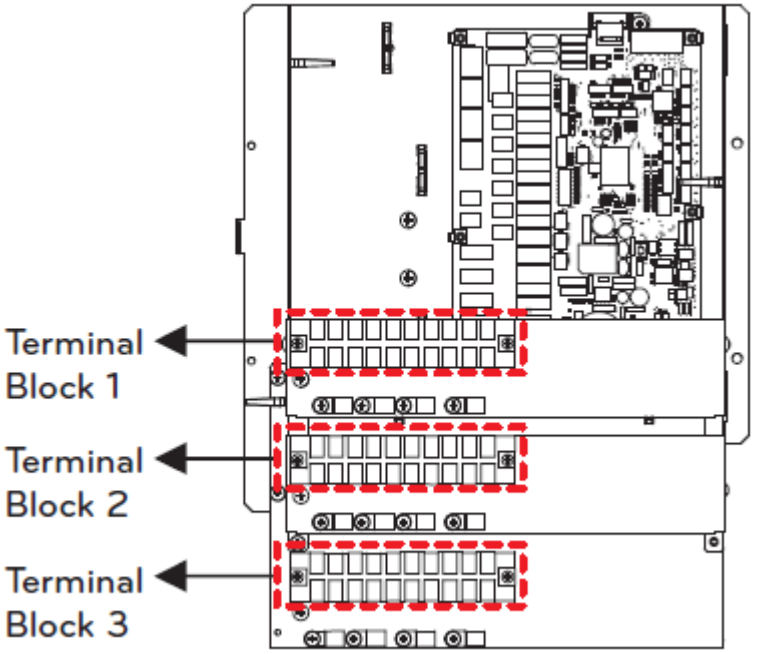
Antifreeze type	Antifreeze mixing ratio					
	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
Ethylene glycol	0%	12%	20%	30%	-	-
Propylene glycol	0%	17%	25%	33%	-	-
Methanol	0%	6%	12%	16%	24%	30%

CAUTION

- Use only one of the above antifreeze.
- If a antifreeze is used, pressure drop and capability degradation of the system can be occurred.
- If one of antifreezes is used, corrosion can be occurred. So please add corrosion inhibitor.
- Please check the concentration of the antifreeze periodically to keep same concentration.
- When the antifreeze is used (for installation or operation), take care to ensure that antifreeze must not be touched.
- Ensure to respect all laws and norms of your country about Anti-freeze usage.

Installation – Terminal Blocks.





Honeywell 3 Way Valve – 2 Wire.

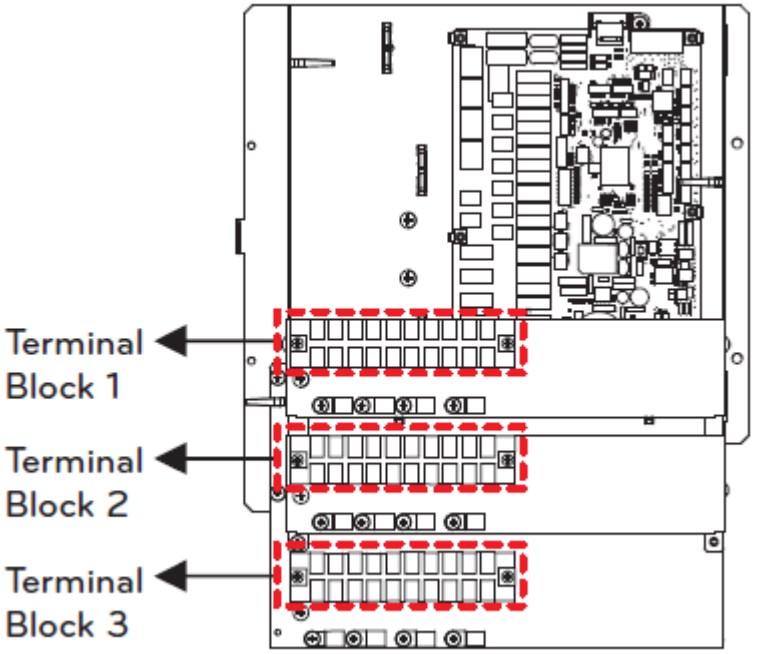
- Terminal 8 – L – Port A - DHW Cylinder.
  Port B – Buffer Tank.
- Terminal 10 – Neutral.

Outdoor Installation – Terminal Block.

Terminal Block 2

Power supply for 2nd heating kit

11	12	13	14	15	16	17	18	19	20
A	B	L	N	L1	L2	N	L	L1	N
3rd PARTY CONTROLLER		MIX PUMP		MIXING VALVE			2WAY VALVE(A)		



Outdoor Installation – Terminal Block.

Terminal Block 3

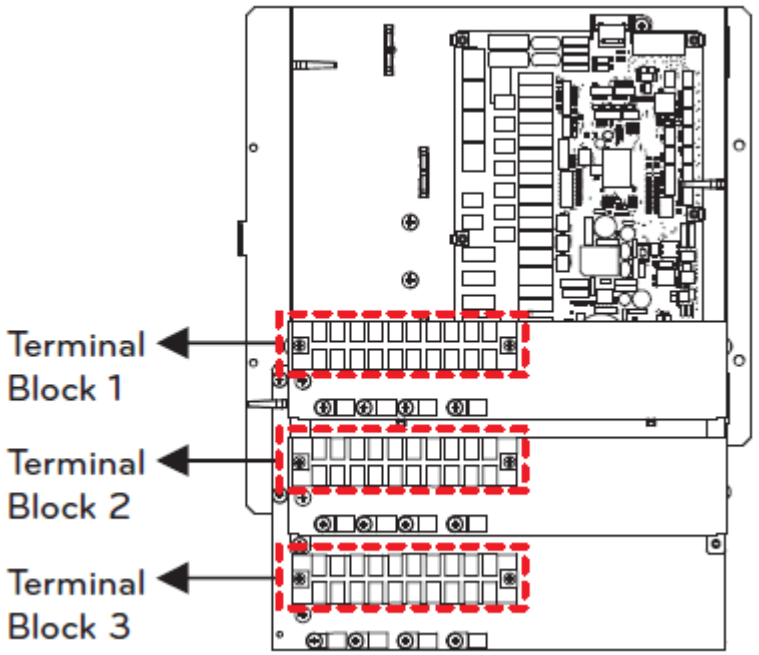
Connection for thermostat
(230V AC)
Supporting type : Heating only or
Heating/Cooling

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)			

Turn on or off backup heater

27	28	29	30
L	N	L1	L2
THERMOSTAT (Default : 230 V AC)			

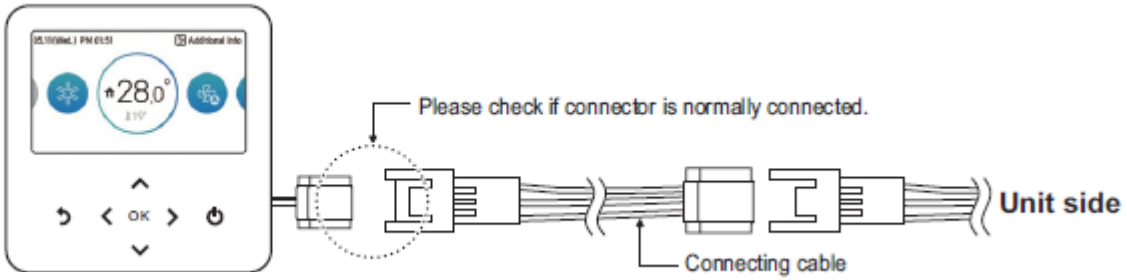
230V 2 Pole Relay

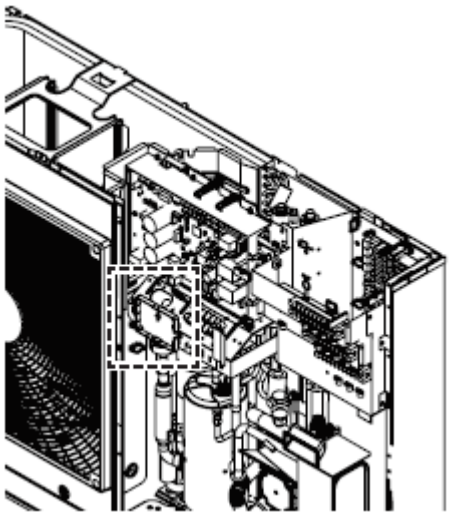


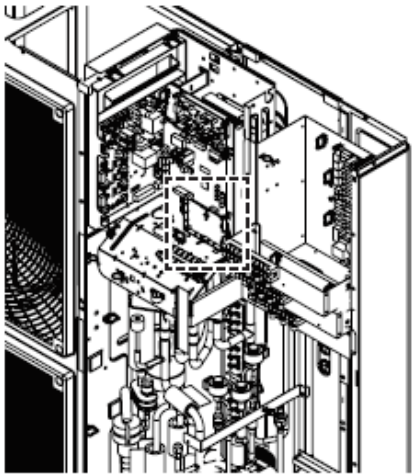
Please see wiring diagram, Slides 20 & 21

Central Controller.

DC 12 V	Red
Signal	Yellow
GND	Black



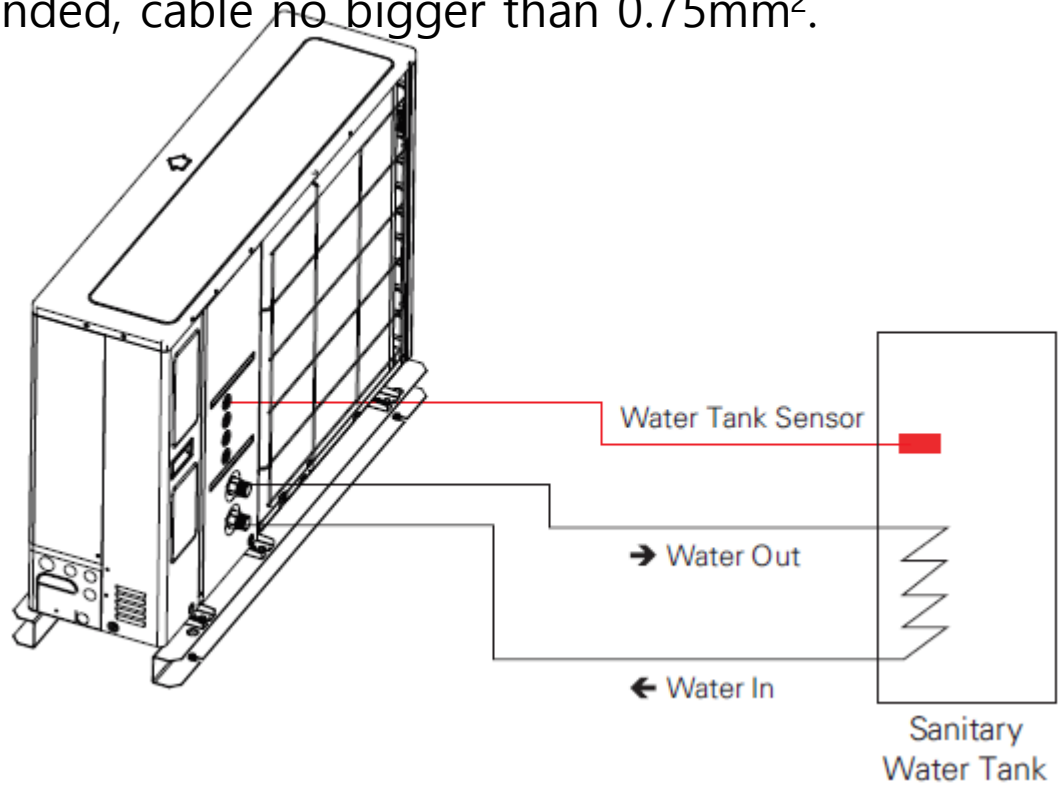




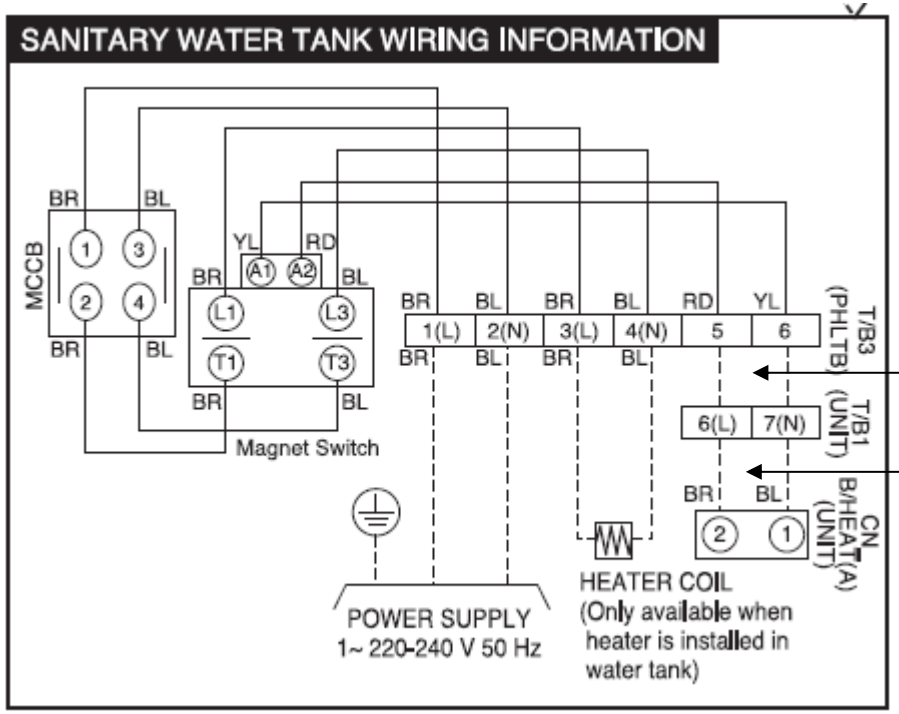
- For detailed installation instructions, refer to the manual included in the accessories.

DHW Installation

- Remove lid/top of unit.
- 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 0.75mm^2.



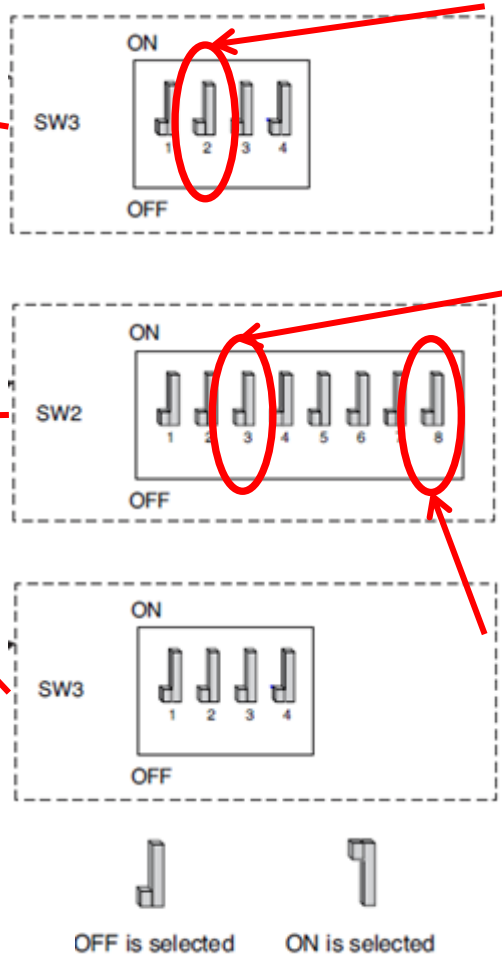
DHW Installation – Tank Heater



Wire from Terminal Pins 6&7 to Pins 5&6 on the DHW Tank Kit.

Wire CN_B/HEAT(A) to Terminal Pins 6&7

Configuration - Dip Switches



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

DHW –
Dip switch 3 On(To the right)

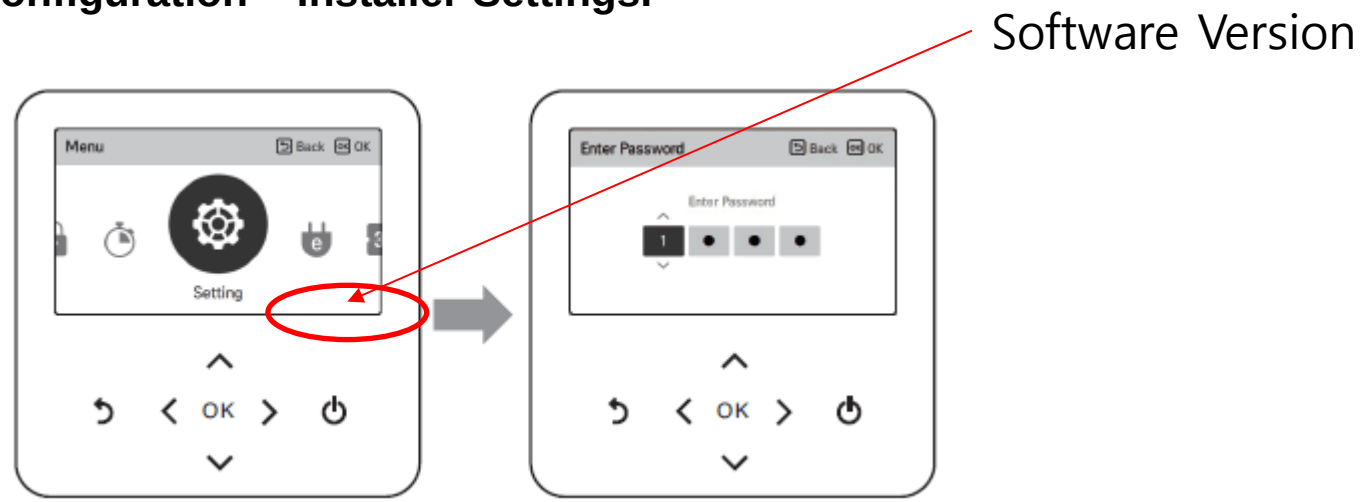
Room Thermostat Control(Field Supplied)
Dip switch 8 On(To the right)

Configuration - Dip Switches – SW2

Description	Setting	Default
Role when central Controller is equipped.	1 - Down – As Master	Down
Accessory installation info	2 – Down	Down
Accessory installation info	**3 – Up DHW Tank**	Down
Cycle	4 – Up Heating & Cooling + Weather Comp	Down
Flow Switch	5 – Always	Down
Electric Heater	6	Down
Electric Heater	7	Down
Thermostat Installed*	**8 – Up**	Down

*When dip switch 8 is turned on, ALL heating functions are locked from the central controller.

Configuration – Installer Settings.



Press the Right arrow to select:- Menu.
Press Ok, Settings is shown.
Press the up button for 3 seconds.
Insert the Password – Shown in the bottom right corner (Software Version)
- Example:- 3 0 3 1 or 3 0 5 1

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.

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

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)	N/A				
	Unit	Port 1 Pulse/kwh (value)	N/A	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		