Therma V R32: Generation 3.

Wiring Instructions.

R32 Monobloc – Feb 2021

LG | Business Solutions

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:

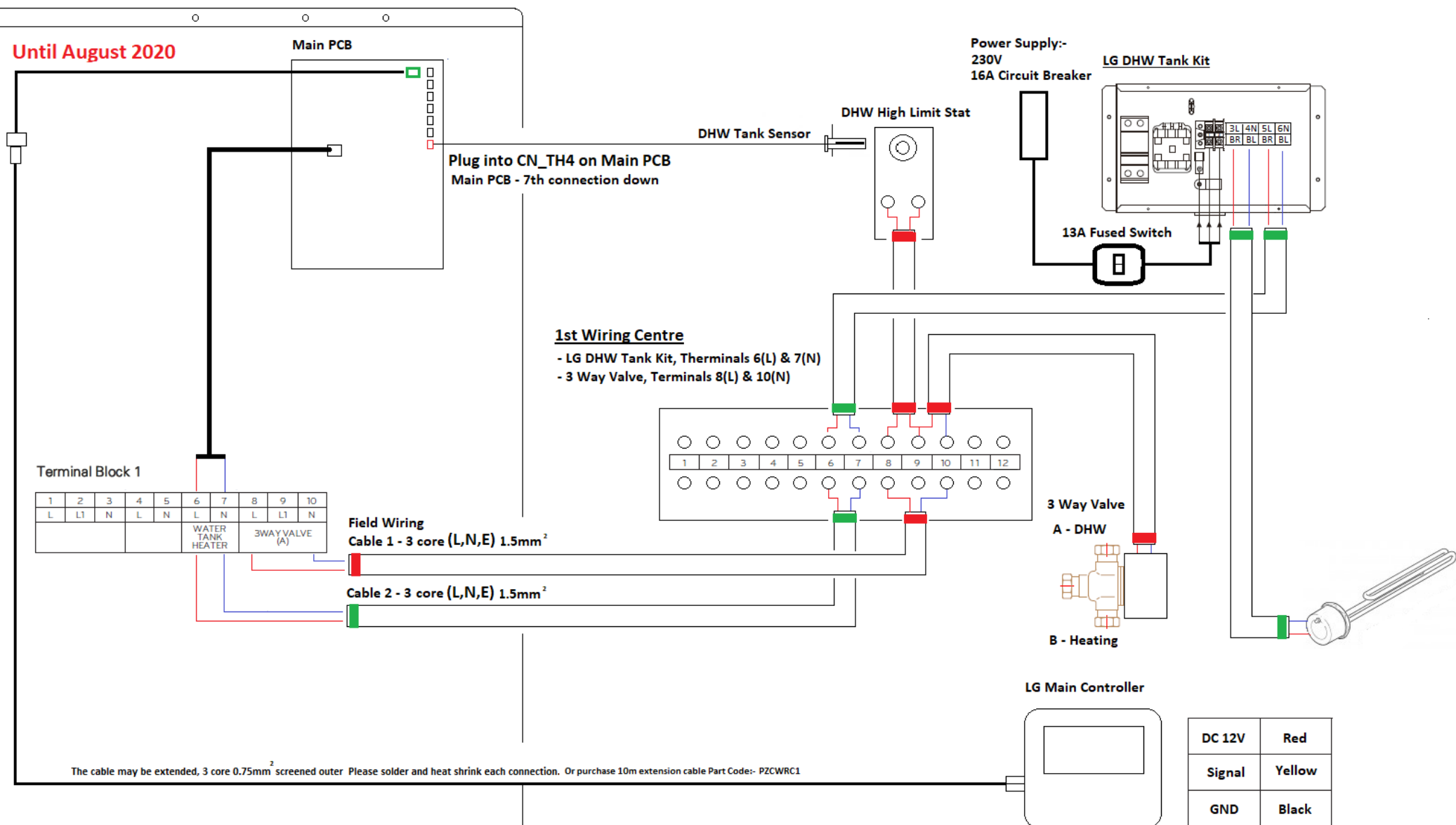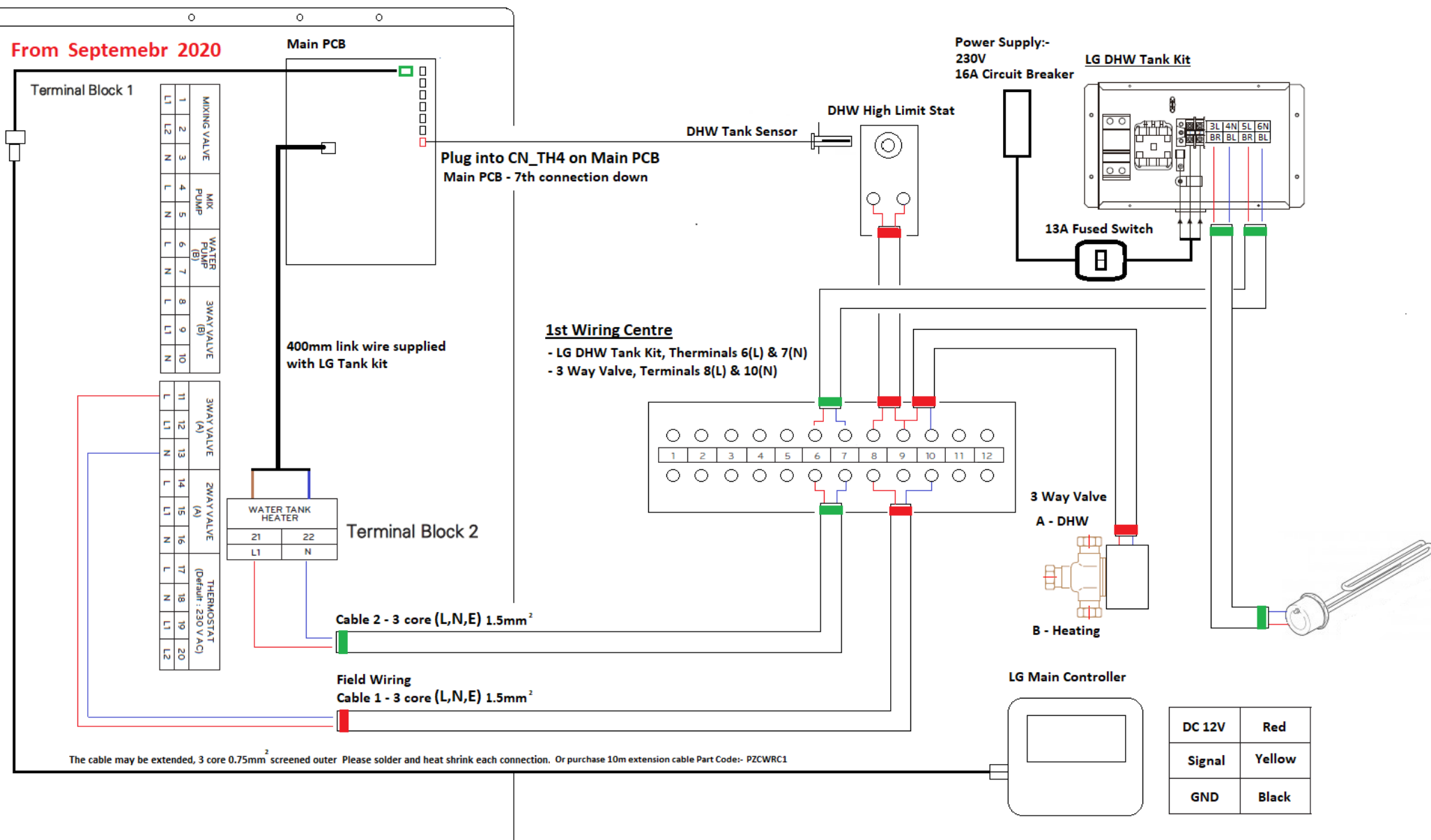| DHW sensor	Relay Box	Link cable, approx 400mm long.
PHRSTA0	PHLTB	

Therma V R32 Installation Instructions.

Installation Wiring. DHW and LG Tank Kit:- 5, 7, 9, 12, 14 & 16kW.

LG R32 Monobloc - Outdoor Unit

Until August 2020

Main PCB

Power Supply:-
230V
16A Circuit Breaker

LG DHW Tank Kit

DHW High Limit Stat

DHW Tank Sensor

Plug into CN_TH4 on Main PCB
Main PCB - 7th connection down

3L 4N 5L 6N
BR BL BR BL

13A Fused Switch

1st Wiring Centre
 - LG DHW Tank Kit, Therminals 6(L) & 7(N)
 - 3 Way Valve, Terminals 8(L) & 10(N)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

3 Way Valve

A - DHW

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)		

Field Wiring
Cable 1 - 3 core (L,N,E) 1.5mm²

Cable 2 - 3 core (L,N,E) 1.5mm²

B - Heating

LG Main Controller

DC 12V	Red
Signal	Yellow
GND	Black

The cable may be extended, 3 core 0.75mm² screened outer Please solder and heat shrink each connection. Or purchase 10m extension cable Part Code:- PZCWRC1

Therma V R32 Installation Instructions.

Installation Wiring. DHW and LG Tank Kit:- 5, 7, 9, 12, 14 & 16kW.

LG R32 Monobloc - Outdoor Unit
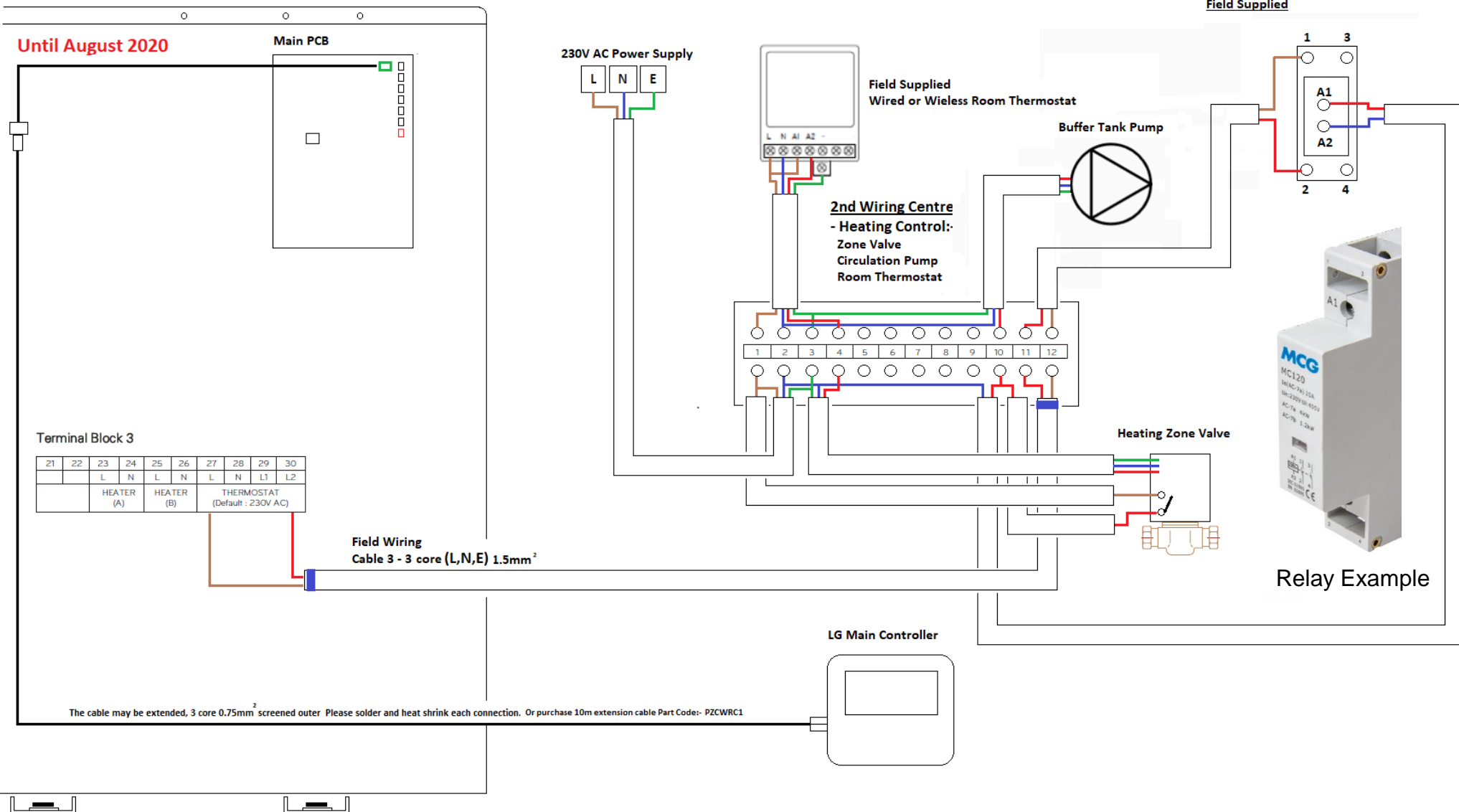
From Septemebr 2020

Main PCB

Terminal Block 1

MIXING VALVE — L1 1, L2 2, N 3
MIX PUMP — L 4, N 5
WATER PUMP (B) — L 6, N 7
3WAY VALVE (B) — L 8, L1 9, N 10
3WAY VALVE (A) — L 11, L1 12, N 13
2WAY VALVE (A) — L 14, L1 15, N 16
THERMOSTAT (Default : 230 V AC) — L 17, N 18, L1 19, L2 20

Plug into CN_TH4 on Main PCB
Main PCB - 7th connection down

DHW Tank Sensor

DHW High Limit Stat

Power Supply:-
230V
16A Circuit Breaker

LG DHW Tank Kit

3L 4N 5L 6N
BR BL BR BL

13A Fused Switch

400mm link wire supplied
with LG Tank kit

WATER TANK HEATER — 21 L1, 22 N

Terminal Block 2

1st Wiring Centre
- LG DHW Tank Kit, Therminals 6(L) & 7(N)
- 3 Way Valve, Terminals 8(L) & 10(N)

1 2 3 4 5 6 7 8 9 10 11 12

3 Way Valve

A - DHW

B - Heating

Cable 2 - 3 core (L,N,E) 1.5mm²

Field Wiring
Cable 1 - 3 core (L,N,E) 1.5mm²

The cable may be extended, 3 core 0.75mm² screened outer Please solder and heat shrink each connection. Or purchase 10m extension cable Part Code:- PZCWRC1

LG Main Controller

DC 12V	Red
Signal	Yellow
GND	Black

Therma V R32 Installation Instructions.

Installation Wiring. Heating Controls 1 Zone:- 5, 7, 9, 12, 14 & 16kW.

LG R32 Monobloc - Outdoor Unit

Heating Controls - 1 Zone

2 Pole Relay - Internally Mounted Field Supplied

Until August 2020

Main PCB

230V AC Power Supply

L   N   E

Field Supplied
Wired or Wieless Room Thermostat

L   N   AI   A2   -

Buffer Tank Pump

1   3

A1

A2

2   4

**2nd Wiring Centre
- Heating Control:·**
Zone Valve
Circulation Pump
Room Thermostat

1 2 3 4 5 6 7 8 9 10 11 12

Heating Zone Valve

MCG
MC120

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)			

**Field Wiring
Cable 3 - 3 core (L,N,E) 1.5mm²**

Relay Example

LG Main Controller

The cable may be extended, 3 core 0.75mm² screened outer Please solder and heat shrink each connection. Or purchase 10m extension cable Part Code:- PZCWRC1

Therma V R32 Installation Instructions.

Installation Wiring. Heating Controls 1 Zone:- 5, 7, 9, 12, 14 & 16kW.

LG R32 Monobloc - Outdoor Unit

Heating Controls - 1 Zone

2 Pole Relay - Internally Mounted
Field Supplied

From Septemebr 2020

Main PCB

Terminal Block 1

L1	1	MIXING VALVE
L2	2	
N	3	
L	4	MIX PUMP
N	5	
L	6	WATER PUMP (B)
N	7	
L	8	3WAY VALVE (B)
L1	9	
N	10	
L	11	3WAY VALVE (A)
L1	12	
N	13	
L	14	2WAY VALVE (A)
L1	15	
N	16	
L	17	THERMOSTAT (Default : 230V AC)
N	18	
L1	19	
L2	20	

230V AC Power Supply

L N E

L N AI A2

Field Supplied
Wired or Wieless Room Thermostat

Buffer Tank Pump

2nd Wiring Centre
- Heating Control:-
Zone Valve
Circulation Pump
Room Thermostat

1	2	3	4	5	6	7	8	9	10	11	12

1 3

A1

A2

2 4

MCG
MC120

Heating Zone Valve

Relay Example

Field Wiring
Cable 3 - 3 core (L,N,E) 1.5mm^2

LG Main Controller

The cable may be extended, 3 core 0.75mm^2 screened outer Please solder and heat shrink each connection. Or purchase 10m extension cable Part Code:- PZCWRC1

Therma V R32 Installation Instructions.

Installation Wiring.

R32 Monobloc – 2-Zone Control Schematic
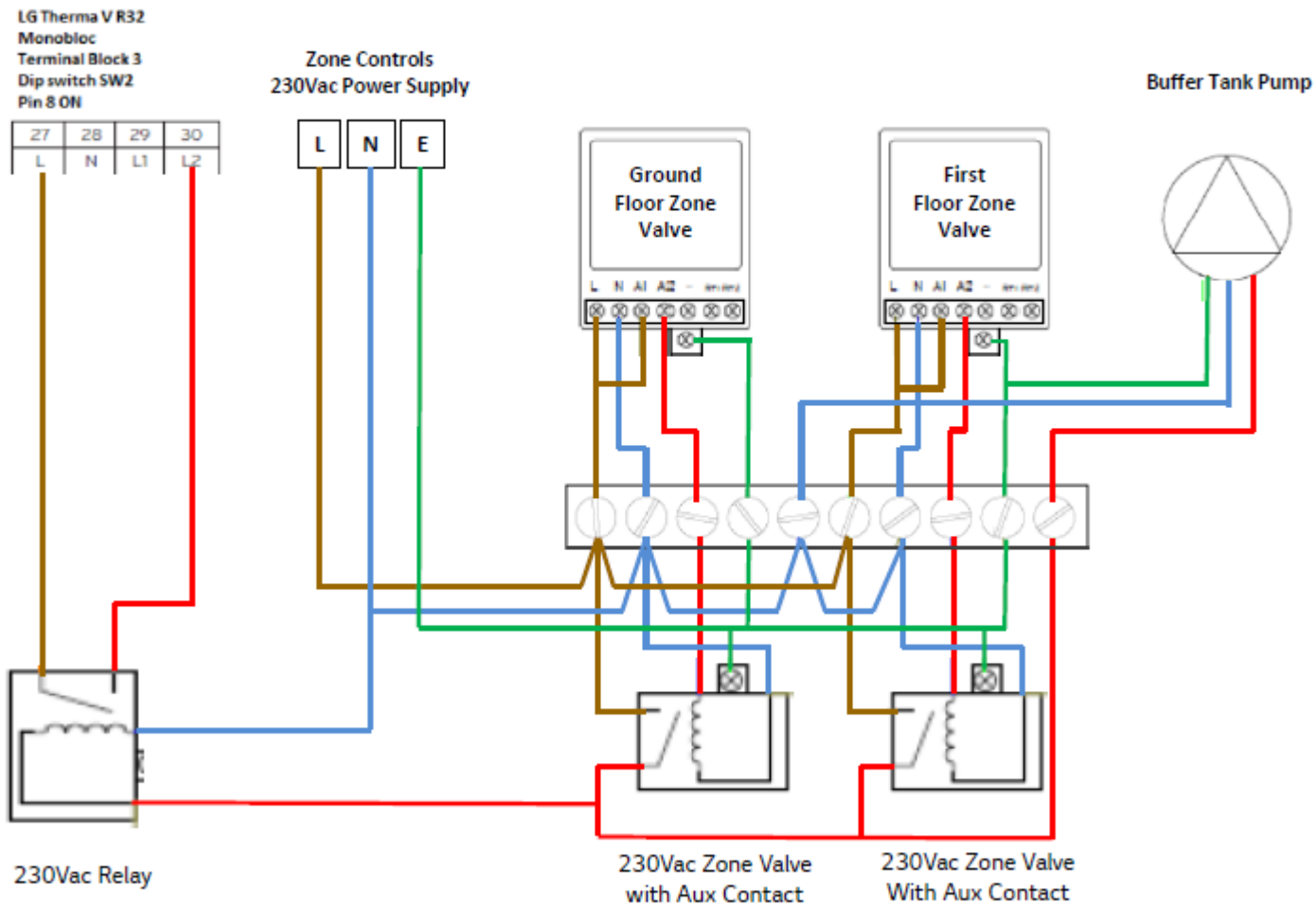
Relay Example

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℃(Default : -5℃)

- The values shown are not actual temperature setting but an offset that can be applied to the default value of 0℃, as shown in the previous slide. When the function is activated the default value is -5℃.
- Example if setting -10 is used;
  - entering water temp for judgment is reduced from 15℃to 5℃for protection starting
  - entering water for condition release is reduced from 18℃(15℃+ 3℃) to 8℃(5℃+ 3℃)

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℃. 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.

Installer	⮐ Back OK OK
CN_EXT	>
Anti-freezing Temperature	⟨ -5 ⟩
Data logging	>
Password Initialization	>

Antifreeze short Pin

CN_FLOW2

SW3

ON

1 2 3 4

OFF

Indoor PCB
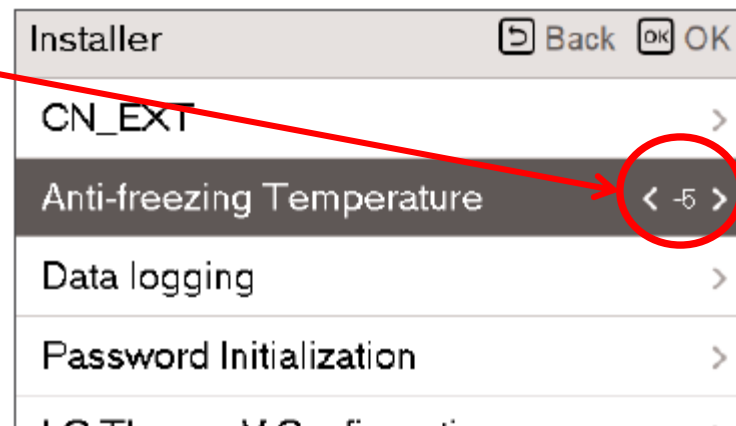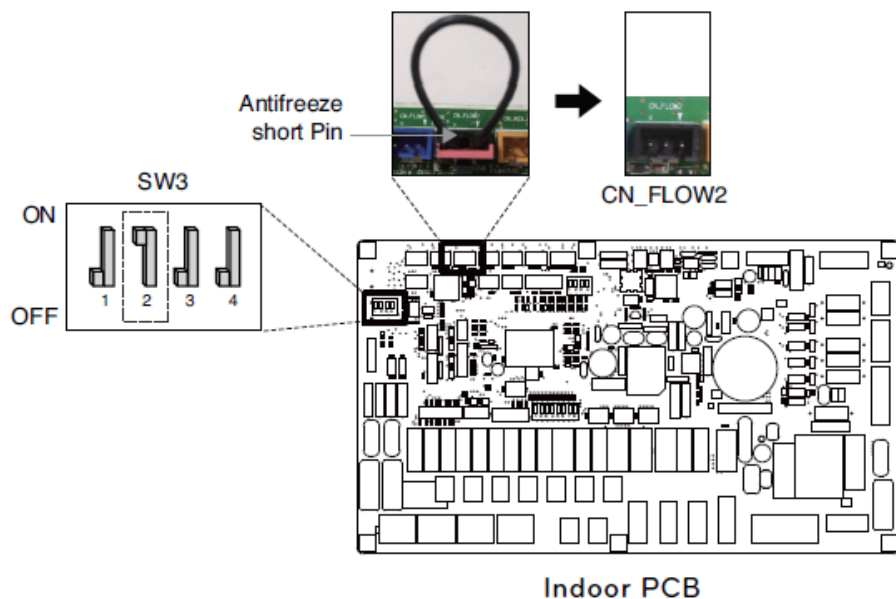
Therma V R32 Installation Instructions.

Central Controller.

DC 12 V	Red
Signal	Yellow
GND	Black

Please check if connector is normally connected.

Unit side

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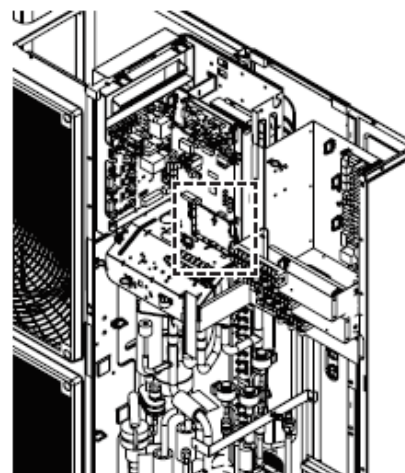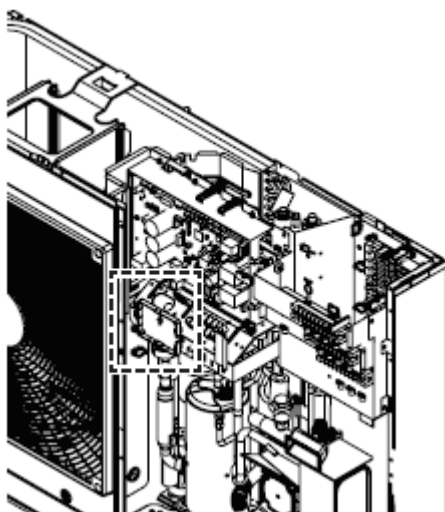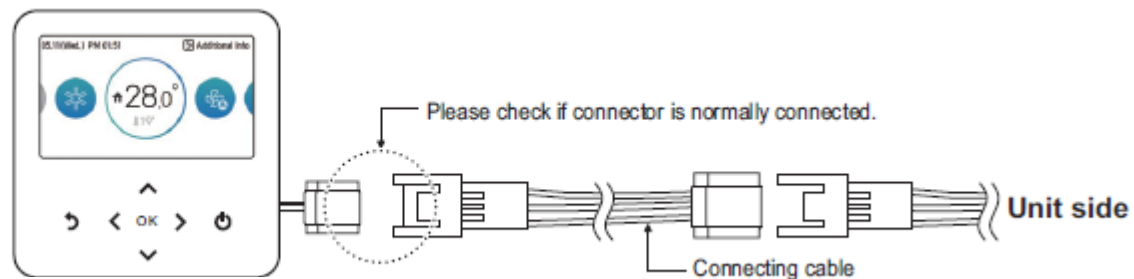
- For detailed installation instructions, refer to the manual included in the accessories.

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 0.75mm^2.

Water Tank Sensor

→ Water Out

← Water In

Sanitary
Water Tank
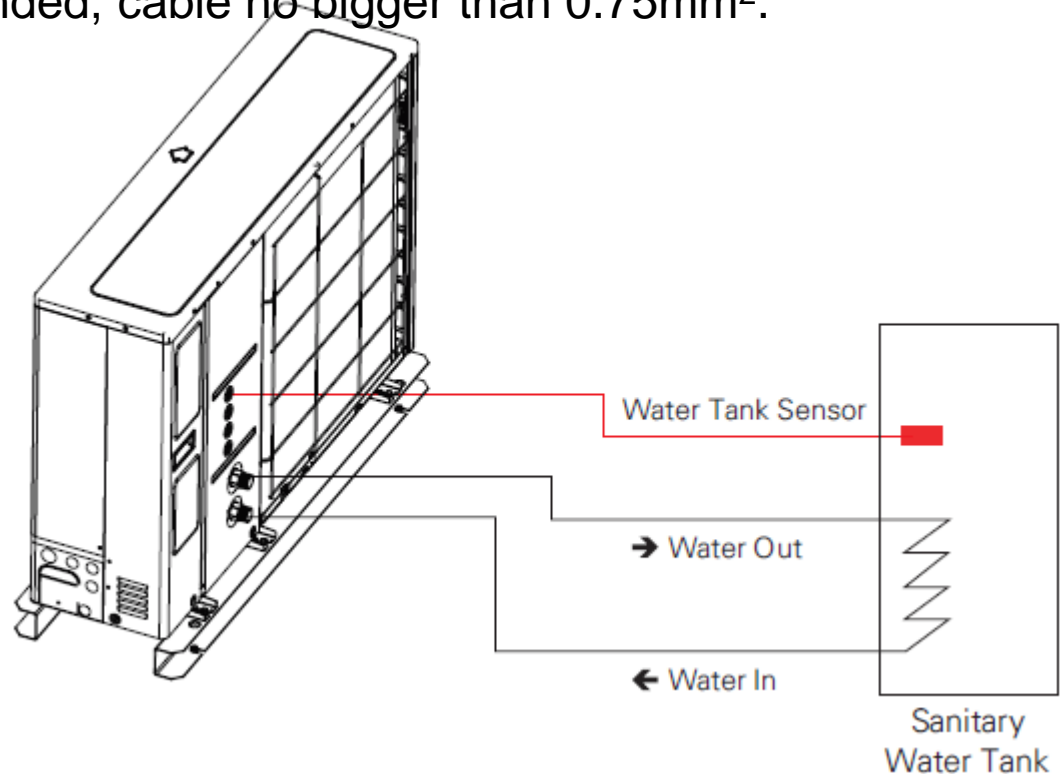
Therma V R32 Installation Instructions.

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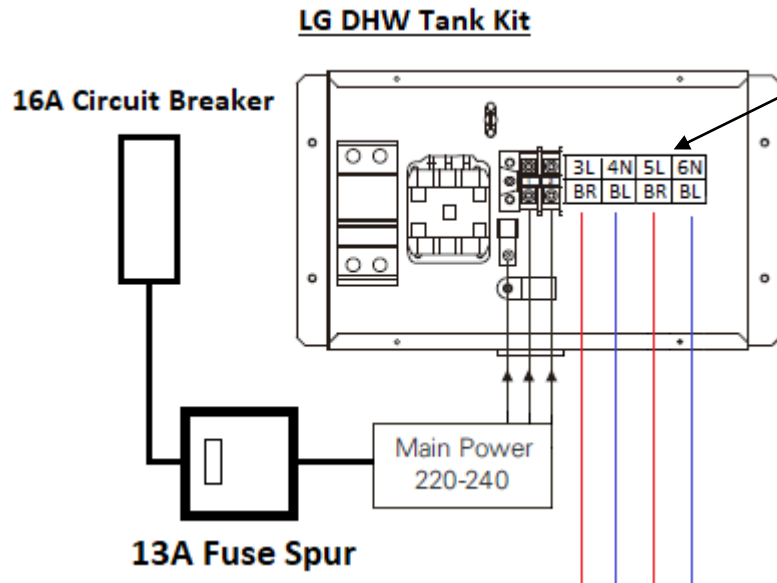
Wire from Heat Pump 6&7 Terminals to DHW Tank Kit Terminals 5&6.

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

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

Configuration - Dip Switches
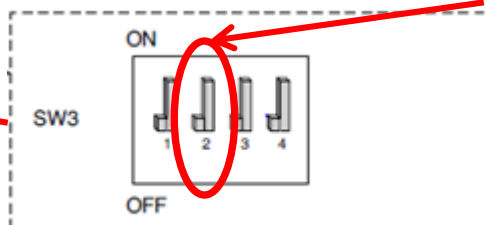
Antifreeze Logic –
Dip switch 2 On(To the right)
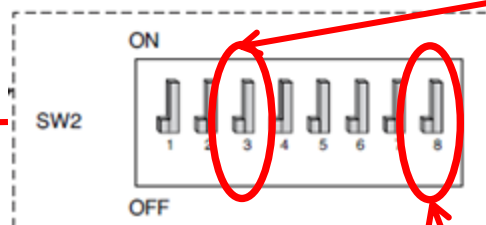
DHW –
Dip switch 3 On(To the right)
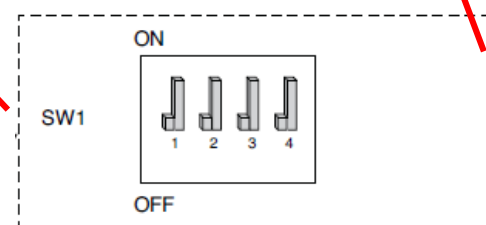
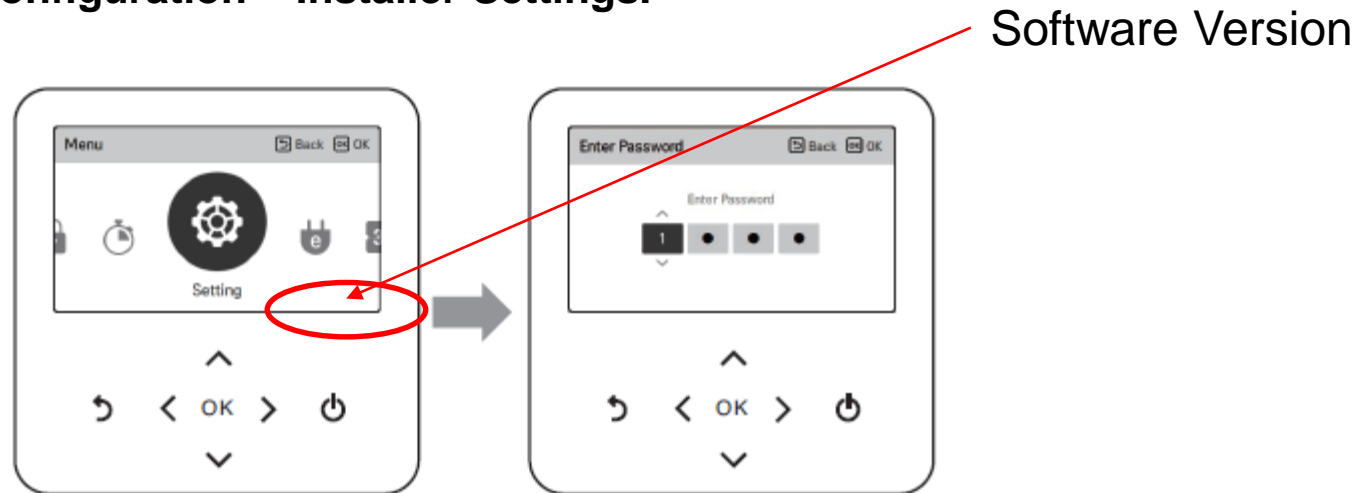**Room Thermostat Control**(Field Supplied)
Dip switch 8 On(To the right),
*When dip switch 8 is turned on, ALL **HEATING**
functions are locked from the controller.

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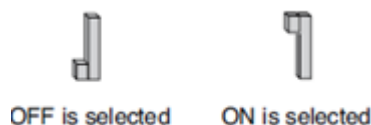
Note: - Please ensure the heat pump is turned off,
before changing dip switches.

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 | HEAT MODE ONLY | HEAT & TANK MODE |

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)	N/A				
Meter Interface — 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		