THERMA V

APPLICATION GUIDE

Jan, 2022
HQ Heating Task

CONTENTS

THERMA V – APPLICATION GUIDE

1 Air Temperature Sensor

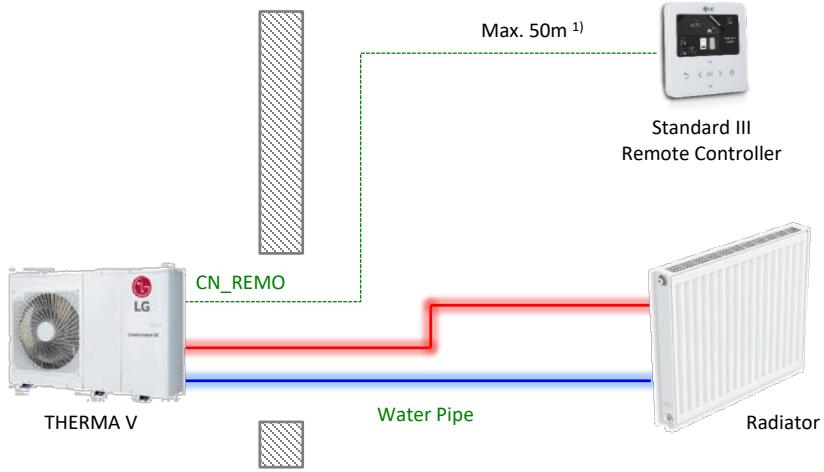
Therma V can be operated based on Room Air Temperature. In this case, the remote controller that air temp. sensor is embedded or the remote room air temperature sensor should be installed in a space where heating / cooling is applied continuously (e.g. living room)

Using Air Temp. Sensor embedded in Remote Controller

▪ Available Product

Availability	Available Products
Available	R32 Split – Hydro Box & IWT R32 Hydrosplit – Hydro Box & IWT R410A Split – Hydro Box (NK5) R32 Monobloc and R32 Monobloc S
Not Available	R410A Split – Hydro Box (NK3) Split High Temp.

▪ Schematic Diagram



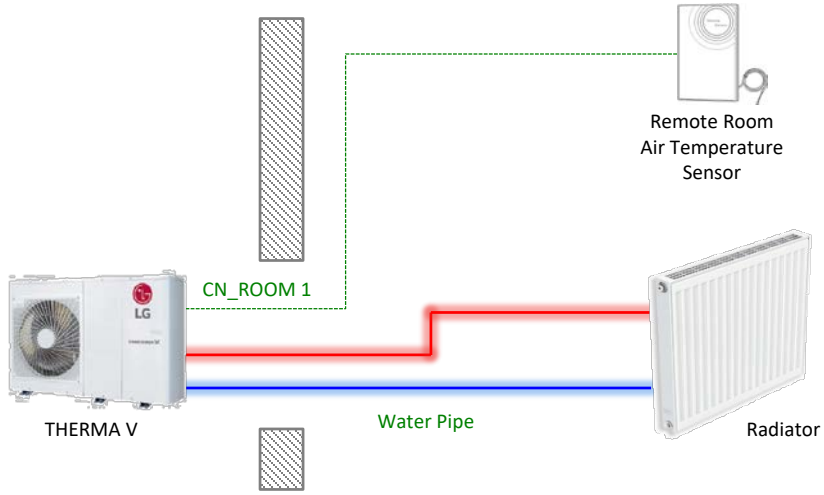
Note :
1) Extension wire for remote controller (PZCWRC1) is required for Max. 50m connection.
2) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) In case of 2nd circuit, the Remote controller can be used for the High-temp circuit only (refer to “2nd circuit“ contens of this document)

Using Remote Room Air Temp. Sensor

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Remote Room Air Temperature Sensor	PQRSTA0		• Max. Wire Length : 15m

▪ Schematic Diagram



Note :
1) To use a remote room air temperature sensor, it is mandatorily required to change the dip SW setting for “Remote Room air sensor” and some options of “Select Temperature Sensor” in the Installer Setting.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

2 Room Thermostat

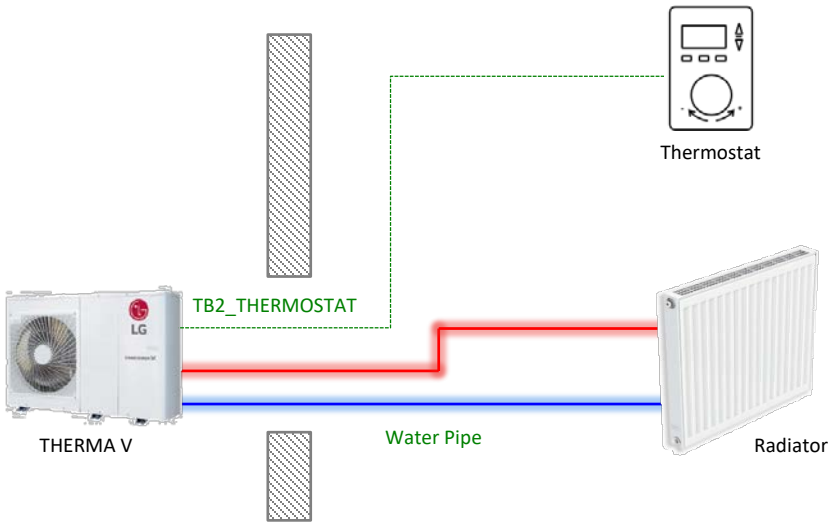
The room thermostat can be connected to Built-in Thermostat Port in the product to control operation mode and status(on/off) of Therma V. It would be operated when it receives “ON” signal from room thermostat.

▪ Available Thermostat Type (3rd Party Accessory)

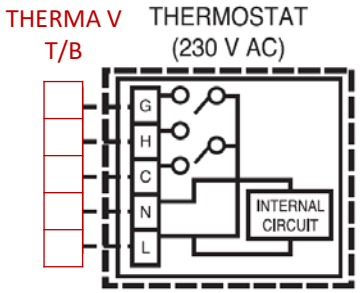
Type	Figure	Power	Operating Mode	Supported
Mechanical		230 V AC	Heating Only	Yes
			Heating / Cooling	Yes
			Heating / Cooling / DHW Heating	Yes *
Electrical		230 V AC	Heating Only	Yes
			Heating / Cooling	Yes
			Heating / Cooling / DHW Heating	Yes *

* Only available for R32 Monobloc S, R32 Hydrosplit (Hydro Box & IWT), Split Hydro Box (NK5 series)

▪ Schematic Diagram



▪ Operation Logic



Space Heating & Cooling		
Input		Operation
Heat (H)	Cool (C)	
Off	Off	Off
On	Off	On (Heating)
Off	On	On (Cooling)

Hot Water Heating *	
Input	DHW Enable
DHW (G)	
Off	Off
On	On

* Only available for R32 Monobloc S, R32 Hydrosplit (Hydro Box & IWT), Split Hydro Box (NK5 series)

Note :

1) To use a room thermostat connected to Built-in Thermostat Port in the product, it is mandatorily required to change dip SW setting for “Thermostat”.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) If a wireless Thermostat is used, the signal receiver should be connected to Built-in Thermostat Port.
4) Therma V will be operated by considering both the signal from the Thermostat and the ”Thermo On” condition of the remote controller.

Thermo On/Off Condition		Product
Thermostat	Remote Controller	
Thermo Off	Thermo Off	Thermo Off
Thermo Off	Thermo On	Thermo Off
Thermo On	Thermo Off	Thermo Off
Thermo On	Thermo On	Thermo On

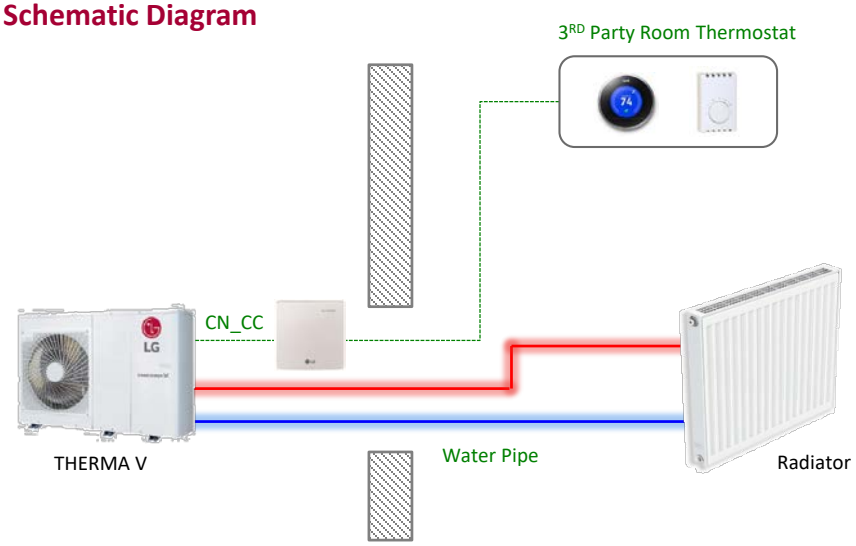
3 Dry Contact

Dry contact is available to connect 3rd party controller(24V Thermostat) to Therma V. For example, if you want to use “Google Nest” thermostat, you need to connect it through Dry Contact.

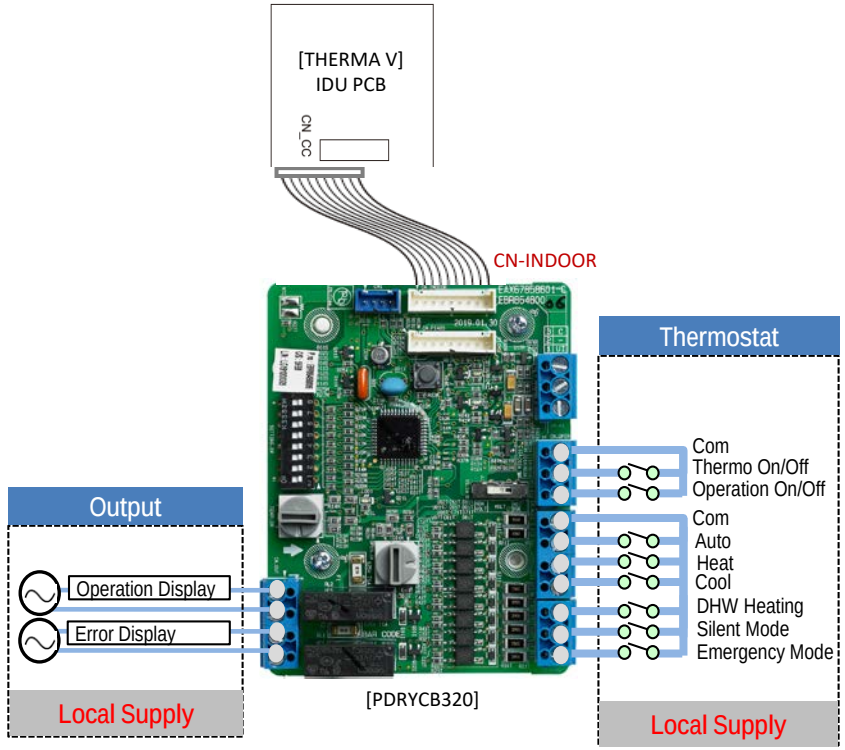
▪ Specification of Dry Contact

Description		Simple Dry Contact	Dry Contact for Thermostat
		PDRYCB000 	PDRYCB320 
Control	Input Port	1	8
	Operation On / Off	○	○
	Thermo On / Off	-	○
	Operation Mode	-	Auto, Heating, Cooling
	DHW On / Off	-	○
	Silent Mode	-	○
	Emergency Mode	-	○
Output	Operation Status	○	○
	Error	○	○

▪ Schematic Diagram



▪ Wiring Diagram



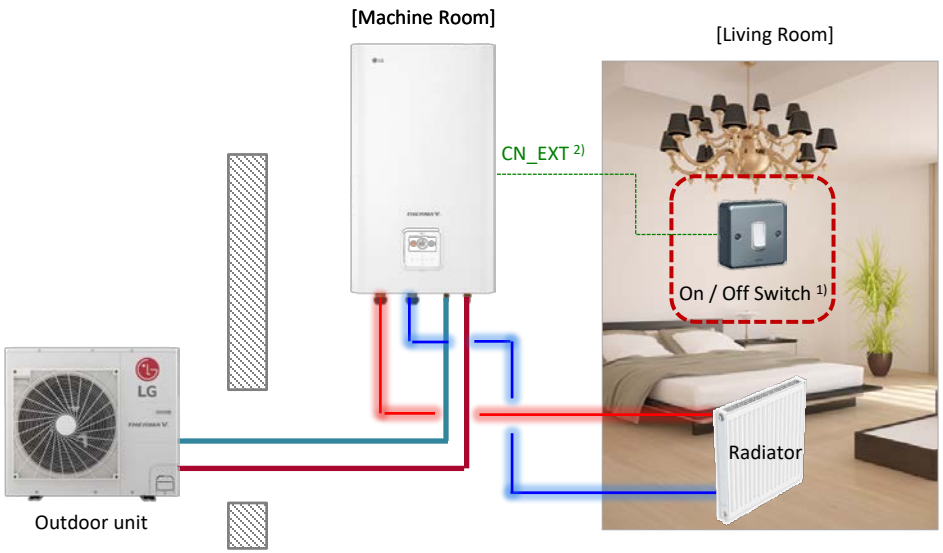
Note :

1) For Therma V Application with Dry Contact(PDRYCB320), TEMP_SW and OPER_SW should be “F” and “0”, respectively.
2) If there is no external power input, VS_SW should be “NON VOLT”.
3) When PDRYCB320 is connected by Therma V, there is no OPER_SW setting that each input signal is disabled.
4) If the signal for DHW Heating, Silent Mode, Emergency Mode is not provided by the thermostat, these operations will be stopped, even though these functions are activated by the remote controller.
5) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

4 Programmable Digital Input Operation

Thermal V has a port to receive external input signal, and the product would be operated according to the mode selected by the installer setting and input signal.

▪ Schematic Diagram



Note :
1) If the length between Port for CN_EXT and ON/OFF Switch is more than 10m, it should be connected through the relay.
2) Adapter Cable (0.5m) for CN_EXT is provided with product.

3) To use the Programmable Digital Input operation, it is mandatorily required to change options of "CN_EXT" in the Installer Setting.
4) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Detailed Operation

CN_EXT Mode	Input Signal *	Operation **
Not Use (Default)	-	Not Used
Simple operation (On / Off) ***	Open	"Operation Off"
	Close	"Operation On"
Simple Dry contact	Open	Operation Off with dry contact lock setting ※ In this case, "Operation on" is possible only with the Central controller.
	Close	Release dry contact lock setting and "operation on" is possible depend on dry contact auto setting **** - Auto Mode : Change as "Operation on" condition automatically - Manual Mode : Keep on "operation off" condition, but "operation on" is possible by remote controller manually
Single Emergency Stop (Forced Stop)	Open	Forced operation stop with forced lock setting ※ In this case, "Operation on" is impossible with any other controller.
	Close	Release forced lock and keep on "operation off" condition, but "operation on" is possible by remote controller manually

* This signal is recognized only when status is changed.
** This operation on / off means remote controller of / off for heating & cooling.
*** In case of simple operation, operation on/off is possible as per both the remote controller and external input signal.
**** It can be selected in "Dry Contact Mode" menu of the Installer Setting.

5 External Water Pump

If additional water pump is required due to various reasons, LG Therma V can provide contact signal (Non-Voltage) to external water pump in accordance with Pump operation situation.

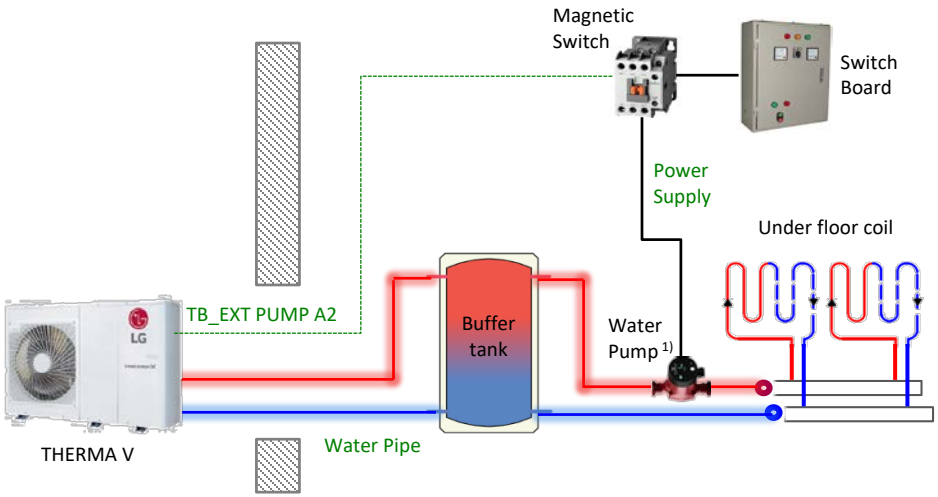
▪ Available Options

One of three options can be selected in the Installer Setting.

Option	External Pump Operation
Use	Operation when main water pump is operating
Heating/Cooling	Operation only for space heating or cooling
Direct Circuit *	Used for Circuit 1 in case of 2nd circuits

* Only available for R32 Monobloc S, R32 Hydrosplit (Hydro Box & IWT), Split Hydro Box (NK5 series)

▪ Schematic Diagram

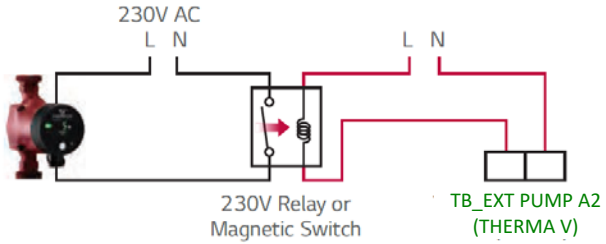


Note :
1) If hydronic separator or buffer tank is installed, water pump in the secondary circuit must be installed.
2) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Water Pump	Field Scope		• 1Φ, 230V AC • Self-Controlled is recommended

▪ Wiring of External Water Pump



Note :
1) Direct connection without relay or Magnetic Switch is not recommended.
2) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

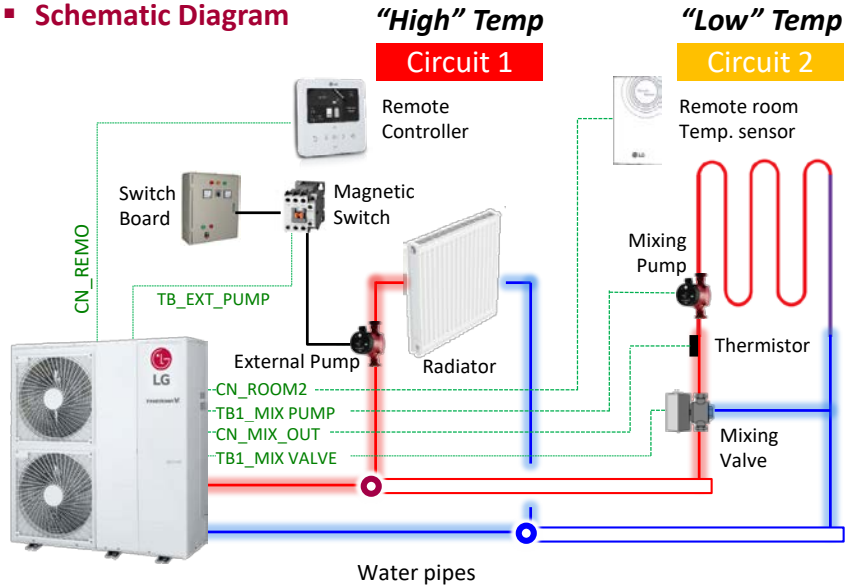
6 2nd Circuit

LG Therma V can provide the solution to control two different set temperatures for two circuits. In this case, the circuit 2 (Low Temp. zone) will have the remote room sensor and the circuit 1 (High Temp. zone) will have the remote controller.

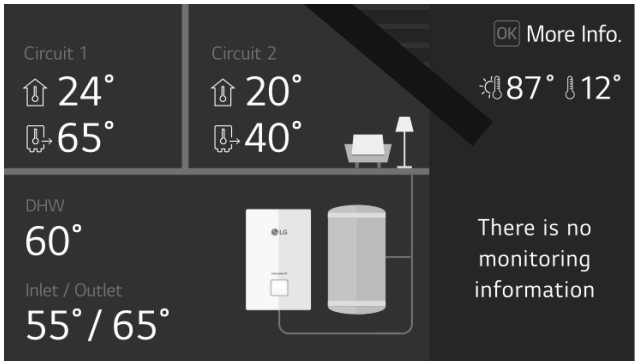
Required Accessory

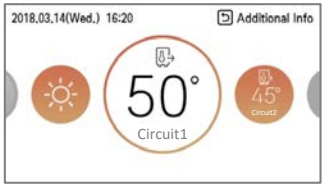
Model Name	Model Number	Figure	Feature
Remote Room Air Temperature Sensor	PQRSTA0		• Max. Wire Length : 15m
Thermistor for 2nd Circuit	PRSTAT5K10		• 5kΩ thermistor, 10m
Mixing Pump	Field Scope		• 1Φ, 230V AC (Max. 1.05A)
Mixing Valve	Field Scope		• 1Φ, 230V AC • Full Open Time (60~999, Default 240s)

Schematic Diagram



Remote Controller UI





Set Temperature of Circuit 1

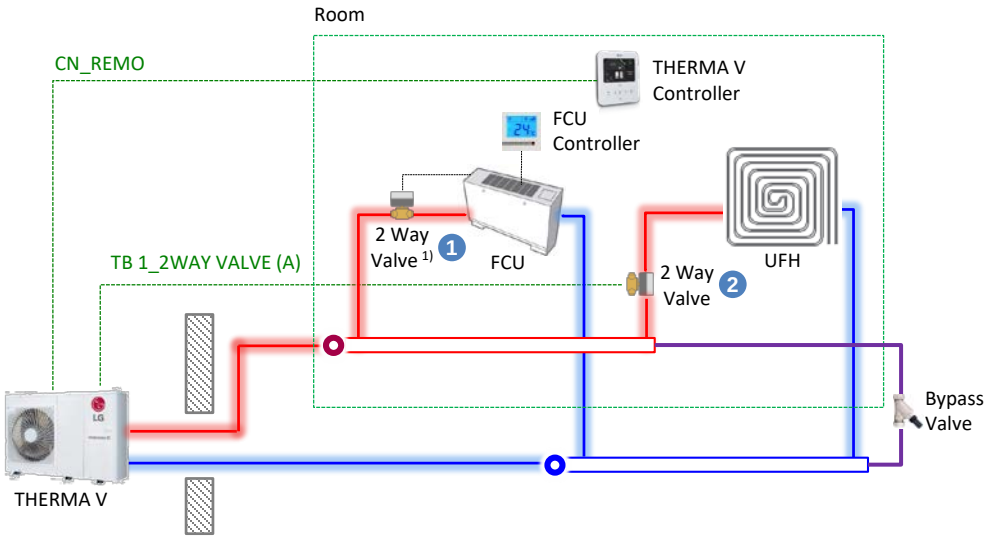
Set Temperature of Circuit 2

Note :
1) The arrangement of the external pump and mixing pump indicated here is applicable only to R32 Monobloc S, R32 Hydrosplit (Hydro Box & IWT), Split Hydro Box (NK5 series). In case of the other models, please make sure to consult with LG regional engineer for 2nd circuit system configuration.
2) The temperature of the circuit 2 is controlled by the mixing valve and it can be set below the circuit 1 temperature.
3) Both Water Temp. Base Control and Air Temp. Base Control is available for 2nd circuit application.
4) The Remote controller can be used for the High-temp circuit only. The Remote room sensor (PQRSTA0) can be used for both – low and high-temperature circuits.
5) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

7 Heating & Cooling using 2way valve

If the fan coil unit and underfloor heating coil are installed in the same system, a 2way valve (2) is used to prevent underfloor side condensation during cooling operation.

▪ Schematic Diagram



Note :

1) This 2 way valve is built into the FCU or operates by receiving a signal from the FCU. Only during FCU operation, the 2 way valve is open. On the other hand, when the FCU is not running, the valve is closed.
2) For cooling operation, it is mandatorily required to change dip SW setting for “Cycle” as a “Heating & Cooling”.
3) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
4) There is the case where the water pump operates while all valves are closed, so a bypass valve must be installed.

▪ Operation

Type	Terminal Unit	Main Controller by End User	FCU	Underfloor Coil
Heating	by UFH	THERMA V Controller	X (2 Way Valve 1 : Close as per FCU Non-operation)	O (2 Way Valve 2 : Open)
	by UFH & FCU	THERMA V and FCU Controller	O (2 Way Valve 1 : Open as per FCU Operation)	O (2 Way Valve 2 : Open)
Cooling *	by FCU	FCU Controller	O (2 Way Valve 1 : Open as per FCU Operation)	X (2 Way Valve 2 : Close)

* Therma V and FCU are operating independently. Therma V is operating based on Pre-set Target Water Temp, while FCU is operating based on Room Air Temp. measured by FCU controller.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
2 Way Valve	Field Scope		• 1Φ, 230V AC

8 Multi-Zone Control

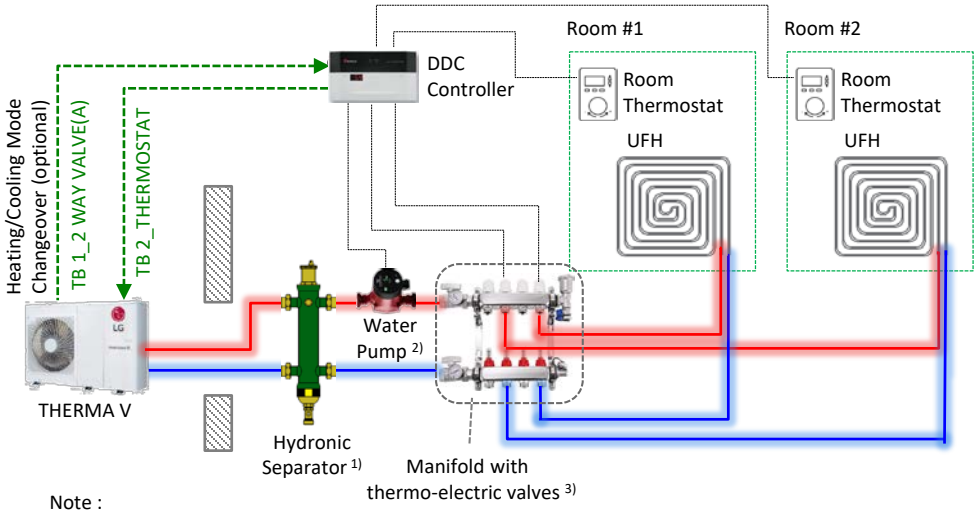
If individual control of multiple rooms is required with one heat pump, LG Therma V can provide the necessary solution in conjunction with the thermostats, valves, etc.

Case 1 – Application with Thermo-electric valves and DDC Controller - Applicable for UFH

▪ Operation

1) The DDC controller is connected to each individual thermo-electric valve and room thermostat.
2) Therma V is operating based on the Thermostat signal from the DDC controller.
3) The operation of thermo-electric valves is controlled by the DDC controller.
4) The operation of External Water pump is controlled by the DDC controller.

▪ Schematic Diagram



Note :

1) There is the case where the water pump operates while all valves are closed, so one of the hydronic separator, buffer tank, and bypass valve must be installed.
2) If hydronic separator or buffer tank is installed, water pump in the secondary circuit must be installed. The water pump is controlled by the DDC Controller to operate only with some valves open. If not, self-controlled water pump must be used.
3) 0 - 10 V (DDC), 24 V and 230 V versions available on the market - continuous (PWM) or discontinuous.
4) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
DDC Controller	Field Scope		• Providing Thermostat-output (“Boiler signal“) to stop heat pump when no heating is needed
Thermo-electric valves	Field Scope		• 0 - 10 V (DDC), 24 V and 230 V versions available on the market • Continuous (PWM) or discontinuous
Room Thermostat	Field Scope		
Hydronic Separator	Field Scope		
Water Pump	Field Scope		• 1Φ, 230V AC • Self-Controlled is recommended

8 Multi-Zone Control

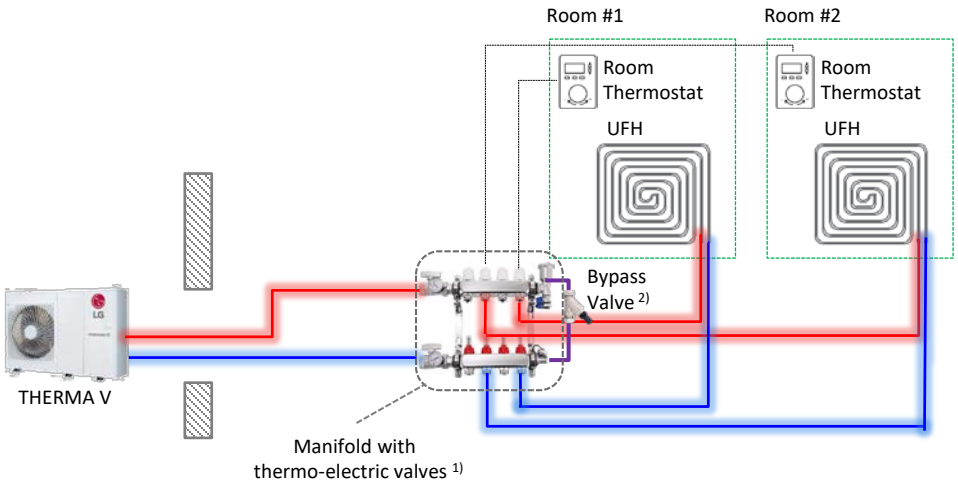
If individual control of multiple rooms is required with one heat pump, LG Therma V can provide the necessary solution in conjunction with the thermostats, valves, etc.

Case 2 – Application with Thermo-electric valves and Room thermostat - Applicable for UFH or Radiator

▪ Operation

1) Therma V and Thermo-electric valves are operating independently.
2) Therma V is operating based on Pre-set Target Water Temp.
3) The operation of Thermo-electric valves is controlled by the Room Thermostats.

▪ Schematic Diagram



Note :
1) 0 - 10 V (DDC), 24 V and 230 V versions available on the market - continuous (PWM) or discontinuous.
2) There is the case where the water pump operates while all valves are closed, so a bypass valve must be installed.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Thermo-electric valves	Field Scope		• 0 - 10 V (DDC), 24 V and 230 V versions available on the market • Continuous (PWM) or discontinuous
Room Thermostat	Field Scope		
Bypass valve	Field Scope		

8 Multi-Zone Control

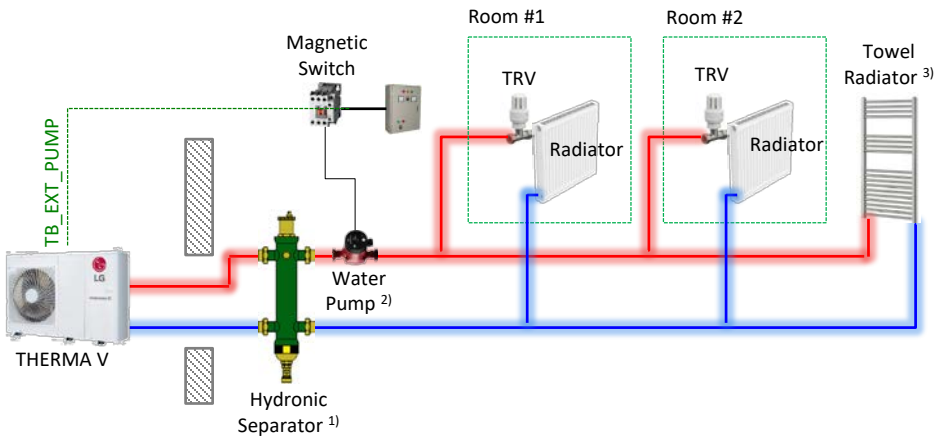
If individual control of multiple rooms is required with one heat pump, LG Therma V can provide the necessary solution in conjunction with the thermostats, valves, etc.

Case 3 – Application with Thermostatic Radiator Valve (TRV) - Applicable for Radiator

▪ Operation

1) Therma V and Thermostatic Radiator Valve (TRV) are operating independently.
2) Therma V is operating based on Pre-set Target Water Temp.
3) The operation of radiator is regulated by the Thermostatic Radiator Valve (TRV).

▪ Schematic Diagram



Note :
1) There is the case where the water pump operates while all valves are closed, so one of the hydronic separator, buffer tank, and bypass valve must be installed.
2) If hydronic separator or buffer tank is installed, water pump in the secondary circuit must be installed.
3) Bypass line (or valve) should be considered in the secondary circuit in case all valves are closed, if water pump is not self-controlled.
4) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Thermostatic Radiator Valve (TRV)	Field Scope		
Hydronic Separator	Field Scope		
Water Pump	Field Scope		• 1Φ, 230V AC • Self-Controlled is recommended
Towel Radiator	Field Scope		• Hot Water Type

8 Multi-Zone Control

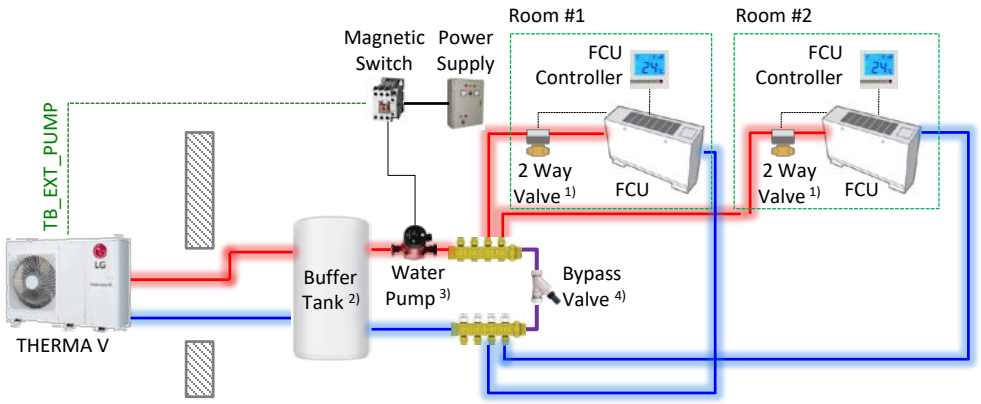
If individual control of multiple rooms is required with one heat pump, LG Therma V can provide the necessary solution in conjunction with the thermostats, valves, etc.

Case 4 – Application with Fan Coil Unit(FCU) and 2 Way Valve - Applicable for FCU

▪ Operation

1) Therma V and FCU are operating independently.
2) Therma V is operating based on Pre-set Target Water Temp.
3) FCU is operating based on Room Air Temp. measured by each FCU controller.

▪ Schematic Diagram



Note :

1) This 2 way valve is built into the FCU or operates by receiving a signal from the FCU. Only during FCU operation, the 2 way valve is open. On the other hand, when the FCU is not running, the valve is closed.
2) There is the case where the water pump operates while all valves are closed, so one of the hydronic separator, buffer tank, and bypass valve must be installed.
3) If hydronic separator or buffer tank is installed, water pump in the secondary circuit must be installed.
4) Bypass line (or valve) should be considered in the secondary circuit in case all valves are closed, if water pump is not self-controlled.
5) For cooling operation, it is mandatorily required to change dip SW setting for “Cycle” as a “Heating & Cooling”.
6) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
FCU (Fan Coil Unit)	Field Scope		• Including FCU Controller • Available for “Heating only“ or “Heating and Cooling“ • Built-in 2 way valve or Providing signal for 2 way valve
2 Way Valve	Field Scope		• Optional; In case the FCU does not have a built-in 2-way valve
Water Pump	Field Scope		• 1Φ, 230V AC • Self-Controlled is recommended
Bypass valve	Field Scope		

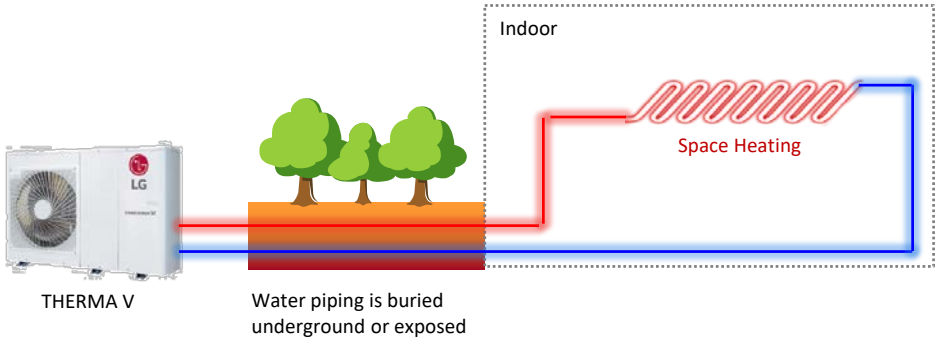
9 Anti-freeze Solution

Contents

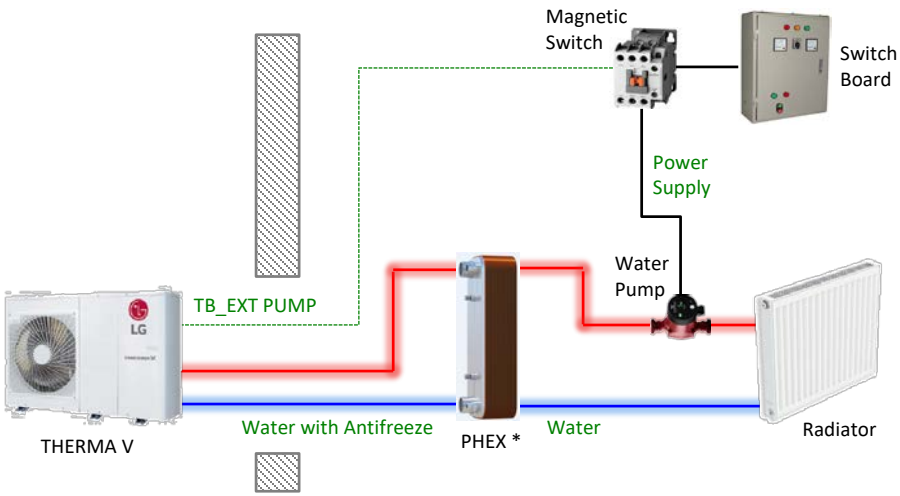
SPACE HEATING ONLY

When concerning about freezing in water system, antifreeze can be added to the circulating water for the heating circuit to prevent water freezing.

▪ Schematic Diagram



▪ Advanced Application



* Since some antifreeze agents might be harmful to materials used in the heating circuit, it is recommended to use an indirect circuit by installing a suitable plate-heat-exchanger.
This also reduced the amount of antifreeze.

▪ Available Antifreezes

Antifreeze Type	Antifreeze mixing ratio (by volume)					
Freezing Temp.	**0℃**	**-5℃**	**-10℃**	**-15℃**	**-20℃**	**-25℃**
Methanol	0%	6%	12%	16%	24%	30%
Ethylene glycol	0%	12%	20%	30%	-	-
propylene glycol	0%	17%	25%	33%	-	-

Note :
1) By mixing antifreeze with water, the Freezing Temp. of the water is lowered. Therefore, the temperature at which the freeze protection logic starts must be adjusted accordingly in the installer's setting. Furthermore, it is mandatorily required to change dip SW setting for “Antifreeze” and remove bridge at CN_ANTI_SW on indoor PCB.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) If an Anti-freeze is used, pressure drop and capability degradation of the system can occur.
4) Please check the concentration of the Anti-freeze periodically to keep the same concentration.

10 Drain Pan

Contents

COOLING ONLY

When Therma V operates in cooling mode, condensed water is generated in the indoor unit. In this regard, for the Hydro-box type indoor unit, a drain pan must be installed to collect the condensed water.

▪ Required Accessory

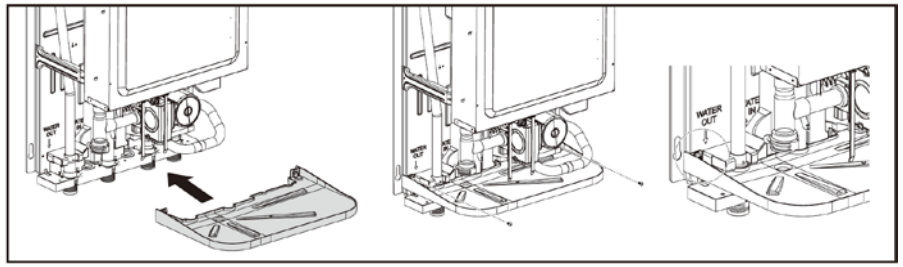
Model Name	Model Number	Figure	Feature
Drain Pan	PHDPB		• Including Insulators * • Available for R32 Split Hydro Box (NK4), R410A Split Hydro Box (NK3)
	PHDPC		• Including Insulators * • Available for R32 Hydrosplit Hydro Box, Split Hydro Box (NK5 series)
Drain Hose	Field Scope		

* The enclosed insulators must be installed around the hydro box unit to prevent the formation of condensed water on the surface of it.

▪ Drain Pan Accessory as per Product

Products	Drain Pan
R32 Split IWT R32 Hydrosplit IWT	Drain Pan is included in the Product
R32 Split – Hydro Box (NK4) R410A Split – Hydro Box (NK3)	PHDPB
R32 Split – Hydro Box (NK5) R410A Split – Hydro Box (NK5) R32 Hydrosplit – Hydro Box	PHDPC

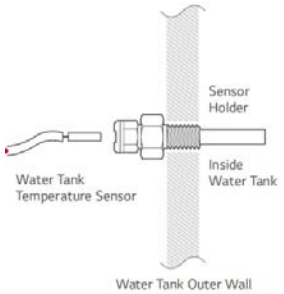
▪ Installation of Drain Pan



11 DHW Tank

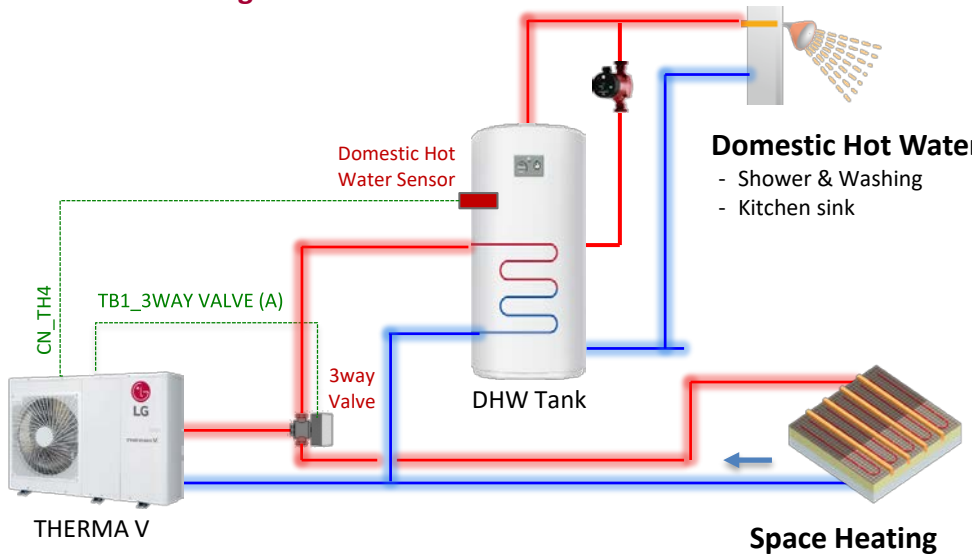
Therma V can be used not only for space heating, but also for hot water supply. For hot water supply application, basically DHW Tank, 3 way valve, and DHW Sensor are required.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Domestic Hot Water Tank * (Single Coil)	OSHW-200F OSHW-300F OSHW-500F		• Storage volume : 200L / 300L / 500L • Type : Internal single coil • Material : Stainless steel • Capacity of booster heater : 2.4 kW
Domestic Hot Water Tank * (Double Coil)	OSHW-300FD		• Storage volume : 300L • Type : Internal double coil • Material : Stainless steel • Capacity of booster heater : 2.4 kW
3 Way Valve	OSHA-3V or Field Scope		• 1Φ, 230V AC
Domestic Hot Water Sensor	PHRSTA0 **		• 5kΩ thermistor • Length : 12m
Temperature Sensor Holder	Field Scope***	 	

* 3rd party Domestic Hot Water Tank is also available
** In case of Split High Temp. model, PHRSTA0 (Domestic Hot Water Sensor) is provided as a default.
*** included in OSHW- models

▪ Schematic Diagram



Note :
1) When both Therma V and DHW Tank are installed, it is mandatorily required to change dip SW setting for “DHW Tank”.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

12 3 Way Valve

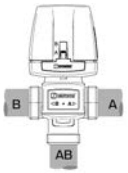
This design employs a 3way valve to switch between hot water supply and space heating operations.

Required Accessory

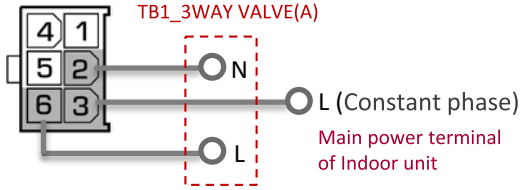
Model Name	Model Number	Figure	Feature
3 Way Valve *	OSHA-3V		• 1Φ, 230V AC • Size : DN 20 G 1" connection, male threaded

* 3rd-party 3-way valve can be used, too.

Installation Guide of OSHA-3V

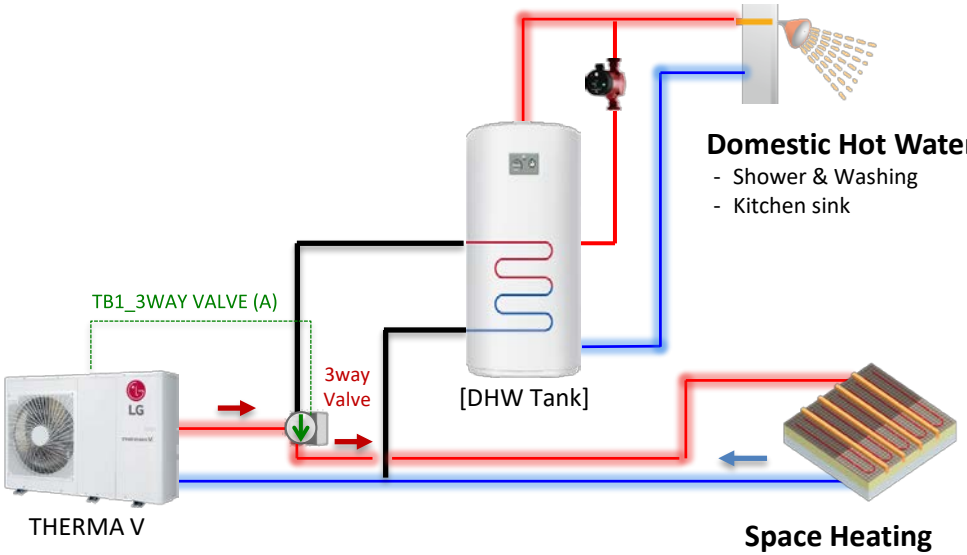


Install the valve as follows:
A: DHW tank
B: Heating/Cooling circuit
AB: Heat pump outlet



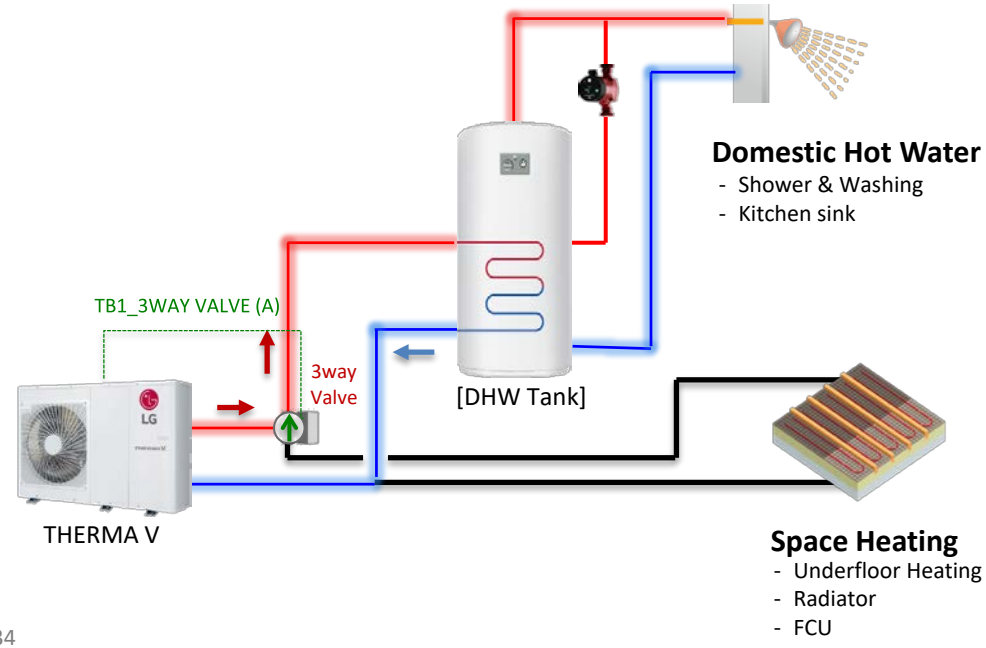
Space Heating Mode

1) 3way valve is switched to space heating direction.
2) During space heating mode, hot water supply is possible using the hot water stored in the DHW tank.



DHW Mode

1) 3way valve is switched to DHW Tank direction.
2) During DHW mode, space heating operation is not possible unless a buffer tank is installed.



13 Booster Heater

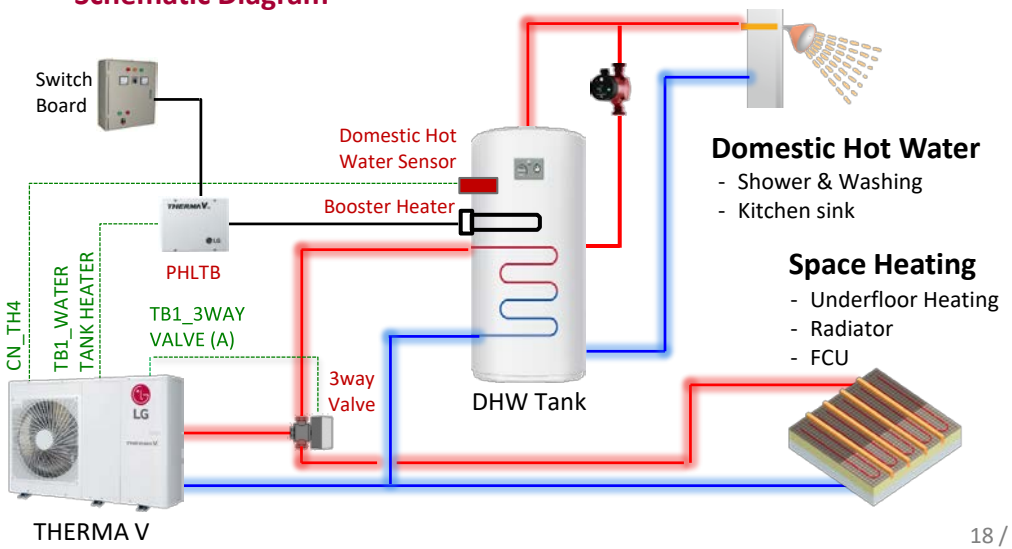
When hot water of 58℃ or higher is required or anti-legionella operation is needed, hot water operation using Booster heater must be installed.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Domestic Hot Water Tank Kit *	PHLTA (For Hydro Box Type) PHLTC (For HN1639 NK3)		• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay
	PHLTB (For Monobloc)		• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay, Multi harness
Electric. Heater Element **	Field Scope		• Capacity : Max. 3 kW (1Φ)

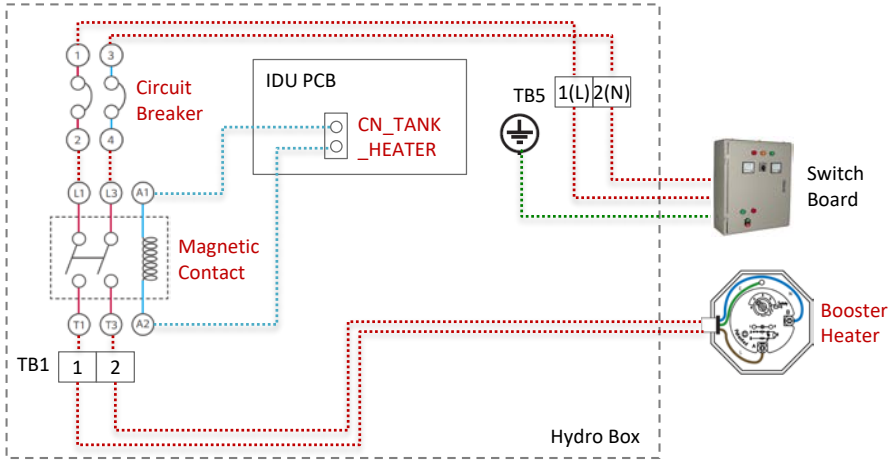
* Domestic Hot Water Tank Kit is including Domestic Hot Water Sensor (PHRSTA0)
** In case of OSHW-200F, OSHW-300F, OSHW-500F, and OSHW-300FD, 2.4kW booster heater is integrated inside of tank.

▪ Schematic Diagram

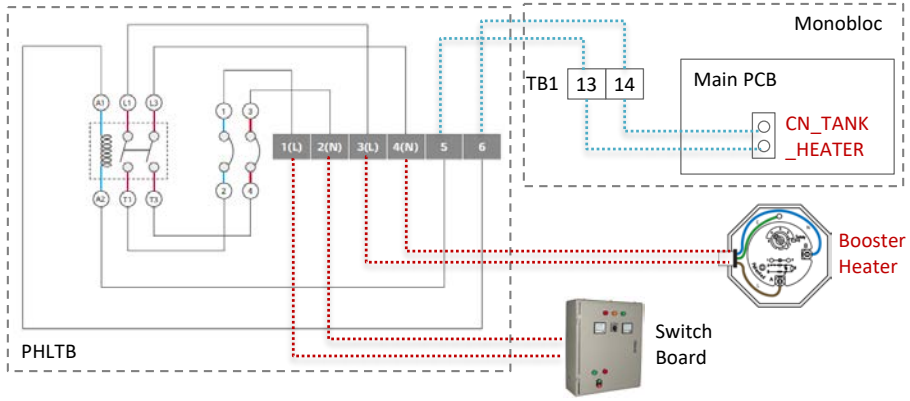


▪ Wiring Diagram

1) Hydro Box Type (Split & Hydrosplit) / PHLTA



2) Monobloc / PHLTB



Note :
1) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

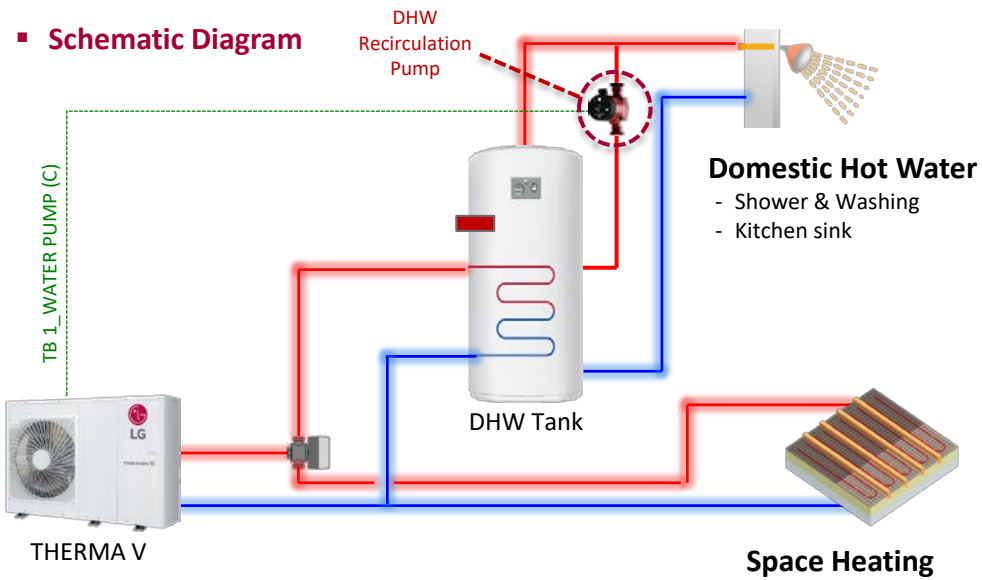
14 DHW Re-circulation Pump

If a DHW Recirculation Pump is installed, a power terminal for that pump is provided. Furthermore, recirculation time setting and scheduler functions are also provided.

▪ Available Product

Availability	Available Products
Available	R32 Split – Hydro Box (NK5, Produced after Dec. of 2021) R32 Hydrosplit – Hydro Box (NK1, Produced after Dec. of 2021) R410A Split – Hydro Box (NK5, Produced after Dec. of 2021) R32 Monobloc S
Not Available	R32 Monobloc R32 Split - IWT R32 Hydrosplit - IWT Split High Temp.

▪ Schematic Diagram

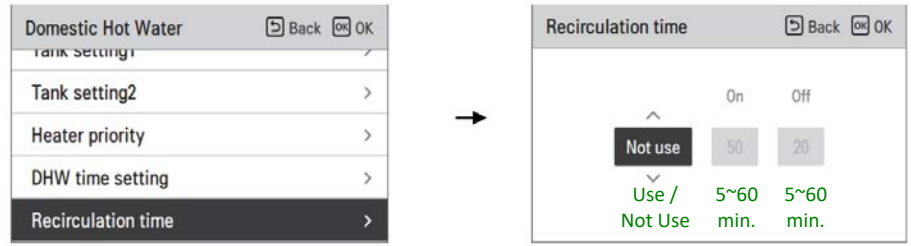


▪ Required Accessory

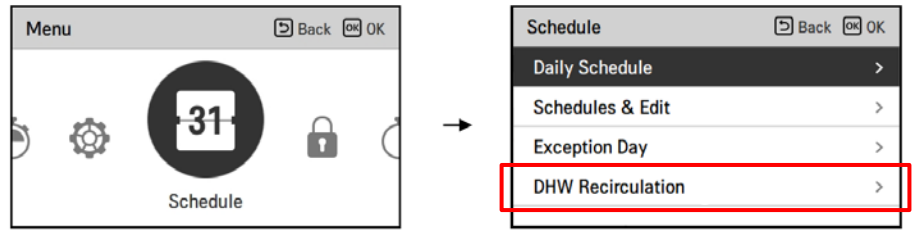
Model Name	Model Number	Figure	Feature
DHW Recirculation Pump	Field Scope		• 1Φ, 230V AC (Max. 1.05A)

▪ Time Setting & Scheduler

1) Recirculation Time



2) Scheduler



Note :
1) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

15 Solar Thermal System

When Therma V is used with the DHW tank, the solar thermal system can be combined with the DHW tank to support producing hot water.

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Domestic Hot Water Tank * (Double Coil)	OSHW-300FD		• Storage volume : 300L • Type : Internal double coil • Material : Stainless steel • Capacity of booster heater : 2.4 kW
3 Way Valve **	OSHA-3V or Field Scope		• 1Φ, 230V AC
Solar Pump	Field Scope		• 1Φ, 230V AC (Max. 1.05A)
Solar Temp. Sensor	Field Scope		• PT-1000 ***
Solar Thermal Kit	PHLLA ****		• Parts included : T Pipe, Sensor Holder, Dual Thermistors (DHW Temp. Sensor & Solar Pipe Sensor)
Solar Thermal Collector *****	Field Scope		

- 3rd party Domestic Hot Water Tank is also available.

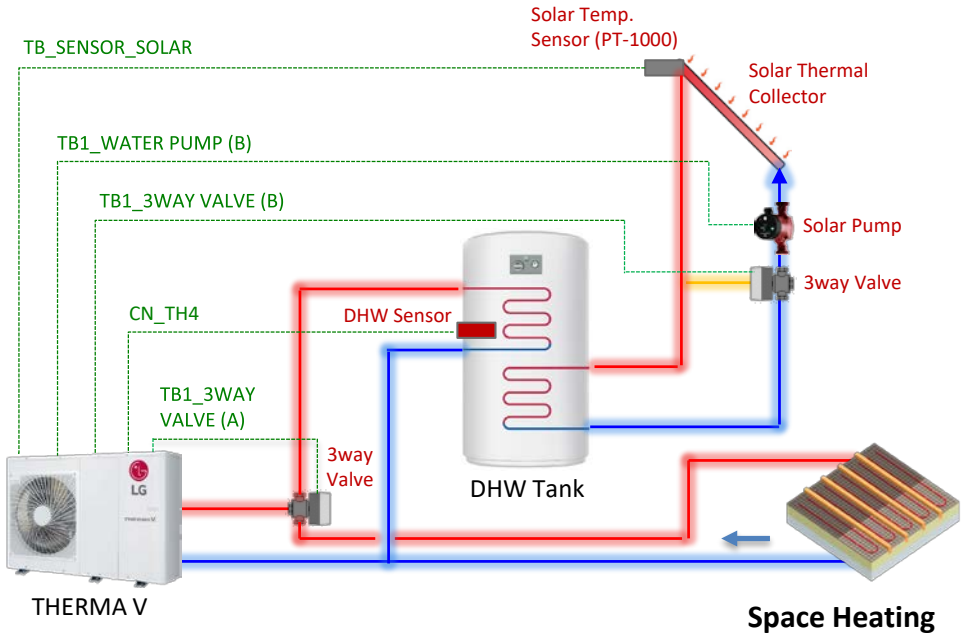
** 3-way valve not required from 2nd half of 2022

*** PT-1000 are available for R32 Monobloc S, R32 Hydrosplit Hydro Box, Split Hydro Box (NK5 series)

**** PHLLA is available for R32 Monobloc, R32 Split Hydro Box (NK4), R410A Split Hydro Box (NK3)

***** Thermal Collector is different from Solar Photovoltaic (PV) panel. Solar Thermal collector absorbs sunlight and heats water using that energy. On the other hand, a solar PV panel is one where the light hits a solar panel and is turned into electricity.

▪ Schematic Diagram



Note :

1) When both Therma V, Double Coil DHW Tank, and Solar Thermal System are installed, it is mandatorily required to change dip SW setting for “DHW Tank”.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) Regarding the Solar Thermal System, not only the Solar Collector, Solar Pump, and 3-way valve, but also the expansion tank, pressure relief valve, Air vent, check valve, drain valve, and anti-freeze system should be considered.

16 Back-up Heater

Contents

COMBINED WITH BACK UP HEATING

The back-up heater is sometimes required to manage back-up or emergency operation. Monobloc and Hydrosplit - Hydro box type do not include back-up heater, so installer should install it separately, if required.

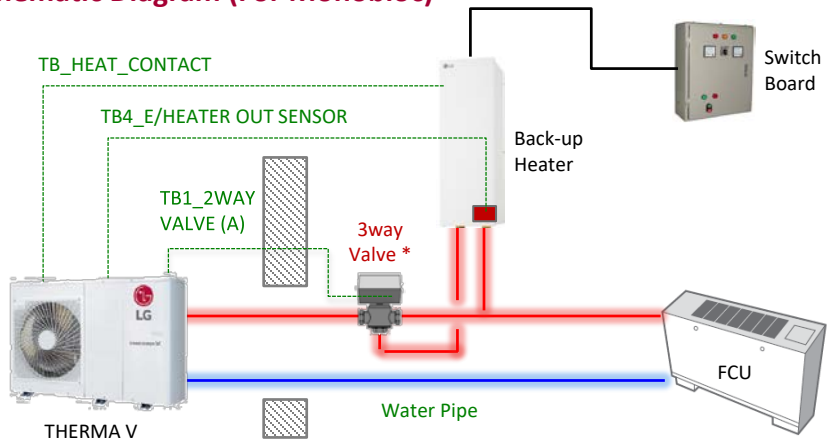
▪ Required Accessory

Model Name	Model Number	Figure	Feature
Electric Back-up heater (For Monobloc)	HA031M E1		• Heater capacity : 3 kW • Number of heating coil : 1 ea (3.0kW) • Size (W x H x D) : 210 x 607 x 217 • Power : 220-240 V, 1Φ
	HA061M E1		• Heater capacity : 6 kW • Number of heating coil : 2 ea (3.0 + 3.0kW) • Size (W x H x D) : 210 x 607 x 217 • Power : 220-240 V, 1Φ
	HA063M E1		• Heater capacity : 6 kW • Number of heating coil : 3 ea (2.0 + 2.0 + 2.0kW) • Size (W x H x D) : 210 x 607 x 217 • Power : 380-415 V, 3Φ
Electric Back-up heater (For Hydrosplit - Hydro Box)	HA061C E1 *		• Heater capacity : 6 kW • Number of heating coil : 2 ea (3.0kW+3.0kW) • Power : 220-240 V, 1Φ
	HA063C E1 *		• Heater capacity : 6 kW • Number of heating coil : 3 ea (2.0 + 2.0 + 2.0kW) • Power : 380-415 V, 3Φ

* These back-up heaters are internal accessories, so they can be installed inside of product in field, if required.

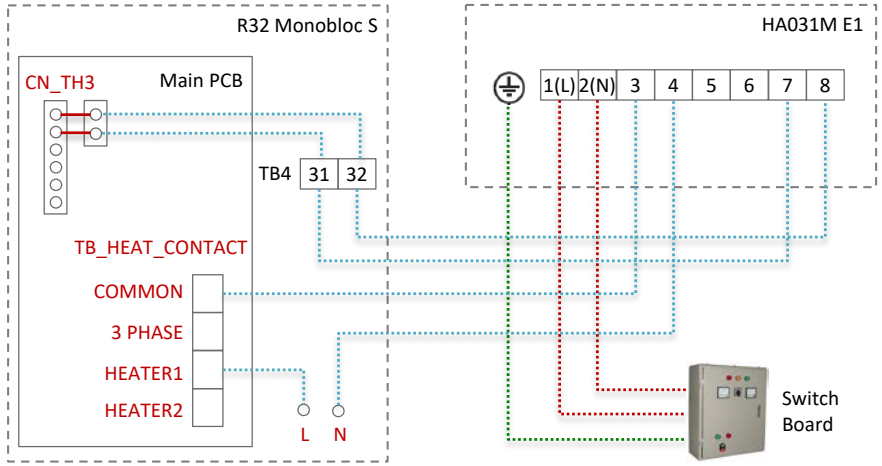
Note :
1) To add back-up heater, it is mandatorily required to change dip SW setting for “Back-up Heater Capacity”.
2) Dip SW No. and Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) The Backup heater is already integrated in case of Split (Hydrobox and IWT) and Hydrosplit (IWT).

▪ Schematic Diagram (For Monobloc)



* During cooling operation, condensation may occur inside of back up Heater. In order to protect formation of condensation, please install 3 Way valve for bypass.

▪ Wiring Diagram (For HA031M E1)



17 Auxiliary Boiler

Contents

COMBINED WITH BACK UP HEATING

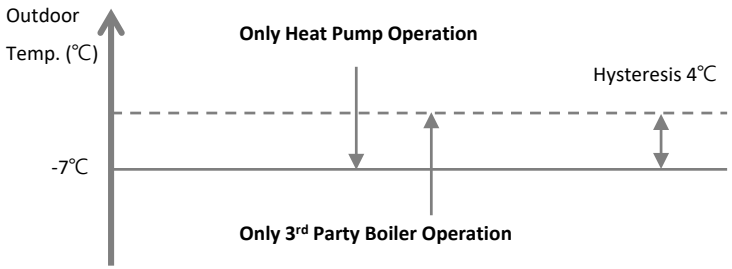
As the ambient temperature drops, the heat pump capacity may decrease or the product may stop due to being out of operation range. In this case, if an auxiliary boiler is installed, interlocking operation with the heat pump is possible. Therma V does not control the boiler; only provides a contact signal (Non voltage) to enable/disable the boiler.

Required Accessory

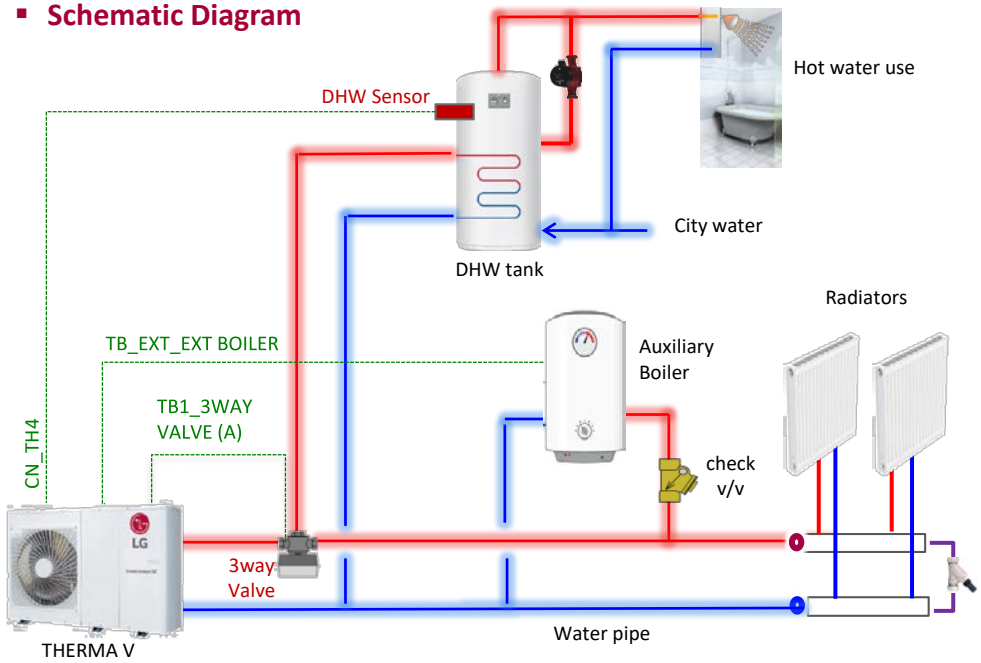
Model Name	Model Number	Figure	Feature
Auxiliary Boiler	Field Scope		• Auxiliary Boiler should have an integrated water pump.
Check Valve	Field Scope		

Operation

Operation Mode	Setting	
Manual	Operation	
	Stop	
Auto	Base Outdoor Temp.	-25 ~ 25℃ (Default : -7℃)
	Hysteresis Temp.	2 ~ 10℃ (Default : 4℃)



Schematic Diagram



Note :

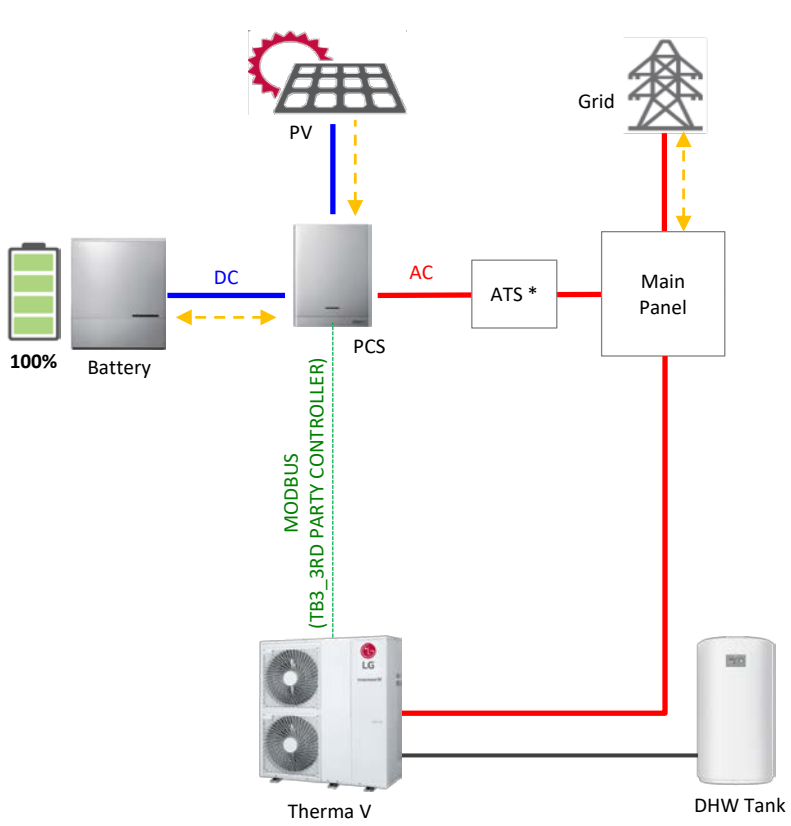
1) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
2) The Auxiliary boiler should have an integrated water pump or the circulating pump should be installed separately.
3) To prevent water from crossing between the boiler and the heat pump, a check valve should be installed.
4) There is a case where the water pump operates while all valves are closed, so a bypass valve must be installed.
5) During Boiler On Condition, 3 way valve is switched to DHW direction and DHW operation is possible.

Condition	3 Way Valve	Space Heating	DHW Operation
Boiler On	To DHW	By Boiler	Possible by Therma V

18 Energy State

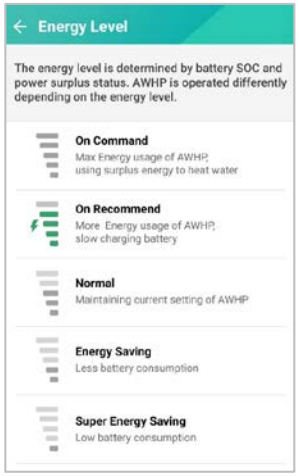
In case that PV and ESS are installed together with Therma V, it can be operated in accordance with energy states that enable customers to use as much as possible of their own renewable energy. It can shift set points depending on input signal from Energy Storage System (ESS) or any other third-party device using Modbus (8 states) or Digital 230V inputs (4 states).

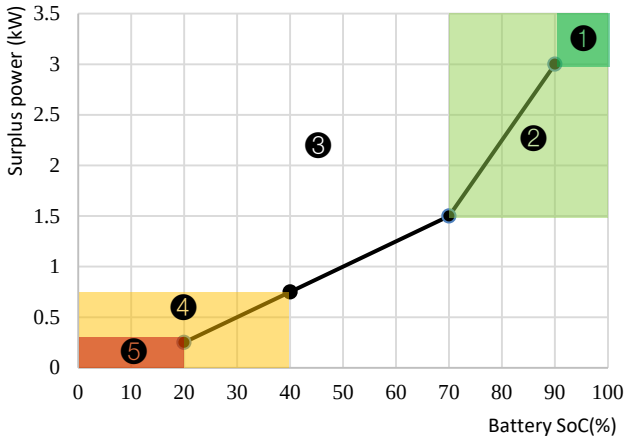
▪ System diagram with LG ESS



* ATS : Automatic Transfer Switch

▪ Energy Level (Set by LG ESS)





* SoC : State of Charge, Surplus Power = PV Power – Load Power

Energy Level	Energy State	Set temperature Adjustment (℃)		
		Heating	Cooling	DHW
❶ On Command(++)	ES5	+5	-5	+30
❷ On Recommend(+)	ES6	+2	-2	+10
❸ Normal	ES2	0	0	0
❹ Energy Saving(-)	ES7	-2	+2	0
❺ Super Energy Saving(--)	ES8	-5	+5	0

Note :
1) Above indicated Energy State condition and Adjusting Temp. of AWHP can be changed.
2) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

18 Energy State

In case that PV and ESS are installed together with Therma V, it can be operated in accordance with energy states that enable customers to use as much as possible of their own renewable energy. It can shift set points depending on input signal from Energy Storage System (ESS) or any other third-party device using Modbus (8 states) or Digital 230V inputs (4 states).

▪ Available Energy States

There are 8 energy states available. 4 fixed and 4 customizable - each with the possibility to enhance self consumption of renewable energy.

Energy state	Command	MODBUS	Digital Input (TB_SG)		Operation (standard setting)					
					Heating		Cooling		Domestic Hot Water	
			ES1	ES2	Setting	Range	Setting	Range	Setting	Range
ES1	Operation Off (Utility lock)	1	1 (Close)	0 (Open)	Forced internal operation off	Fixed	Forced internal operation off	Fixed	Forced internal operation off	Fixed
ES2	Normal Operation	2	0 (Open)	0 (Open)	Maintain operation status	Fixed	Maintain operation status	Fixed	Maintain operation status	Fixed
ES3	Operation On Recommend	3	0 (Open)	1 (Close)	Increase 2 °C from target temperature	Fixed	Maintain operation Status	Fixed	Increase 5 °C from target temperature	Fixed
ES4	Operation On Recommend	4	1 (Close)	1 (Close)	Maintain operation status	Fixed	Maintain operation status	Fixed	DHW Target 80 °C	Fixed
ES5	Operation On Commend	5	Note*		Increase from target temperature	0/+30 (Default : +5)	Decrease from target temperature	0/-30 (Default : -5)	Increase from target temperature	0/+50 (Default : +30)
ES6	Operation On Recommend	6			Increase from target temperature	0/+30 (Default : +2)	Decrease from target temperature	0/-30 (Default : -2)	Increase from target temperature	0/+50 (Default : +10)
ES7	Operation Save	7			Decrease from target temperature	0/-30 (Default : -2)	Increase from target temperature	0/+30 (Default : +2)	Decrease from target Temperature	0/-50 (Default : 0)
ES8	Operation Super Save	8			Decrease from target temperature	0/-30 (Default : -5)	Increase from target temperature	0/+30 (Default : +5)	Decrease from target Temperature	0/-50 (Default : 0)

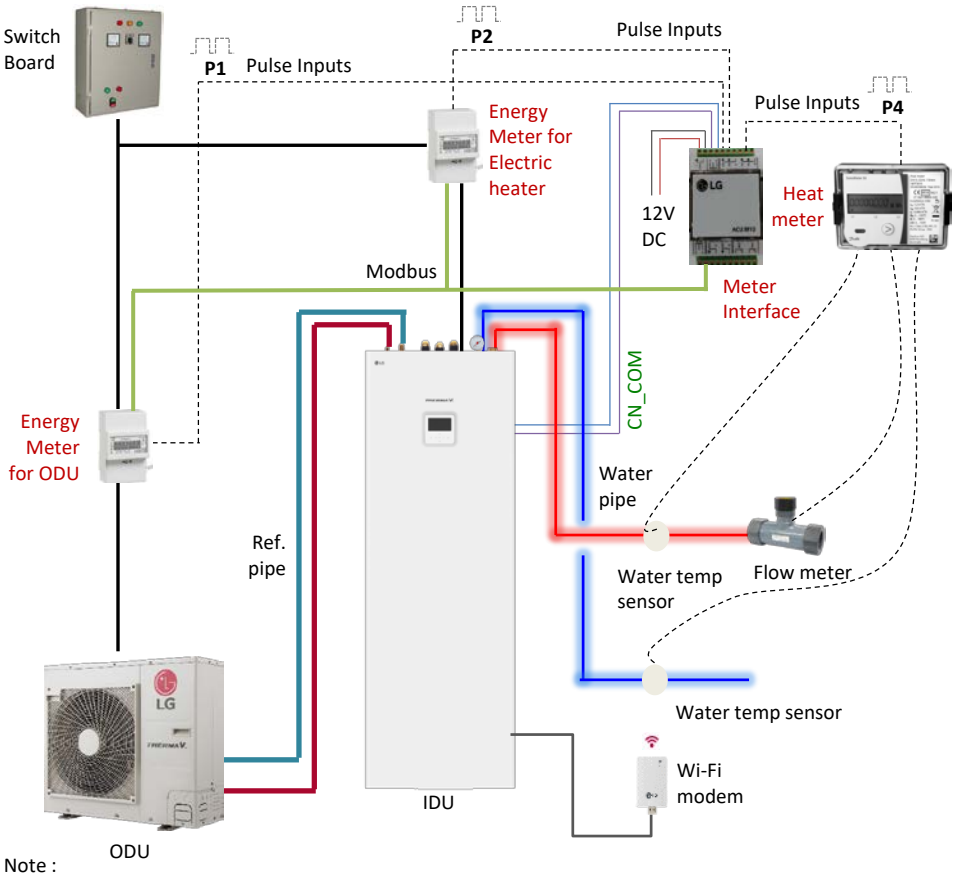
*If Digital Input (TB_SG) is used, user can select the Energy state mode (ES3 ~ ES8) for each input combination 0:1, 1:1 of TB_SG_ES1 and TB_SG_ES2.

19 Energy Monitoring

Energy monitoring for AWHP is mandatorily required in some countries. In the case of Therma V, there are two available options to show the energy consumption. One is to display the measured value by the meter and the other option is to display the estimated value through self-calculation.

Option 1 - To display measured value by meter

▪ Schematic Diagram



Note :

1) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
2) In the case of Energy Meter, Pulse input and Modbus slave function can not be used at the same time.
3) If a Wi-Fi modem is installed, Energy information can be indicated in the LG ThinQ App.

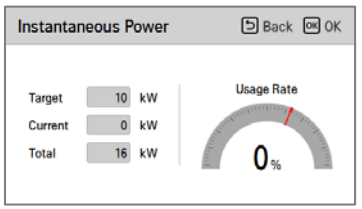
▪ Required Accessory

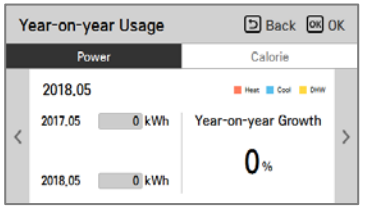
Model Name	Model Number	Figure	Feature
Meter Interface	PENKTH000		• Measuring - Max. 3 Energy (Watt-Hour) Meters (Pulse Input or Modbus) : Port 1,2,3 * - Max. 1 Heat Meter (Pulse Input) : Port 4 • Modbus RTU Comm. with THERMA V - 2 Wire RS485 / 9600bps • Power : DC 12V • Size (W x H x D) : 54 x 90 x 61
Energy Meter (Electricity)	Field Scope		• Pulse Input : 0.1 ~ 9999.9 Pulse / kWh • For Modbus with Meter Interface, it should be Rayleight RI-78-80-C Meter
Heat Meter	Field Scope		• Pulse Input : 0.1 ~ 9999.9 Pulse / kWh

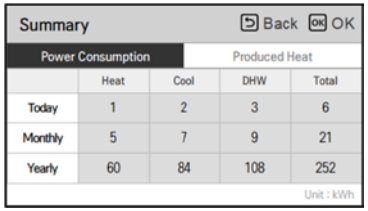
* If Booster Heater is used, Energy Meter for Booster Heater should be connected to Port 3.

▪ Monitoring Information

- Instant power consumption
- Power consumption and heat generation by period (24month data storage)
  : Daily, Weekly, Monthly, Yearly





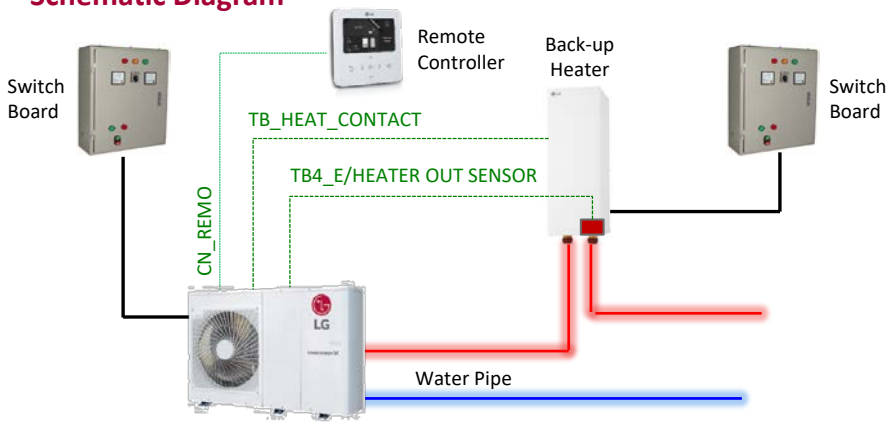


19 Energy Monitoring

Energy monitoring for AWHP is mandatorily required in some countries. In the case of Therma V, there are two available options to show the energy consumption. One is to display the measured value by the meter and the other option is to display the estimated value through self-calculation.

Option 2 - To display estimated value [1] through self-calculation

▪ Schematic Diagram

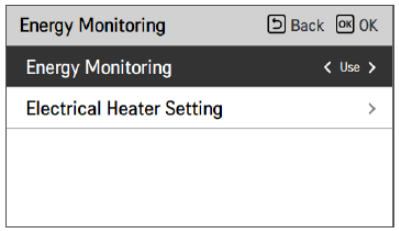


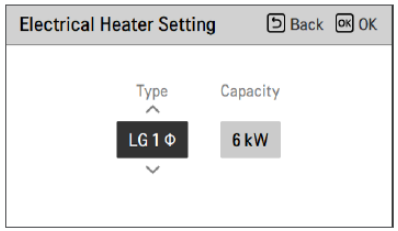
Note :
1) The accuracy of the energy consumption is not guaranteed because the calculation includes predictions.
2) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.
3) If a Wi-Fi modem is installed, Energy information can be indicated in the LG ThinQ App. (TBD)

▪ Available Product

Availability	Available Products
Available	R32 Split – Hydro Box (NK5, Produced after Dec. of 2021) R32 Hydrosplit – Hydro Box (NK1, Produced after Dec. of 2021) R410A Split – Hydro Box (NK5, Produced after Dec. of 2021) R32 Monobloc S
Not Available	R32 Monobloc R32 Split - IWT R32 Hydrosplit - IWT Split High Temp.

▪ Installer Setting

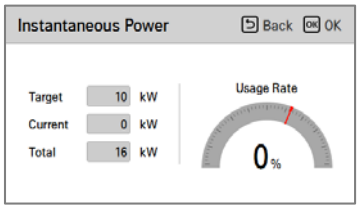


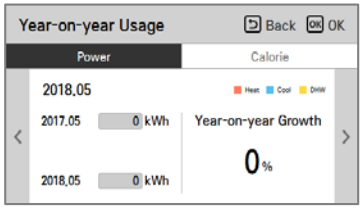


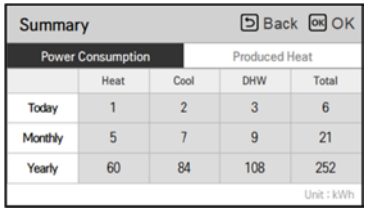
Description		Range
Energy Monitoring		Use/Not Use
Electric Back-up Heater Setting	Type	LG 1Ø / LG 3Ø / EXTERNAL
	Heater Capacity	1 kW ~ 10 kW

▪ Monitoring Information

- Instant power consumption
- Power consumption by period (24month data storage)
  : Daily, Weekly, Monthly, Yearly



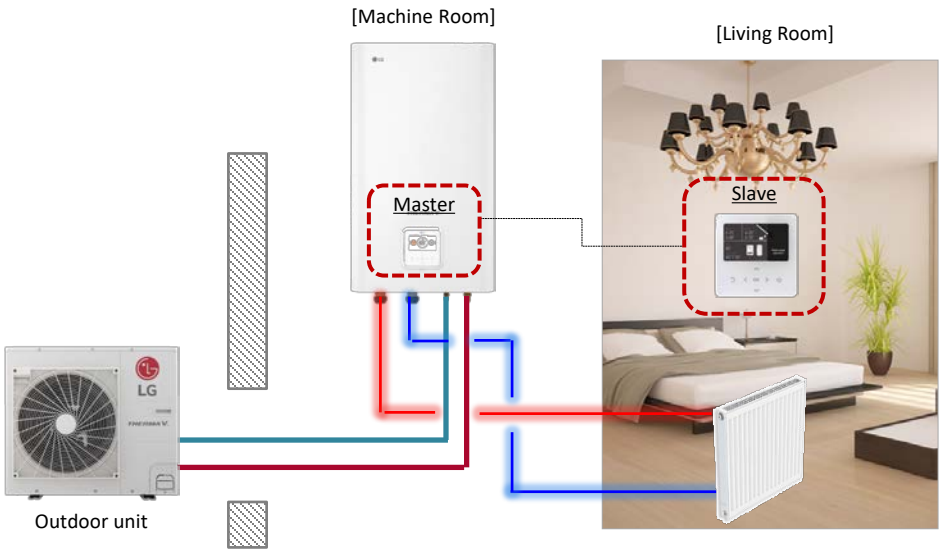




20 2-Remote Controllers

Instead of the remote controller attached to the indoor unit, a separate remote controller can be installed in the living room or bedroom for the End User's convenience. In this case, the "Master" controller is used for the installer setting and the "Slave" controller is used for End-user operation.

▪ Schematic Diagram

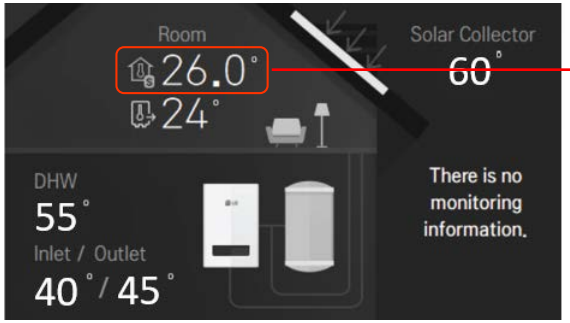


"Master" controller is used for the installer setting
"Slave" controller is used for End-user operation

▪ Required Accessory

Model Name	Model Number	Figure	Feature
Wired Remote Controller	PREMTW101		• New modern design 4.3 inch color LCD display. • Information displayed with simple graphic, icon & text. • Built-in temperature sensor • Size (W x H x D) : 120 x 120 x 16 • Extension cable (PZCWRC1, 10m) and 2-remo cable (PZCWRC2, 0.25m) are included.
Extension wire for wire remote controller	PZCWRC1		• Included in PREMTW101 • Length : 10 m
2-Remo Control Wire	PZCWRC2		• Included in PREMTW101 • Length : 0.25 m

▪ Slave Controller



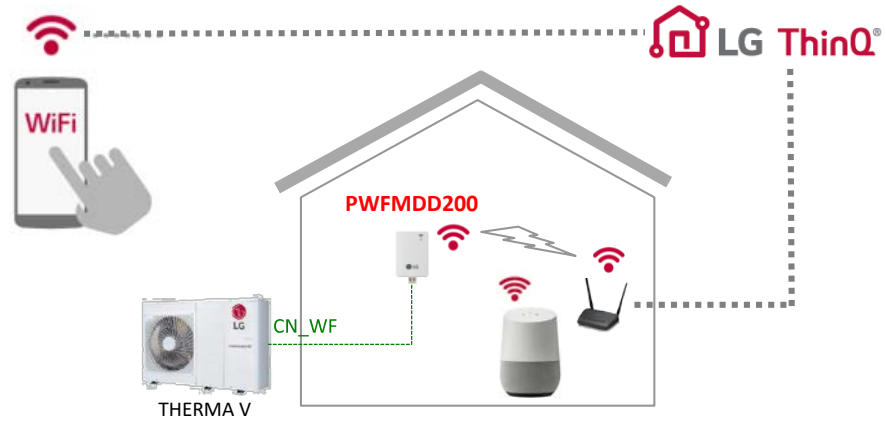
: Air Temp. of Slave Controller

Note :
1) In this case, Therma V recognizes the data of the air temperature sensor integrated in the slave controller as the air temperature and it will be operating based on this temperature.

21 Wi-Fi Modem

Therma V can be remotely controlled by smart internet devices such as Android or iOS using LG ThinQ App.
In addition, LG ThinQ works with Google assistant voice control by using Google home speaker.

Schematic Diagram



Note :
1) Search “LG ThinQ” on Google market or App Store, then download the app.
2) Google home voice is supported in UK, France, Germany, Spain, Italy, Austria, Ireland and Portugal.
3) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

Required Accessory

Model Name	Model Number	Figure	Feature
LG Wi-Fi Modem	PWFMDD200		• Frequency : 2.4GHz • IEEE 802.11b/g /n Supported
Extension cable for Wi-Fi Modem *	PWYREW000		• Length : 10 m
Google Home Speaker	Field Scope		

* PWYREW000 (10m extension cable) may be necessary depending on installation condition.

Operation

Simple operation by LG ThinQ

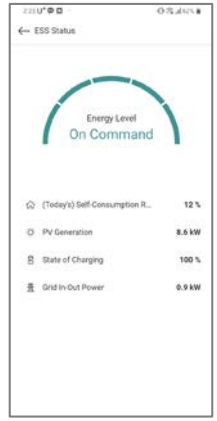
- On/Off
- Operation Mode Selection
- Current Temperature
- Temperature Setting
- On/Off Reservation Scheduling
- Energy Monitoring
- ESS Monitoring
- Silent Mode Reservation
- Holiday Mode
- Quick DHW Heating

Simple operation by Google Voice

- On/Off
- On/Off - DHW
- Temperature Setting
- Operation Mode Selection
- Monitoring for current Temp. & operation Status

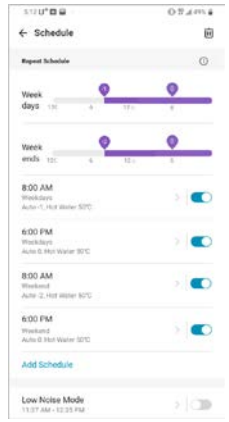
UI of LG ThinQ App.

[Main Screen]



[ESS Status]

[Holiday Mode]

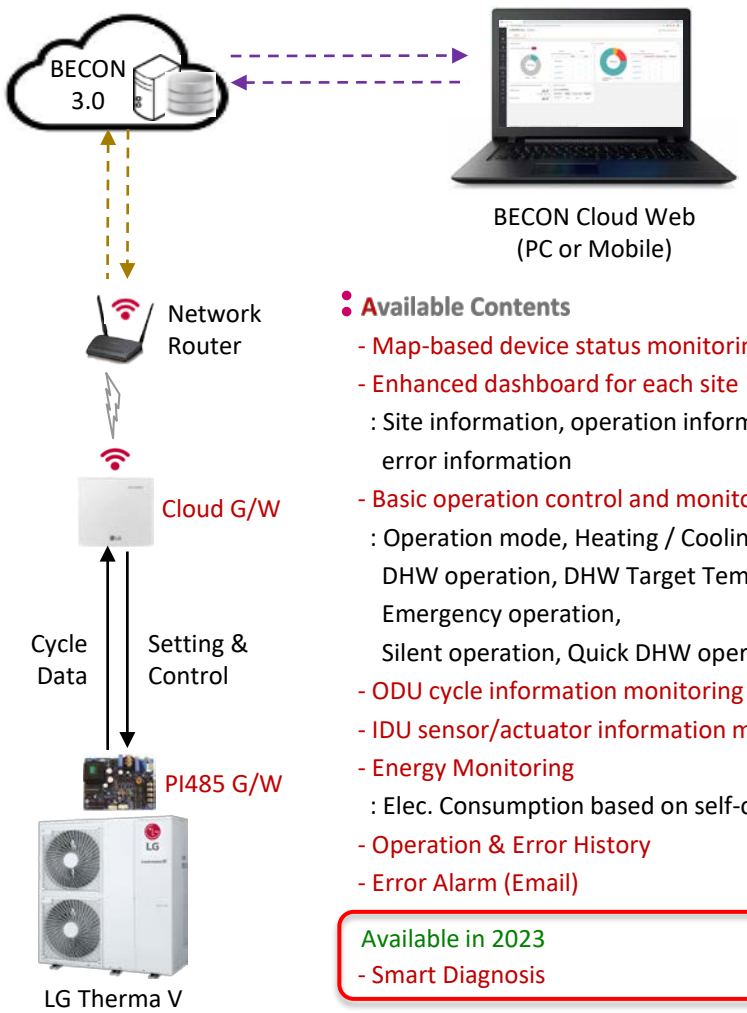


[Schedule]

22 Cloud Gateway

Heating Cloud Service is a cloud-based service that remotely monitors a customer's heating system via PC, tablet or mobile anytime, anywhere. By allowing service provider to monitor their customer's heating systems remotely, it will shorten the service response time.

Heating Cloud Service



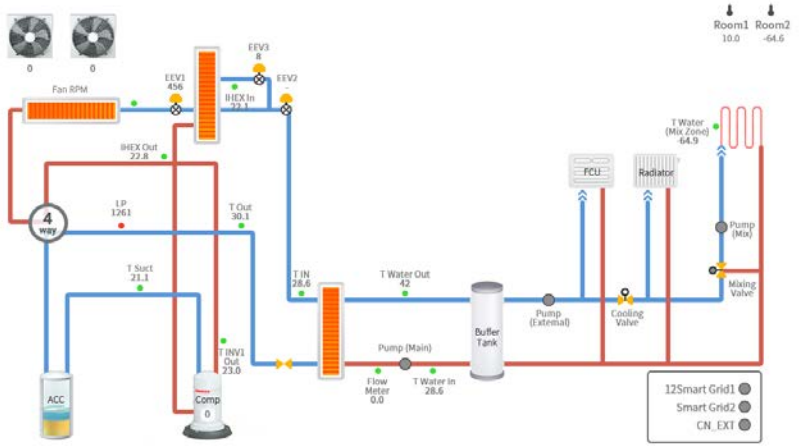
Available Contents

- Map-based device status monitoring by site
- Enhanced dashboard for each site
  : Site information, operation information, error information
- Basic operation control and monitoring
  : Operation mode, Heating / Cooling Target Temp, DHW operation, DHW Target Temp, Emergency operation, Silent operation, Quick DHW operation
- ODU cycle information monitoring
- IDU sensor/actuator information monitoring
- Energy Monitoring
  : Elec. Consumption based on self-calculation
- Operation & Error History
- Error Alarm (Email)

Available in 2023
- Smart Diagnosis

Description	Commercial Service *
Plan & Product	- From April of 2022 : R32 Monobloc S (Gen.2) - From June of 2022 : R32 Split - Hydro Box R32 Hydrosplit - Hydro Box R410A Split - Hydro Box
Browser	- PC Version or Mobile Web Browser - Mobile App. (iOS / Android)
Language	- English, Spanish, Italian

* This service will be only available in the EU, and the schedule for service availability may vary by country.



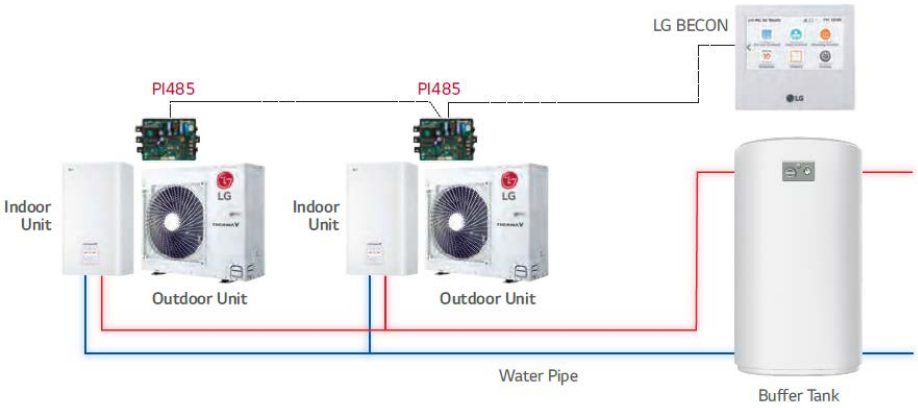
Required Accessory

Model Name	Model Number	Figure	Feature
Cloud G/W	PWFMDB200		• Power : DC 12 V terminal or C-Type Connection • Network : Ethernet / Wi-Fi • Max. 16 IDUs
PI485 G/W	PP485A00T		• 1 for each outdoor unit • Power : supplied by outdoor unit

23 LG Central Controller (BECON)

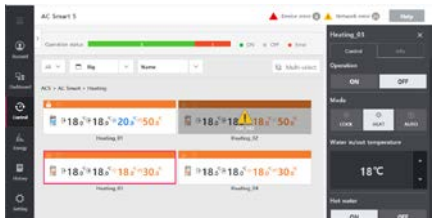
In case that more than two units are installed at a single site and controlled by a central controller, LG BECON (Central Controller) can control and monitor all units.

▪ Schematic Diagram



Note :
1) PI485 Gateway (PP485A00T) should be installed on outdoor unit to use Central controller.

[AC Ez Touch]



[AC Smart 5]

You CAN	You CANNOT
- Change mode individually or by group - Change target temp. (Air or Water) individually or by group - Change hot water settings - Apply schedules - Check error codes	- Apply different hysteresis for each unit. - Access all Installer settings - Balance operating hours of units

▪ LG BECON (Central Controller)

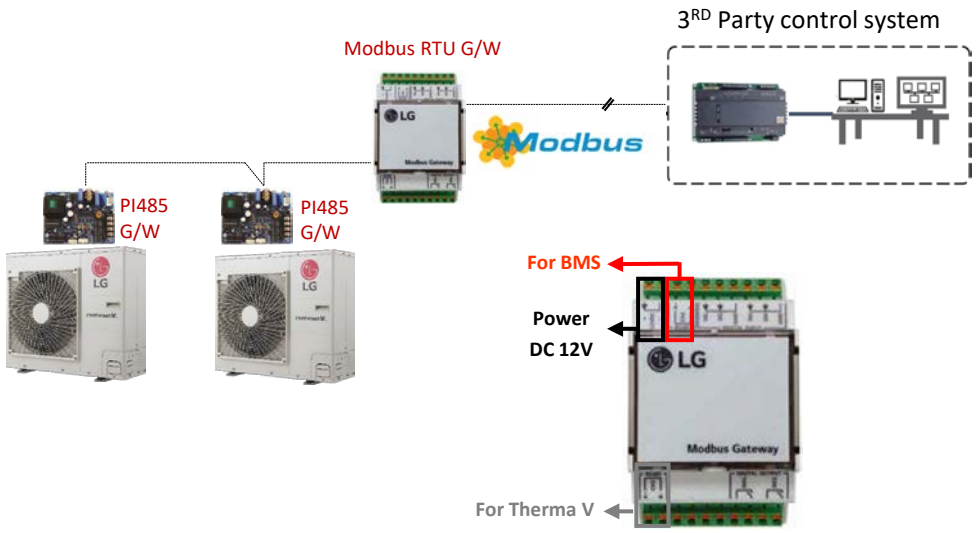
Model	Feature
AC Ez Touch PACEZA000 	• 5 inch Color Display • User-friendly control with iconographic interface (Touch screen) • Max. 32 Unit Control • Total 200 schedule events (Weekly/Monthly/Yearly/Exception day) • Error History • Remote Controller Lock (All) • PC Access Supported (IPv6 supported) • DI 1EA (Emergency Stop Only) • Size (W x H x D) : 137 x 121 x 25
AC Smart PACS4B000 (AC Smart 4) PACS5A000 (AC Smart 5) 	• 10 inch Color Display • User-friendly control with iconographic interface (Touch screen) • (Smart 4)_MAX IDU 32, (Smart 5)_MAX IDU 64 • Total 100 schedule events (Weekly/Monthly/Yearly/Exception day) • History /Operation Trend • Interlock with 3rd party equipment (ACS IO, ACU IO Module is needed) • Error alarm by e-mail • Remote Controller Lock (All) • Map view (Visual navigation) • Web Access Supported with HTML5 (PC, Smartphone, Tablet) • DI 2EA, DO 2EA • BACnet IP / Modbus TCP Protocol Support • Size (W x H x D) : 253.2 x 167.7 x 28.9
ACP PACP4B000 (ACP4) PACP5A000 (ACP5) 	• Web Access Controller • Max. 128 Unit Control • Total 100 schedule events (Weekly/Monthly/Yearly/Exception day) • History /Operation Trend • Interlock with 3rd party equipment (ACS IO, ACU IO Module is needed) • Error alarm by e-mail • Remote Controller Lock (All) • Map view (Visual navigation) • DI 10EA, DO 4EA • BACnet IP / Modbus TCP Protocol Support • Size (W x H x D) : 270 x 155 x 65

24 MODBUS

Therma V can be connected to 3rd party control system using the Modbus protocol. There are two available options, one is to connect through Modbus RTU Gateway and the other option is to connect directly without Modbus RTU gateway.

Option 1 - Through Modbus RTU Gateway

▪ Schematic Diagram



▪ Required Accessory

Model Name	Model Number	Figure	Feature
Modbus RTU G/W	PMBUSB00A		• Modbus RTU slave (RS485) / 9,600 bps • Size (W x H x D) : 53.6 x 89.7 x 60.7 • Max. 16 IDUs with single module / Max. 64 IDUs with 4 modules • Power : DC 12V
PI485 G/W	PP485A00T *		• 1 for each outdoor unit • Power : supplied by outdoor unit

* For some models, On-boarding for PP485A00T is required due to compatibility issues.

▪ Modbus Memory Map

Coil Register (0x01)

Register	Data Bit (Therma V)	Function
1	Operate (On/Off)	0: Stop / 1: Run
2	Hot Water Mode (On/Off)	0: Disable / 1: Enable
3	Reserved	-
4	Lock Remote Controller	0: UnLock / 1: Lock

Discrete Register (0x02)

Register	Data Bit (Therma V)	Function
10001	Connected IDU	0: Disconnected / 1: Connected
10002	Alarm	0: Normal / 1: Alarm
10003	Reserved	-
10004	Target Temp Select	0: Air / 1: Water

Holding Register (0x03)

Register	Data Bit (Therma V)	Function
40001	Operate Mode	0: Cooling, 3: Auto, 4: Heating
40002	Target Temp. DHW [1)]	-
40003	Target Temp. [1)]	-

Input Register (0x04)

Register	Data Bit (Therma V)	Function
30001	Error Code	0 ~ 255 ※ Please refer to the product error table.
30002	Room Temp.	-99.0 ~ 99.0 [℃] X 10
30003	Water Inlet Temp.	-99.0 ~ 99.0 [℃] X 10
30004	Water Outlet Temp.	-99.0 ~ 99.0 [℃] X 10
30005	Sanitary Tank Temp.	-99.0 ~ 99.0 [℃] X 10
30006	Solar Temp.	-99.0 ~ 99.0 [℃] X 10

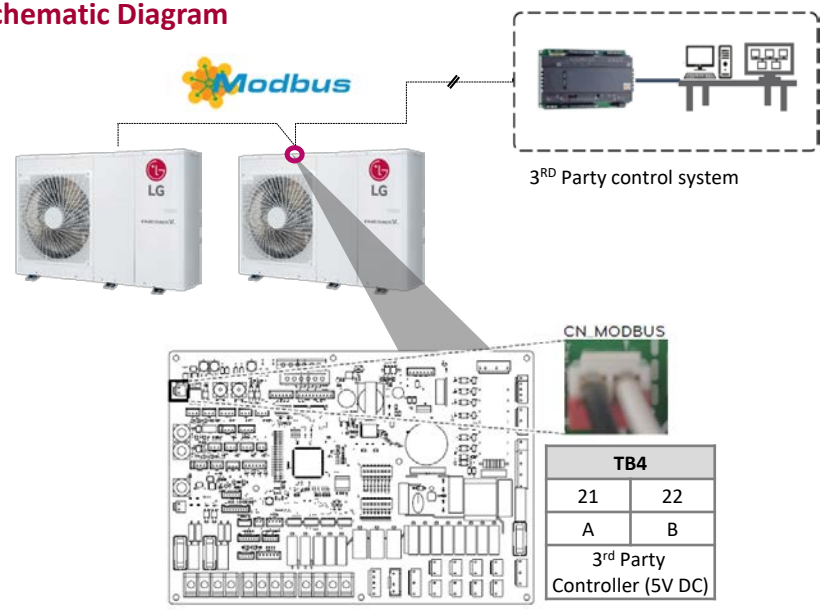
Note :

1) This value range can be between 0 ~ 127[℃]. And it would be limited by upper & lower value according to the setting of remote controller.

Therma V can be connected to 3rd party control system using the Modbus protocol. There are two available options, one is to connect through Modbus RTU Gateway and the other option is to connect directly without Modbus RTU gateway.

Option 2 - Direct Connection without Modbus RTU Gateway

▪ Schematic Diagram



TB4	
21	22
A	B
3rd Party Controller (5V DC)	

Note :
1) Terminal Block No. may differ depending on the product. Please refer to the PDB or manual for details.

▪ Available Product

Availability	Available Products
Available	R32 Split – Hydro Box (NK5) R32 Hydrosplit – Hydro Box R32 Hydrosplit - IWT R410A Split – Hydro Box (NK5) R32 Monobloc S
Not Available	R32 Monobloc R32 Split - IWT Split High Temp.

▪ Modbus Memory Map

Coil Register (0x01)

Register	Description	Value explanation
00001	Enable/Disable (Heating/Cooling)	0 : Operation OFF / 1 : Operation ON
00002	Enable/Disable (DHW)	0 : Operation OFF / 1 : Operation ON
00003	Silent Mode Set	0 : Silent mode OFF / 1 : Silent mode ON
00004	Trigger Disinfection operation	0 : Keep status / 1 : Operation start
00005	Emergency Stop	0 : Normal operation / 1 : Emergency stop
00006	Trigger Emergency Operation	0 : Keep status / 1 : Operation Start

Discrete Register (0x02)

Register	Description	Value explanation
10001	Water flow status	0 : Flow rate ok / 1 : Flow rate too low
10002	Water Pump status	0 : Water Pump OFF / 1 : Water Pump ON
10003	Ext. Water Pump status	0 : Water Pump OFF / 1 : Water Pump ON
10004	Compressor status	0 : Compressor OFF / 1 : Compressor ON
10005	Defrosting status	0 : Defrost OFF / 1 : Defrost ON
10006	DHW heating status (DHW Thermal On/Off)	0 : DHW inactive / 1 : DHW active
10007	DHW Tank disinfection status	0 : Disinfection inactive / 1 : Disinfection active
10008	Silent mode status	0 : Silent mode inactive / 1 : Silent mode active
10009	Cooling status	0 : No cooling / 1 : Cooling operation
10010	Solar pump status	0 : Solar pump OFF / 1: Solar pump ON
10011	Backup heater (Step 1) status	0 : OFF / 1 : ON
10012	Backup heater (Step 2) status	0 : OFF / 1 : ON
10013	DHW boost heater status	0 : OFF / 1 : ON
10014	Error status	0 : no error / 1 : error state
10015	Emergency Operation Available (Space heating/cooling)	0 : Unavailable / 1 : Available
10016	Emergency Operation Available (DHW)	1 : Unavailable / 1 : Available
10017	Mix pump status	0 : Mix pump OFF / 1 : Mix pump ON

Therma V can be connected to 3rd party control system using the Modbus protocol. There are two available options, one is to connect through Modbus RTU Gateway and the other option is to connect directly without Modbus RTU gateway.

Option 2 - Direct Connection without Modbus RTU Gateway

▪ Modbus Memory Map (Continued)

Holding Register (0x03)

Register	Description	Value explanation
30001	Error Code	Error Code
30002	ODU operation Cycle	0 : Standby(OFF) / 1 : Cooling / 2 : Heating
30003	Water inlet temp.	[0.1 °C ×10]
30004	Water outlet temp.	[0.1 °C ×10]
30005	Backup heater outlet temp.	[0.1 °C ×10]
30006	DHW tank water temp.	[0.1 °C ×10]
30007	Solar collector temp.	[0.1 °C ×10]
30008	Room air temp. (Circuit 1)	[0.1 °C ×10]
30009	Current Flow rate	[0.1 LPM ×10]
30010	Flow temp. (Circuit 2)	[0.1 °C ×10]
30011	Room air temp. (Circuit 2)	[0.1 °C ×10]
30012	Energy State input	0 : Energy state 0; 1: Energy state 1....
30013	Outdoor Air temp.	[0.1 °C ×10]
39998	Product Group	0x8X (0x80, 0x83, 0x88, 0x89)
39999	Product Info.	Split : 0 / Monobloc : 3 / High Temp. : 4 / Medium Temp. : 5 / System Boiler : 6

Input Register (0x04)

Register	Description	Value explanation
40001	Operation Mode	0 : Cooling / 4 : Heating / 3 : Auto
40002	Control method (Circuit 1/2)	0 : Water outlet temp. control 1 : Water inlet temp. control 2 : Room air control
40003	Target temp (Heating/Cooling) Circuit 1	[0.1 °C ×10]
40004	Room Air Temp. Circuit 1	[0.1 °C ×10]
40005	Shift value(Target) in auto mode Circuit 1	1K
40006	Target temp (Heating/Cooling) Circuit 2	[0.1 °C ×10]
40007	Room Air Temp. Circuit 2	[0.1 °C ×10]
40008	Shift value(Target) in auto mode Circuit 2	1K
40009	DHW Target temp.	[0.1 °C ×10]
40010	Energy state input	0 : Not Use 1 : Forced off (equal to TB_SG1=close / TB_SG2=open) 2 : Normal operation (equal to TB_SG1=open / TB_SG2=open) 3 : On-recommendation (equal to TB_SG1=open / TB_SG2=close) 4 : On-command (equal to TB_SG1=close / TB_SG2=close) 5 : On-command step 2 (++ Energy Consumption compared to Normal) 6 : On-recommendation Step 1 (+ Energy Consumption compared to Normal) 7 : Energy Saving mode (- Energy Consumption compared to Normal) 8 : Super Energy saving mode (-- Energy Consumption compared to Normal)

Jan, 2022
HQ Heating Task