LG
Life's Good

2020-2021
THERMA V SOLUTION

APPLICATION BOOK

2020-2021 LG THERMA V SOLUTION

APPLICATION BOOK

LG
Life's Good

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Dear Spec-in Engineer & Designer ( )

LG Electronics Air Solution Business Unit is a provider of total HVAC and energy solutions.
The company offers a broad portfolio of air conditioners and heating products that are compatible with any building anywhere, including compact residences, towering skyscrapers, massive factories and giant concert halls.

The company has steadily increased its sales and market share by introducing energy efficient and reliable HVAC solutions and actively pursuing new opportunities wherever they arise.

This is a complimentary material for A/C installers, plumbers and designers.

Essential and frequently referenced information is introduced in this material.
We hope that you lead design processes and product purchases referring to this guide.

For more information, please visit us at http://partner.lge.com

Thank you.

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Welcome to LG application book which is designed to help you decide which LG model is best suited to customer's needs. Through this book, you will learn about application cases, product information, wiring and checklists.

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Please read this guide completely before installing the product.
Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
Please retain this guide for future reference after reading it thoroughly.

WHAT IS MODERN HEAT PUMP SYSTEM?

Introduction

Domestic, commercial hot water and heating systems have been used for a long time, employing gas, oil, or electric heaters. Also, as a cooling system, heat pumps using air as a heat source has recently expanded from a large centralized facility such as a chiller to a building system in a short period of time.
In existing systems, there is a lack of environmentally friendly aspects such as an infrastructure system for fuel supply, a space for storing fuel and environmental pollution. In recent years with the requirements for high efficiency and environmentally friendly equipment, the technological advances of the manufacturer's heat pumps have provided a driving force for changes in energy consumption.

What is Heat Pump?

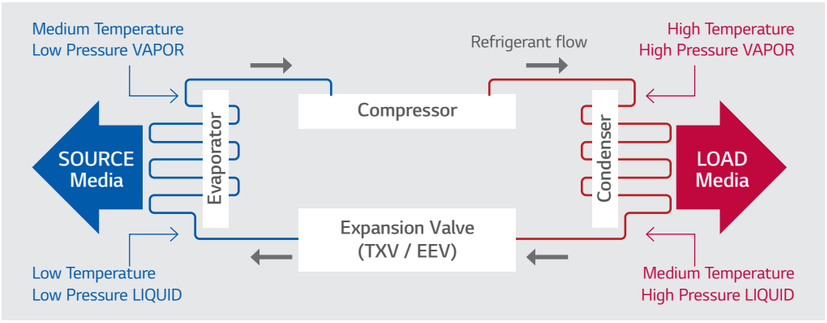
The heat pump is a device that convert low temperature heat to high temperature using two heat exchangers, a condenser and an evaporator. The refrigerant circulates through the medium to transfer heat energy.
During cooling operation, the indoor heat is absorbed and discharged to the outside and when the heating operation is performed, the outdoor heat is absorbed and the heat is released to the room.

Refrigeration Cycle

The refrigerant cycle is a vapor compression process. The main components are a compressor, a condenser, an expansion device and an evaporator. A 4 Way valve is additionally installed to switch between the heating and cooling operations. In case of cooling operation, the high-temperature and pressure gas refrigerant driven by the compressor is converted into a liquid refrigerant through the condensation process and becomes a low-temperature and pressure liquid refrigerant through the expansion valve.
The heat is absorbed through the evaporator and circulated back to the compressor in a state of low-temperature low-pressure gas refrigerant categories of Heat pump.

Refrigerant	GWP*	ODP	Safety
R22	1,810	0.04	A1
R410A	2,088	0	A1
R32	675	0	A2L
R290	3	0	A3
R744	1	0	A1

* Source : Global Warming Potential Values (2007, AR4)



Major Components

- Compressor
- Condenser
- Expansion device (EEV)
- Evaporator
- 4 Way valve

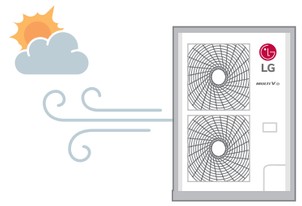
Categories of Heat Pump

Heat pumps can be classified according to the sources from which heat is absorbed and dissipated as follow :
If the heat source is air, it is an air source. If it is water, it is a water source. If it is geothermal, it is a ground source heat pump.

ASHP

Air Source Heat Pump

- Air to air
  : MULTI V series (VRF), MULTI, Single CAC, Single package, GHP
- Air to water
  : THERMA V, Hydro Kit, etc.

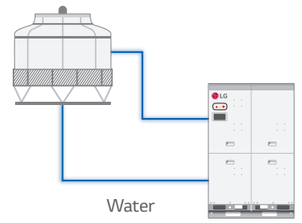


WSHP

Water Source Heat Pump

- Water to air
  : MULTI V water series (VRF)
- Water to water
  : Inverter scroll chiller heat pump, Chiller products

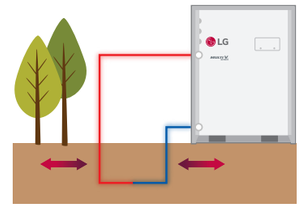
* Centrifugal chiller, Screw chiller, Absorption chiller, Scroll chiller



GSHP

Ground Source Heat Pump

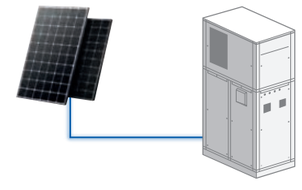
- Ground to air
  : MULTI V water series (VRF)
- Ground to water
  : Inverter scroll chiller heat pump, Chiller products



SSHP

Solar Source Heat Pump

- Integrated Package Solution
  : PV + ESS + Ventilation + AWHP + DHW



HOW TO USE THIS BOOK?

Welcome to LG THERMA V Application guide which is designed to help you decide **which LG model is best suited to your renewable and high-efficient heating solution based on your customer requirements.**

Key Requirements

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LG THERMA V

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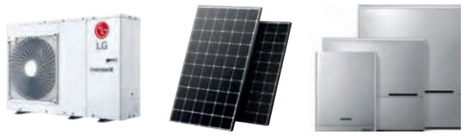
THERMA V Products

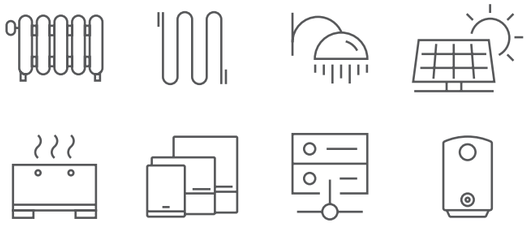
Monobloc | Split Hydro Box | High Temp. | Split IWT (R410A) | Split IWT (R32) | Hydrosplit

Energy Package



AWHP | PV SOLAR MODULE | ESS

Applications



KEY REQUIREMENTS

BUILDING-SIDE

Buildings can be largely divided into residential and commercial buildings based on their purpose.
In order to propose an optimal heating solution that meets the requirements of the site, it is necessary to know in advance the building's and heating specifications in detail.

Building Specifications

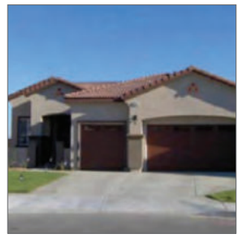
- Building type : Residential / Commercial
- Project type : New building / Replacement or Renovation
- Building and energy regulation / Policy
- Building drawing : Building architects and dimensions

Heating System Specifications

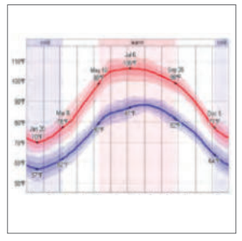
- Available energy source : Oil, Gas, Pellet, Electric, etc.
- Calculated heat loss which depends on building design and the weather conditions : For renovation or replacement, existing system's specifications such as radiator and floor heating help to calculate heat loss more accurately.
- Expected operating cost : The operating time of system is used for accurate energy cost calculation.
- The temperature and humidity standard required for the living space.

Regulations / Incentives

- Mandatory HVAC design / Duty ratio with heat pump system
- Requirements for receiving government grants and incentives.



Architecture Information



Weather Data

CUSTOMER-SIDE

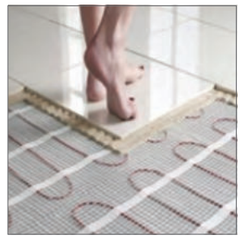
Recent heating systems became more and more energy-efficient, but in order to prove the energy performance that the system guarantees, you must consider actual customers' usage patterns. In a viewpoint of energy efficiency, comfort and convenience, you must understand customers' requirements in detail before designing the system so that they can operate the heating system more efficiently and smartly.

Heating Requirements

- Desired heating and cooling temperature to maximize a comfortability of indoor environment.
- Desired hot water temperature and maximum hot water usage volume per hour.
- Preferred heat emitter. (Radiator, Underfloor heating and FCU)
- Additional heat loads : Swimming pool, thermal storage, snow and ice melting, etc.

Functional Requirements

- Low noise, small size and simple & easy piping.
- Zoning control of indoor temperature for heating.
- Integrated and remote control and management for 'Smart home' service.
- Energy performance monitoring. (Wired or wireless data tracking based on IoT)



Floor Heating

FCU

Radiator

Hot Water

LG THERMA V

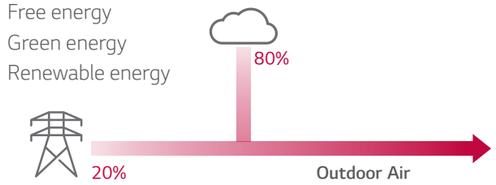
WHAT IS LG THERMA V ?

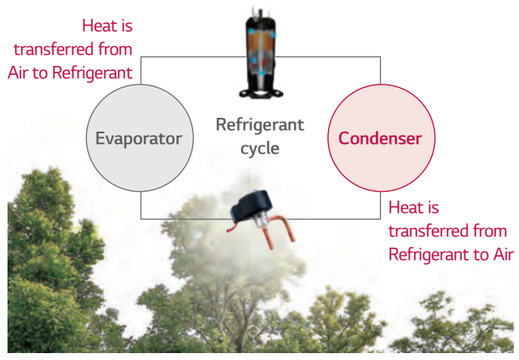
AWHP (Air to Water Heat Pump) System can provide various heating solutions from floor heating to hot water supply with multiple heat sources. It is 5 times more energy efficient than the conventional system.

Air to Water Heat Pump

Air Source

Free energy
Green energy
Renewable energy

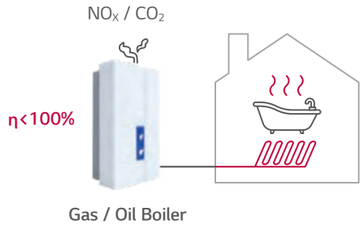




Conventional System

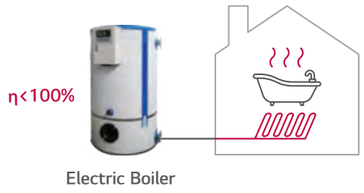
Conventional Gas / Oil Boiler

Emissions of environmentally hazardous substances.



Electric Boiler

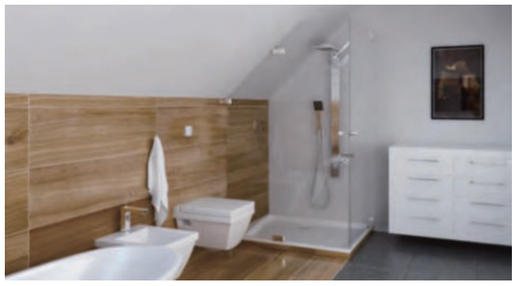
High energy consumption



New approach and design for recent residential are required to create a comfortable living environment.

- High-efficiency
- Eco-friendly
- Cost efficient investment
- Low Noise

Space Heating / Cooling
Radiant
Convection



Domestic Hot Water
Shower & Washing
Kitchen sink

THERMA V is the brand name of LG's AWHP Business. The LG THERMA V has been specially designed to provide a space and domestic hot water solution to both new build and renovated homes.

Space Heating
The wide span THERMA V systems with high efficiency can cover heating loads of various types of houses.

Domestic Hot Water
As the hot water efficiency becomes more and more important, THERMA V can provide an optimized solution for this.

Space Cooling
THERMA V is a single device that can also provide a cooling solution besides the heating and hot water provided by boilers.

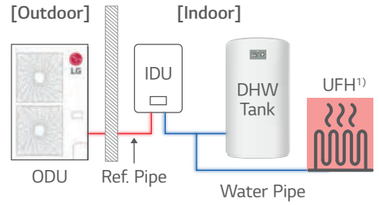
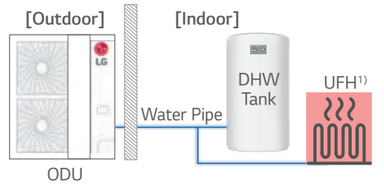
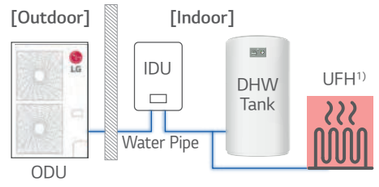
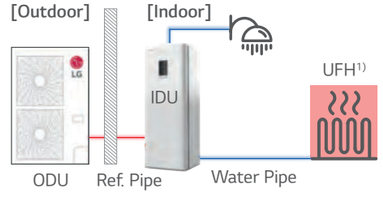
LG THERMA V

LINE UP

*(Heating Capa.)

Product		Water Temperature (C/H)	Refrigerant	Power	Capacity (kW) 5	7	9	12	14	16
THERMA V Monobloc		5°C / 65°C	R32	1Ø 230V	● 5.5 (5.5)	● 7.0 (7.0)	● 9.0 (9.0)	● 12.0 (12.0)	● 14.0 (14.0)	● 16.0 (16.0)
				3Ø 400V				● 12.0 (12.0)	● 14.0 (14.0)	● 16.0 (16.0)
THERMA V Silent Monobloc				1Ø 230V			● 9.0 (9.0)			
THERMA V Hydrosplit	Hydro Box Type	5°C / 65°C		1Ø 230V				● 12.0 (12.0)	● 14.0 (14.0)	● 16.0 (16.0)
				3Ø 400V				● 12.0 (12.0)	● 14.0 (14.0)	● 16.0 (16.0)
THERMA V Split	Hydro Box Type	5°C / 65°C		1Ø 230V	● 5.5 (5.5)	● 7.0 (7.0)	● 9.0 (9.0)			
	Integrated Water Tank	5°C / 65°C		1Ø 230V	● 5.5 (5.5)	● 7.0 (7.0)	● 9.0 (9.0)			
	Hydro Box Type	5°C / 57°C	R410A	1Ø 230V				● 10.4 (12.0)	● 12.0 (14.0)	● 13.0 (16.0)
				3Ø 400V				● 10.4 (12.0)	● 12.0 (14.0)	● 13.0 (16.0)
	DHW Tank Integrated Unit	7°C / 58°C		1Ø 230V			● 9.0 (9.0)	● 10.4 (12.0)	● 11.0 (14.0)	● 12.0 (16.0)
				3Ø 400V				● 10.4 (12.0)	● 11.0 (14.0)	● 12.0 (16.0)
THERMA V High Temp.	High Temp. (Heating only)	80°C	R410A + R134a	1Ø 230V						● (16.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Types	Scheme	Configuration	Remark
Split Hydro box		- Basic : ODU + IDU - IDU and ODU are connected by Ref. Pipe - Additional DHW Tank	- No water freezing - Risk of refrigerant leakage inside - Certified person for refrigerant
Monobloc		- Basic : ODU - IDU and ODU are combined together and it is located outside - Additional DHW Tank	- Risk of water freezing - No refrigerant pipes (No leakage inside & No cert.) - Saving Indoor Space - Indoor PCB located outside
Hydrosplit		- Basic : ODU + IDU - IDU and ODU are connected by Water Pipe - Additional DHW Tank	- Risk of water freezing - No refrigerant pipes (No leakage inside & No cert.)
Split IWT		- Basic : ODU + IWT (DHW Tank included) - IDU and DHW Tank are combined together	- No water freezing - Saving Indoor Space - Risk of refrigerant leakage inside - Certified person for refrigerant

1) Instead of UFH, other terminal units such as RAD (Radiator) and FCU (Fan Coil Unit) can be connected for space heating or cooling.
* ODU : Outdoor Unit, IDU : Indoor Unit, IWT : Integrated Water Tank, UFH : Under Floor Heating

LG THERMA V

KEY FEATURES

Low GWP Refrigerant R32

What is R32 Refrigerant ?

Low GWP, Zero ODP, Higher efficiency, Easy to recycle

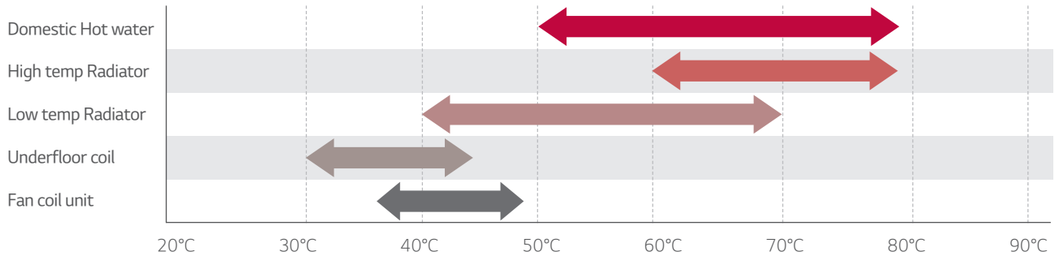
Wide Operation Range

R32 THERMA V Products are providing

Cool water outlet temperature is 5~27°C,
Hot water outlet temperature is 15~65°C

THERMA V High temp is providing

Hot water outlet temperature is 25~80°C



Purpose of use	Temperature range (°C)
Bath, Shower	42~45
Wash-up, Dish-washing	35~40
Kitchen	45~45
Swimming Pool	25~28 (Winter season 30)

R1 Compressor

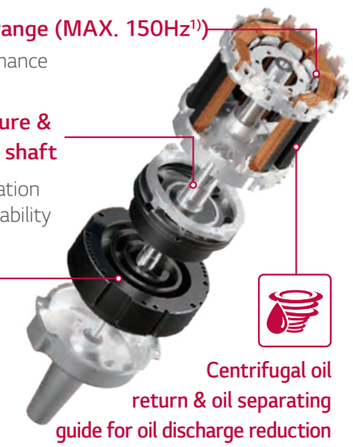
LG R1 Compressor is more stable and simple compressing structure with low-vibration characteristics.

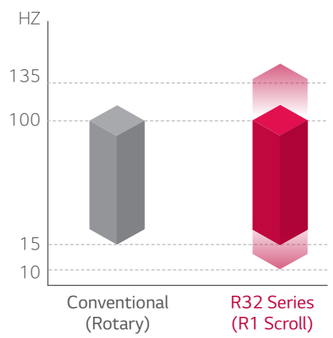
*** Hybrid Scroll Shape Design**

Extended operation range (MAX. 150Hz[1])
- Higher heating performance

Shaft-through structure & support both ends of shaft
- Solid compressor operation ensuring enhanced durability

Bottom compression & simple structure
- Lower noise & vibration (Max. 4dB(A) ↓)
- Decreased weight (20% ↓[2])
- Superior reliability





1) Max. operation range of R1 compressor is 135Hz for AWHP products.
2) LG Internal test result, Based on conventional compressor. (rotary type GPT442M)

Black Fin

The black coating with enhanced epoxy resin is applied for strong protection from various corrosive external conditions such as salt contamination and air pollution including fumes from factories. This improvement in durability prolongs the product's lifespan and lowers both the operational and maintenance costs.

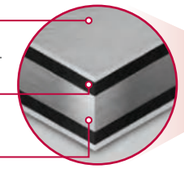
Longer Lifespan, Lower Operational Costs

Strengthened Corrosion Resistant Coating

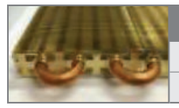
Hydrophilic Film (Water Flow)
The hydrophillic coating minimizes moisture build up on the fin.

Acryl + Epoxy + Melamine Resin (Corrosion Resistant)
The black coating provides strong protection from corrosion.

Aluminum Fin



Test result of corrosion resistance[1]



Conventional	
SST	50%
CCT	50%

Black Fin	
SST	1,950hr **(95% ↑)**
CCT	1,300hr **(160% ↑)**

1) Test condition
- SST (Salt Spray Test) : NaCl aqueous solution (5%), Fog (35°C, 24hr) → Repeat test
- CCT (Cyclic Corrosion Test) : NaCl aqueous solution (5%), Fog (35°C, 2hr) / Dry (70°C, 2hr) / Wet (50°C, 2hr) → Repeat test

* This result can be different depending on actual environment.

LG THERMA V

KEY FEATURES

Standard III Remote Controller (RS3)

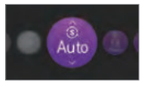
The R32 series is equipped with Standard III remote controller (RS3).

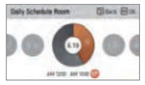
Premium Design

New modern design 4.3 inch color LCD display
Capacitive touch button (especially On/Off button turn on LED)

User Friendly Interface

Information displayed with simple graphic, icon & text
Navigation button, easy to use





Integrated Air temp sensor

Embedded Air temperature sensor in remote controller

More energy contents

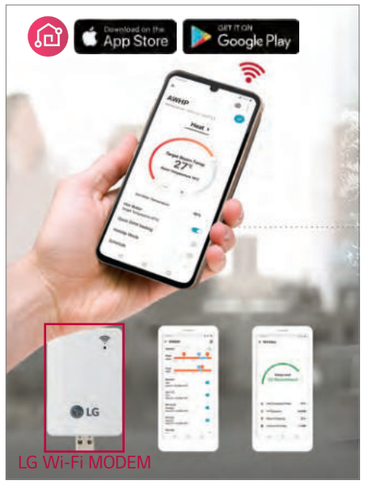
Auto controlled by weather and time

Convenient Functions

Optimize schedule setting logic
- Set the period, date, on/off time, operation mode, target temp.
Easy installation setting (as-is : numeric code, to-be : word)

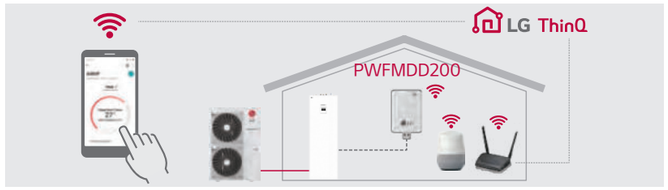
Wi-Fi / Google Voice Control

Control your LG THERMA V via using the smart internet devices such as Android or iOS based smartphones. In addition, ThinQ works with Google assistant voice control by using Google home speaker and Wi-Fi modem.



Mandatory Accessory : PWFMDD200 (LG Wi-Fi Modem)
Note : PWYREW000 (10m extension cable) may be necessary depending on installation condition.

Access your THERMA V anytime from anywhere



※ Search "LG ThinQ" on Google market or Appstore then download the app.
※ Google home voice is supported in UK, France, Germany, Spain, Italy, Austria, Ireland and Portugal.

Simple operation by ThinQ

- Operation 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

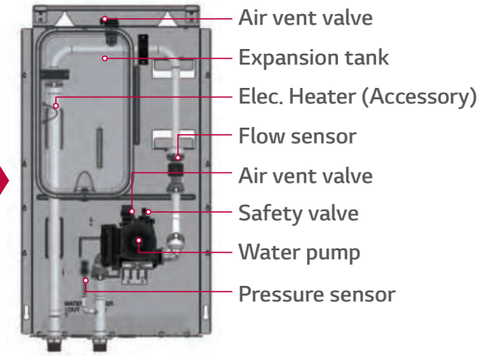
Simple operation by Google Voice

- On/Off
- On/Off – DHW
- Operation Mode Selection

Integrated Hydronic Components

All hydronic components integrated into one unit and it can reduce time and cost for preparation.

- Flow sensor
- Pressure sensor
- Water pump
- Expansion tank
- Air vent valve
- Safety valve
- Controller
- Electric Heater (Accessory)

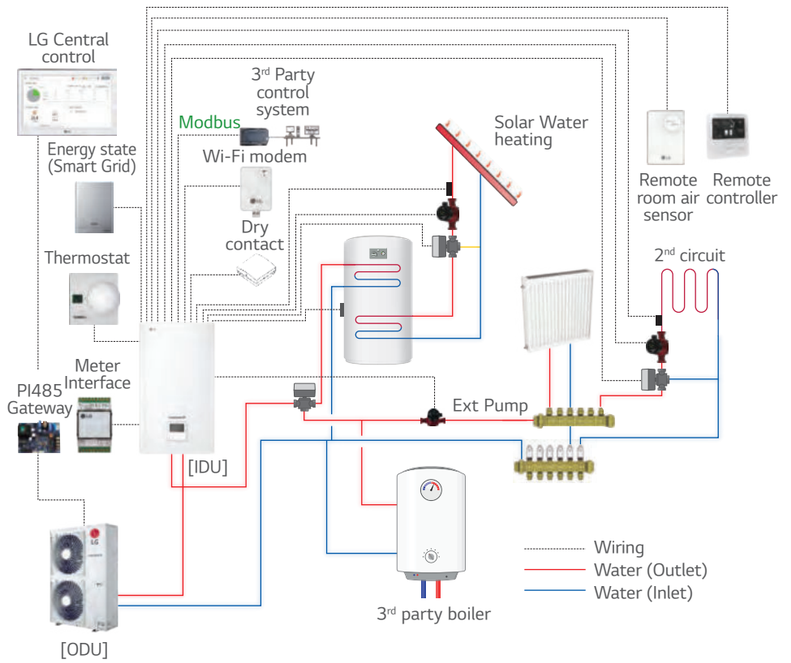


[Hydrosplit IDU]

Note
1. A strainer is separately supplied with the product and it should be installed at the PHEX inlet.
2. Details of Integrated hydronic components are different as per model.

Integrated PCB

One integrated PCB makes all functions



Note
1. LG Central Controller can be connected via ODU with PI485 Gateway.
2. Details of Connection Diagram are different as per model.

No additional PCB Required

- Wi-Fi Control
- Control by room air temp sensor
- Various Temperature Control Options
- Seasonal Auto Mode
- Solar Water Heating
- Air Purge Operation
- DHW Tank Anti-Legionella Operation
- Advanced Pump Control
- LG THERMA V Configuration
- 2nd Circuit
- External water pump
- 3rd Party boiler
- Meter interface
- Energy State (Smart Grid)
- 3rd Party Control System (Modbus)
- Dry Contact Mode
- Screed drying
- Programmable Digital Input Operation

LG THERMA V

THERMA V SELECTOR

The LG THERMA V Selector is a mobile application for designers, installers and end users, which provide various reallife simulations.
An energy simulation can quickly indicate energy consumption and cost as well as CO_2 emission values that can be vastly reduced from conventional heating systems using minimal input values.
With both model selection and energy simulation tools, quick and accurate selection is made possible with detailed input values such as desired system configuration, required heating and domestic hot water (DHW) load, which will calculate payback, result in a faster energy simulation and generate cost comparisons.
Sound level can also be calculated through simulations based on the installation environment.

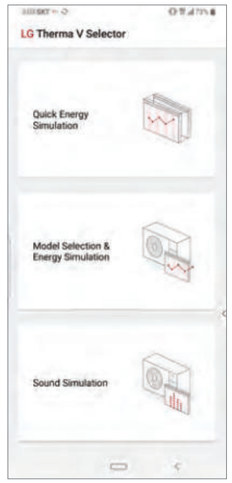
How to Install?

Search "LG Energy Payback" in Google Play Store.

Android
URL : https://play.google.com/store/apps/details?id=com.lg.smartinverterpayback

* iOS version will be available within 2020 on the Apple App Store.

Simulation Mode



'Quick Energy Simulation' is a quick & easy mode.
Users can see the annual energy consumption, cost, and CO_2 emission with several input, which is similar to the LG THERMA V website version.

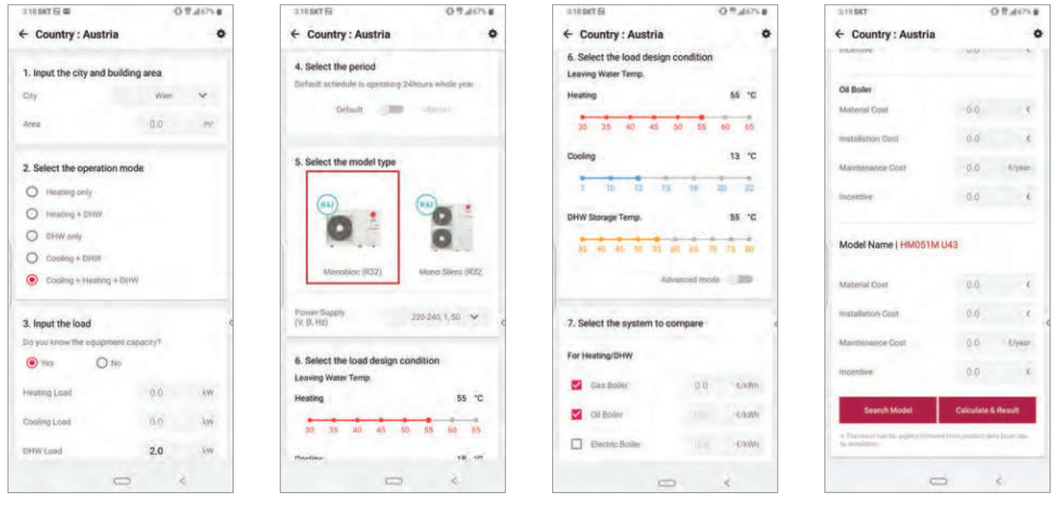
'Model Selection & Energy Simulation'
is to provide more information about model, energy simulation and payback simulation.
Users can select or input more information about site or design condition, then can see the suitable model, annual energy consumption, cost, CO_2 emission, and payback result.

'Sound Simulation' is to see the calculated sound result.

Model Selection & Energy Simulation

Before choosing an air to water heat pump, many customers wonder how much energy costs can be saved compared to conventional heating systems, and how to select a product with the right capacity for the home.
The LG THERMA V selector allows you to calculate annual energy costs and payback periods as well as model selection through sophisticated simulations through simple input values.

- City selection
- Building area input
- Operation mode selection
- Load input
- Operation period selection
- Model type selection
- Design condition input
- System selection to be compared
- Costs input for systems
- Searching model that meets criteria



LG THERMA V

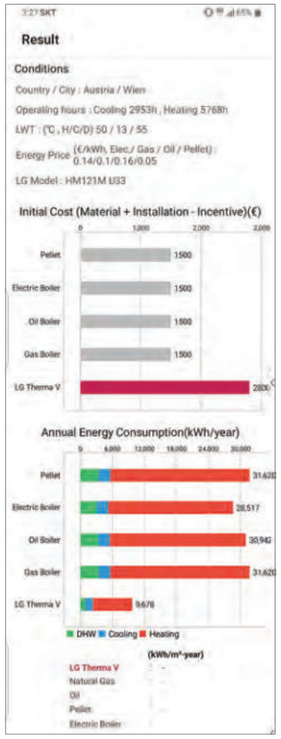
THERMA V SELECTOR

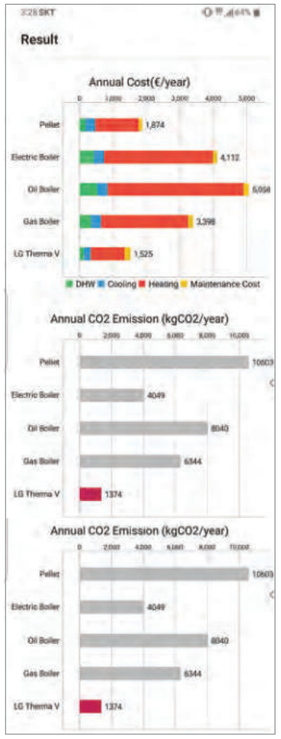
Result & Report

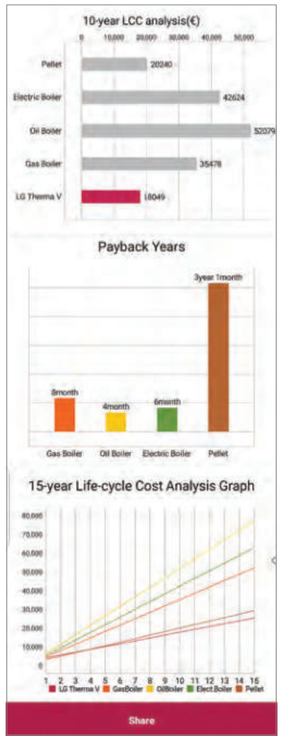
After the simulation, analysis results including initial investment cost, annual energy consumption, and payback period can be checked in the form of various graphs. Moreover, this report is provided in PDF format and can be shared by e-mail and messenger.

Result

- Simulation conditions summary
- Initial cost
- Annual energy consumption
- Annual cost
- Annual CO_2 emission
- 10-year LCC analysis
- 15-year LCC analysis
- Payback year
- 15-year LCC analysis graph

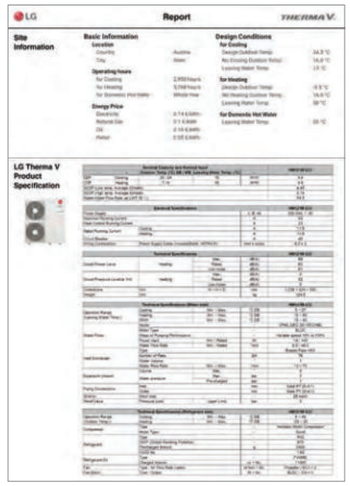


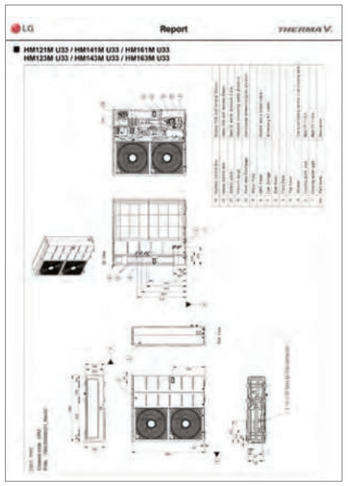




Report

- Site information & design condition
- Product specification
- Annual energy consumption
- Life cycle cost
- Drawings

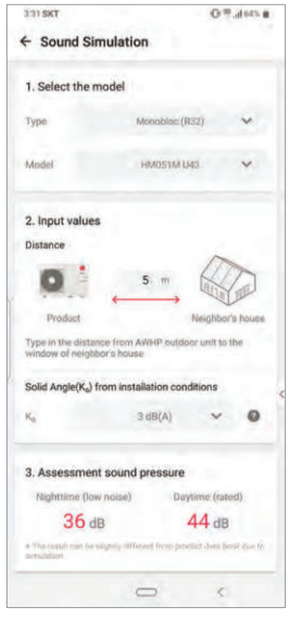


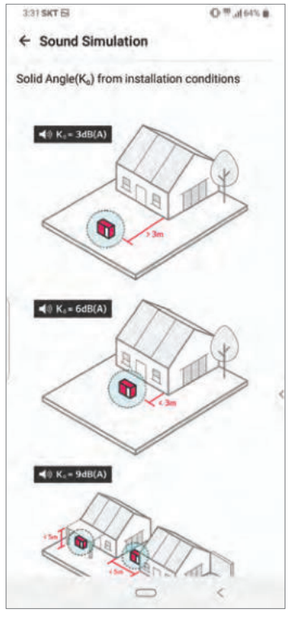


Sound Simulation

Consumers are also wondering how much sound level will be after installing the Air to Water Heat Pump product. Using the sound simulation function of THERMA V selector, you can predict the expected sound pressure values in the daytime and nighttime according to the installation distance and conditions.

- Model selection
- Distance input
- Solid angle selection
- Reference for solid angle selection





APPLICATIONS

1. Space Heating Only
2. Space Heating and DHW
3. Space Heating and Cooling
4. Space Heating System combined with back up heating
5. Integrated Solution with PV & ESS
6. Control functions with Accessory

APPLICATIONS

APPLICATION OVERVIEW FOR LG THERMA V PRODUCTS

As a heating / cooling system for residential buildings, the following products offer advantages such as environmentally friendly and a cost efficient operation. In addition, various degrees of design freedom and design of various application systems are possible. Heat pump system using air as heat source enables stable operation and implement high performance with great efficiency A+++. (* R32 Products)

THERMA V - R32 Monobloc / Silent Monobloc

R32

R32 Silent Monobloc – 1Ø 9kW only (2 fan)

Capacity Range : 1Ø 5 / 7 / 9 / 12 / 14 / 16kW
3Ø 12 / 14 / 16kW

- Supply water up to 65°C for heating
- Supply water up to 5°C for cooling
- Radiant system design
- Space heating / cooling design with FCU
- Hot water system
- Hydronic components included
- No refrigerant piping work
- R1 Compressor / Black Fin

THERMA V - R32 Split / IWT

R32

IWT Hydro Box

Capacity Range : 1Ø 5 / 7 / 9kW

- Supply water up to 65°C for heating
- Supply water up to 5°C for cooling
- Radiant system design
- Space heating / cooling design with FCU
- Hot water system
- For R32 IWT, Integrated water tank (All in one)
- Hydronic components included
- R1 Compressor / Black Fin

THERMA V - R32 Hydrosplit

R32

Hydro Box

Capacity Range : 1Ø 12 / 14 / 16kW
3Ø 12 / 14 / 16kW

- Supply water up to 65°C for heating
- Supply water up to 5°C for cooling
- Radiant system design
- Space heating / cooling design with FCU
- Hot water system
- Hydronic components included
- R1 Compressor / Black Fin

THERMA V - R410A Split

Hydro Box

Capacity range : 1Ø 12 / 14 / 16kW
3Ø 12 / 14 / 16kW

- Supply water up to 57°C for heating
- Supply water up to 5°C for cooling
- Radiant system design
- Space heating / cooling design with FCU
- Hot water system
- Hydronic components included
- Rotary Compressor / Gold Fin

THERMA V - R410A IWT (Integrated Water Tank)

Capacity range : 1Ø 9 / 12 / 14 / 16kW
3Ø 12 / 14 / 16 kW

- Supply water up to 58°C for heating
- Supply water up to 7°C for cooling
- Integrated water tank (All in one)
- Hydronic components included
- Radiant system design
- Space heating design with FCU
- Rotary Compressor / Gold Fin

THERMA V - High temp.

Capacity range : 1Ø 16kW

- Supply water up to 80°C for High temp. heating
- Radiant system design
- Space heating design
- Hot water system
- R1 Compressor / Black Fin

APPLICATIONS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

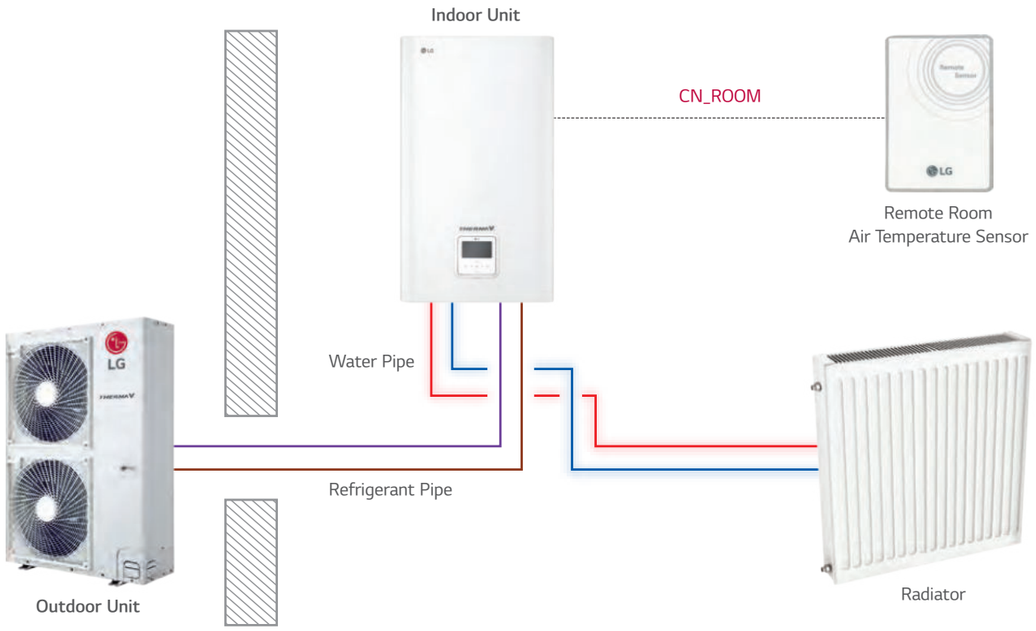
THERMA V - High Temp.

Design Purpose

• To control heating the indoor space by sensing room air temperature.

Schematic Diagram

• THERMA V : Using Remote Room Air Temperature Sensor



* Regardless of type (Monobloc, Split, Silent, High Temp.), Remote Room Air Temperature Sensor can be connected IDU PCB.

Preparation

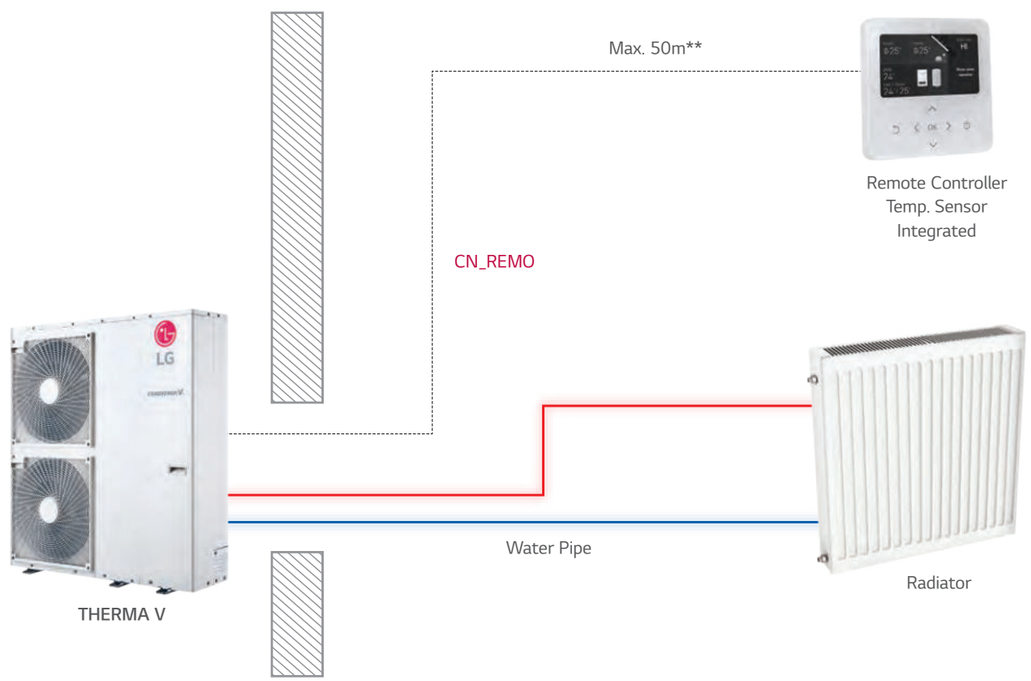
• Remote Room Air Temperature Sensor (Accessory)
• Change of No. 1 of Dip Switch #3 in case Remote Room Air Temperature Sensor is installed.

Remote Temp. Sensor (Accessory)

Model Name	Feature
Remote Room Air Temperature Sensor (PQRSTA0)	• Sensor for Detecting the Room Air Temperature • Max. Wire Length : 15m

Schematic Diagram

• THERMA V R32 Series and High Temp. : Using Remote Controller Temp. Sensor Integrated



* In case of R32 Series and High Temp. Model, location of temperature sensor can be selected among Remote Controller or Remote Room Air Temperature Sensor.
* Extension wire for remote controller (PZCWRC1) is required for Max. 50m connection.

APPLICATIONS

Available Product

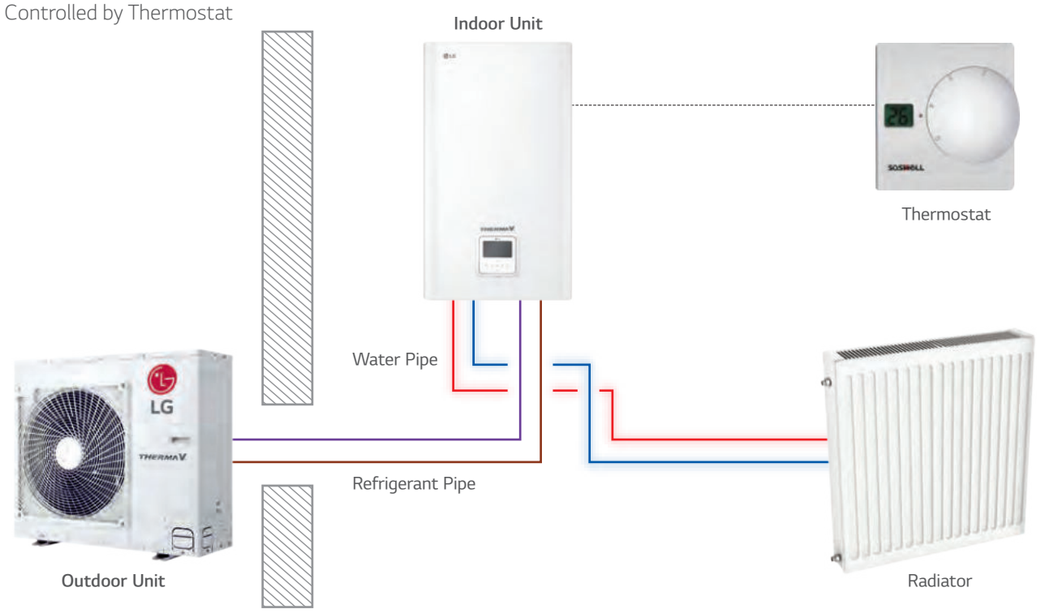
- THERMA V - R32 Series
- THERMA V - R410A Split
- THERMA V - High Temp.

Design Purpose

• In this design, thermostat can control product On/Off status and mode change.

Schematic Diagram

• Controlled by Thermostat



* Regardless of type, 230V AC Thermostat can be connected IDU PCB, but specific TB (Terminal Block) numbers are different as per model.

Preparation

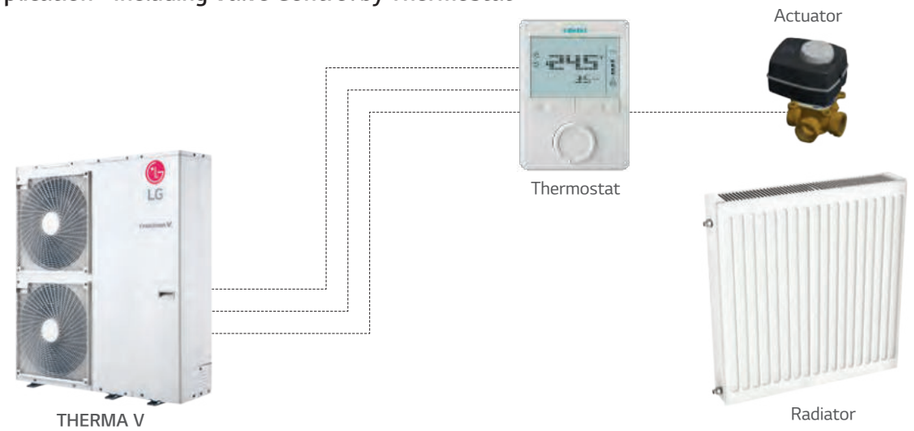
• Thermostat (Field scope)
• Change of No. 8 of Dip Switch #2 in case Thermostat is installed.

Thermostat (Accessory)

Model Name	Feature
Thermostat (3rd Party)	• 230V AC Signal • Mode : Cooling / Heating / DHW (DHW mode is supported only for Hydrosplit type)

* If wireless thermostat is used, signal receiver should be connected to IDU PCB.

Advanced Application - Including Valve Control by Thermostat



Wiring (ex. Split)

Thermostat (Default : 230V AC)			
27	28	29	30
L	N	L1	L2
↓ (L)	↓ (N)	↑ (C)	↑ (H)
Thermostat			

(L) : Live signal from outdoor unit's PCB to thermostat.
(N) : Neutral signal from outdoor unit's PCB to thermostat.
(C) : Cooling signal from thermostat to outdoor unit's PCB.
(H) : Heating signal from thermostat to outdoor unit's PCB.

APPLICATIONS

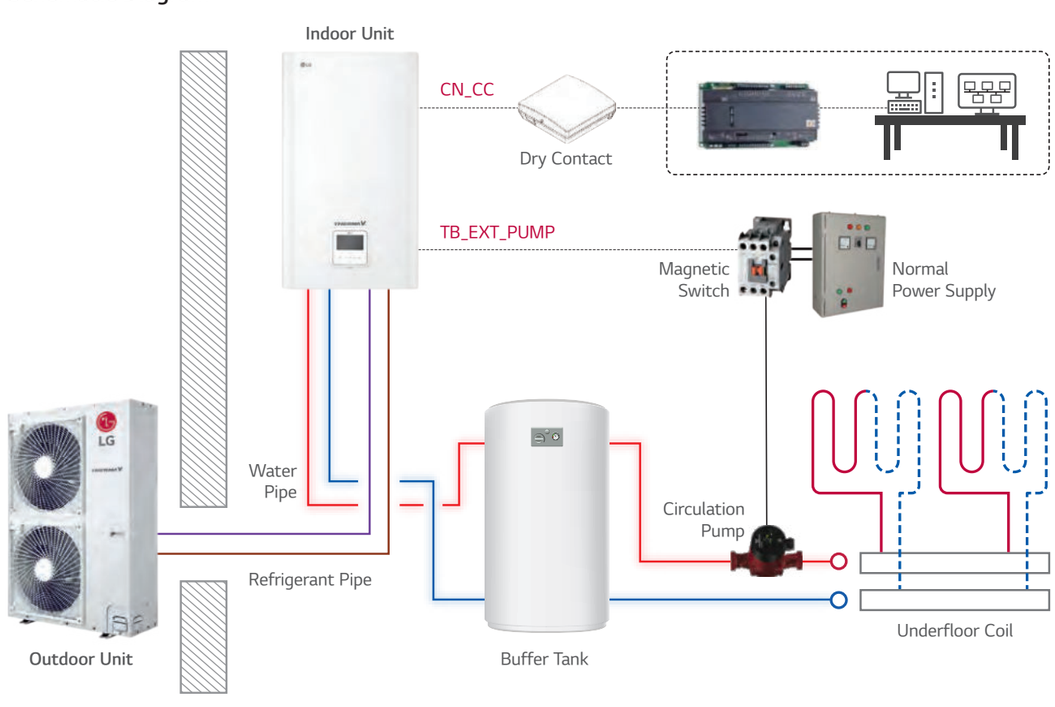
Available Product

- THERMA V - R32 Series
- THERMA V - R410A Split
- THERMA V - High Temp.

Design Purpose

• In this design, a dry contact is used to channel communications between the 3rd party DDC and our product.

Schematic Diagram



Preparation

• Dry Contact (Accessory)
• BMS (Filed scope)

Dry Contact (Accessory)

Model Name	Feature
Simple Dry Contact (PDRYCB000)	• 1 Set Per 1 Unit • 1 Input Contact for Turning On/Off • Input Power : 220-240V • 2 Output Contacts - Operation Status - Error Status
Dry Contact for Thermostat (PDRYCB320)	• 1 Set Per 1 Unit • Non Voltage or 12 ~ 24V • 1 Analog input for Set point • 8 Digital Input Contacts for Thermostat - On/Off, Operation Mode, DHW Heating - Emergency Mode, Silent Mode • 2 Output Contacts - Operation Status - Error Status

APPLICATIONS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

THERMA V - R410A IWT

Design Purpose

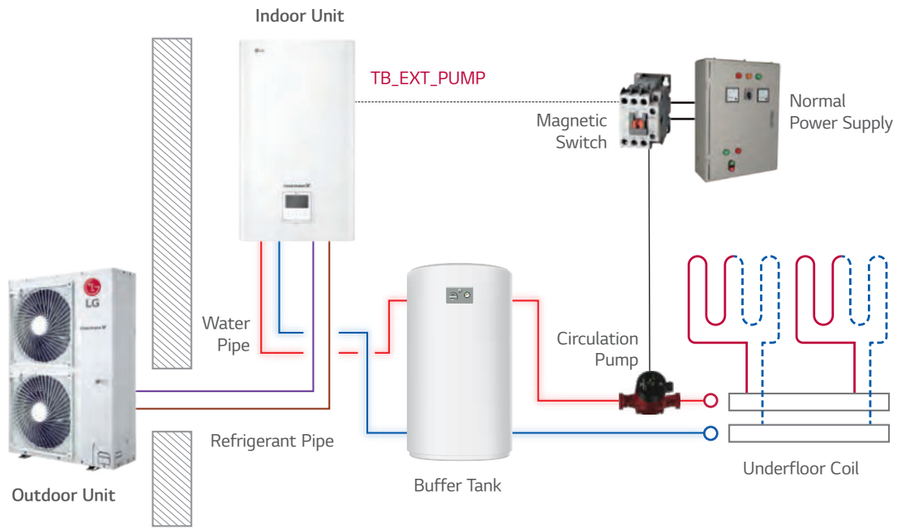
- If auxiliary circulation pump is required. (with Buffer tank)
- Additional pump connection control due to big pressure drop of terminal unit.
- Water pump is not integrated into the product (THERMA V High Temp.).

Preparation

- External pump (Field scope)
- Magnet Switch / Relay, MCC (Field scope)

Schematic Diagram

- THERMA V R32 Series and R410A Split



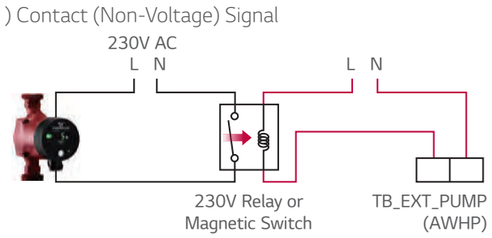
External Pump (Signal)

Model Name	Feature
R32 Series and R410A Split	• Contact Signal (Non-Voltage) : TB_EXT_PUMP
High Temp.	• 230V AC Output (Main) : PUMP(A) 1/2 • Contact Signal (Non-Voltage) : TB_EXT_PUMP
R410A IWT	• 230V AC Output

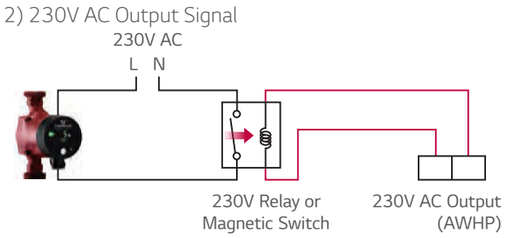
* TB_EXT_PUMP : Pump On signal is provided during main water pump is operating except for R32 Hydrosplit.
In case of R32 Hydrosplit, three options are available.
1) Use – operation when main water pump is operating
2) Heating/Cooling – operation only for space heating or cooling
3) Direct Circuit – Used for 2nd circuit.

External Pump Application as per Signal

1) Contact (Non-Voltage) Signal



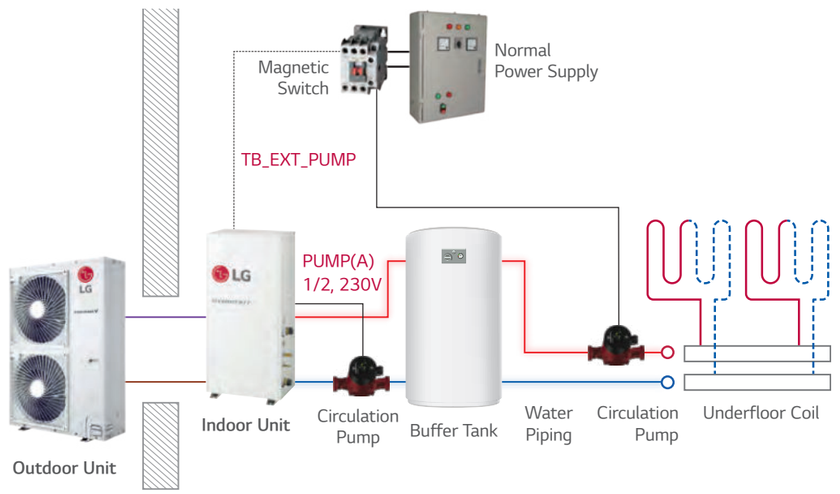
2) 230V AC Output Signal



* Direct connection without relay or Magnetic Switch is not recommended for large size water pump.

Schematic Diagram

- THERMA V High Temp.



* Please use the pump of 230 voltage and maximum operation current of 2A or less for PUMP(A) 1/2.

APPLICATIONS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - R410A IWT

* In case of R410A IWT, 2nd circuit function is available, but setting method is different from indicated below.

Design Purpose

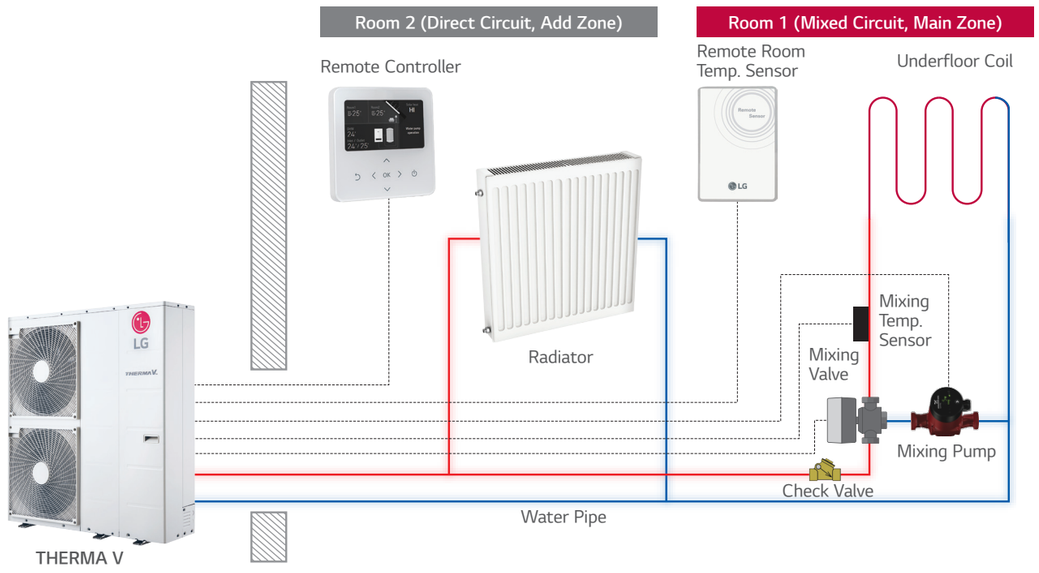
• If there is a need to design two different set temperatures for two zones, the main zone will have the remote room sensor and the other zone will have the remote controller.

Preparation

• Mixing Temp. Sensor (Accessory)
• Mixing Pump (Field scope)
• 3 Way Mixing Valve (Field scope)
• Remote Room Air Temperature Sensor (Accessory)

Schematic Diagram

• THERMA V R32 Monobloc, R32 IWT, R32 Split and R410A Split



* For 2nd circuit application of R32 Monobloc, R32 IWT, R32 Split and R410A Split, please make sure to consult with LG regional engineer for 2nd circuit system configuration.

Control

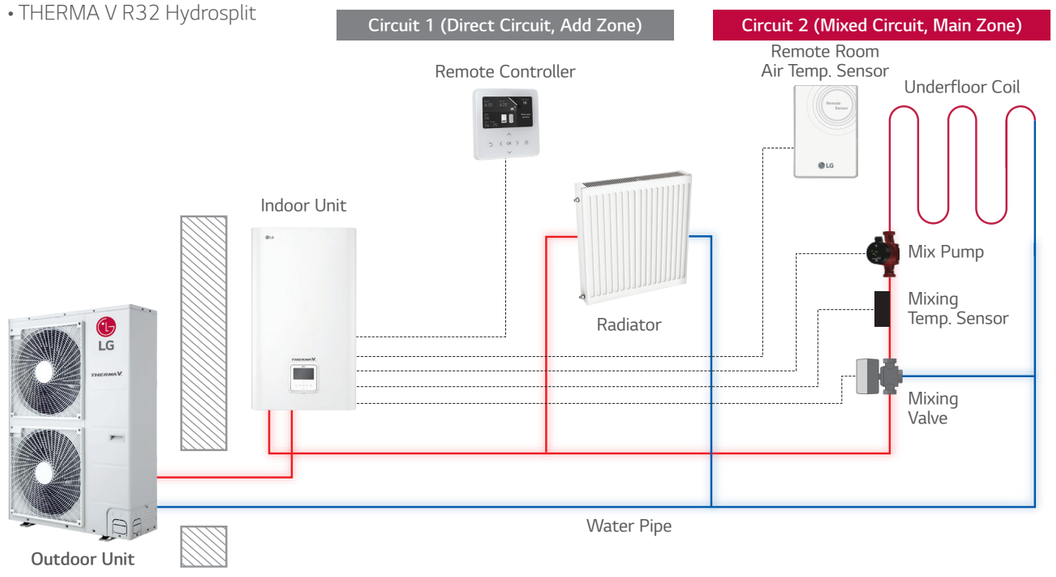
• Circuit 2 (Room 1) : Mixed Circuit (Main Zone), Low temperature than circuit 1.
• Circuit 1 (Room 2) : Direct Circuit (Add Zone), High temperature zone.
• The temperature of the circuit 2 zone is controlled by the mixing valve.
• The temperature of the circuit 2 zone can be adjusted below the circuit 1 zone temperature.
• Both Water Temp. Base Control and Air Temp. Base Control are available for 2nd circuit application.

2nd Circuit (Accessory)

Model Name	Feature
Mixing Temp. Sensor (PRSTAT5K10)	• Accessory (5kΩ Thermistor), 10m
Mixing Pump	• Field scope • 230V Output Signal from PCB
Mixing Valve	• Field scope • 230V Input Signal • Full Open Time (60 ~ 999, Default 240 sec)
Remote Room Air Temperature Sensor (PQRSTA0)	• Sensor for Detecting the Room Air Temperature • Max. Wire Length : 15m

Schematic Diagram

• THERMA V R32 Hydrosplit



* The arrangement of external pump and mixing pump indicated above diagram is applicable only to R32 Hydrosplit model. In case of other models, please make sure to consult with LG regional engineer for 2nd circuit system configuration.

APPLICATIONS

Available Product

THERMA V - R32 Series

Design Purpose

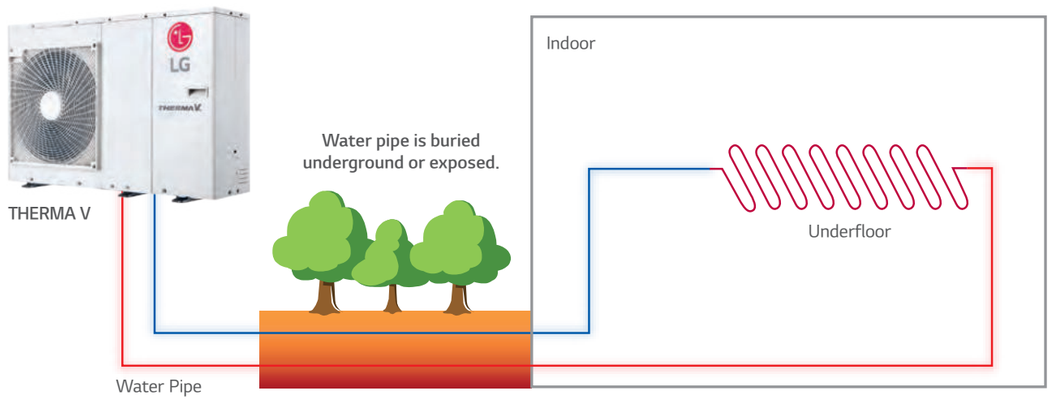
- When water temperature is low at commissioning work.
- When concerning about freezing in water system.

Logic

Entering Water Temp. (Default 15°C) that Anti-freeze Protection logic would be started is adjusted by Anti-freeze solution function setting Temp. For example, if Anti-freeze solution function setting Temp. is set as -5°C, Entering Water Temp that Anti-freeze Protection logic would be started is changed as 10°C.

* Anti-freeze solution function setting Temp. (Water Freezing Temp. as per addition of Anti-freeze Fluid) : -5 / -10 / -15 / -20 / -25°C (Default : -5°C)

Schematic Diagram



Preparation

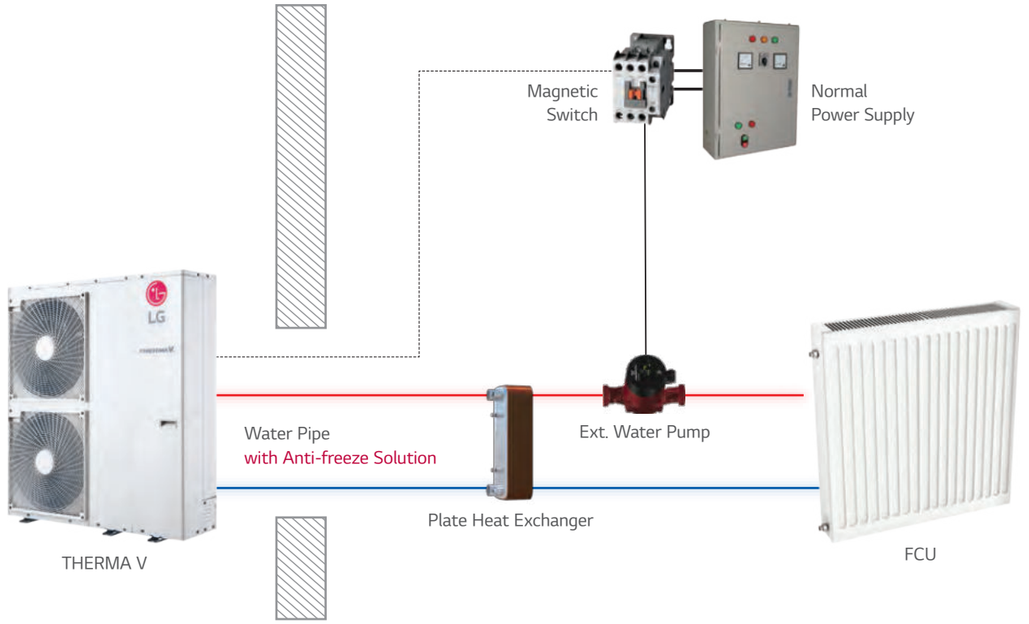
- Anti-freeze fluid (Field scope)
- Change of No. 2 of Dip Switch #3, if Anti-freeze agent is used.
- Short key of CN_FLOW2 to be open.

Category	Anti-freeze Mixing Ratio (By Volume)					
Water Freezing Temp.	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
Ethylene Glycol	0%	12.8%	22%	29%	33.5%	38%
Propylene Glycol	0%	15.5%	26%	33%	39%	44%
Ethanol	0%	14%	24.8%	32%	37.3%	42.2%

* When the Anti-freeze is used (for installation or operation), take care to ensure that Anti-freeze must not be touched.
* If a Anti-freeze is used, pressure drop and capability degradation of the system can be occurred.
* Please check the concentration of the Anti-freeze periodically to keep same concentration.

Advanced Application - THERMA V with additional Heat Exchanger

Some kinds of Anti-freeze fluid is toxic, so it is recommended to use indirect circuit for air-side equipment.



APPLICATIONS

SPACE HEATING AND DHW

Available Product

- THERMA V - R32 Series *
- THERMA V - R410A Split
- THERMA V - High Temp.
- THERMA V - R410A IWT *

* In case of THERMA V IWT, DHW Tank is already integrated into the product.

Design Purpose

• This application is designed for hot water supply.

Preparation

• DHW Tank (Accessory or Field scope)
• DHW Temp. sensor (Accessory)
• Change of No. 2 and 3 of Dip Switch #2, if DHW Heating is added.
  - No. 2 OFF, No. 3 ON : Include DHW / No. 2 ON, No. 3 OFF : Include DHW and Solar Thermal System

Low Temp. Products

• THERMA V R410A Split
• THERMA V R410A IWT

R410A Split

R410A IWT

Mid Temp. Products

• THERMA V R32 Monobloc
• THERMA V R32 Silent Monobloc
• THERMA V R32 Split
• THERMA V R32 IWT
• THERMA V R32 Hydrosplit

R32 Monobloc

R32 Split

R32 IWT

R32 Hydrosplit

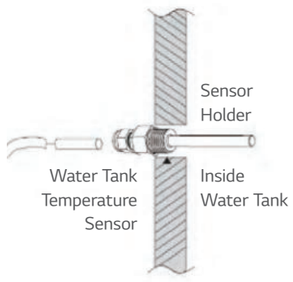
High Temp. Products

• THERMA V High temp.

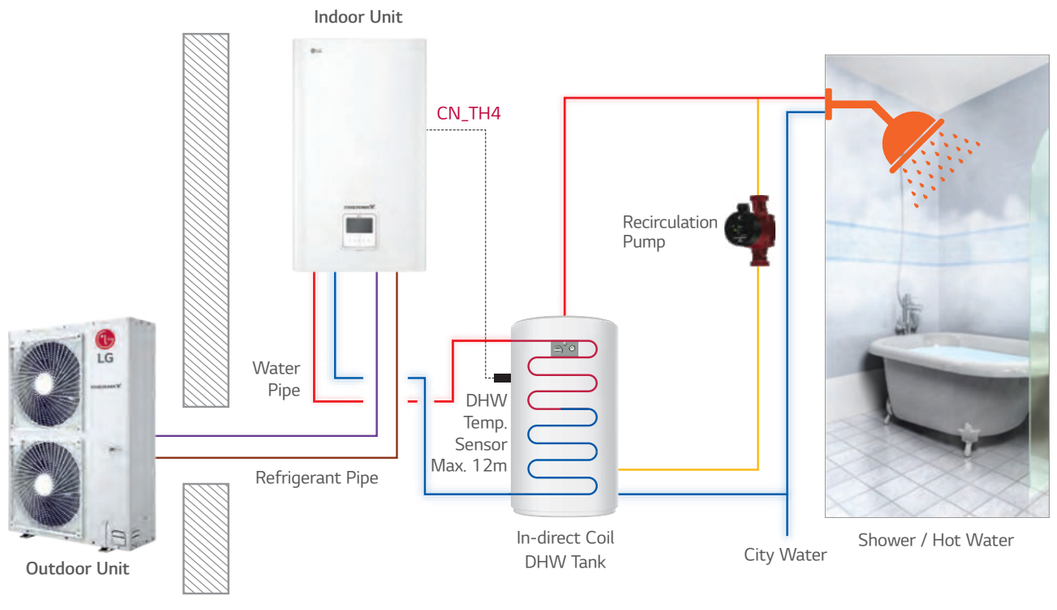
High Temp.

Accessory

Model Name	Feature
DHW Tank	• Accessory - OSHW-200F (200L) / OSHW-300F (300L)/ OSHW-500F (500L) : Single Coil, Stainless Steel, including 2.4kW Booster Heater - OSHW-300FD (300L) : Double Coil, Stainless Steel, including 2.4kW Booster Heater
DHW Tank Kit (Relay, MCCB, Sensor)	• Accessory - PHLTA (Split 1p) - PHLTB (Mono) - PHLTC (Split 3p) • DHW temp. sensor (PHRSTA0) is included in the Kit)
DHW temp. Sensor (PHRSTA0)	• Accessory • 5kΩ, 7PI, 12m
DHW Sensor Holder	• Field scope



Schematic Diagram



APPLICATIONS

SPACE HEATING AND DHW

Available Product

THERMA V - R32 Series

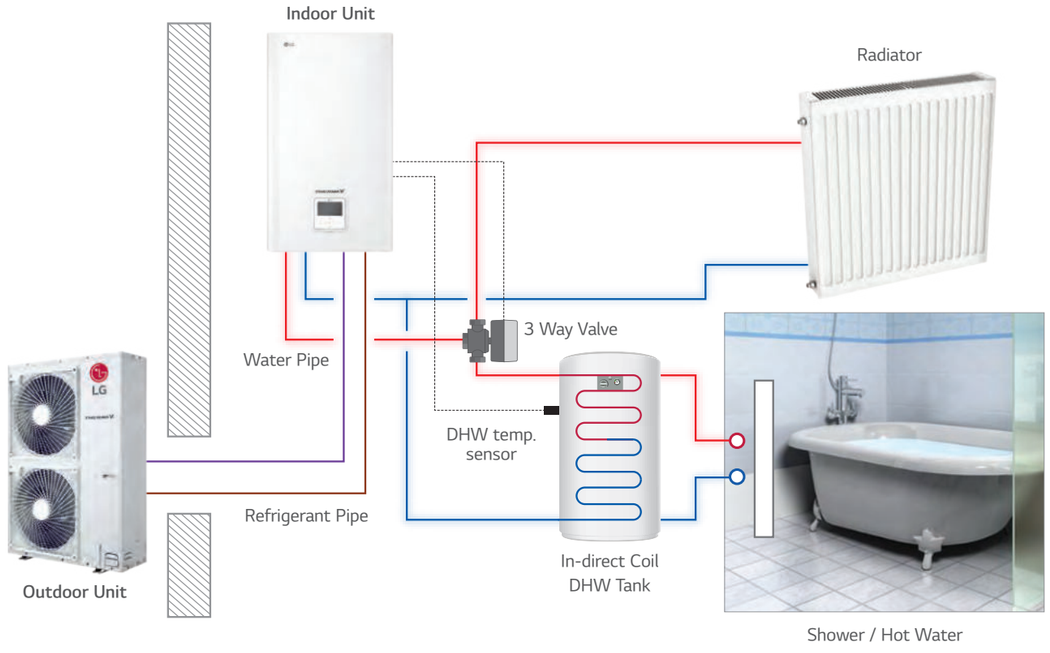
THERMA V - R410A Split

THERMA V - High Temp.

Design Purpose

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

Schematic Diagram



Preparation

• 3 Way valve (Accessory or Field scope)

Accessory

Model Name	Feature
3 Way Valve	• Accessory (OSHA-3V) • AC 230V signal from PCB

Terminal Block Information

Model Name	Feature
R32 Series and R410A Split	• TB1 8 / 9 / 10 : 3 Way VALVE(A) (SPDT, 230V AC, 3 Wire Type)
High Temp.	• TB 4 / 5 / 6 : 3 Way VALVE(A) (SPDT, 230V AC, 3 Wire Type)

Ex) 3 Way Valve (Field scope)

Voltage	230V (±10%) -50 ~ 60Hz
Protection Class	IP42
Operating Time (Angle of Rotation 90°)	40 s
Temperature	-40 ~ 80°C

APPLICATIONS

SPACE HEATING AND DHW

Available Product

THERMA V - R32 Series *

THERMA V - R410A Split

* Except for THERMA V R32 IWT

Design Purpose

- For hot water operation with a back up solution.
- When disinfection operation is necessary.

Preparation

- DHW Tank equipped with Booster Heater (Accessory or Field scope)
- DHW Tank Kit (Accessory)

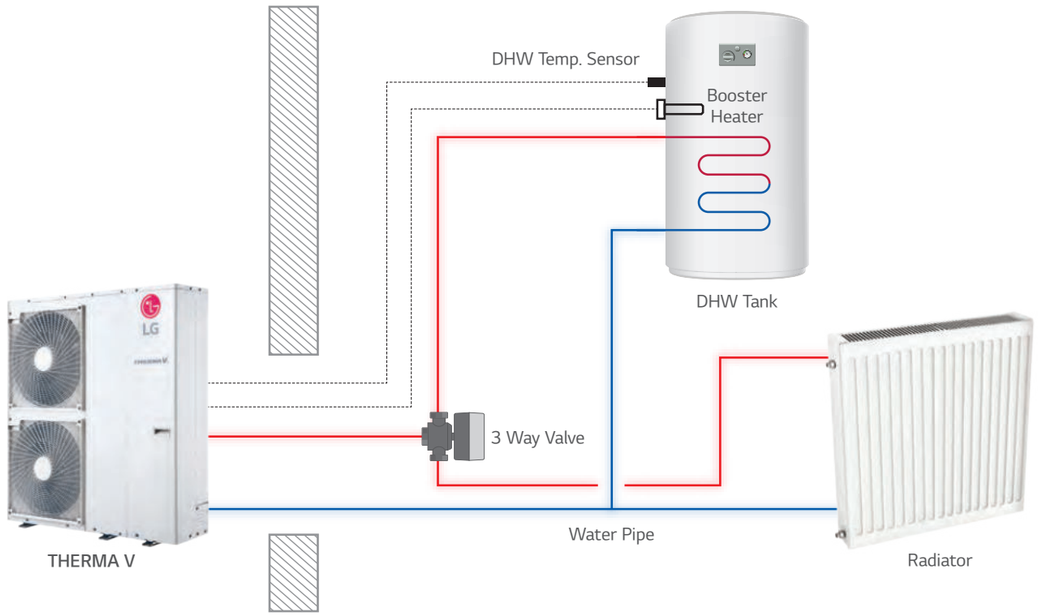
Accessory

Model Name	Feature
DHW Tank	• Accessory - OSHW-200F (200L) / OSHW-300F (300L)/ OSHW-500F (500L) : Single Coil, Stainless Steel, including 2.4kW Booster Heater - OSHW-300FD (300L) : Double Coil, Stainless Steel, including 2.4kW Booster Heater
DHW Tank Kit (Relay, MCCB, Sensor)	• Accessory - PHLTA (Split 1p) - PHLTB (Mono) - PHLTC (Split 3p) • DHW Temp. Sensor (PHRSTA0) is included in the Kit)

Heater Element

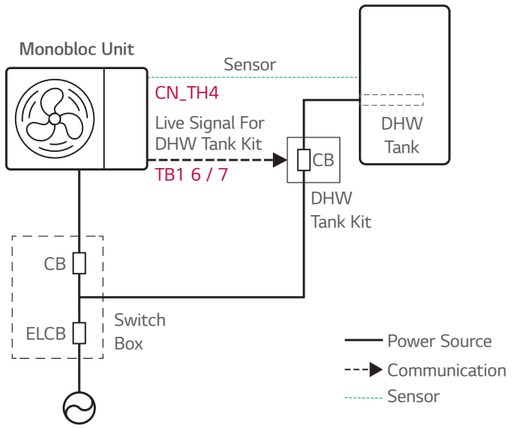
DHW Tank
Hot Water Tank

Schematic Diagram

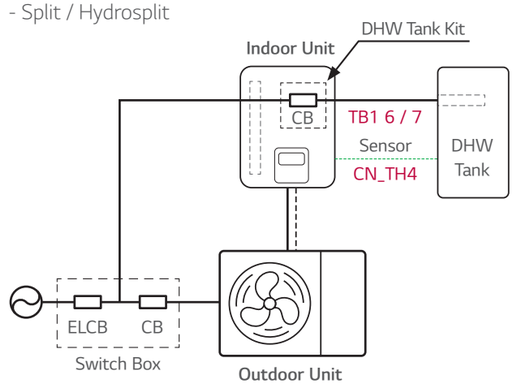


Power Supply Diagram

- Monobloc / Silent Monobloc



- Split / Hydrosplit



* For Split, DHW Tank Kit (CB and Relay) should be installed into control box of Indoor unit.

APPLICATIONS

SPACE HEATING AND DHW

Available Product

THERMA V - R32 Series *

THERMA V - R410A Split

* Except for THERMA V R32 IWT

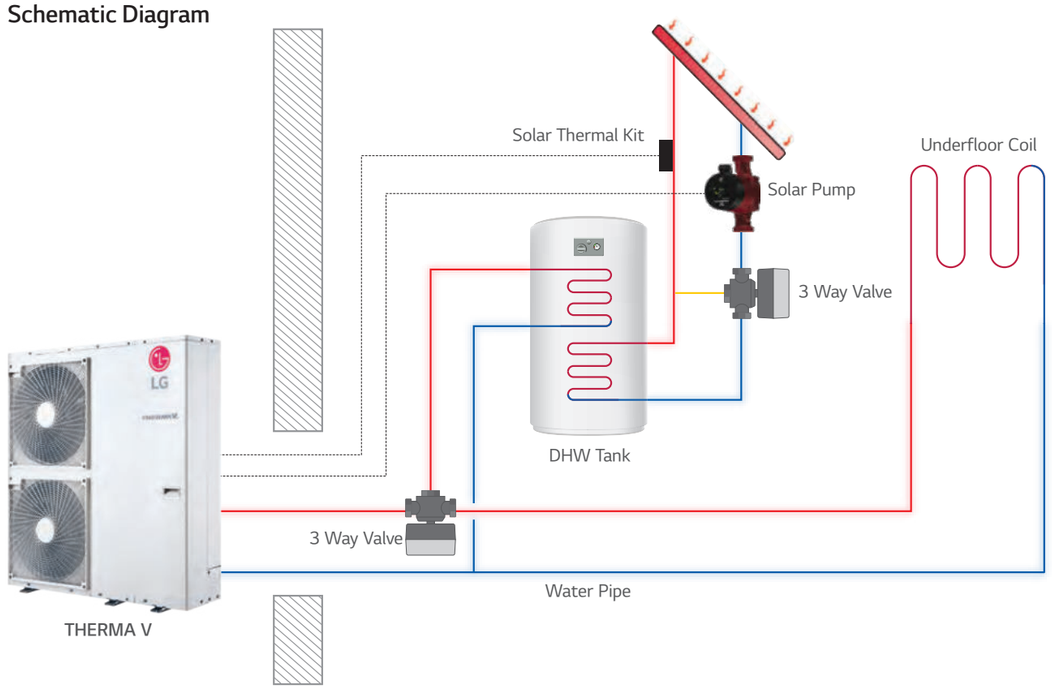
Design Purpose

• In case solar panels are used in the design.

Preparation

• Double Coil DHW Tank (Accessory or Field scope)
• Solar Thermal Panel (Field scope)
• Solar Thermal Kit (Accessory)
• 3 Way valve (Accessory or Field scope)
• Circulating Pump for Solar (Field scope)
• Change of No. 2 and 3 of Dip Switch #2 (No. 2 ON, No. 3 OFF : Include DHW and Solar Thermal System)

Schematic Diagram



Accessory

Model Name	Feature
DHW Tank	• Accessory - OSHW-300FD (300L) : Double Coil, Stainless Steel, including 2.4kW Booster Heater
Solar Thermal kit (PHLLA)	• Accessory (Not Applicable for Hydrosplit) - Solar Pipe Sensor is included in the Kit.
3 Way Valve	• Accessory (OSHA-3V) • AC 230V signal from PCB
Water Pump	• Field scope • AC 230V signal from PCB
Solar Thermal Sensor (PT1000)	• Field scope • Only applicable for Hydrosplit

Terminal Block Information

Item	Feature
3 Way Valve	• TB1 1 / 2 / 3 : 3 WAY VALVE(B) (SPDT, 230V AC, 3 wire Type)
Circulating Pump for Solar	• TB1 4 / 5 : WATER PUMP (B) (SPST, 230V AC, max. 1.05A)
Solar Pipe Sensor	• CN_TH4

Solar Thermal System

Main Components (3rd Party)

- Solar collector
- Pump
- 3 Way valve
- Expansion tank
- Pressure relief valve
- Air vent / Check valve

• A circulator is used for moving specific fluid between indirect coin in DHW and solar collector.
• Solar water heating systems should have freeze protection.
• Anti-freeze system and closed loop.
• Drainback devices.

APPLICATIONS

SPACE HEATING AND COOLING

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

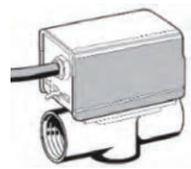
Design Purpose

• If fan coil unit and underfloor coil are installed in the same system, a 2 Way valve is used to prevent underfloor side condensation during cooling.

Preparation

• 2 Way valve (Field scope)

Voltage	220-240V, 50Hz
Protection Class	IP42
Operating Time (Angle of Rotation 90°)	Normally Open
Temperature	-40 ~ 80°C

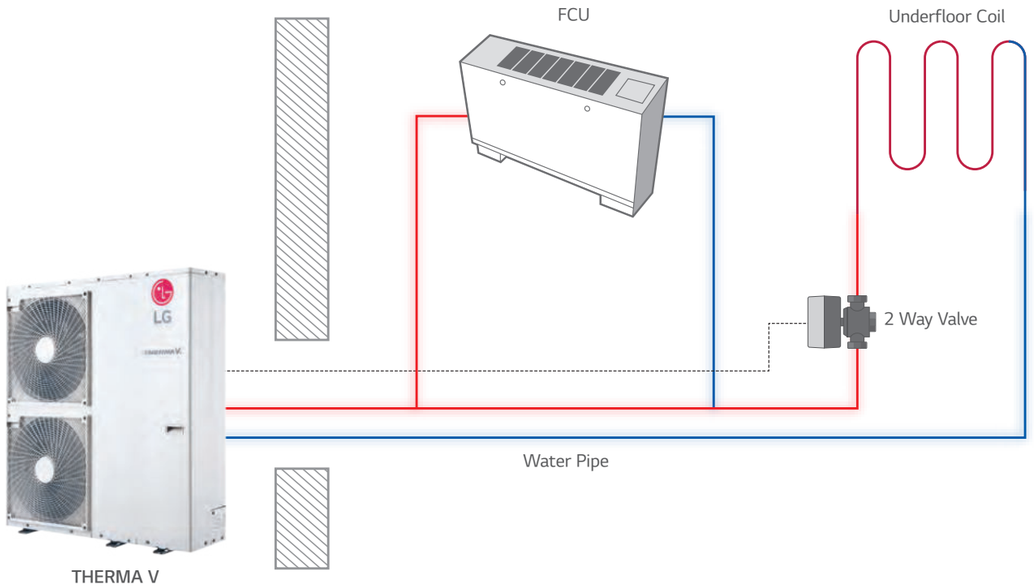


Accessory

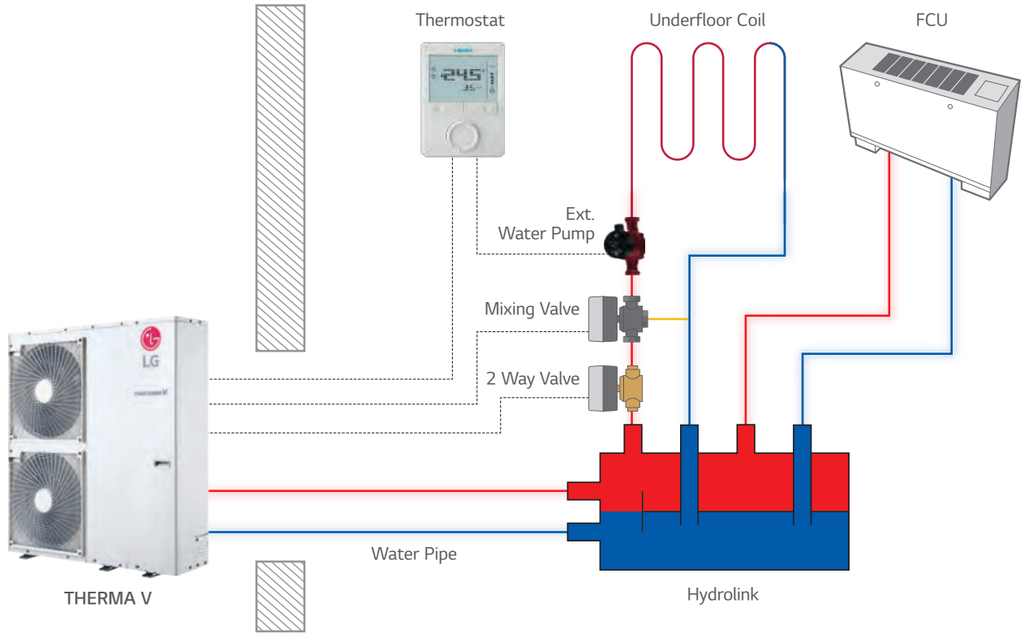
Model Name	Feature
2 Way Valve	• Field scope • AC 230V Signal from PCB

Schematic Diagram

FCU, UFC – Heating Mode (Winter)
FCU – Cooling Mode (Summer) by 2 Way valve Operation



Advanced Application - Combination of 2nd Circuit and 2 Way Valve



APPLICATIONS

SPACE HEATING AND COOLING

Available Product

- THERMA V - R32 Series
- THERMA V - R410A Split
- THERMA V - High Temp.
- THERMA V - R410A IWT

Design Purpose

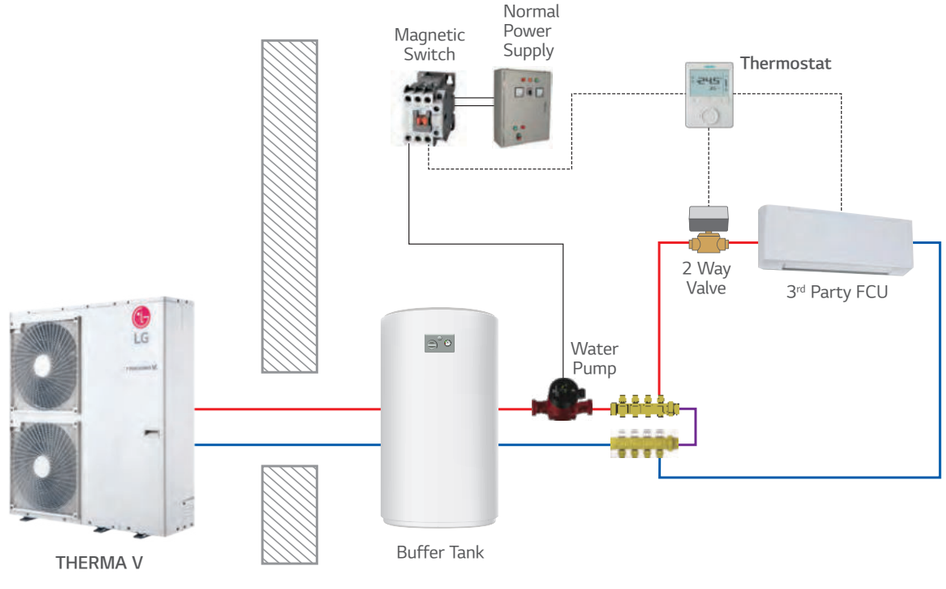
In case that FCU (Fan Coil Unit) is installed

Preparation

1. FCU (3rd Party, Field scope)
2. Circulating Pump (Field scope)
3. 2 Way electric valve (Field scope)

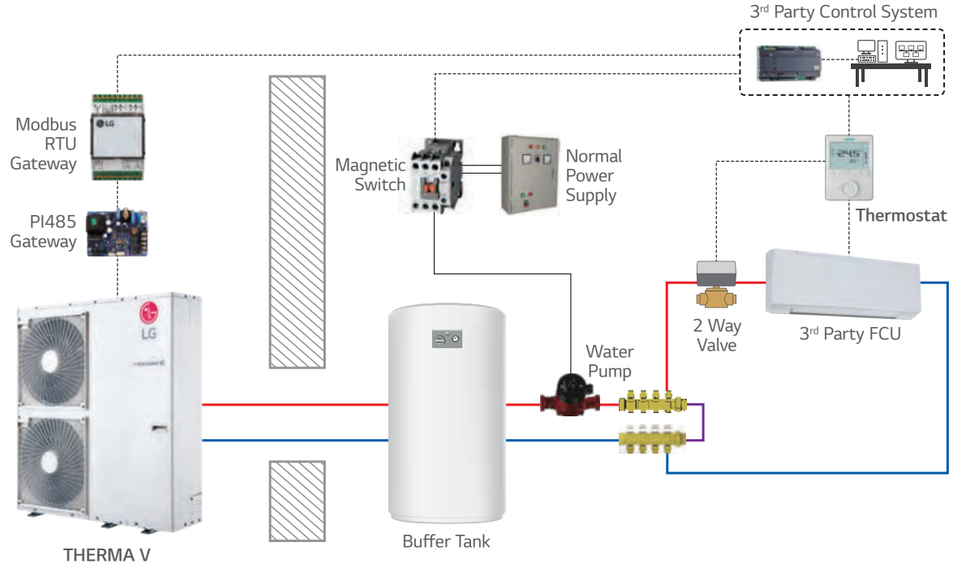
Schematic Diagram

• THERMA V is operating based on Pre-set Target Water Temp.



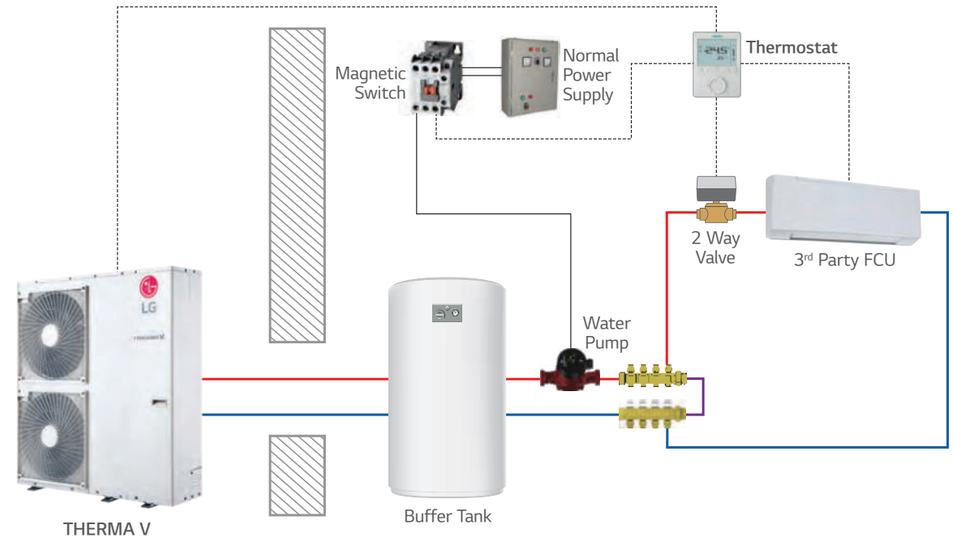
Schematic Diagram

• THERMA V is operating based on 3rd Party Control System (On/Off Control, Mode Change, Target Temp. Change)



Schematic Diagram

• THERMA V is operating based on Pre-set Target Water Temp.



APPLICATIONS

SPACE HEATING SYSTEM
COMBINED WITH BACK UP HEATING

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

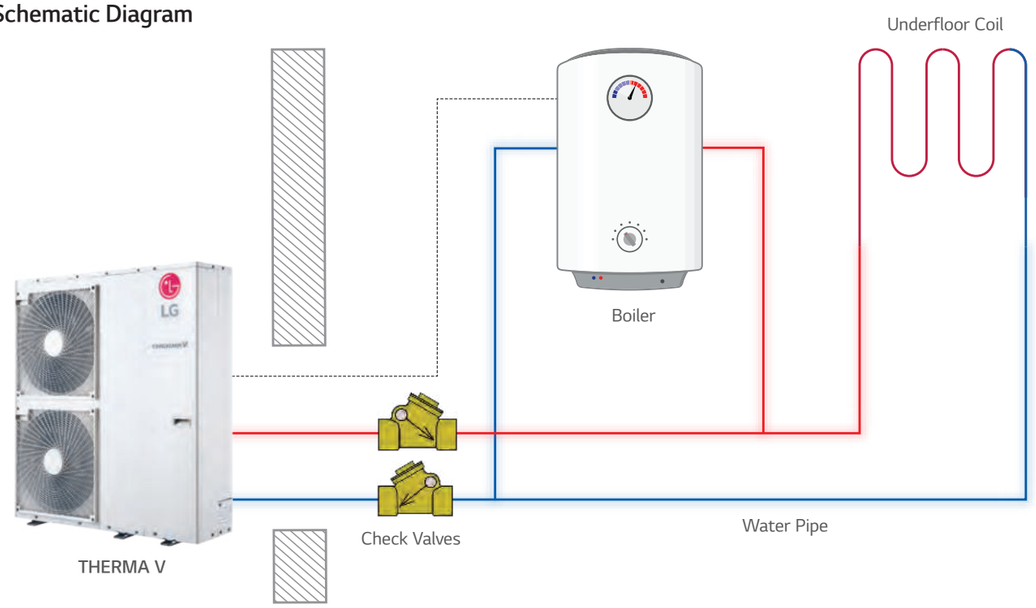
Design Purpose

- Insufficient capacity due to the decrease of ambient temperature in winter.
- When the temperature operation range of the heat pump in winter is frequently exceeded.

Preparation

- Auxiliary boiler (Field scope)
- Shut off valves (Field scope)
- Check valve (Field scope)

Schematic Diagram



* 3rd party boiler should have a water pump integrated with it.

Accessory

Model Name	Feature
Auxiliary Boiler	• Field scope • Contact Signal from PCB

Logic

- The boiler operation has 2 modes (Manual, Auto). In case of automatic operation, it operates according to set temperature. It is used for heating assistant and for preventing freeze when heater is not installed.

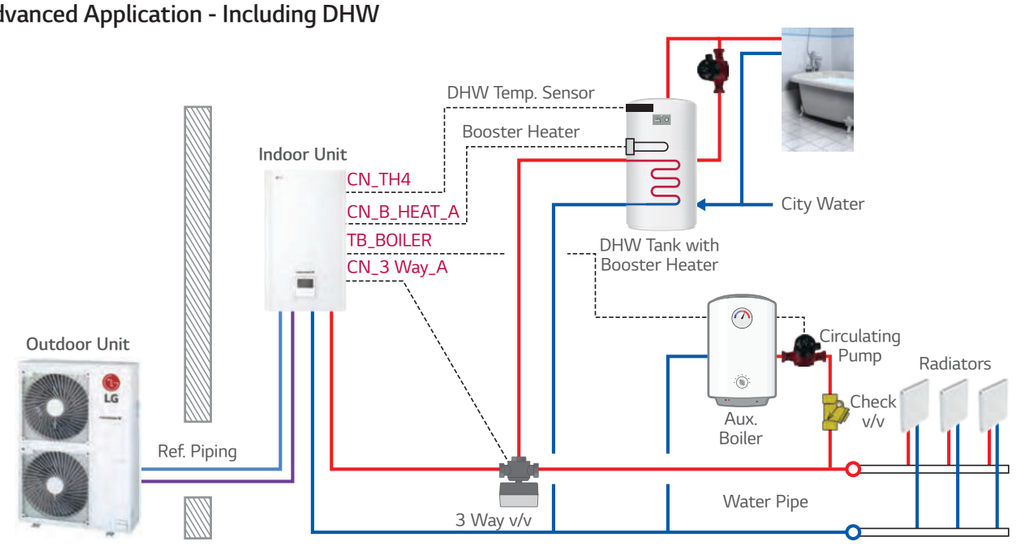
Operation Mode	Control	
Manual	Run / Stop	
Auto	Ambient Temp.	-25 ~ 25°C (Default : -7°C)

* No feedback.
* When 3rd boiler on, heat pump stop.

When water heated by the boiler reach the heat pump, an error occurs.
Use a check valve or other devices to prevent water from flowing backward.

Check Valves (Field scope)

Advanced Application - Including DHW



APPLICATIONS

SPACE HEATING SYSTEM
COMBINED WITH BACK UP HEATING

Available Product

THERMA V - R32 Monobloc

THERMA V - R32 Silent Monobloc

* In case of THERMA V Split and IWT (R32 or R410A), back up heater is included in the product as a default.
* In case of THERMA V Hydrosplit, back up heater is internal accessory, so it can be installed inside of product in field, if required.

Design Purpose

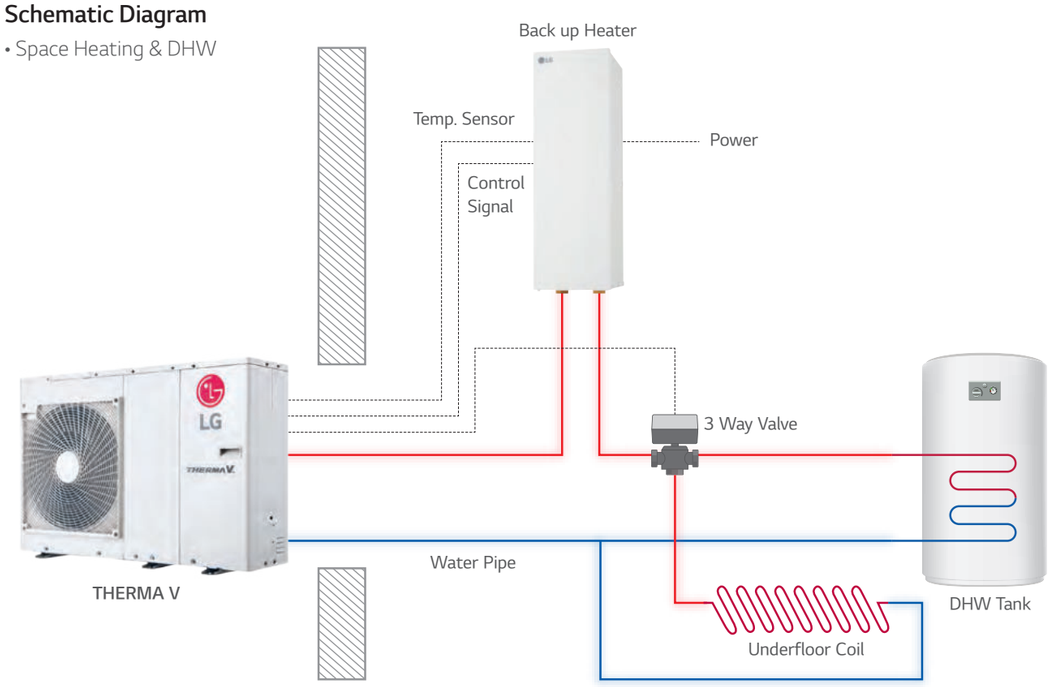
- In case of insufficient capacity due to the decrease of ambient temperature in winter.
- When the temperature operation range of the heat pump in winter is frequently exceeded.

Preparation

- Back up heater (Accessory)
- 3 Way valve (Accessory or Field scope)
- Change of No. 6 and 7 of Dip Switch #2, if back up heater is installed.
  - No. 6 ON, No. 7 OFF : Step 1 (Half capacity) / No. 6 ON, No. 7 ON : Step 2 (Full capacity)

Schematic Diagram

- Space Heating & DHW

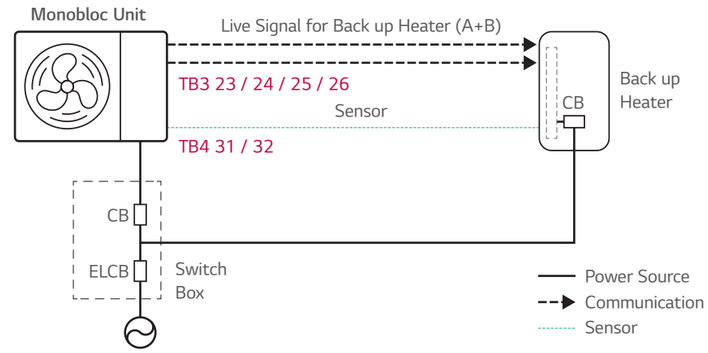


Accessory (Back up Heater)

Electrical Specification			HA031M E1	HA061M E1	HA063M E1
Back up Heater	Type	-	Sheath	Sheath	Sheath
	Number of Heating Coil	EA	1	2	3
	Capacity Combination	kW	3.0	3.0 + 3.0	2.0 + 2.0 + 2.0
	Heating Steps	Step	1	2	1
	Power Supply	V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	380-415, 3, 50
Wiring Connection	Power Cable (Including Earth,H07RN-F)	mm² x cores	1.5 x 3	4.0 x 3	2.5 x 4
	Communication Cable (H07RN-F)	mm² x cores	0.75 x 2	0.75 x 4	0.75 x 2

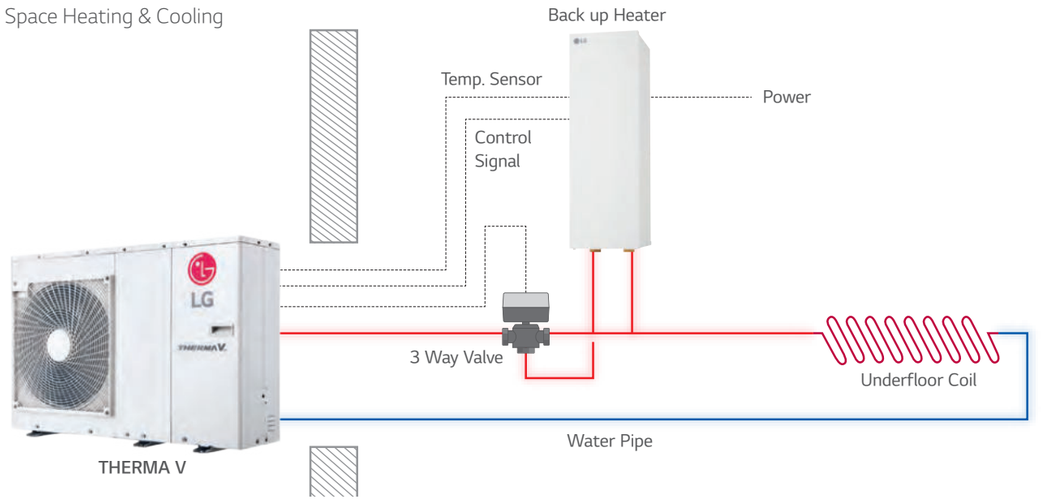
* Back up heater kit includes heater, sensor and terminal block kit. (Wires are field-supplied item)

Power Supply Diagram



Schematic Diagram

- Space Heating & Cooling



* 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

APPLICATIONS

INTEGRATED SOLUTION WITH PV & ESS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

Design Purpose

• The THERMA V can shift set points automatically according to the status signals received from Energy Storage System (ESS) or any other third-party device using Modbus or contact signal.

Preparation

• Change of No. 1 and No. 2 of Dip Switch #1 in case Modbus Communication is used between ESS PCS and AWHP.

Smart Grid (R32 Split, R32 IWT, R410A Split, High Temp.)

Application	Smart Grid (Contact)				Operation
Status	Operation Mode	Power Supply Status	TB_SG1	TB_SG2	
SGN	Normal		0 (Open)	0 (Open)	Normal operation
SG1	Operation Off (Utility lock)		1 (Close)	0 (Open)	Forced off to avoid peak load.
SG2*	On Recommend		0 (Open)	1 (Close)	Changed target temperature higher 1) Step 0 : DHW : +5°C 2) Step 1 : Heating : +2°C / DHW : +5°C 3) Step 2: : Heating : +5°C / DHW : +7°C
SG3	On Command		1 (Close)	1 (Close)	Changed target temperature higher (DHW : 80°C)

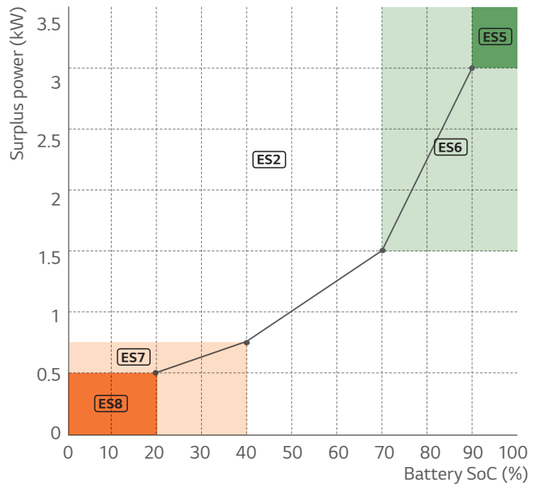
* In case of SG2, Target temperature would be changed in accordance with mode (Step 0, Step 1, Step 2) selected in the installer setting.

Energy State (R32 (Silent) Monobloc, R32 Hydrosplit)

Application	Smart Grid (Contact)				ESS (Modbus)		Operation
Energy States	Operation Mode	Power Supply Status	TB_SG1	TB_SG2	Operation Mode	Battery Charged Status	
ES1	Operation Off		1 (Close)	0 (Open)			Forced off to avoid peak load
ES2	Normal		0 (Open)	0 (Open)	Normal		Normal operation
ES3*	On Recommend		0 (Open)	1 (Close)			Changed target temperature higher (Heating : +2°C / DHW : +5°C)
ES4*	On Command		1 (Close)	1 (Close)			Changed target temperature higher (DHW : 80°C)
ES5**					On Command (Step2)		Changed target temperature higher (Heating : +5°C, Cooling : -5°C, DHW : +30°C)
ES6**					On Recommend (Step1)		Changed target temperature higher (Heating : +2°C, Cooling : -2°C, DHW : +10°C)
ES7**					Energy Saving		Changed target temperature lower (Heating : -2°C, Cooling : +2°C)
ES8**					Super Energy Saving		Changed target temperature lower (Heating : -5°C, Cooling : +5°C)

* Contact signal designated ES3 and ES4 can be changed to ES5 ~ ES8 for R32 Monobloc and R32 Hydrosplit.
** Offset values of heating, cooling and DHW are changeable.
*** The R32 Hydrosplit can connect not only ESS but also 3rd party controller through Modbus, in that case, ES1 to ES8 are used.

[Area of Energy State for ESS]



• SoC : State of Charge, Surplus Power (SP) = PV Power – Load Power
• Area of Energy State for ESS can be adjusted by ESS.

APPLICATIONS

INTEGRATED SOLUTION WITH PV & ESS

Available Product

- THERMA V - R32 Monobloc
- THERMA V - R32 Silent Monobloc
- THERMA V - R32 Hydrosplit

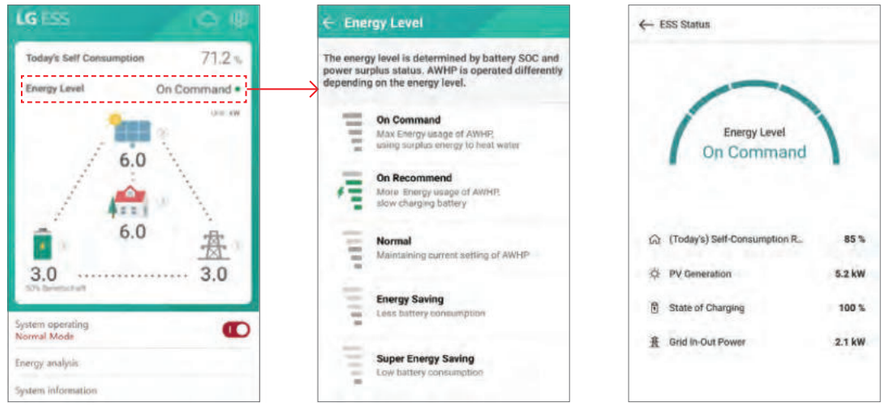
Design Purpose

• In case that LG's PV and ESS are installed together with THERMA V

Preparation

• PV and ESS (LG Product)
• Change of No. 1 and No. 2 of Dip Switch #1 in case Modbus Communication is used between ESS PCS and AWHP.

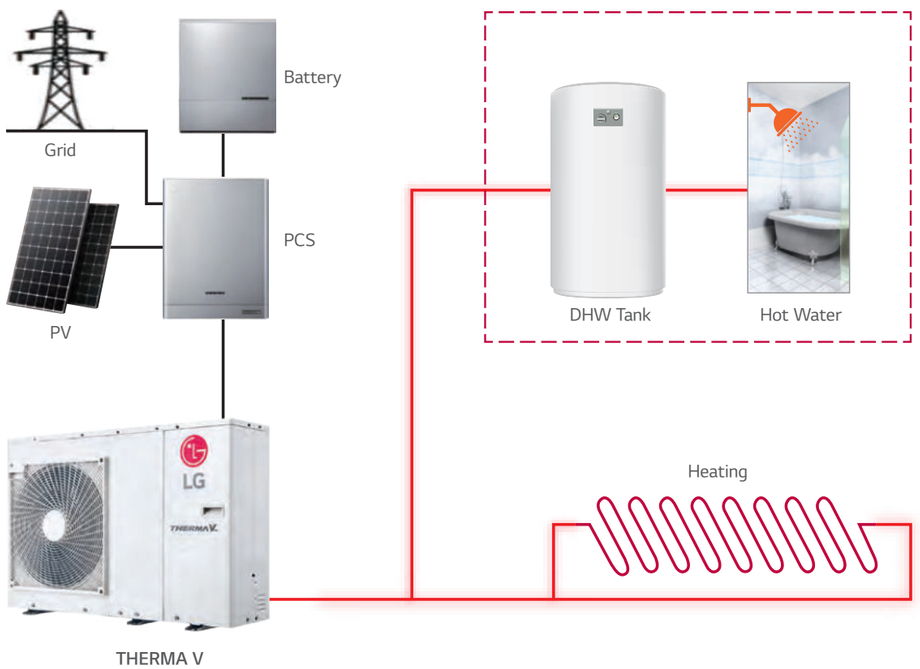
Mobile Application



EnerVu Plus ThinQ*

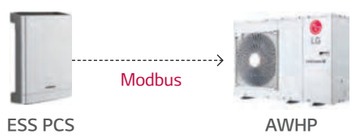
* This is available for R32 (Silent) Monobloc only. For this, Wi-Fi Modem is necessary

Concept of Energy Package

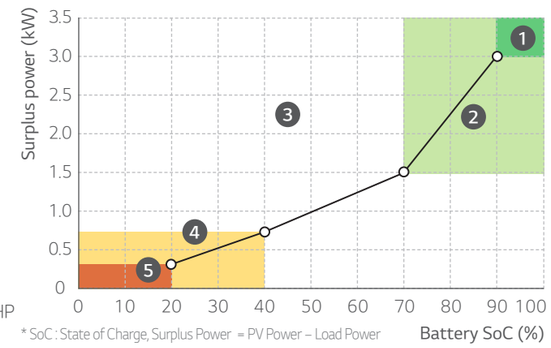


THERMA V Operation by Energy Level

• According to the Energy Level received from ESS, Setting Temp. of AWHP can be adjusted for efficient operation and energy saving.
- Energy Level Setting : By ESS EnerVu Plus App.
- Adjusting Temp. Setting of AWHP : By AWHP Remote Controller



• Energy Level
1) On Command : Maximum energy consumption for AWHP
2) On Recommend : More energy consumption for AWHP
3) Normal : Maintaining current setting of AWHP
4) Energy Saving : Less energy consumption for AWHP
5) Super Energy Saving : Minimum energy consumption for AWHP



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

Energy Level on EnerVu App	Set Temperature Adjustment (°C)		
	Heating	Cooling	DHW
❶ On Command (++)	+5	-5	+ 30
❷ On Recommend (+)	+2	-2	+10
❸ Normal	0	0	0
❹ Energy Saving (-)	-2	+2	0
❺ Super Energy Saving (--)	-5	+5	0

* Above indicated Energy State condition and Adjusting Temp. of AWHP can be changed as per user preference.

APPLICATIONS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

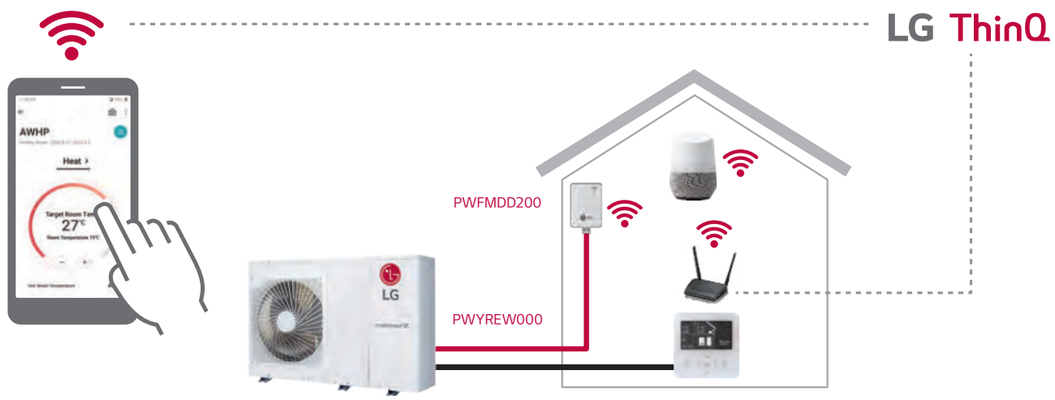
Design Purpose

• Enabling remote system operation via using the smart internet devices.
• Enabling voice control operation via using Google Home Speaker.

Preparation

• Wi-Fi Modem (Accessory)
• Extension Cable (Accessory)
• Google Home Speaker (Field Scope)

Concept of LG ThinQ & Google Voice Control

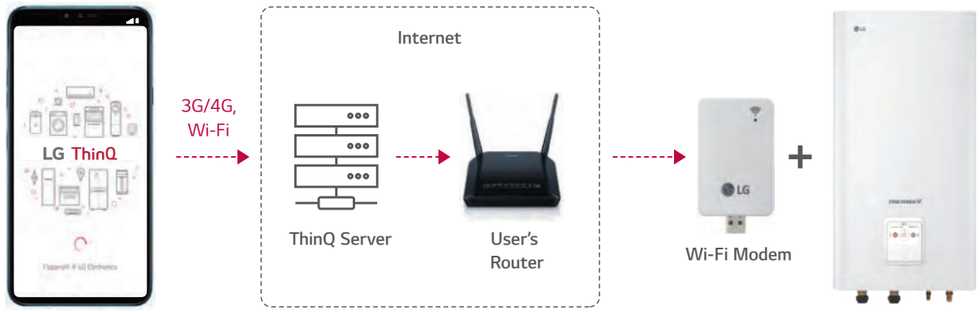


* Search "LG ThinQ" on Google Play or App store, then download the app.
* Google home voice is supported in UK, France, Germany, Spain, Italy, Austria, Ireland and Portugal

Accessory

Model Name	Feature
Wi-Fi Modem (PWFMDD200)	• Accessory USB cable : 0.6m Extension : 0.5m
Extension cable (PWYREW000)	• Accessory USB Extension cable : 10m
Google Home Speaker	• Field Scope

Connection Diagram



Simple operation by ThinQ

• Operation 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

• Operation On/Off
• DHW On/Off
• Operation mode selection

APPLICATIONS

CONTROL FUNCTIONS WITH ACCESSORY

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

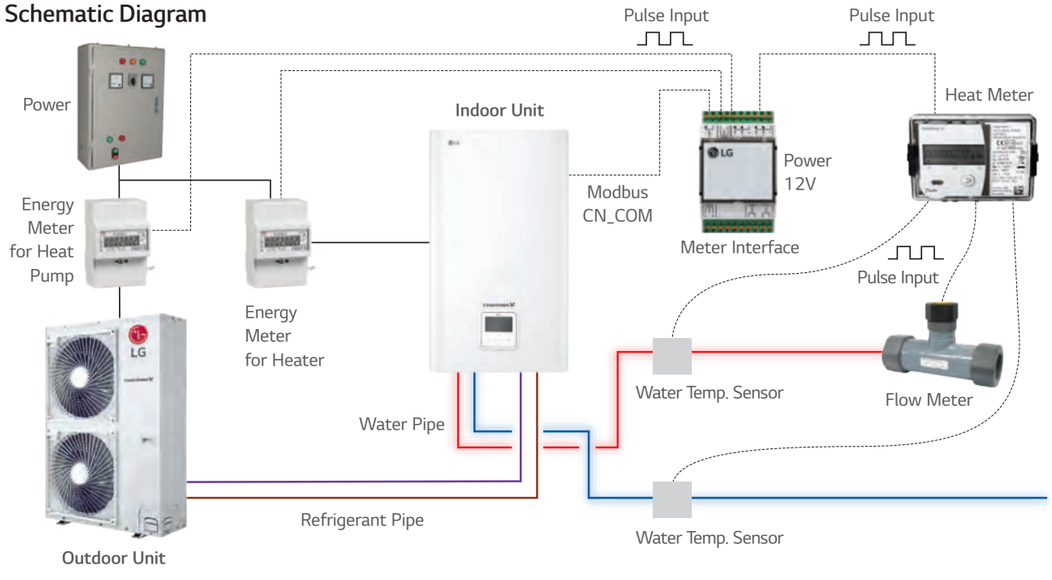
Design Purpose

• To monitor energy consumption and heat production.

Accessory

Model Name	Feature
Meter Interface (PENKTH000)	• Accessory • To Monitor Heat Energy and Power Consumption
Heat Meter with Temp. Sensors	• Field scope • To Monitor Heat Production Energy
Flow Meter	• Field scope • To Check Water Flow Rate
Energy Meter	• Field scope • To Check Power Consumption

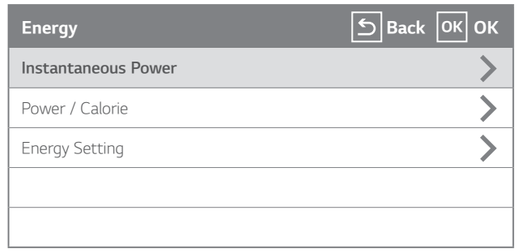
Schematic Diagram

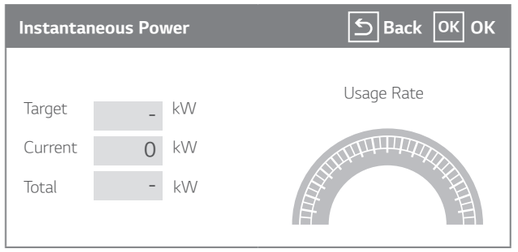


* Energy Metering Information also can be sent through Modbus Communication.

Energy Information (Electric, Heat)

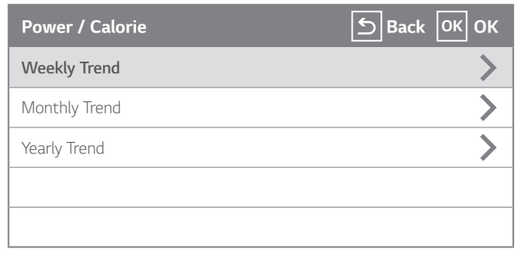
Instantaneous Power

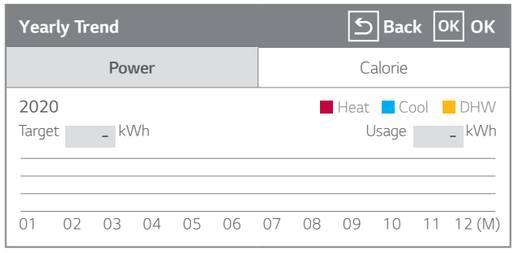




Power / Calorie

The information includes instantaneous power as well as power/calorie usage and up to annual trend.





* Total power consumption can be checked by numbers, but power consumption by mode(Heat, Cool, and DHW) is simply displayed as a graph.
* Calorie information by mode(Heat, Cool, and DHW) is not provided.

Specification

Model Name			Feature
Meter Interface (PENKTH000)			54mm x 90mm x 61mm
Measuring	Energy Meter	Pulse Input	3EA (Input1 / 2 / 3) * Input 3 : DHW Only
			0.1Wh ~ 10kWh / 1Pulse
		Modbus (Master)	3EA
			Communication with Rayleigh RI-78-80-C Meter (Slave)
	Heat Meter	Pulse Input	1EA (Input4)
			0.1 ~ 9999 Pulse / kWh
Status Output	Operation	Operation	Close
		Stop	Open
	Error	Occurred	Close
		Normal	Open

* Energy meter : Pulse input and modbus type can not be used at the same time.

APPLICATIONS

Available Product

THERMA V - R32 Series

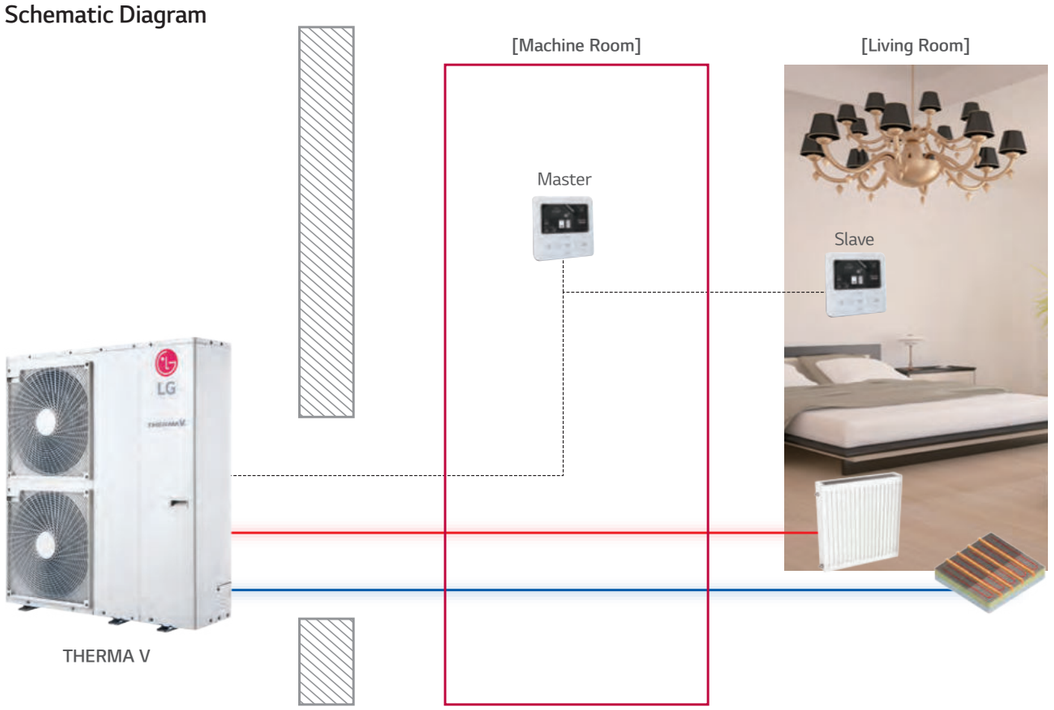
THERMA V - R410A Split

THERMA V - High Temp.

Design Purpose

• Enabling convenient control by installing additional RS3 controller at living room.

Schematic Diagram



* "Master" is for the installation setting and "Slave" is for user setting

Preparation

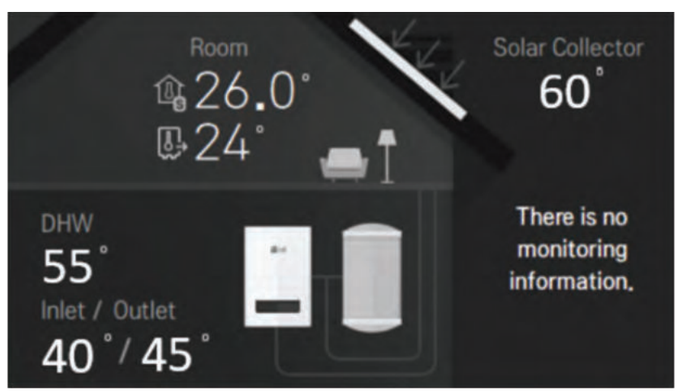
• Wired Remote Controller (Accessory)
• 2-Remote Control Wire (Included in PREMTW101)
• Extension wire for Remote Controller (Included in PREMTW101)

Accessory

Model Name	Feature
Wired Remote Controller (PREMTW101)	• Accessory • 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
2-Remote Control Wire (PZCWRC2)	• Included in PREMTW101 • Length : 0.25m
Extension wire for wire remote controller (PZCWRC1)	• Included in PREMTW101 • Length : 10m

Control

THERMA V is operating based on temp. sensor integrated in Slave Remote Controller located in the room.



Slave Symbol

APPLICATIONS

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

Design Purpose

• In case that more than 2 units are installed in system and controlled by LG BECON (Central Controller).

Preparation

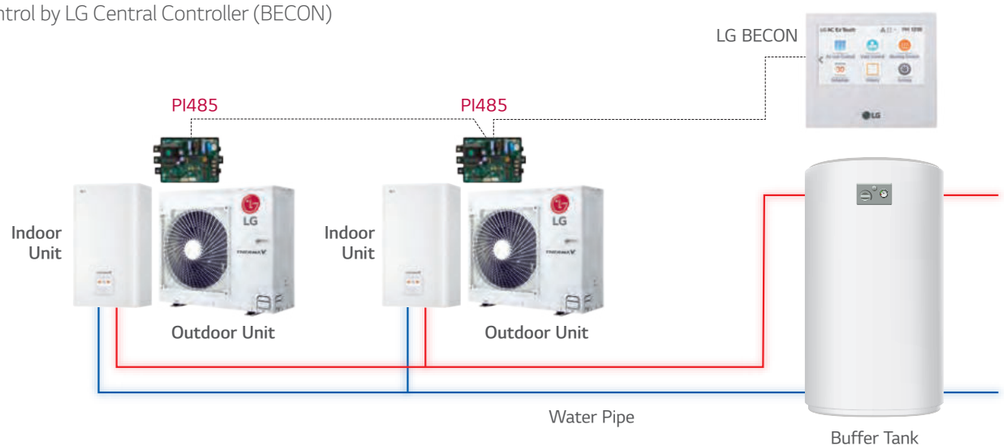
• PI485 (Accessory)
• LG Central Controller (BECON)

Accessory

Model Name	Feature
PI485 (PMNFP14A1)	• Accessory • To Connect LG Central Controller / Modbus

Schematic Diagram

• Control by LG Central Controller (BECON)



* PI485 Unit should be connected to Outdoor unit PCB.

LG BECON (Central Controller)

Model Name	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) • Operation History • Remote Controller Lock (All, Temp, Mode) • PC Access Supported (IPv6 supported) • DI 1EA (Emergency Stop Only) • Size (W x H x D) : 137 x 121 x 25
AC Smart 4 (PACS4B000) AC Smart 5 (PACS5A000)	• 10.2 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, Temp, Mode) • 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 4 (PACP4B000) ACP 5 (PACP5A000)	• 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, Temp, Mode) • 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

APPLICATIONS

CONTROL FUNCTIONS WITH ACCESSORY

Available Product

THERMA V - R32 Series

THERMA V - R410A Split

THERMA V - High Temp.

Design Purpose

• In case that more than 2 units are installed in system and controlled by 3rd party control system.

Preparation

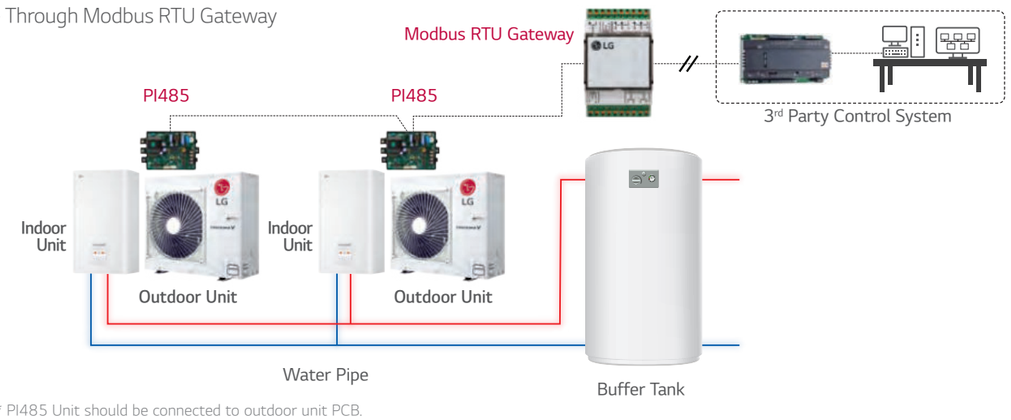
• PI485 (Accessory)
• Modbus RTU Gateway (Accessory)
• Change of No. 1 and No. 2 of Dip Switch #1 in case of Direct Connection without Modbus RTU Gateway

Accessory

Model Name	Feature
Modbus RTU Gateway (PMBUSB00A)	• Accessory - 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 (PMNFP14A1)	• Accessory • To Connect LG Central Controller / Modbus

Schematic Diagram

• Through Modbus RTU Gateway



* PI485 Unit should be connected to outdoor unit PCB.

Modbus RTU Gateway 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)]	-

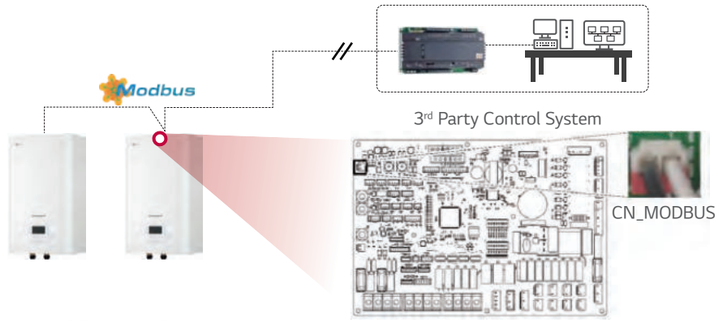
Input Register (0x04)

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 [°C] X 10
30003	Water Inlet Temp.	-99.0 ~ 99.0 [°C] X 10
30004	Water Outlet Temp.	-99.0 ~ 99.0 [°C] X 10
30005	Sanitary Tank Temp.	-99.0 ~ 99.0 [°C] X 10
30006	Solar Temp.	-99.0 ~ 99.0 [°C] X 10

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

Schematic Diagram

• Only for R32 Hydrosplit (Direct Connection without Modbus RTU Gateway)



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

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	Back up Heater (Step 1) Status	0 : OFF / 1 : ON
10012	Back up 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

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 x10]
30004	Water Outlet Temp.	[0.1 °C x10]
30005	Back up Heater Outlet Temp.	[0.1 °C x10]
30006	DHW Tank Water Temp.	[0.1 °C x10]
30007	Solar Collector Temp.	[0.1 °C x10]
30008	Room Air Temp. (Circuit 1)	[0.1 °C x10]
30009	Current Flow Rate	[0.1 LPM x10]
30010	Flow Temp. (Circuit 2)	[0.1 °C x10]
30011	Room Air Temp. (Circuit 2)	[0.1 °C x10]
30012	Energy State Input	0 : Energy state 0; 1: Energy state 1···.
30013	Outdoor Air Temp.	[0.1 °C x10]
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 x10]
40004	Room Air Temp. Circuit 1	[0.1 °C x10]
40005	Shift Value (Target) in auto mode Circuit 1	1K
40006	Target temp (Heating/Cooling) Circuit 2	[0.1 °C x10]
40007	Room Air Temp. Circuit 2	[0.1 °C x10]
40008	Shift Value (Target) in Auto Mode Circuit 2	1K
40009	DHW Target Temp.	[0.1 °C x10]
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)

PRODUCT INFORMATION

1. THERMA V R32 Split
2. THERMA V R410A Split
3. THERMA V R32 Monobloc
4. THERMA V R32 Silent Monobloc
5. THERMA V R32 Hydrosplit
5. THERMA V R32 IWT
7. THERMA V R410A IWT
8. THERMA V High Temp.

PRODUCT INFORMATION

THERMA V R32 SPLIT R32

Indoor Unit

Outdoor Unit

Controller

No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi Modem (Accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor Integrated in RS3
3	Temperature Control Definition	Leaving Water Temperature
		Entering Water Temperature
		Room Air Temperature Base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Solar Water Heating	Need Solar Thermal System (Field scope)
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintain Time : 1 ~ 12 hours
8	Pump Setting	Capacity Control
9	LG Heating Configurator	For Installer Setting with PC
10	2nd Circuit	Need Mixing Valve System (Field scope)
11	External Water Pump	Contact Signal (On/Off)
12	3rd Party Boiler	On/Off Control
13	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
14	Smart Grid (SG)	SGN / SG1 / SG2 / SG3
15	LG Central Controller	ACP, AC Smart, AC Ez Touch
16	PI485 Gateway	Accessory for Central Control
17	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus* (Need PI485 and Modbus RTU Gateway)
18	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

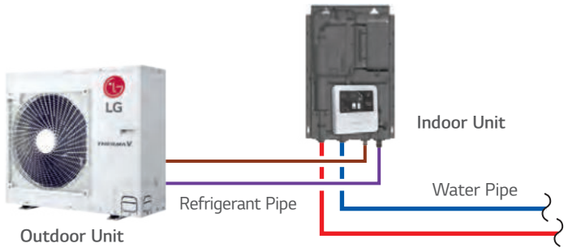
* Direct Modbus communication without Modbus RTU Gateway is not supported.

Key Features

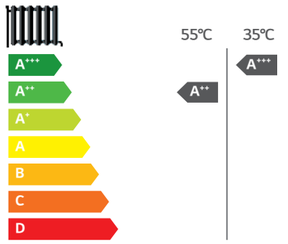
No.	Name	Remark
1	Water Pump	Grundfos, BLDC
2	Expansion Tank	8ℓ, Max. 3bar
3	Electric Heater	6kW
4	Strainer	STS, 28mesh
5	Flow Sensor	SIKA
6	Air Vent Valve	Max. 3.5bar
7	Relief Valve	3bar
8	Manometer	Max. 4bar
9	Shut off Valve	2ea

- High Energy Efficiency (SCOP 4.65 / A+++)
- Excellent Performance at Low Ambient Temperature (100% @ -7°C)
- Wide Operation Range (Ambient : -25 ~ 35°C / Water side : 15 ~ 65°C)
- Quiet Operation (Sound Power Level) : Rated 60 dB(A) / Low Noise Mode 58 dB(A)
- R32 Refrigerant with Low GWP
- Revolutionary Scroll compressor (R1 Compressor)
- Corrosion Resistance Heat Exchanger (Black Fin)
- Including Electric Heater for Back up operation
- Remote Control Solution via LG ThinQ

Split is a hydro box type which is that the indoor unit and outdoor unit are separated. Between two units, they are connected by refrigerant piping only, thus hydronic components such as plate heat exchanger, expansion tank and water pump are located inside of indoor unit. For that reason, it is easy to withstand freezing issues regardless of outside ambient temperature. THE **LG THERMA V R32 SPLIT** designed specifically for the new and renovated housing markets is LG's highly-efficient product that can deliver effective space heating and hot water supply, as it applies the low Global Warming Potential (GWP) R32 refrigerant and the revolutionary R1 scroll compressor.



• Space Heating



011-1W0315

* EHPA for Austria, Switzerland, and Germany.

Main Components

PHE (Ref-Water) / Water Pump
Back up Heater / Strainer
Relief Valve / Flow Sensor
Expansion Tank / Remote Controller

Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		5	7	9
R32 Split	1Ø 230V	● (5.5) ● (5.5)	● (7.0) ● (7.0)	● (9.0) ● (9.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit	HU051MR U44	HU071MR U44	HU091MR U44
			Indoor Unit	HN0916M NK4		
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.65	4.65	4.65
		Rated Heat Output (Prated)	kW	6	6	6
		Seasonal Space Heating Efficiency (ηs)	%	183	183	183
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A+++
		Annual Energy Consumption	kWh	2,444	2,552	2,669
	Average Climate Water Outlet 55°C	SCOP	-	3.23	3.23	3.23
		Rated Heat Output (Prated)	kW	6	6	6
		Seasonal Space Heating Efficiency (ηs)	%	126	126	126
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A++	A++	A++
		Annual Energy Consumption	kWh	3,843	3,843	3,843

PRODUCT INFORMATION

THERMA V R32 SPLIT

SPECIFICATION

Nominal Capacity and Nominal Input				Outdoor Unit	HU051MR U44	HU071MR U44	HU091MR U44
Condition		OAT (°C) DB / WB	LWT (°C)	Indoor Unit	HN0916M NK4		
Capacity	Cooling	35 / 24	18	kW	5.50	7.00	9.00
		35 / 24	7	kW	5.50	7.00	9.00
	Heating	7/6	35	kW	5.50	7.00	9.00
		7/6	55	kW	5.50	5.50	5.50
		2/1	35	kW	3.30	4.20	5.40
Power Input	Cooling	35 / 24	18	kW	1.20	1.56	2.14
		35 / 24	7	kW	1.96	2.59	3.46
	Heating	7/6	35	kW	1.12	1.43	1.94
		7/6	55	kW	1.57	1.57	1.57
		2/1	35	kW	0.94	1.20	1.54
EER	Cooling	35 / 24	18	W/W	4.60	4.50	4.20
		35 / 24	7	W/W	2.80	2.70	2.60
COP	Heating	7/6	35	W/W	4.90	4.90	4.65
		7/6	55	W/W	3.50	3.50	3.50
		2/1	35	W/W	3.52	3.51	3.50
Rated Water Flow Rate (at LWT 35°C)				LPM	15.8	20.1	25.9

Indoor Unit				HN0916M NK4
Operation Range (LWT)	Cooling[1]	Min. ~ Max.	°C DB	5 ~ 27
	Heating	Min. ~ Max.	°C DB	15 ~ 65
	DHW[2]	Min. ~ Max.	°C DB	15 ~ 80
Water Pump	Type		-	Canned type for hot water circulation
	Model			GRUNDFOS UPM3K 20-75 CHBL
	Motor Type		-	BLDC
	Steps of Pump Performance		-	Variable capacity 10% to 100%
	Power input	Min. ~ Max.	W	3 ~ 60
Heat Exchanger	Type		-	Brazed Plate HEX
	Quantity			1
	Number of Plate		EA	54
	Water Volume		˜	0.7
Flow Sensor	Type		-	Vortex
	Model		-	SIKA VVX20
	Measuring Range	Min. ~ Max.	˜/min.	5 ~ 80
	Flow (Trigger point)	Min.	˜/min.	7
Expansion Vessel	Volume	Max.	˜	8
	Water pressure	Max.	bar	3
	Water pressure	Pre-charged	bar	1
Strainer	Mesh size		-	28 mesh
	Material		-	Stainless Steel
Relief Valve	Pressure Limit	Upper Limit	bar	3.0
Piping Connections	Water Circuit	Inlet	mm (Inch)	Male PT 25.4 (1)
		Outlet	mm (Inch)	Male PT 25.4 (1)
	Refrigerant Circuit	Gas	mm (Inch)	Ø 15.88 (5/8)
		Liquid	mm (Inch)	Ø 9.52 (3/8)
Sound Power Level	Heating	Rated	dB(A)	44
Dimensions	Unit	W x H x D	mm	490 x 850 x 315
	Packed Unit	W x H x D	mm	563 x1,082 x 375
Weight	Unit		kg	40.5
	Packed Unit		kg	46.5
Electrical Specification				**HN0916M NK4**
Wiring Connections	Power and Communication Cable (H07RN-F) (Included Earth)		mm² x cores	0.75 x 4
Back up Heater	Type		-	Sheath
	Number of Heating Coil		EA	2
	Capacity Combination		kW	3.0 + 3.0
	Operation		-	Automatic
	Heating Steps		Step	2
	Power Supply		V, Ø, Hz	220-240, 1, 50
	Rated Current		A	25.0
	Power Cable (H07RN-F) (Included Earth)		mm² x cores	4.0 x 3

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 °C.
2) DHW 58 ~ 80°C Operating is available only when the booster heater is operating.

SPECIFICATION

Outdoor Unit				HU051MR U44	HU071MR U44	HU091MR U44
Operation Range (OAT)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Hermetic Sealed Scroll		
	Model		Model x No.	RJB036MAA x 1		
	Motor Type		-	BLDC	BLDC	BLDC
	Displacement		cm³/Rev.	31.6	31.6	31.6
Refrigerant	Type		-	R32	R32	R32
	GWP (Global Warming Potential)		-	675	675	675
	Precharged Amount		g	1,500	1,500	1,500
	t-CO_2 eq.		-	1.013	1.013	1.013
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	FW68D	FW68D	FW68D
	Charged Volume		cc x No.	1,100	1,100	1,100
Piping Connections	Gas		Type	Flare	Flare	Flare
			mm (Inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
	Liquid		Type	Flare	Flare	Flare
			mm (Inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Piping Length	Standard	m	5	5	5
		Max.	m	50	50	50
	Piping Level Difference	Max.	m	30	30	30
	Chargeless-Pipe Length		m	10	10	10
	Additional Charging Volume		g/m	30	30	30
Heat Exchanger	Quantity		EA	1	1	1
	Specification	Row	EA	2	2	2
		Column	EA	38	38	38
		FPI	EA	14	14	14
Fan	Type		-	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m³/min. x No.	60.0 x 1	60.0 x 1	60.0 x 1
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	124 x 1	124 x 1	124 x 1
Sound Power Level	Heating	Rated	dB(A)	60	60	60
		Low noise	dB(A)	58	58	58
Dimensions	Unit	W x H x D	mm	950 x 834 x 330	950 x 834 x 330	950 x 834 x 330
	Packed Unit	W x H x D	mm	1,065 x 618 x 461	1,065 x 618 x 461	1,065 x 618 x 461
Weight	Unit		kg	60.0	60.0	60.0
	Packed Unit		kg	65.0	65.0	65.0
Electrical Specifications				**HU051MR U44**	**HU071MR U44**	**HU091MR U44**
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50
Maximum Running Current	Cooling		A	14.2	15.7	23.0
	Heating		A	14.2	15.7	23.0
Peak Control Running Current	Cooling		A	13.0	14.0	15.0
	Heating		A	13.0	14.0	15.0
Rated Running Current	Cooling		A	5.3	6.9	9.5
	Heating		A	5.0	6.3	8.6
Circuit breaker			A	16	20	25
Wiring Connections	Power Supply Cable (H07RN-F) (Included Earth)		mm² x cores	4.0 x 3	4.0 x 3	4.0 x 3

* OAT : Outdoor Air Temperature, LWT : Leaving water temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R32 SPLIT

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HU051MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 15.8 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	6.42	4.57	6.95	4.85	7.49	5.13	7.85	5.31	8.39	5.59	8.75	5.78	9.11	5.96
20°C DB	6.05	3.86	6.37	4.23	6.70	4.61	6.91	4.86	7.23	5.23	7.45	5.48	7.66	5.74
30°C DB	5.68	3.15	5.79	3.62	5.90	4.09	5.97	4.41	6.08	4.88	6.15	5.19	6.22	5.51
35°C DB	5.50	2.80	5.50	3.32	5.50	3.84	5.50	4.18	5.50	4.60	5.50	5.05	5.50	5.39
40°C DB	5.32	2.45	5.34	2.84	5.35	3.24	5.37	3.50	5.38	3.90	5.40	4.17	5.41	4.43
45°C DB	5.13	2.09	5.17	2.37	5.21	2.64	5.23	2.83	5.27	3.10	5.29	3.29	5.32	3.47

HU071MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 20.1 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	8.17	4.37	8.85	4.64	9.54	4.91	9.99	5.09	10.68	5.35	11.13	5.53	11.59	5.71
20°C DB	7.70	3.70	8.11	4.06	8.52	4.42	8.80	4.66	9.21	5.01	9.48	5.25	9.75	5.49
30°C DB	7.23	3.03	7.37	3.48	7.51	3.93	7.60	4.22	7.74	4.67	7.83	4.97	7.92	5.27
35°C DB	7.00	2.70	7.00	3.19	7.00	3.68	7.00	4.01	7.00	4.50	7.00	4.83	7.00	5.15
40°C DB	6.77	2.37	6.79	2.74	6.81	3.11	6.83	3.36	6.85	3.74	6.87	3.99	6.88	4.24
45°C DB	6.53	2.03	6.58	2.29	6.63	2.55	6.66	2.72	6.70	2.98	6.74	3.15	6.77	3.32

HU091MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 15.8 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	10.50	4.08	11.38	4.33	12.26	4.58	12.85	4.75	13.73	5.00	14.31	5.16	14.90	5.33
20°C DB	9.90	3.49	10.43	3.81	10.96	4.14	11.31	4.35	11.84	4.68	12.19	4.89	12.54	5.11
30°C DB	9.30	2.90	9.48	3.30	9.65	3.69	9.77	3.96	9.95	4.36	10.06	4.63	10.18	4.89
35°C DB	9.00	2.60	9.00	3.04	9.00	3.47	9.00	3.76	9.00	4.20	9.00	4.49	9.00	4.78
40°C DB	8.70	2.30	8.73	2.63	8.76	2.96	8.78	3.18	8.81	3.50	8.83	3.72	8.85	3.94
45°C DB	8.40	2.01	8.46	2.23	8.52	2.44	8.56	2.59	8.62	2.81	8.66	2.95	8.70	3.10

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU051MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 15.8 LPM								Water Flow Rate 9.9 LPM				Water Flow Rate 7.9 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C		LWT 60 °C		LWT 65 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	4.02	1.96	3.90	1.84	3.78	1.72	3.66	1.60	-	-	-	-	-	-	-	-
-20°C DB	4.64	2.59	4.51	2.07	4.38	1.90	4.26	1.74	4.13	1.57	-	-	-	-	-	-
-15°C DB	5.26	2.51	5.12	2.30	4.99	2.09	4.85	1.88	4.72	1.66	4.58	1.45	-	-	-	-
-7°C DB	5.50	2.88	5.50	2.70	5.50	2.53	5.50	2.35	5.50	2.18	5.50	2.00	5.50	1.83	-	-
-4°C DB	5.50	3.18	5.50	2.97	5.50	2.75	5.50	2.53	5.50	2.31	5.50	2.10	5.50	1.88	-	-
-2°C DB	5.50	3.41	5.50	3.14	5.50	2.88	5.50	2.61	5.50	2.34	5.50	2.08	5.50	1.81	-	-
2°C DB	5.50	3.79	5.50	3.50	5.50	3.21	5.50	2.93	5.50	2.64	5.50	2.36	5.50	2.07	5.50	1.79
7°C DB	5.50	5.37	5.50	4.90	5.50	4.43	5.50	3.97	5.50	3.50	5.50	3.03	5.50	2.57	5.50	2.10
10°C DB	5.50	5.84	5.50	5.34	5.50	4.83	5.50	4.32	5.50	3.81	5.50	3.30	5.50	2.79	5.50	2.29
15°C DB	5.50	6.64	5.50	6.06	5.50	5.48	5.50	4.91	5.50	4.33	5.50	3.75	5.50	3.17	5.50	2.60
18°C DB	5.50	7.11	5.50	6.50	5.50	5.88	5.50	5.26	5.50	4.64	5.50	4.02	5.50	3.40	5.50	2.78
20°C DB	5.50	7.43	5.50	6.79	5.50	6.14	5.50	5.49	5.50	4.85	5.50	4.20	5.50	3.55	5.50	2.91
35°C DB	5.50	9.81	5.50	8.96	5.50	8.11	5.50	7.25	5.50	6.40	5.50	5.55	5.50	4.69	5.50	3.84

HU071MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 20.1 LPM								Water Flow Rate 12.6 LPM				Water Flow Rate 10.0 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C		LWT 60 °C		LWT 65 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	5.00	1.95	4.85	1.78	4.71	1.62	4.56	1.45	-	-	-	-	-	-	-	-
-20°C DB	5.58	2.52	5.43	2.02	5.27	1.84	5.11	1.66	4.95	1.49	-	-	-	-	-	-
-15°C DB	6.17	2.44	6.00	2.25	5.83	2.06	5.66	1.88	5.49	1.69	5.32	1.50	-	-	-	-
-7°C DB	7.00	2.76	7.00	2.72	7.00	2.44	7.00	2.28	7.00	2.11	7.00	2.06	7.00	1.79	-	-
-4°C DB	7.00	3.07	7.00	2.87	7.00	2.66	7.00	2.45	7.00	2.24	7.00	2.08	7.00	1.83	-	-
-2°C DB	7.00	3.27	7.00	3.04	7.00	2.82	7.00	2.59	7.00	2.37	7.00	2.14	7.00	2.06	-	-
2°C DB	7.00	3.65	7.00	3.40	7.00	3.15	7.00	2.90	7.00	2.66	7.00	2.41	7.00	2.16	7.00	1.91
7°C DB	7.00	5.35	7.00	4.90	7.00	4.45	7.00	4.00	7.00	3.55	7.00	3.10	7.00	2.65	7.00	2.20
10°C DB	7.00	5.77	7.00	5.28	7.00	4.80	7.00	4.31	7.00	3.83	7.00	3.34	7.00	2.86	7.00	2.37
15°C DB	7.00	6.46	7.00	5.92	7.00	5.37	7.00	4.83	7.00	4.29	7.00	3.74	7.00	3.20	7.00	2.66
18°C DB	7.00	6.88	7.00	6.30	7.00	5.72	7.00	5.14	7.00	4.56	7.00	3.99	7.00	3.41	7.00	2.83
20°C DB	7.00	7.16	7.00	6.55	7.00	5.95	7.00	5.35	7.00	4.75	7.00	4.15	7.00	3.54	7.00	2.94
35°C DB	7.00	9.24	7.00	8.46	7.00	7.69	7.00	6.91	7.00	6.13	7.00	5.35	7.00	4.58	7.00	3.80

HU091MR U44 + HN0916M NK4

Outdoor Temperature	Water Flow Rate 25.9 LPM								Water Flow Rate 16.2 LPM				Water Flow Rate 12.9 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C		LWT 60 °C		LWT 65 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	6.40	1.85	6.20	1.70	6.00	1.55	5.80	1.40	-	-	-	-	-	-	-	-
-20°C DB	7.23	2.45	7.00	1.96	6.77	1.80	6.54	1.64	6.31	1.48	-	-	-	-	-	-
-15°C DB	8.06	2.39	7.80	2.22	7.54	2.05	7.28	1.89	7.02	1.72	6.76	1.55	-	-	-	-
-7°C DB	9.00	2.75	9.00	2.71	9.00	2.35	9.00	2.20	9.00	2.05	9.00	1.90	9.00	1.75	-	-
-4°C DB	9.00	2.98	9.00	2.78	9.00	2.58	9.00	2.38	9.00	2.18	9.00	1.98	9.00	1.78	-	-
-2°C DB	9.00	3.16	9.00	2.97	9.00	2.78	9.00	2.59	9.00	2.40	9.00	2.21	9.00	2.02	-	-
2°C DB	9.00	3.57	9.00	3.35	9.00	3.13	9.00	2.91	9.00	2.69	9.00	2.47	9.00	2.25	9.00	2.04
7°C DB	9.00	5.04	9.00	4.65	9.00	4.26	9.00	3.87	9.00	3.48	9.00	3.08	9.00	2.69	9.00	2.30
10°C DB	9.00	5.39	9.00	4.97	9.00	4.55	9.00	4.13	9.00	3.71	9.00	3.30	9.00	2.88	9.00	2.46
15°C DB	9.00	5.97	9.00	5.50	9.00	5.04	9.00	4.58	9.00	4.11	9.00	3.65	9.00	3.19	9.00	2.72
18°C DB	9.00	6.32	9.00	5.83	9.00	5.33	9.00	4.84	9.00	4.35	9.00	3.86	9.00	3.37	9.00	2.88
20°C DB	9.00	6.55	9.00	6.04	9.00	5.53	9.00	5.02	9.00	4.51	9.00	4.00	9.00	3.50	9.00	2.99
35°C DB	9.00	8.29	9.00	7.64	9.00	7.00	9.00	6.35	9.00	5.71	9.00	5.07	9.00	4.42	9.00	3.78

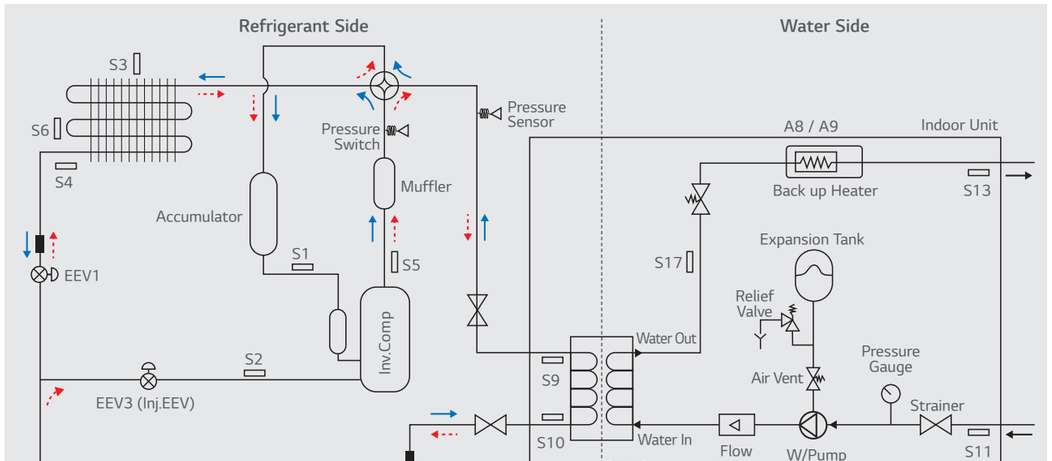
Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. The shaded areas are not guaranteed continuous operation.

PRODUCT INFORMATION

THERMA V R32 SPLIT

DRAWINGS

Product Schematic



Indoor Unit

Outdoor Unit

Refrigerant Pipe (Gas) : 9.52mm

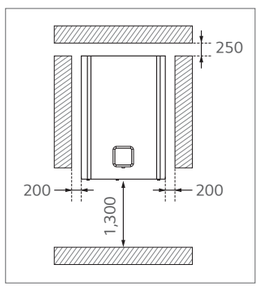
Water Pipes (Outlet / Inlet) : 25A

Refrigerant Pipe (Liquid) : 15.88mm

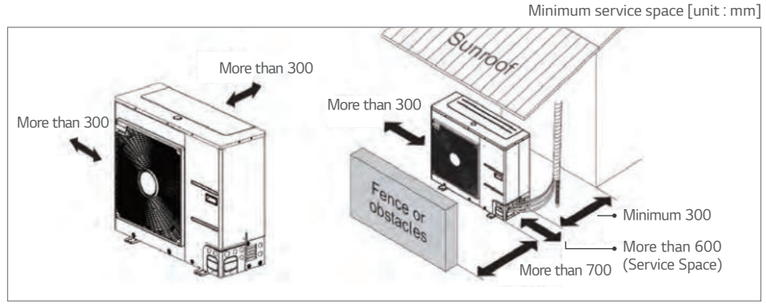
Ref.	Capa. (kW)	Pipe Size (mm,Inch)		Elevation (m)		Length (m)			Add.
		Gas	Liquid	STD	Max.	STD	Charge less	Max.	Ref
R32	5 7 9	15.88 (5/8)	9.52 (3/8)	0	30	5	10	50	30 g/m

Installation & SVC Space

Minimum service space [unit : mm]



Indoor Unit SVC Space

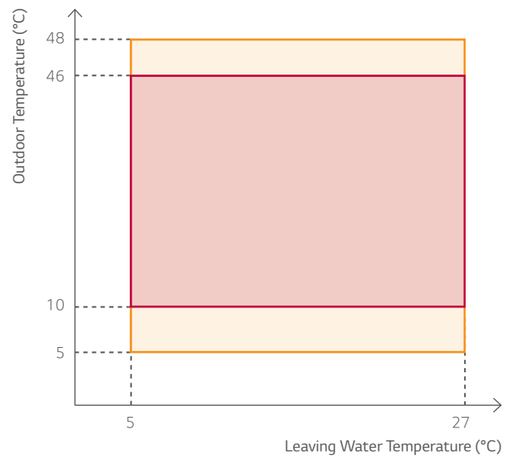


Outdoor Unit SVC Space

* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

OPERATION RANGE

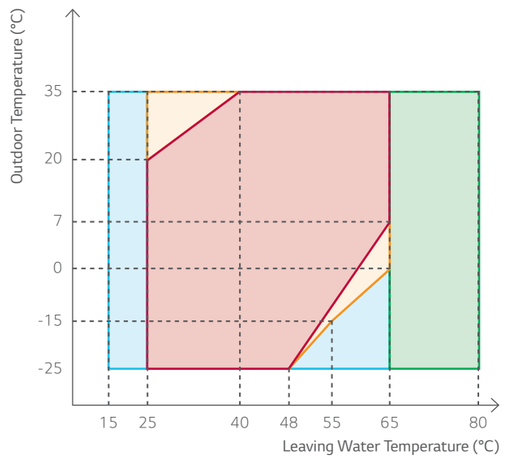
Cooling (Fan Coil Unit)



Continuous Operation

Operative

Heating



Continuous Operation

Operative

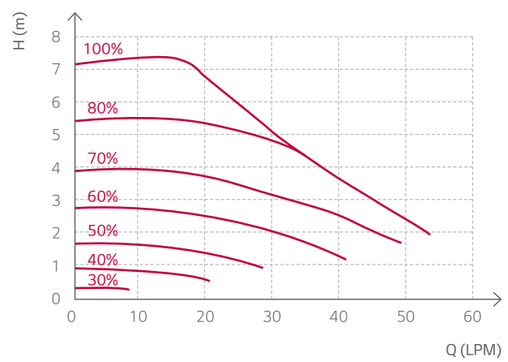
Booster heater operation only (DHW)

Back up heater required to achieve temp.

WATER PUMP

Capacity [kW]	Rated Flow Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure Drop [m] (Plate heat Ex.)	Serviceable Head [m]	Min. Flow-Rate [LPM] (Recommend)
5	15.8	7.5	0.2	7.3	15
7	20.1	7.3	0.3	7.0	
9	25.9	6.1	0.4	5.7	

Model : GRUNDFOS UPM3K 20-75 CHBL



PRODUCT INFORMATION

THERMA V R32 SPLIT

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Thermostat	230V AC, H/C	TB2 (17 / 18 / 19 / 20)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	TB1 (8 / 9 / 10)
3	2 Way Valve	2 Wire, 230V AC	TB2 (14 / 15 / 16)
4	Solar Pump	230V AC	TB1 (4 / 5)
5	3 Way Valve (B) for Solar Pump	3 Wire, SPDT, 230V AC	TB1 (1 / 2 / 3)
6	Outdoor Unit	230V AC	TB2 (11 / 12 / 13)
7	Booster Heater	230V AC	TB1 (6 / 7)
8	DHW Tank Kit	PHLTA (1Ø, Split)	TB3 (3 / 4)
9	Power Supply for Electric Heaters	1Ø, 220-240V, 50Hz	TB3 (1 / 2)
10	3rd Party Controller / LG Meter Interface	5V DC	TB4 (21 / 22)
11	Mixing Pump	230V AC	TB5 (23 / 24)
12	Mixing Valve	3 Wire, 230V AC	TB5 (25 / 26 / 27)

TERMINAL BLOCK : TB1

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

TERMINAL BLOCK : TB2

11	12	13	14	15	16	17	18	19	20
1 (L)	2 (N)	3	L1	L2	N	L	N	L1	L2
OUTDOOR UNIT			2 Way VALVE (A)			THERMOSTAT (Default : 230V AC)			

TERMINAL BLOCK : TB3

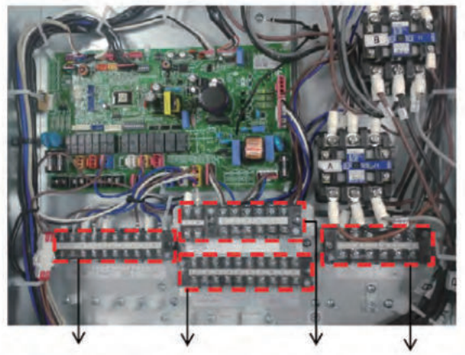
1	2	3	4
L	N	L	N
POWER SUPPLY (1Ø, 220-240V, 50Hz)		TO ELB FOR DHW TANK E / HEATER	

TERMINAL BLOCK : TB4 & 5

21	22		23	24	25	26	27
A	B		L	N	L1	L2	N
3rd PARTY CONTROLLER (5V DC)			MIX PUMP		MIXING VALVE		

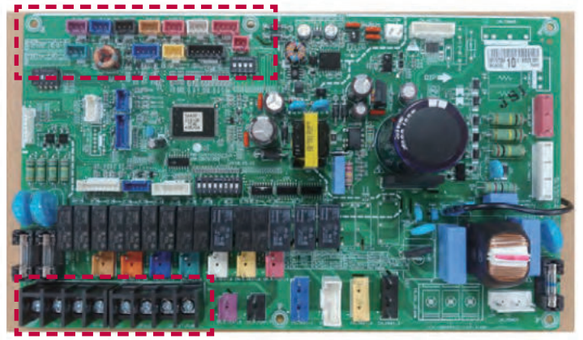
PCB INFORMATION

No.	Name	Remark	Connection
1	Remote Air sensor	PQRSTA0	CN_ROOM
2	Add Remote Air Sensor	PQRSTA0	CN_LEAK_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	Water Tank Sensor	PHRSTA0	CN_TH4
5	Solar Pipe Sensor	Included in Solar Thermal Kit (PHLLA)	CN_TH4
6	RS3 Remote Controller	-	CN_REMO
7	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
8	Wi-Fi Modem	PWFMDD200	CN_WF
9	External Pump	Contact	TB_EXT_Pump
10	Boiler	Contact	TB_Boiler
11	Smart Grid (SG)	Contact	TB_SG1 / TB_SG2



[Terminal block]

CN_Connection



TB_SG / Boiler / Pump

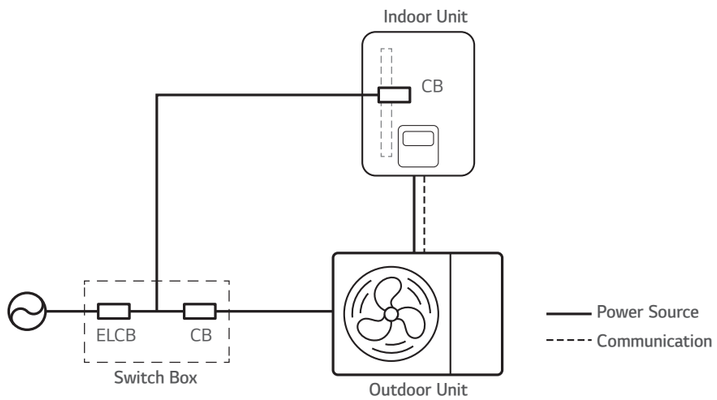
[Main PCB]

PRODUCT INFORMATION

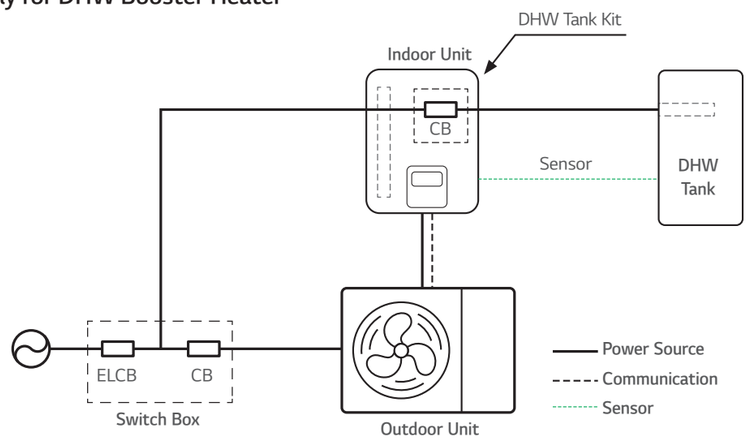
THERMA V R32 SPLIT

POWER SUPPLY DIAGRAM

Power Supply for Heat Pump and Back up Heater



Power Supply for DHW Booster Heater



* For Split, DHW Tank Kit (CB and Relay) should be installed into control box of Indoor unit.
* For selection of Circuit Breaker(CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

NOTE

PRODUCT INFORMATION

THERMA V R410A SPLIT

Indoor Unit

Outdoor Unit

Controller

No.	Contents	Remark
1	Wi-Fi Control	Wi-Fi Modem Needed (Accessory)
2	Control by Room Air Temp. Sensor	Need Air Temp. Sensor
3	Temperature Control Definition	Leaving Water Temperature
		Room Air Temperature Base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Solar Water Heating	Need Solar Thermal System (Field scope)
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintaining Time : 1 ~ 12 Hours
8	Pump Setting	RPM Control
9	LG Heating Configurator	For Installer Setting with PC
10	2nd Circuit	Need Mixing Valve System (Field scope)
11	External Water Pump	Contact Signal (On/Off)
12	3rd Party Boiler	On/Off Control
13	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
14	Smart Grid (SG)	SGN / SG1 / SG2 / SG3
15	LG Central Controller	ACP, AC Smart, AC Ez Touch
16	PI485 Gateway	Accessory for Central Control
17	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus* (Need PI485 and Modbus RTU Gateway)
18	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

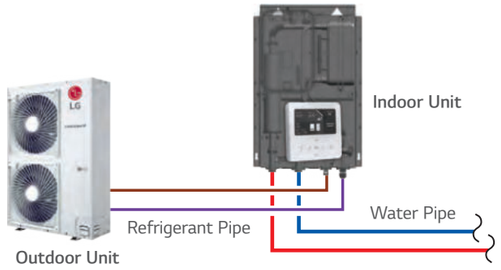
* Direct Modbus communication without Modbus RTU Gateway is not supported.

Key Features

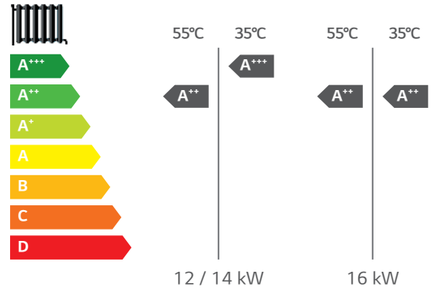
No.	Name	Remark
1	Water Pump	Panasonic, INV
2	Expansion Tank	8ℓ, Max. 3bar
3	Electric Heater	3kW / 6kW
4	Strainer	STS, 28mesh
5	Flow Switch	SIKA
6	Air Vent Valve	Max. 3.5bar
7	Relief Valve	3bar
8	Manometer	Max. 4bar
9	Shut off Valve	2ea

- High Energy Efficiency (SCOP 4.45 / A+++)
- Maximum 57°C LWT
- Stable BLDC Rotary Compressor
- Corrosion Resistant Heat Exchanger (Gold Fin)
- Including Electric Heater for Back up operation
- Remote Control Solution via LG ThinQ

Split is a hydro box type that the indoor unit and outdoor unit are separated. Between two units, they are connected by refrigerant piping only, thus hydronic components such as plate heat exchanger, expansion tank and water pump are located inside of indoor unit. For that reason, it is easy to withstand freezing issues regardless of outside ambient temperature. THE **LG THERMA V R410A SPLIT** is suitable for the users and installers who want to apply large capacity AWHP in extreme outside conditions. As it has A++ energy label in the mid-temperature applications(55 °C), it has high competitiveness for mid-temperature applications as well as low-temperature applications.



- Space Heating



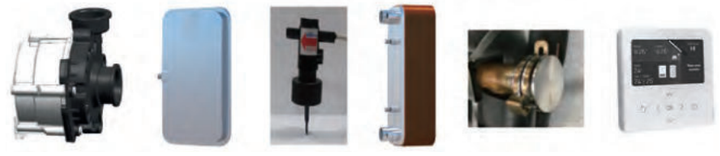
R410A

011-1W0253

* EHPA for Austria, Switzerland, and Germany.

Main Components

PHE (Ref-Water) / Water Pump
Back up Heater / Strainer
Relief Valve / Flow Switch
Expansion Tank / Remote Controller



Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		12	14	16
R410A Split	1Ø 230V	● (12.0) ● (10.4)	● (14.0) ● (12.0)	● (16.0) ● (13.0)
	3Ø 400V	● (12.0) ● (10.4)	● (14.0) ● (12.0)	● (16.0) ● (13.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit	HU121 U33	HU141 U33	HU161 U33	HU123 U33	HU143 U33	HU163 U33
			Indoor Unit	HN1616 NK3			HN1639 NK3		
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.45	4.45	4.30	4.45	4.45	4.30
		Rated Heat Output (Prated)	kW	9	10	10	9	10	10
		Seasonal Space Heating Efficiency (ηs)	%	175	175	169	175	175	169
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A++	A+++	A+++	A++
		Annual Energy Consumption	kWh	4,177	4,408	4,802	4,179	4,410	4,804
	Average Climate Water Outlet 55°C	SCOP	-	3.32	3.32	3.32	3.32	3.32	3.32
		Rated Heat Output (Prated)	kW	10	10	10	10	10	10
		Seasonal Space Heating Efficiency (ηs)	%	130	130	130	130	130	130
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A++	A++	A++	A++	A++	A++
		Annual Energy Consumption	kWh	6,154	6,154	6,154	6,156	6,156	6,156

PRODUCT INFORMATION

THERMA V R410A SPLIT

SPECIFICATION

Nominal Capacity and Nominal Input				Outdoor Unit	HU121 U33	HU141 U33	HU161 U33	HU123 U33	HU143 U33	HU163 U33
Condition		OAT (°C) DB / WB	LWT (°C)	Indoor Unit	HN1616 NK3			HN1639 NK3		
Capacity	Cooling	35 / 24	18	kW	10.4	12.0	13.0	10.4	12.0	13.0
	Heating	7 / 6	35	kW	12.0	14.0	16.0	12.0	14.0	16.0
Power Input	Cooling	35 / 24	18	kW	2.60	3.10	3.60	2.60	3.10	3.60
	Heating	7 / 6	35	kW	2.60	3.20	3.80	2.60	3.20	3.80
EER	Cooling	35 / 24	18	W/W	4.00	3.90	3.60	4.00	3.90	3.60
COP	Heating	7 / 6	35	W/W	4.60	4.40	4.30	4.60	4.40	4.30
Rated Water Flow Rate (at LWT 35°C)				LPM	34.0	40.0	46.0	34.0	40.0	46.0

Indoor Units					HN1616 NK3	HN1639 NK3
Operation Range (LWT)	Cooling[1]		Min. ~ Max.	°C	5 ~ 27	5 ~ 27
	Heating		Min. ~ Max.	°C	15 ~ 57	15 ~ 57
	DHW[2]		Min. ~ Max.	°C	15 ~ 80	15 ~ 80
Water Pump	Type			-	Non-Self-Priming Type of DC Pump	
	Motor type			-	BLDC	BLDC
	Steps of Speed			EA	500 ~ 3,500	500 ~ 3,500
	Power input		Rated	W	130	130
Heat Exchanger	Type			-	Brazed Plate HEX	
	Quantity				1	1
	Number of Plate			EA	76	76
Expansion Vessel	Volume			l	8.0	8.0
	Water Pressure		Max.	bar	3	3
	Water Pressure		Pre-charged	bar	1	1
Strainer	Mesh size			-	28 mesh	28 mesh
	Material			-	Stainless Steel	Stainless Steel
Safety Valve	Pressure Limit		Upper Limit	bar	3	3
Devices for Water Circuit				-	Manometer	
				-	Drain Valve / Fill Valve	
				-	Shut off Valve	
				-	Air Vent	
Piping Connections	Water Circuit	Inlet	Inner Dia.	mm (Inch)	Male PT 25.4(1)	Male PT 25.4(1)
		Outlet	Inner Dia.	mm (Inch)	Male PT 25.4(1)	Male PT 25.4(1)
	Refrigerant Circuit	Gas	Outer Dia.	mm (Inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
		Liquid	Outer Dia.	mm (Inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Sound Power Level	Heating		Rated	dB(A)	44	44
Dimensions	Unit		W x H x D	mm	490 x 850 x 315	490 x 850 x 315
	Packed Unit		W x H x D	mm	563 x 1,082 x 375	563 x 1,082 x 375
Weight (Without water)	Unit			kg	42.2	45.0
	Packed Unit			kg	48.2	51.0
Electrical Specification					**HN1616 NK3**	**HN1639 NK3**
Wiring Connections	Power and Communication Cable (H07RN-F) (Included Earth)			mm² x cores	0.75 x 4	0.75 x 4
Back up Heater	Type			-	Sheath	Sheath
	Number of Heating Coil			EA	2	3
	Capacity Combination			kW	3.0 + 3.0	3.0 + 3.0 + 3.0
	Operation			-	Automatic	Automatic
	Heating Steps			Step	2	2
	Power Supply			V, Ø, Hz	220-240, 1, 50	380-415, 3, 50
	Rated Current			A	25.0	13.0
	Maximum Current			A	32.0	16.3
	Power Cable (H07RN-F) (Included Earth)			mm² x cores	4.0 x 3	2.5 x 4

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 °C.
2) DHW 50 ~ 80°C Operating is available only when the booster heater is operating.

SPECIFICATION

Outdoor Unit				HU121 U33	HU141 U33	HU161 U33	HU123 U33	HU143 U33	HU163 U33
Operation Range (OAT)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 35	-20 ~ 35	-20 ~ 35	-20 ~ 35	-20 ~ 35	-20 ~ 35
Compressor	Type		-	Hermetic Motor					
	Model		Model x No.	GPT442MAA x 1					
	Displacement		cm³/Rev.	44.2	44.2	44.2	44.2	44.2	44.2
	Capacity Motor Type		kW	13.92	13.92	13.92	13.92	13.92	13.92
			-	BLDC	BLDC	BLDC	BLDC	BLDC	BLDC
	Motor Output	Rated	W x No.	4,000 x 1	4,000 x 1	4,000 x 1	4,000 x 1	4,000 x 1	4,000 x 1
Refrigerant	Type		-	R410A	R410A	R410A	R410A	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.50	2,087.50	2,087.50	2,087.50	2,087.50	2,087.50
	Precharged Amount		g	2,300	2,300	2,300	2,300	2,300	2,300
	t-CO_2 eq.		-	4.801	4.801	4.801	4.801	4.801	4.801
	Chargeless-Pipe Length		m	7.5	7.5	7.5	7.5	7.5	7.5
	Additional Charging Volume		g/m	40	40	40	40	40	40
	Control		-	Electronic Expansion Valve					
Refrigerant Oil	Type		-	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D
	Charged Volume		cc x No.	1,300 x 1	1,300 x 1	1,300 x 1	1,300 x 1	1,300 x 1	1,300
Heat Exchanger	Row x Column x FPI		-	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14
	No.		EA	2	2	2	2	2	2
Fan	Type		-	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m³/min x No.	55 x 2	55 x 2	55 x 2	55 x 2	55 x 2	55 x 2
Fan Motor	Type		-	BLDC	BLDC	BLDC	BLDC	BLDC	BLDC
	Output		W x No.	124 x 2	124 x 2	124 x 2	124 x 2	124 x 2	124 x 2
Sound Power Level	Heating	Rated	dB(A)	66	66	66	66	66	66
Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	58	58	58	58	58	58
Piping Connections	Liquid	Type	-	Flare	Flare	Flare	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare	Flare	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Standard	m	7.5	7.5	7.5	7.5	7.5	7.5
		Max.	m	50	50	50	50	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30	30	30	30	30
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330					
	Packed Unit	W x H x D	mm	1,140 x 1,462 x 461					
Weight	Unit		kg	94.0	94.0	94.0	94.0	94.0	94.0
	Packed Unit		kg	107.0	107.0	107.0	107.0	107.0	107.0
Electrical Specification				**HU121 U33**	**HU141 U33**	**HU161 U33**	**HU123 U33**	**HU143 U33**	**HU163 U33**
Power Supply			V, Ø, Hz	220-240, 1, 50			380-415, 3, 50		
Current (Rated)	Cooling		A	11.3	13.4	15.7	6.5	7.7	9.0
	Heating		A	11.5	13.8	16.3	6.6	8.0	9.4
Maximum Running Current	Cooling		A	25.0	25.0	25.0	16.1	16.1	16.1
	Heating		A	25.0	25.0	25.0	16.1	16.1	16.1
Circuit Breaker			A	40	40	40	20	20	20
Wiring Connections	Power Supply Cable (H07RN-F) (Included Earth)		mm² x cores	6.0 x 3	6.0 x 3	6.0 x 3	2.5 x 5	2.5 x 5	2.5 x 5

* OAT : Outdoor Air Temperature, LWT : Leaving water temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor - Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R410A SPLIT

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HU121 U33 + HN1616 NK3 / HU123 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 34.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20°C DB	7.60	4.78	8.55	5.03	9.51	5.23	10.33	5.32	11.19	5.46	11.98	5.52	-	-
30°C DB	8.62	3.50	9.05	3.62	9.78	3.61	10.67	4.10	10.90	4.24	11.37	4.49	-	-
35°C DB	7.94	2.98	8.66	3.15	9.33	3.33	10.10	3.58	10.40	4.00	10.75	3.87	11.16	3.88
40°C DB	7.56	2.55	8.02	2.65	8.81	2.82	9.36	2.96	9.54	3.32	9.89	3.38	10.28	3.44
45°C DB	6.38	2.01	7.08	2.20	7.79	2.38	8.44	2.53	9.14	2.70	9.44	2.83	9.73	2.95

HU141 U33 + HN1616 NK3 / HU143 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 40.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20°C DB	8.13	4.52	9.87	4.89	10.97	5.08	11.92	5.21	12.91	5.29	13.82	5.38	-	-
30°C DB	9.24	3.29	10.44	3.52	11.29	3.52	12.31	4.00	12.58	4.14	13.12	4.39	-	-
35°C DB	8.50	2.81	9.99	3.07	10.76	3.24	11.65	3.48	12.00	3.90	12.40	3.77	12.88	3.78
40°C DB	8.10	2.40	9.25	2.58	10.17	2.76	10.80	2.90	11.01	3.24	11.42	3.29	11.86	3.36
45°C DB	7.17	2.21	8.17	2.14	8.99	2.31	9.73	2.46	10.55	2.62	10.89	2.75	11.23	2.87

HU161 U33 + HN1616 NK3 / HU163 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 46.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20°C DB	8.54	4.34	10.69	4.53	11.89	4.72	12.91	4.82	13.98	4.91	14.97	4.97	-	-
30°C DB	9.70	3.16	11.31	3.26	12.22	3.26	13.34	3.71	13.63	3.84	14.21	4.06	-	-
35°C DB	8.92	2.70	10.82	2.84	11.66	3.01	12.63	3.23	13.00	3.61	13.43	3.49	13.96	3.51
40°C DB	8.51	2.32	10.03	2.39	11.02	2.56	11.70	2.68	11.93	3.01	12.37	3.05	12.85	3.11
45°C DB	7.52	2.12	8.85	1.98	9.73	2.14	10.55	2.28	11.42	2.43	11.80	2.54	12.16	2.66

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. The shaded areas are not guaranteed continuous operation.

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU121 U33 + HN1616 NK3 / HU123 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 34.0 LPM								Water Flow Rate 21.6 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-20°C DB	10.89	4.22	11.00	3.33	11.37	2.22	11.74	1.97	-	-	-	-
-15°C DB	10.89	4.30	11.00	3.40	11.37	2.84	11.74	2.13	10.99	1.89	-	-
-7°C DB	10.89	4.43	11.00	3.50	11.37	2.92	11.74	2.52	11.72	2.15	11.09	1.90
-4°C DB	10.66	4.44	10.77	3.51	11.17	2.94	11.58	2.53	11.83	2.25	11.35	1.99
-2°C DB	10.54	4.45	10.65	3.51	11.07	2.94	11.49	2.56	11.89	2.26	11.53	2.04
2°C DB	10.22	4.46	10.33	3.53	10.79	2.96	11.26	2.58	11.74	2.29	11.88	2.08
7°C DB	11.88	5.77	12.00	4.55	12.13	3.78	12.25	3.23	12.38	2.84	12.50	2.53
10°C DB	12.03	6.61	12.16	5.22	12.28	4.32	12.41	3.70	12.54	3.25	12.66	2.90
15°C DB	12.29	8.59	12.42	6.79	12.55	5.63	12.67	4.82	12.80	4.22	12.93	3.78
18°C DB	12.44	10.45	12.57	8.27	12.70	6.83	12.83	5.86	12.96	5.14	13.10	4.58

HU141 U33 + HN1616 NK3 / HU143 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 40.0 LPM								Water Flow Rate 25.2 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-20°C DB	12.24	3.56	11.92	2.99	11.61	2.22	11.08	1.96	-	-	-	-
-15°C DB	12.47	3.72	12.14	3.12	11.96	2.68	11.56	2.13	10.99	1.89	-	-
-7°C DB	12.83	4.00	12.50	3.35	12.31	2.87	12.12	2.50	11.72	2.15	11.09	1.90
-4°C DB	12.28	4.07	11.96	3.41	11.95	2.93	11.93	2.54	11.83	2.25	11.35	1.99
-2°C DB	12.01	4.11	11.70	3.45	11.79	2.95	11.85	2.55	11.89	2.26	11.53	2.04
2°C DB	11.12	4.18	10.83	3.50	11.20	2.97	11.53	2.58	11.82	2.30	11.88	2.08
7°C DB	14.38	5.27	14.00	4.40	13.63	3.77	13.25	3.23	12.88	2.84	12.50	2.53
10°C DB	14.66	5.91	14.28	4.96	13.90	4.24	13.52	3.67	13.13	3.22	12.75	2.85
15°C DB	15.15	7.39	14.75	6.20	14.36	5.30	13.96	4.59	13.57	4.01	13.17	3.55
18°C DB	15.44	8.58	15.03	7.23	14.63	6.17	14.23	5.35	13.83	4.69	13.42	4.14

HU161 U33 + HN1616 NK3 / HU163 U33 + HN1639 NK3

Outdoor Temperature	Water Flow Rate 46.0 LPM								Water Flow Rate 28.8 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-20°C DB	12.79	2.88	12.13	2.52	11.61	2.22	11.08	1.96	-	-	-	-
-15°C DB	13.35	3.12	12.65	2.73	12.12	2.41	11.56	2.13	10.99	1.89	-	-
-7°C DB	14.24	3.55	13.50	3.10	12.93	2.74	12.34	2.42	11.72	2.15	11.09	1.90
-4°C DB	13.73	3.70	13.02	3.23	12.67	2.86	12.27	2.54	11.83	2.25	11.35	1.99
-2°C DB	13.37	3.80	12.68	3.32	12.48	2.94	12.22	2.56	11.89	2.26	11.53	2.04
2°C DB	12.60	4.00	11.95	3.50	12.07	2.97	12.09	2.58	12.03	2.30	11.88	2.08
7°C DB	16.88	4.88	16.00	4.26	15.13	3.74	14.25	3.23	13.38	2.83	12.50	2.53
10°C DB	17.38	5.33	16.48	4.66	15.58	4.08	14.68	3.58	13.78	3.15	12.88	2.76
15°C DB	18.23	6.20	17.28	5.42	16.34	4.75	15.39	4.16	14.45	3.66	13.50	3.21
18°C DB	18.73	6.81	17.76	5.96	16.79	5.21	15.82	4.59	14.85	4.02	13.88	3.54

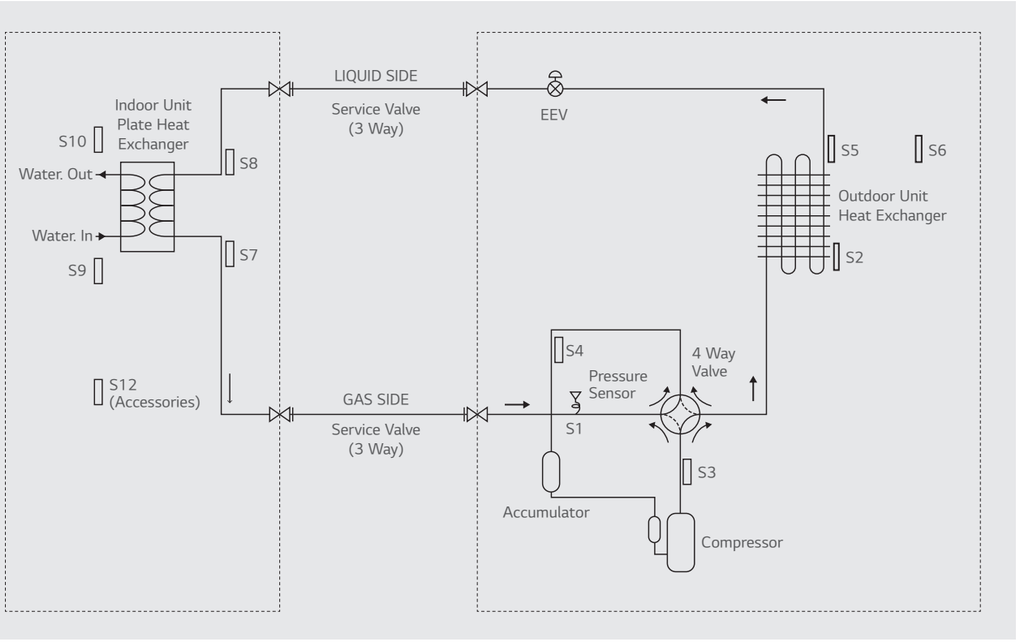
Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. The shaded areas are not guaranteed continuous operation.

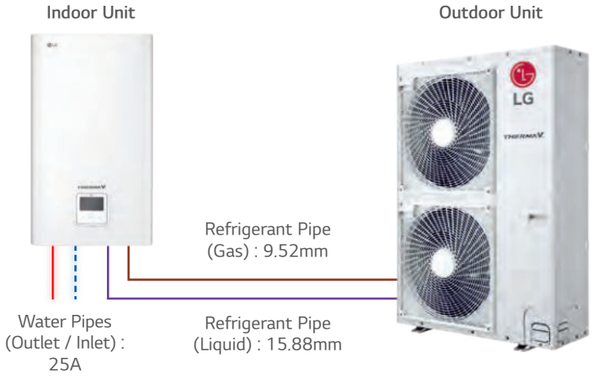
PRODUCT INFORMATION

THERMA V R410A SPLIT

DRAWINGS

Product Schematic



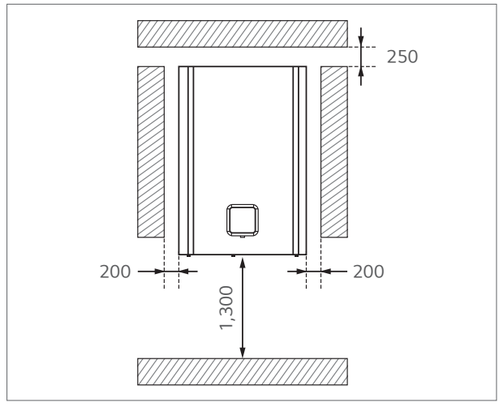


Ref.	Capa. (kW)	Pipe Size (mm,Inch)		Elevation (m)		Length (m)			Add. Ref
		Gas	Liquid	STD	Max.	STD	Charge less	Max.	
R410A	12	15.88	9.52	0	30	7.5	7.5	50	40 g/m
	14								
	16								

Description

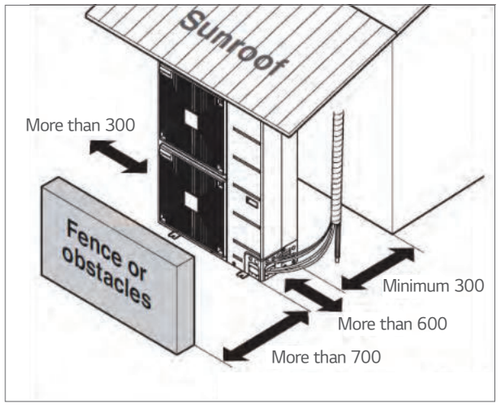
Category	Symbol	Meaning	PCB Connector	Remarks
Outdoor Unit	S1	Pressure Sensor	CN_H_PRESS	-
	S2	Condenser Middle Temperature Sensor	CN_MID	-
	S3	Compressor-Discharge Pipe Temperature Sensor	CN_DISCHA	-
	S4	Compressor-Suction Pipe Temperature Sensor	CN_SUCTION	-
	S5	Condenser Temperature Sensor	CN_C_PIPE	- Description is expressed based on cooling mode.
	S6	Outdoor Air Temperature Sensor	CN_AIR	-
	EEV	Electronic Expansion Valve	CN_EEV1_WH	-
Indoor Unit	S7	Outlet Evaporator Temperature Sensor	CN_PIPE_OUT	- Meaning is expressed based on cooling mode.
	S8	Inlet Evaporator Temperature Sensor	CN_PIPE_IN	-
	S9	Entering Water Temperature Sensor	CN_TH3	-
	S10	Leaving Water Temperature Sensor		-
	S11	Back up Heater Outlet Temperature Sensor		-
	S12	Remote Air Temperature Sensor	CN_ROOM	- Optional accessory (Being sold separately) - Not shown in diagram

Installation & SVC Space



Indoor Unit SVC Space

Minimum service space [unit : mm]



Outdoor Unit SVC Space

PRODUCT INFORMATION

THERMA V R410A SPLIT

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Thermostat	230V AC, H/C	TB2 (17 / 18 / 19 / 20)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	TB1 (8 / 9 / 10)
3	2 Way Valve	2 Wire, 230V AC	TB2 (14 / 15 / 16)
4	Solar Pump	230V AC	TB1 (4 / 5)
5	3 Way Valve (B) for Solar Pump	3 Wire, SPDT, 230V AC	TB1 (1 / 2 / 3)
6	Outdoor Unit	230V AC	TB2 (11 / 12 / 13)
7	Booster Heater	230V AC	TB1 (6 / 7)
8	DHW Tank Kit	PHLTA (1Ø, Split) / PHLTC (3Ø, Split)	1Ø TB3 (3 / 4) / 3Ø TB3 (1 / 2)
9	Power Supply for Electric Heaters	1Ø, 220-240V, 50Hz 3Ø, 380-415V, 50Hz	1Ø TB3 (1 / 2) / 3Ø TB3 (3 / 4 / 5)
10	3rd Party Controller / LG Meter Interface	5V DC	TB4 (21 / 22)
11	Mixing Pump	230V AC	TB5 (23 / 24)
12	Mixing Valve	3 Wire, 230V AC	TB5 (25 / 26 / 27)

TERMINAL BLOCK : TB1

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

TERMINAL BLOCK : TB2

11	12	13	14	15	16	17	18	19	20
1 (L)	2 (N)	3	L1	L2	N	L	N	L1	L2
OUTDOOR UNIT			2 WAY VALVE (A)			THERMOSTAT (Default : 230V AC)			

TERMINAL BLOCK : TB3 (HN1639 NK3)

1	2		3	4	5
L	N		R	S	T
TO ELB FOR DHW TANK E/HEATER			POWER SUPPLY (3P, 380-415V, 50Hz)		

TB3 (HN1616 NK3)

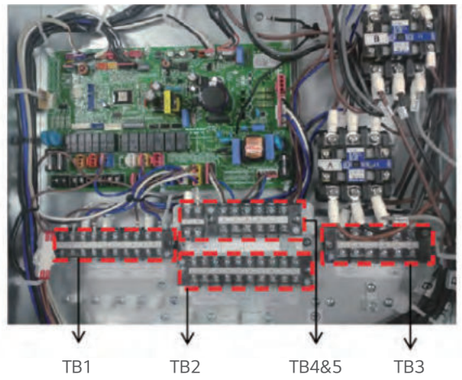
1	2	3	4
L	N	L	N
POWER SUPPLY (1P, 220-240V, 50Hz)		TO ELB FOR DHW TANK E/HEATER	

TERMINAL BLOCK : TB4 & 5

21	22		23	24	25	26	27
A	B		L	N	L1	L2	N
3rd PARTY CONTROLLER (5V DC)			MIX PUMP		MIXING VALVE		

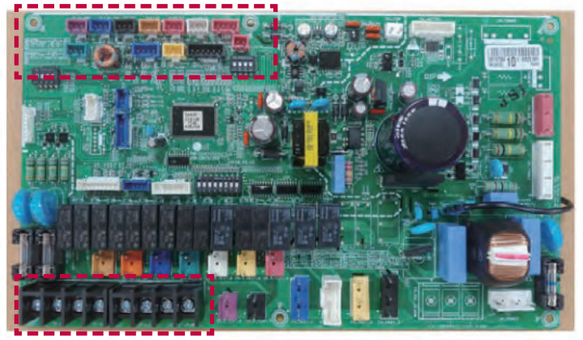
PCB INFORMATION

No.	Name	Remark	Connection
1	Remote Air Sensor	PQRSTA0	CN_ROOM
2	Add Remote Air Sensor	PQRSTA0	CN_LEAK_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	Water Tank Sensor	PHRSTA0	CN_TH4
5	Solar Pipe Sensor	Included in Solar Thermal Kit (PHLLA)	CN_TH4
6	RS3 Remote Controller	-	CN_REMO
7	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
8	Wi-Fi Modem	PWFMDD200	CN_WF
9	External Pump	Contact	TB_EXT_Pump
10	Boiler	Contact	TB_Boiler
11	Smart Grid (SG)	Contact	TB_SG1 / TB_SG2



[Terminal block]

CN_Connection



TB_SG / Boiler / Pump

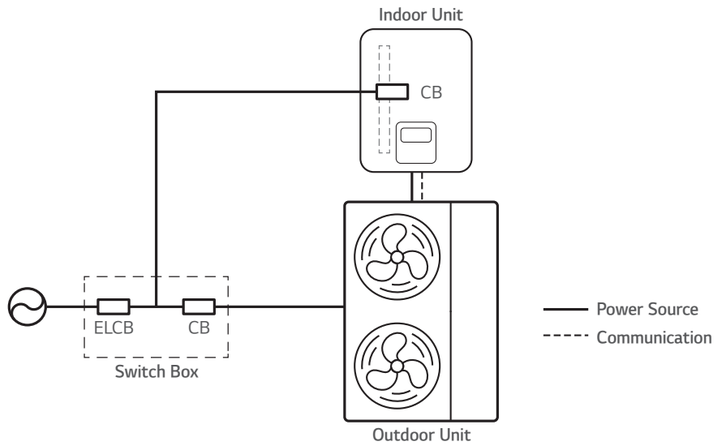
[Main PCB]

PRODUCT INFORMATION

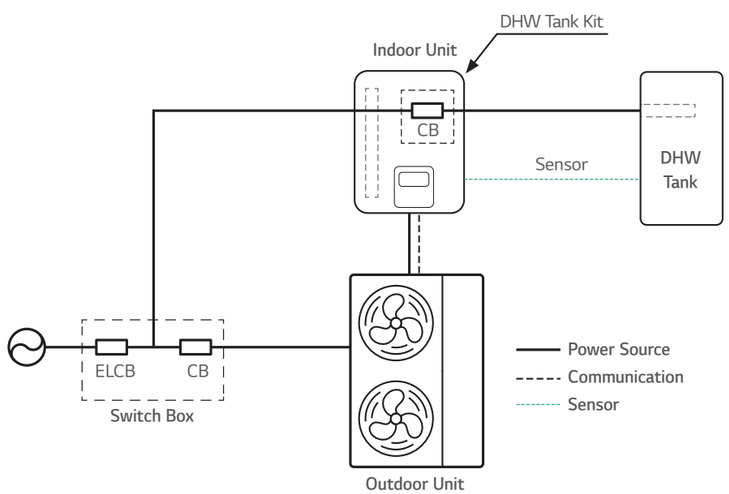
THERMA V R410A SPLIT

POWER SUPPLY DIAGRAM

Power Supply for Heat Pump and Back up Heater



Power Supply for DHW Booster Heater

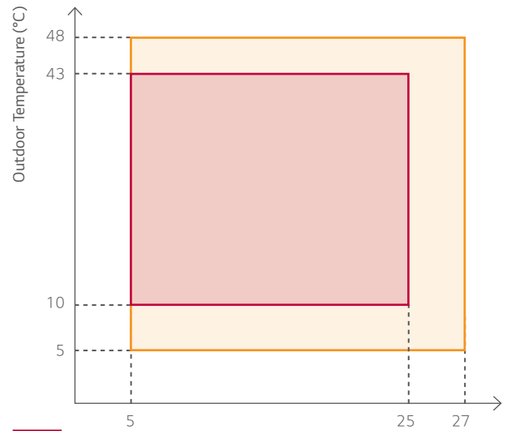


* For Split, DHW Tank Kit (CB and Relay) should be installed into control box of Indoor unit.
* For selection of Circuit Breaker (CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

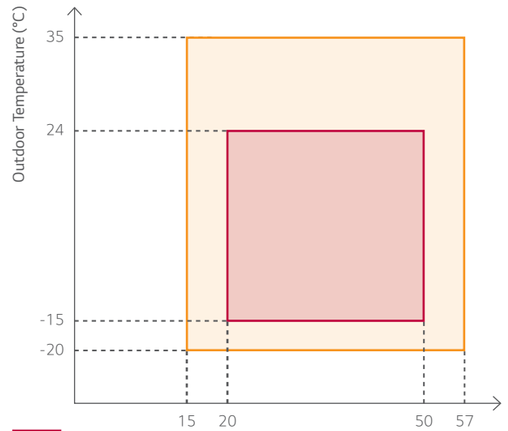
OPERATION RANGE

Cooling

(Fan coil unit)



Heating



WATER PUMP

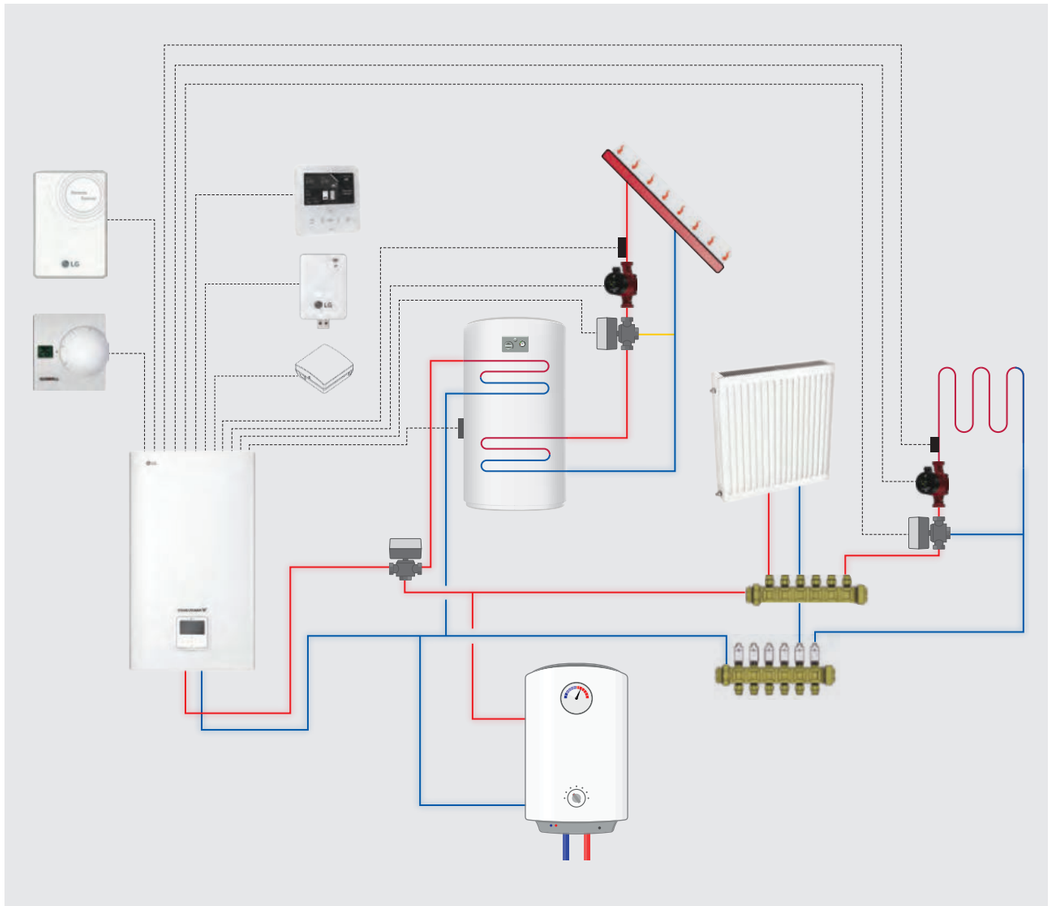
Capacity [kW]	Rated Flow Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure Drop [m] (Plate heat Ex.)	Serviceable Head [m]
12	34.0	10.7	0.8	9.9
14	40.0	10.0	1.1	8.9
16	46.0	9.5	1.4	8.1

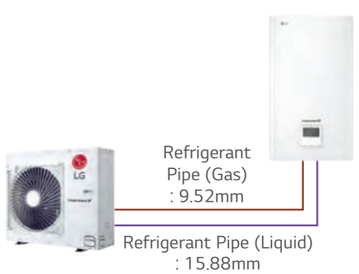
PRODUCT INFORMATION

THERMA V SPLIT - EXTERNAL DEVICE & WIRING

THERMA V - R32 Split | THERMA V - R410A Split

SYSTEM SCHEMATIC





Ref.	Capa. (kW)	Pipe Size (mm,Inch)		Elevation (m)		Length (m)			Add. Ref
		Gas	Liquid	STD	Max.	STD	Charge less	Max.	
R32	5	15.88 (5/8)	9.52 (3/8)	0	30	5.0	10	50	30 g/m
	7								
	9								
R410A	12	15.88 (5/8)	9.52 (3/8)	0	30	7.5	7.5	50	40 g/m
	14								
	16								

ACCESSORY

Part Name	Part No.	Spec	Supply	Max. Length
DHW Tank kit	PHLTA (Split 1p) PHLTC (Split 3p)	5KΩ, Ø7, 12m ± 0.25m	Accessory	12m
Temp. Sensor for DHW Tank	PHRSTA0	5KΩ, Ø7, 12m ± 0.25m	Accessory	12m
Remote Controller (RS3)	PREMTW101	Wired, 10m	Default	
Extension wire for Remote controller	PZCWRC1	10m	Accessory	10m
3 Way v/v actuator wire	-	AC 230V	Field scope	100m ↑
2 Way v/v actuator wire	-	AC 230V	Field scope	100m ↑
Mixing Temp. Sensor	PRSTAT5K10	5kΩ thermistor, 10m	Accessory	10m
Temp. Sensor for Solar Thermal Kit	Included in PHLLA	Sensor 2EA 1) 5KΩ, Ø7, 12m 2) 5KΩ, Ø7, 12m	Accessory	12m
Room Temperature Sensor	PQRSTA0	Cable : 15m Sensor : 10KΩ	Accessory	15m
LG Wi-Fi Modem	PWFMDD200	USB Cable : 0.6 m Extension cable : 0.5 m	Accessory	
Extension cable for Wi-Fi Modem	PWYREW000	USB Extension cable : 10 m	Accessory	10m
Wire for Thermostat	-	220-240V	Field scope	100m ↑
Wire for 3rd Party boiler	-	Contact (H05RN-F) 0.75mm² x 2C	Field scope	
Dry Contact	PDRYCB000 (Simple Dry Contact) PDRYCB320 (8 Input))	PDRYCB000 : AC 220-240V PDRYCB320 : Non Voltage or 12 ~ 24V	Accessory	
Drain Pan	PHDPB		Accessory	
Meter Interface	PENKTH000	DC 12V	Accessory	
Modbus RTU Gateway	PMBUSB00A	DC 12V	Accessory	
PI485 Gateway	PMNP14A1		Accessory	

PRODUCT INFORMATION

THERMA V R32 MONOBLOC R32

Outdoor Unit

Outdoor Unit

Controller

No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi Modem (Accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor Integrated in RS3
3	Temperature Control Definition	Leaving Water Temperature
		Entering Water Temperature
		Room Air Temperature Base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Solar Water Heating	Need Solar Thermal System (Field scope)
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintain Time : 1 ~ 12 Hours
8	Pump Setting	Capacity Control
9	LG Heating Configurator	For Installer Setting with PC
10	2nd Circuit	Need Mixing Valve System (Field scope)
11	External Water Pump	Contact Signal (On/Off)
12	3rd Party Boiler	On/Off Control
13	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
14	Energy State	ES1 ~ ES8
15	LG Central Controller	ACP, AC Smart, AC Ez Touch
16	PI485 Gateway	Accessory for Central Control
17	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus* (Need PI485 and Modbus RTU Gateway)
18	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

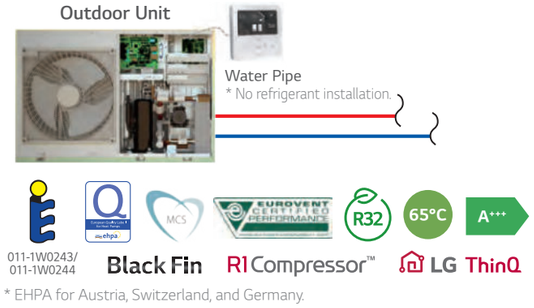
* Direct Modbus communication without Modbus RTU Gateway is not supported.

Key Features

No.	Name	Remark
1	Water Pump	Grundfos, INV
2	Expansion Tank	8ℓ, Max. 3bar
3	Electric Heater	Option (3/6kW)
4	Strainer	STS, 28mesh
5	Flow Switch	SIKA
6	Air Vent Valve	Max. 3.5bar
7	Relief Valve	3bar
8	Manometer	Max. 4bar
9	Shut off Valve	2ea

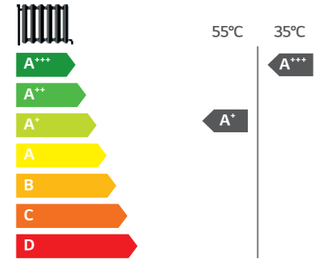
- High Energy Efficiency (SCOP 4.45 / A+++)
- Excellent Performance at Low Ambient Temperature (100% @ -7°C)
- Wide Operation Range (Ambient : -25 ~ 35°C / Water side : 15 ~ 65°C)
- Quiet Operation (Sound Power Level) : 1-Fan Model : Rated 60 dB(A) / Low Noise Mode 58 dB(A) 2-Fan Model : Rated 63 dB(A) / Low Noise Mode 61 dB(A)
- R32 Refrigerant with Low GWP
- Revolutionary Scroll compressor (R1 Compressor)
- Corrosion Resistance Heat Exchanger (Black Fin)
- Remote Control Solution via LG ThinQ

Monobloc is a fully packaged piece of equipment, where the indoor and outdoor unit are combined as one module. Therefore, there is no need for refrigerant piping work since Monobloc unit located outside is connected by only water piping. Furthermore, additional water side items such as plate heat exchanger, expansion tank, water pump are included in the package. THE **LG THERMA V R32 MONOBLOC** guarantees incomparable customer values including unbeatable energy efficiency, the ultimate in convenience, and easy controls by applying the advanced technologies. As It applies the low Global Warming Potential (GWP) R32 refrigerant and the revolutionary R1 scroll compressor, it provides the powerful and high efficient heating performance.



* EHPA for Austria, Switzerland, and Germany.

- Space Heating



Main Components

PHE (Ref-Water) / Water Pump
Strainer / Relief Valve
Flow Switch / Expansion Tank
Remote Controller

Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		5	7	9	12	14	16
R32 Monobloc	1Ø 230V	● (5.5) ● (5.5)	● (7.0) ● (7.0)	● (9.0) ● (9.0)	● (12.0) ● (12.0)	● (14.0) ● (14.0)	● (16.0) ● (16.0)
	3Ø 400V	-	-	-	● (12.0) ● (12.0)	● (14.0) ● (14.0)	● (16.0) ● (16.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Unit	HM051M U43	HM071M U43	HM091M U43
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.45	4.45	4.45
		Rated Heat Output (Prated)	kW	5	6	6
		Seasonal Space Heating Efficiency (ηs)	%	175	175	175
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A+++
		Annual Energy Consumption	kWh	2,551	2,551	2,551
	Average Climate Water Outlet 55°C	SCOP	-	3.12	3.12	3.12
		Rated Heat Output (Prated)	kW	5	5	5
		Seasonal Space Heating Efficiency (ηs)	%	122	122	122
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+	A+	A+
		Annual Energy Consumption	kWh	3,638	3,638	3,638

Description			Unit	HM121M U33 HM123M U33	HM141M U33 HM143M U33	HM161M U33 HM163M U33
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.45	4.45	4.45
		Rated Heat Output (Prated)	kW	10	11	11
		Seasonal Space Heating Efficiency (ηs)	%	175	175	175
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A+++
		Annual Energy Consumption	kWh	4,642	4,875	5,103
	Average Climate Water Outlet 55°C	SCOP	-	3.18	3.18	3.18
		Rated Heat Output (Prated)	kW	12	12	12
		Seasonal Space Heating Efficiency (ηs)	%	124	124	124
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+	A+	A+
		Annual Energy Consumption	kWh	7,795	7,795	7,795

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

SPECIFICATION

Technical Specifications					HM051M U43	HM071M U43	HM091M U43
Water Side	Operation Range (LWT)	Cooling[1]	Min. ~ Max.	℃ DB	5 ~ 27	5 ~ 27	5 ~ 27
		Heating	Min. ~ Max.	℃ DB	15 ~ 65	15 ~ 65	15 ~ 65
		DHW[2]	Min. ~ Max.	℃ DB	15 ~ 80	15 ~ 80	15 ~ 80
	Water Pump	Type		-	Canned type for hot water circulation		
		Model		-	UPM3K 20-75 CHBL		
		Motor Type		-	BLDC		
		Steps of Pumping Performance		-	Variable speed 10% to 100%		
		Power input	Min. / Rated	W	6 / 60	6 / 60	6 / 60
		Water Flow Rate	Min. / Rated	˜/min	2.3 / 25.9	2.3 / 25.9	2.3 / 25.9
	Heat Exchanger	Type		-	Brazed Plate HEX		
		Quantity		-	1	1	1
		Number of Plate		EA	54	54	54
		Water Volume		˜	0.7	0.7	0.7
		Water Flow Rate	Min. ~ Max.	˜/min	13 ~ 70	13 ~ 70	13 ~ 70
	Expansion Vessel	Volume	Max.	˜	8	8	8
		Water pressure	Max.	bar	3	3	3
			Pre-charged	bar	1	1	1
	Piping Connections	Inlet		mm	Male PT 25.4(1)		
		Outlet		mm	Male PT 25.4(1)		
	Strainer	Mesh size		-	28 mesh	28 mesh	28 mesh
		Material		-	Stainless Steel		
	Relief Valve	Pressure Limit	Upper Limit	bar	3.0	3.0	3.0
	Devices for Water Circuit			-	Relief Valve / Flow Switch		
				-	Drain hose		
				-	Pressure gauge / Air Vent Valve		
Refrigerant Side	Operation Range (OAT)	Cooling	Min. ~ Max.	℃ DB	5 ~ 48	5 ~ 48	5 ~ 48
		Heating	Min. ~ Max.	℃ DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
	Compressor	Type		-	Hermetic Motor Compressor		
		Model		Model x No.	RJB036MAA x 1		
		Motor Type		-	Scroll		
		Displacement		cm³/Rev.	31.6	31.6	31.6
	Refrigerant	Type		-	R32	R32	R32
		GWP (Global Warming Potential)		-	675	675	675
		Precharged Amount		g	1,400	1,400	1,400
		t-CO_2 eq.		-	0.945	0.945	0.945
		Control		-	Electronic Expansion Valve		
	Refrigerant Oil	Type		-	FW68D		
		Charged Volume		cc x No.	11,000	11,000	11,000
	Fan	Type		-	Propeller		
		Air Flow Rate	Rated	m³/min x No.	60.0 x 1	60.0 x 1	60.0 x 1
	Fan Motor	Type		-	BLDC		
		Output		W x No.	124 x 1	124 x 1	124 x 1
Technical	Sound Power Level	Heating	Max.	dB(A)	67	67	67
			Rated	dB(A)	60	60	60
			Low noise	dB(A)	58	58	58
	Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	50	50	50
	Dimensions	Unit	W x H x D	mm	1,239 x 834 x 330	1,239 x 834 x 330	1,239 x 834 x 330
		Packed Unit	W x H x D	mm	1,364 x 985 x 461	1,364 x 985 x 461	1,364 x 985 x 461
	Weight	Unit		kg	91.0	91.0	91.0
		Packed Unit		kg	103.0	103.0	103.0
Electrical	Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50
	Maximum Running Current			A	14.2	15.7	23.0
	Peak Control Running Current			A	13.0	14.0	15.0
	Rated Running Current	Cooling		A	5.3	6.9	9.5
		Heating		A	5.4	6.9	9.6
	Circuit Breaker			A	16	20	25
	Wiring Connections	Power Supply Cable (Included Earth, H07RN-F)		mm² x cores	4.0 x 3	4.0 x 3	4.0 x 3

HM121M U33	HM141M U33	HM161M U33	HM123M U33	HM143M U33	HM163M U33
5 ~ 27	5 ~ 27	5 ~ 27	5 ~ 27	5 ~ 27	5 ~ 27
15 ~ 65	15 ~ 65	15 ~ 65	15 ~ 65	15 ~ 65	15 ~ 65
15 ~ 80	15 ~ 80	15 ~ 80	15 ~ 80	15 ~ 80	15 ~ 80
Canned type for hot water circulation			Canned type for hot water circulation		
UPML GEO 20-105 CHBL			UPML GEO 20-105 CHBL		
BLDC			BLDC		
Variable speed 10% to 100%			Variable speed 10% to 100%		
14 / 140	14 / 140	14 / 140	14 / 140	14 / 140	14 / 140
5.0 / 46.0	5.0 / 46.0	5.0 / 46.0	5.0 / 46.0	5.0 / 46.0	5.0 / 46.0
Brazed Plate HEX			Brazed Plate HEX		
1	1	1	1	1	1
76	76	76	76	76	76
1	1	1	1	1	1
13 ~ 70	13 ~ 70	13 ~ 70	13 ~ 70	13 ~ 70	13 ~ 70
8	8	8	8	8	8
3	3	3	3	3	3
1	1	1	1	1	1
Male PT 25.4(1)			Male PT 25.4(1)		
Male PT 25.4(1)			Male PT 25.4(1)		
28 mesh	28 mesh	28 mesh	28 mesh	28 mesh	28 mesh
Stainless Steel			Stainless Steel		
3.0	3.0	3.0	3.0	3.0	3.0
Relief Valve / Flow Switch			Relief Valve / Flow Switch		
Drain hose			Drain hose		
Pressure gauge / Air Vent Valve			Pressure gauge / Air Vent Valve		
5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48
-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35
Hermetic Motor Compressor			Hermetic Motor Compressor		
RJB036MAA x 1			RJB036MAA x 1		
Scroll			Scroll		
31.6	31.6	31.6	31.6	31.6	31.6
R32	R32	R32	R32	R32	R32
675	675	675	675	675	675
2,400	2,400	2,400	2,400	2,400	2,400
1.620	1.620	1.620	1.620	1.620	1.620
Electronic Expansion Valve			Electronic Expansion Valve		
FW68D			FW68D		
11,000	11,000	11,000	11,000	11,000	11,000
Propeller			Propeller		
60.0 x 2	60.0 x 2	60.0 x 2	60.0 x 2	60.0 x 2	60.0 x 2
BLDC			BLDC	BLDC	BLDC
124 x 2	124 x 2	124 x 2	124 x 2	124 x 2	124 x 2
69	69	69	69	69	69
63	63	63	63	63	63
61	61	61	61	61	61
52	52	52	52	52	52
1,239 x1,380 x 330	1,239 x1,380 x 330	1,239 x1,380 x 330	1,239 x1,380 x 330	1,239 x1,380 x 330	1,239 x1,380 x 330
1,364 x 1,532 x 461	1,364 x 1,532 x 461	1,364 x 1,532 x 461	1,364 x 1,532 x 461	1,364 x 1,532 x 461	1,364 x 1,532 x 461
124.5	124.5	124.5	124.5	124.5	124.5
138.5	138.5	138.5	138.5	138.5	138.5
220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	380-415, 3, 50	380-415, 3, 50	380-415, 3, 50
33.0	34.0	35.0	12.0	12.5	13.0
23.0	24.0	25.0	8.0	9.0	10.0
11.6	14.4	17.7	3.8	4.8	5.9
11.6	13.8	16.1	3.8	4.6	5.4
40	40	40	16	16	16
6.0 x 3	6.0 x 3	6.0 x 3	4.0 x 5	4.0 x 5	4.0 x 5

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 ℃.
2) DHW 58 ~ 80℃ Operating is available only when the booster heater is operating.

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

SPECIFICATION

Nominal Capacity and Nominal Input					HM051M U43	HM071M U43	HM091M U43
Condition		OAT (°C) DB / WB	LWT (°C)	-			
Capacity	Cooling	35 / 24	18	kW	5.50	7.00	9.00
			7	kW	5.50	7.00	9.00
	Heating	7/6	35	kW	5.50	7.00	9.00
			55	kW	5.50	5.50	5.50
		2/1	35	kW	3.30	4.20	5.40
Power Input	Cooling	35 / 24	18	kW	1.20	1.56	2.14
			7	kW	1.96	2.59	3.46
	Heating	7/6	35	kW	1.22	1.56	2.15
			55	kW	2.04	2.04	2.04
		2/1	35	kW	0.94	1.20	1.54
EER	Cooling	35 / 24	18	W/W	4.60	4.50	4.20
			7	W/W	2.80	2.70	2.60
COP	Heating	7/6	35	W/W	4.50	4.50	4.18
			55	W/W	2.70	2.70	2.70
		2/1	35	W/W	3.52	3.51	3.50
Rated Water Flow Rate (at LWT 35 °C)					15.8	20.1	25.9

Nominal Capacity and Nominal Input					HM121M U33	HM141M U33	HM161M U33
Condition		OAT (°C) DB / WB	LWT (°C)	-	HM123M U33	HM143M U33	HM163M U33
Capacity	Cooling	35 / 24	18	kW	12.00	14.00	16.00
			7	kW	12.00	14.00	16.00
	Heating	7/6	35	kW	12.00	14.00	16.00
			55	kW	12.00	12.00	12.00
		2/1	35	kW	11.00	12.00	13.80
Power Input	Cooling	35 / 24	18	kW	2.61	3.26	4.00
			7	kW	4.44	5.38	6.40
	Heating	7/6	35	kW	2.61	3.11	3.64
			55	kW	4.29	4.29	4.29
		2/1	35	kW	3.13	3.42	3.94
EER	Cooling	35 / 24	18	W/W	4.60	4.30	4.00
			7	W/W	2.70	2.60	2.50
COP	Heating	7/6	35	W/W	4.60	4.50	4.40
			55	W/W	2.80	2.80	2.80
		2/1	35	W/W	3.52	3.51	3.50
Rated Water Flow Rate (at LWT 35 °C)					34.5	40.3	46.0

Back up Heater (Accessory)

Electrical Specification		HA031M E1	HA061M E1	HA063M E1
Type	-	Sheath	Sheath	Sheath
Number of Heating Coil	EA	1	2	3
Max. Power consumption	kW	3.0	3.0 + 3.0	2.0 + 2.0 + 2.0
Operation	-	Automatic	Automatic	Automatic
Heating Steps	Step	1	2	1
Power Supply	V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	380-415, 3, 50
Maximum Current	A	12.0	24.0	8.7
Power Cable (Included Earth, H07RN-F)	mm² x cores	1.5 x 3C	4.0 x 3C	2.5 x 4C
Communication Cable (H07RN-F)	mm² x cores	0.75 x 2C	0.75 x 4C	0.75 x 2C

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HM051M U43

Outdoor Temperature	Water Flow Rate 15.8 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	5.16	4.43	5.65	4.86	6.14	5.29	6.47	5.58	6.96	6.01	7.29	6.30	7.62	6.59
20°C DB	5.29	3.78	5.59	4.23	5.89	4.69	6.08	4.99	6.38	5.45	6.58	5.75	6.77	6.05
30°C DB	5.43	3.13	5.53	3.60	5.63	4.08	5.69	4.40	5.79	4.88	5.86	5.20	5.92	5.52
35°C DB	5.50	2.80	5.50	3.29	5.50	3.78	5.50	4.11	5.50	4.60	5.50	4.93	5.50	5.25
40°C DB	5.57	2.47	5.50	2.95	5.43	3.42	5.38	3.74	5.31	4.21	5.27	4.52	5.22	4.84
45°C DB	5.64	2.15	5.50	2.60	5.36	3.06	5.27	3.36	5.13	3.82	5.04	4.12	4.94	4.42

HM071M U43

Outdoor Temperature	Water Flow Rate 20.1 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	6.56	4.33	7.19	4.75	7.82	5.18	8.24	5.46	8.86	5.88	9.28	6.16	9.70	6.44
20°C DB	6.74	3.68	7.11	4.13	7.49	4.58	7.74	4.88	8.12	5.33	8.37	5.63	8.62	5.93
30°C DB	6.91	3.03	7.04	3.50	7.16	3.98	7.25	4.30	7.37	4.78	7.46	5.09	7.54	5.41
35°C DB	7.00	2.70	7.00	3.19	7.00	3.68	7.00	4.01	7.00	4.50	7.00	4.83	7.00	5.15
40°C DB	7.09	2.37	7.00	2.85	6.91	3.32	6.85	3.63	6.76	4.10	6.70	4.42	6.65	4.73
45°C DB	7.18	2.05	7.00	2.50	6.82	2.95	6.70	3.25	6.53	3.70	6.41	4.01	6.29	4.31

HM091M U43

Outdoor Temperature	Water Flow Rate 25.9 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	8.44	4.04	9.24	4.44	10.05	4.83	10.59	5.09	11.40	5.49	11.93	5.75	12.47	6.01
20°C DB	8.66	3.47	9.15	3.88	9.63	4.29	9.95	4.56	10.44	4.97	10.76	5.25	11.08	5.52
30°C DB	8.89	2.89	9.05	3.32	9.21	3.74	9.32	4.03	9.48	4.46	9.59	4.74	9.69	5.03
35°C DB	9.00	2.60	9.00	3.04	9.00	3.47	9.00	3.76	9.00	4.20	9.00	4.49	9.00	4.78
40°C DB	9.11	2.31	9.00	2.73	8.89	3.16	8.81	3.44	8.70	3.86	8.62	4.14	8.54	4.42
45°C DB	9.23	2.02	9.00	2.43	8.77	2.84	8.62	3.11	8.39	3.52	8.24	3.79	8.09	4.06

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HM121M U33 / HM123M U33

Outdoor Temperature	Water Flow Rate 34.5 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	11.25	4.43	12.33	4.86	13.40	5.29	14.12	5.58	15.20	6.01	15.91	6.30	16.63	6.59
20°C DB	11.55	3.74	12.20	4.20	12.84	4.67	13.27	4.98	13.92	5.45	14.35	5.76	14.78	6.07
30°C DB	11.85	3.05	12.07	3.55	12.28	4.05	12.42	4.38	12.64	4.88	12.78	5.22	12.93	5.55
35°C DB	12.00	2.70	12.00	3.22	12.00	3.74	12.00	4.08	12.00	4.60	12.00	4.95	12.00	5.29
40°C DB	12.15	2.35	12.00	2.85	11.85	3.35	11.75	3.68	11.59	4.17	11.49	4.50	11.39	4.83
45°C DB	12.30	2.01	12.00	2.48	11.69	2.95	11.49	3.27	11.19	3.74	10.99	4.06	10.78	4.37

HM141M U33 / HM143M U33

Outdoor Temperature	Water Flow Rate 40.3 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	13.13	4.14	14.38	4.54	15.64	4.95	16.47	5.22	17.73	5.62	18.57	5.89	19.40	6.16
20°C DB	13.48	3.52	14.23	3.95	14.98	4.38	15.48	4.66	16.24	5.09	16.74	5.38	17.24	5.66
30°C DB	13.83	2.91	14.08	3.36	14.33	3.81	14.49	4.11	14.75	4.56	14.91	4.87	15.08	5.17
35°C DB	14.00	2.60	14.00	3.06	14.00	3.53	14.00	3.84	14.00	4.30	14.00	4.61	14.00	4.92
40°C DB	14.18	2.29	14.00	2.74	13.82	3.18	13.70	3.48	13.53	3.93	13.41	4.22	13.29	4.52
45°C DB	14.35	1.98	14.00	2.41	13.64	2.84	13.41	3.13	13.05	3.55	12.82	3.84	12.58	4.13

HM161M U33 / HM163M U33

Outdoor Temperature	Water Flow Rate 46.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	15.00	3.85	16.43	4.23	17.87	4.60	18.83	4.85	20.26	5.23	21.22	5.48	22.17	5.73
20°C DB	15.40	3.31	16.26	3.70	17.12	4.09	17.70	4.35	18.56	4.74	19.13	5.00	19.70	5.26
30°C DB	15.80	2.77	16.09	3.17	16.37	3.57	16.57	3.84	16.85	4.25	17.04	4.51	17.23	4.78
35°C DB	16.00	2.50	16.00	2.91	16.00	3.32	16.00	3.59	16.00	4.00	16.00	4.27	16.00	4.55
40°C DB	16.20	2.23	16.00	2.63	15.80	3.02	15.66	3.29	15.46	3.68	15.32	3.95	15.19	4.21
45°C DB	16.40	1.96	16.00	2.34	15.59	2.73	15.32	2.98	14.92	3.37	14.65	3.62	14.38	3.88

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HM051M U43

Outdoor Temperature	Water Flow Rate 15.8 LPM								Water Flow Rate 9.9 LPM				Water Flow Rate 7.9 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	3.79	1.88	3.67	1.75	3.54	1.63	3.42	1.50	-	-	-	-	-	-	-	-
-20°C DB	4.22	2.51	4.09	2.01	3.96	1.86	3.83	1.72	3.70	1.57	-	-	-	-	-	-
-15°C DB	4.66	2.42	4.52	2.27	4.38	2.10	4.25	1.93	4.11	1.77	3.97	1.60	-	-	-	-
-7°C DB	5.50	3.18	5.50	2.99	5.50	2.79	5.50	2.60	5.50	2.41	5.50	2.21	5.50	2.02	-	-
-4°C DB	5.50	3.36	5.50	3.14	5.50	2.93	5.50	2.71	5.50	2.49	5.50	2.28	5.50	2.06	5.50	1.91
-2°C DB	5.50	3.51	5.50	3.25	5.50	3.04	5.50	2.83	5.50	2.63	5.50	2.42	5.50	2.21	5.50	2.01
2°C DB	5.50	3.52	5.50	3.45	5.50	3.25	5.50	3.04	5.50	2.83	5.50	2.63	5.50	2.42	5.50	2.21
7°C DB	5.50	4.84	5.50	4.50	5.50	4.16	5.50	3.82	5.50	3.49	5.50	3.15	5.50	2.81	5.50	2.47
10°C DB	5.50	5.14	5.50	4.78	5.50	4.42	5.50	4.06	5.50	3.70	5.50	3.35	5.50	2.99	5.50	2.63
15°C DB	5.50	6.12	5.50	5.66	5.50	5.20	5.50	4.73	5.50	4.27	5.50	3.81	5.50	3.35	5.50	2.88
18°C DB	5.50	6.45	5.50	5.96	5.50	5.48	5.50	4.99	5.50	4.50	5.50	4.01	5.50	3.53	5.50	3.04
20°C DB	5.50	6.67	5.50	6.17	5.50	5.66	5.50	5.16	5.50	4.65	5.50	4.15	5.50	3.65	5.50	3.14
35°C DB	5.50	8.31	5.50	7.68	5.50	7.05	5.50	6.43	5.50	5.80	5.50	5.17	5.50	4.54	5.50	3.91

HM071M U43

Outdoor Temperature	Water Flow Rate 20.1 LPM								Water Flow Rate 12.6 LPM				Water Flow Rate 10.0 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	4.82	1.99	4.67	1.73	4.51	1.48	4.36	1.22	-	-	-	-	-	-	-	-
-20°C DB	5.38	2.47	5.21	1.98	5.05	1.77	4.88	1.56	4.72	1.35	-	-	-	-	-	-
-15°C DB	5.93	2.38	5.76	2.22	5.58	2.06	5.41	1.90	5.23	1.74	5.06	1.58	-	-	-	-
-7°C DB	7.00	3.15	7.00	2.96	7.00	2.77	7.00	2.58	7.00	2.38	7.00	2.19	7.00	2.00	-	-
-4°C DB	7.00	3.33	7.00	3.11	7.00	2.90	7.00	2.68	7.00	2.47	7.00	2.25	7.00	2.04	7.00	1.89
-2°C DB	7.00	3.51	7.00	3.21	7.00	3.01	7.00	2.81	7.00	2.60	7.00	2.40	7.00	2.19	7.00	1.99
2°C DB	7.00	3.52	7.00	3.42	7.00	3.21	7.00	3.01	7.00	2.81	7.00	2.60	7.00	2.40	7.00	2.19
7°C DB	7.00	4.69	7.00	4.50	7.00	4.16	7.00	3.82	7.00	3.47	7.00	3.13	7.00	2.79	7.00	2.45
10°C DB	7.00	5.14	7.00	4.78	7.00	4.42	7.00	4.05	7.00	3.69	7.00	3.33	7.00	2.96	7.00	2.60
15°C DB	7.00	6.02	7.00	5.57	7.00	5.12	7.00	4.67	7.00	4.21	7.00	3.76	7.00	3.31	7.00	2.86
18°C DB	7.00	6.34	7.00	5.87	7.00	5.39	7.00	4.92	7.00	4.44	7.00	3.96	7.00	3.49	7.00	3.01
20°C DB	7.00	6.56	7.00	6.07	7.00	5.57	7.00	5.08	7.00	4.59	7.00	4.10	7.00	3.60	7.00	3.11
35°C DB	7.00	8.17	7.00	7.56	7.00	6.95	7.00	6.33	7.00	5.72	7.00	5.10	7.00	4.49	7.00	3.88

HM091M U43

Outdoor Temperature	Water Flow Rate 25.9 LPM								Water Flow Rate 16.2 LPM				Water Flow Rate 12.9 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	6.20	1.95	6.00	1.70	5.80	1.45	5.60	1.20	-	-	-	-	-	-	-	-
-20°C DB	6.91	2.45	6.70	1.96	6.49	1.75	6.28	1.54	6.06	1.33	-	-	-	-	-	-
-15°C DB	7.63	2.39	7.40	2.22	7.18	2.05	6.95	1.89	6.73	1.72	6.50	1.55	-	-	-	-
-7°C DB	9.00	3.09	9.00	2.90	9.00	2.71	9.00	2.53	9.00	2.34	9.00	2.15	9.00	1.96	-	-
-4°C DB	9.00	3.26	9.00	3.05	9.00	2.84	9.00	2.63	9.00	2.42	9.00	2.21	9.00	2.00	9.00	1.85
-2°C DB	9.00	3.51	9.00	3.15	9.00	2.95	9.00	2.75	9.00	2.55	9.00	2.35	9.00	2.15	9.00	1.95
2°C DB	9.00	3.52	9.00	3.35	9.00	3.15	9.00	2.95	9.00	2.75	9.00	2.55	9.00	2.35	9.00	2.15
7°C DB	9.00	4.70	9.00	4.18	9.00	3.88	9.00	3.59	9.00	3.29	9.00	2.99	9.00	2.70	9.00	2.40
10°C DB	9.00	4.76	9.00	4.44	9.00	4.13	9.00	3.81	9.00	3.50	9.00	3.18	9.00	2.87	9.00	2.55
15°C DB	9.00	6.07	9.00	5.60	9.00	5.13	9.00	4.67	9.00	4.20	9.00	3.73	9.00	3.27	9.00	2.80
18°C DB	9.00	6.39	9.00	5.90	9.00	5.41	9.00	4.92	9.00	4.43	9.00	3.93	9.00	3.44	9.00	2.95
20°C DB	9.00	6.61	9.00	6.10	9.00	5.59	9.00	5.08	9.00	4.58	9.00	4.07	9.00	3.56	9.00	3.05
35°C DB	9.00	8.23	9.00	7.60	9.00	6.97	9.00	6.33	9.00	5.70	9.00	5.07	9.00	4.43	9.00	3.80

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate. 4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.
5. The shaded areas are not guaranteed continuous operation.

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HM121M U33 / HM123M U33

Outdoor Temperature	Water Flow Rate 34.5 LPM								Water Flow Rate 21.6 LPM				Water Flow Rate 17.3 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	8.75	2.13	8.50	1.85	8.25	1.58	8.00	1.30	-	-	-	-	-	-	-	-
-20°C DB	10.13	2.34	10.00	2.13	9.88	1.91	9.75	1.70	9.63	1.49	-	-	-	-	-	-
-15°C DB	11.50	2.55	11.50	2.40	11.50	2.25	11.50	2.10	11.50	1.95	11.50	1.80	-	-	-	-
-7°C DB	12.00	3.15	12.00	3.00	12.00	2.85	12.00	2.70	12.00	2.55	12.00	2.40	12.00	2.25	-	-
-4°C DB	12.00	3.36	12.00	3.17	12.00	2.97	12.00	2.78	12.00	2.59	12.00	2.39	12.00	2.20	12.00	2.05
-2°C DB	12.00	3.47	12.00	3.28	12.00	3.09	12.00	2.90	12.00	2.71	12.00	2.53	12.00	2.34	12.00	2.15
2°C DB	12.00	3.69	12.00	3.50	12.00	3.31	12.00	3.12	12.00	2.93	12.00	2.73	12.00	2.54	12.00	2.35
7°C DB	12.00	4.93	12.00	4.60	12.00	4.27	12.00	3.93	12.00	3.60	12.00	2.80	12.00	2.60	12.00	2.60
10°C DB	12.00	5.22	12.00	4.87	12.00	4.51	12.00	4.16	12.00	3.81	12.00	3.46	12.00	3.10	12.00	2.75
15°C DB	12.00	5.99	12.00	5.56	12.00	5.13	12.00	4.71	12.00	4.28	12.00	3.85	12.00	3.43	12.00	3.00
18°C DB	12.00	6.29	12.00	5.84	12.00	5.39	12.00	4.94	12.00	4.49	12.00	4.05	12.00	3.60	12.00	3.15
20°C DB	12.00	6.49	12.00	6.02	12.00	5.56	12.00	5.10	12.00	4.64	12.00	4.17	12.00	3.71	12.00	3.25
35°C DB	12.00	7.98	12.00	7.41	12.00	6.84	12.00	6.28	12.00	5.71	12.00	5.14	12.00	4.57	12.00	4.00

HM141M U33 / HM143M U33

Outdoor Temperature	Water Flow Rate 40.3 LPM								Water Flow Rate 25.2 LPM				Water Flow Rate 20.1 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	9.25	2.08	9.00	1.80	8.75	1.53	8.50	1.25	-	-	-	-	-	-	-	-
-20°C DB	10.63	2.26	10.50	2.05	10.38	1.84	10.25	1.63	10.13	1.41	-	-	-	-	-	-
-15°C DB	12.00	2.45	12.00	2.30	12.00	2.15	12.00	2.00	12.00	1.85	12.00	1.70	-	-	-	-
-7°C DB	14.00	3.12	14.00	2.95	14.00	2.79	14.00	2.63	14.00	2.46	14.00	2.30	14.00	2.14	-	-
-4°C DB	14.00	3.30	14.00	3.10	14.00	2.90	14.00	2.70	14.00	2.50	14.00	2.30	14.00	2.10	14.00	1.95
-2°C DB	14.00	3.39	14.00	3.20	14.00	3.01	14.00	2.82	14.00	2.63	14.00	2.43	14.00	2.24	14.00	2.05
2°C DB	14.00	3.65	14.00	3.40	14.00	3.21	14.00	3.02	14.00	2.83	14.00	2.63	14.00	2.44	14.00	2.25
7°C DB	14.00	4.83	14.00	4.50	14.00	4.17	14.00	3.83	14.00	3.50	14.00	2.78	14.00	2.50	14.00	2.50
10°C DB	14.00	5.12	14.00	4.77	14.00	4.42	14.00	4.06	14.00	3.71	14.00	3.36	14.00	3.00	14.00	2.65
15°C DB	14.00	6.02	14.00	5.57	14.00	5.13	14.00	4.68	14.00	4.24	14.00	3.79	14.00	3.35	14.00	2.90
18°C DB	14.00	6.33	14.00	5.86	14.00	5.39	14.00	4.92	14.00	4.45	14.00	3.99	14.00	3.52	14.00	3.05
20°C DB	14.00	6.53	14.00	6.05	14.00	5.57	14.00	5.08	14.00	4.60	14.00	4.12	14.00	3.63	14.00	3.15
35°C DB	14.00	8.09	14.00	7.49	14.00	6.89	14.00	6.29	14.00	5.70	14.00	5.10	14.00	4.50	14.00	3.90

HM161M U33 / HM163M U33

Outdoor Temperature	Water Flow Rate 46.0 LPM								Water Flow Rate 28.8 LPM				Water Flow Rate 23.0 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	10.50	1.96	10.00	1.70	9.50	1.44	9.00	1.18	-	-	-	-	-	-	-	-
-20°C DB	12.30	2.33	11.75	1.94	11.44	1.74	11.13	1.55	10.81	1.35	-	-	-	-	-	-
-15°C DB	14.10	2.70	13.50	2.18	13.38	2.05	13.25	1.92	13.13	1.78	13.00	1.65	-	-	-	-
-7°C DB	16.00	2.96	16.00	2.80	16.00	2.64	16.00	2.48	16.00	2.31	16.00	2.15	16.00	1.99	-	-
-4°C DB	16.00	3.18	16.00	2.98	16.00	2.79	16.00	2.59	16.00	2.40	16.00	2.20	16.00	2.01	16.00	1.79
-2°C DB	16.00	3.51	16.00	3.11	16.00	2.90	16.00	2.70	16.00	2.50	16.00	2.30	16.00	2.10	16.00	1.90
2°C DB	16.00	3.52	16.00	3.35	16.00	3.14	16.00	2.93	16.00	2.73	16.00	2.52	16.00	2.31	16.00	2.10
7°C DB	16.00	4.74	16.00	4.40	16.00	4.06	16.00	3.72	16.00	3.38	16.00	2.75	16.00	2.40	16.00	2.36
10°C DB	16.00	5.05	16.00	4.69	16.00	4.33	16.00	3.96	16.00	3.60	16.00	3.24	16.00	2.88	16.00	2.51
15°C DB	16.00	5.67	16.00	5.54	16.00	5.08	16.00	4.62	16.00	4.16	16.00	3.69	16.00	3.23	16.00	2.77
18°C DB	16.00	6.34	16.00	5.85	16.00	5.36	16.00	4.87	16.00	4.39	16.00	3.90	16.00	3.41	16.00	2.93
20°C DB	16.00	6.56	16.00	6.05	16.00	5.55	16.00	5.05	16.00	4.54	16.00	4.04	16.00	3.53	16.00	3.03
35°C DB	16.00	8.23	16.00	7.60	16.00	6.96	16.00	6.33	16.00	5.70	16.00	5.07	16.00	4.43	16.00	3.80

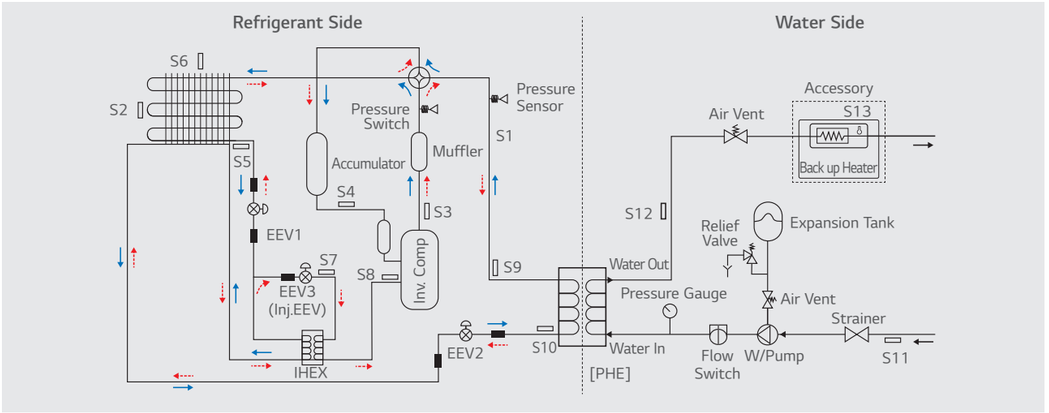
Note

1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   - Rated values are based on standard conditions and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard (or nations), the rating will vary slightly.
5. The shaded areas are not guaranteed continuous operation.

DRAWINGS

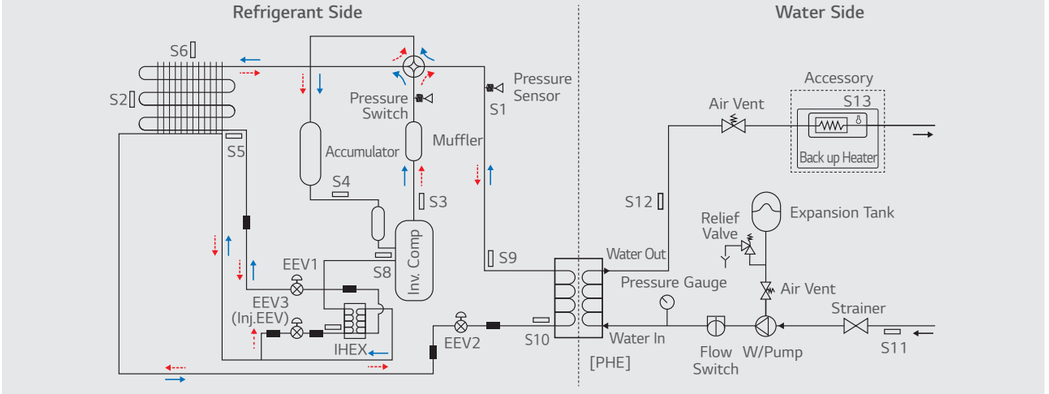
Product Schematic (5 / 7 / 9 kW)

Cooling
Heating



Product Schematic (12 / 14 / 16 kW)

Cooling
Heating



Outdoor Unit

Water Pipes
(Outlet / Inlet) : 25A

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Thermostat	230V AC, H/C	TB2 (27 / 28 / 29 / 30)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	TB1 (8 / 9 / 10)
3	2Way Valve	2 Wire, 230V AC	TB2 (18 / 19 / 20)
4	Solar Pump	230V AC	TB1 (4 / 5)
5	3 Way Valve (B) for Solar Pump	3 Wire, SPDT, 230V AC	TB1 (1 / 2 / 3)
6	Back up Heater	230V AC	TB3 (23 / 24 / 25 / 26)
7	Temp. Sensor for Back up Heater	-	TB4 (31 / 32)
8	Mixing Pump	230V AC	TB2 (13 / 14)
9	Mixing Valve	3 Wire, 230V AC	TB2 (15 / 16 / 17)
10	3rd Party Controller / LG Meter Interface	5V DC	TB2 (11 / 12)
11	DHW Tank Kit	PHLTB	TB1 (6 / 7)

TERMINAL BLOCK : TB1

1	2	3	4	5	6	7	8	9	10
BR	WH	BL	BR	BL	BR	BL	BR	WH	BL
L	L1	N	L	N	L	N	L	L1	N
3 Way VALVE (B)			WATER PUMP (B)		DHW Heater		3 Way VALVE (A)		

TERMINAL BLOCK : TB2

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

TERMINAL BLOCK : TB3

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

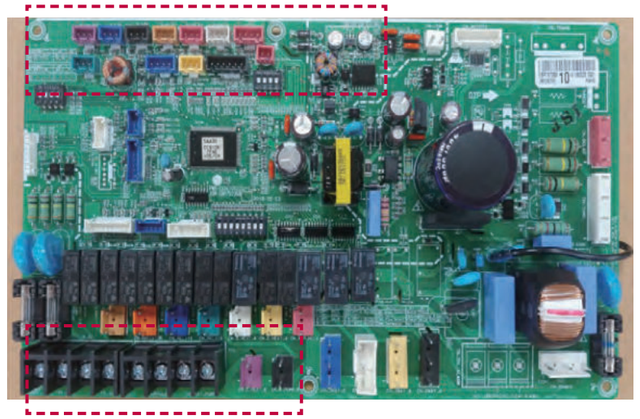
TERMINAL BLOCK : TB4 (ACCESSORY)

31	32
BK	BK
A	B
E/HEATER OUTSENSOR (5V DC)	

PCB INFORMATION

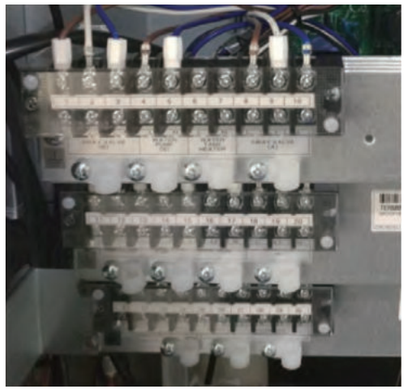
No.	Name	Remark	Connection
1	Remote Air Sensor	PQRSTA0	CN_ROOM
2	Add Remote Air Sensor	PQRSTA0	CN_LEAK_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	Water Tank Sensor	PHRSTA0	CN_TH4
5	Solar Pipe Sensor	Included in Solar Thermal Kit (PHLLA)	CN_TH4
6	RS3 Remote Controller	-	CN_REMO
7	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
8	Wi-Fi Modem	PWFMDD200	CN_WF
9	External Pump	Contact	TB_EXT_Pump
10	Boiler	Contact	TB_Boiler
11	Energy State (Smart Grid)	Contact	TB_SG1 / TB_SG2

CN_Connection



TB_SG / Boiler / Pump

[Main PCB]



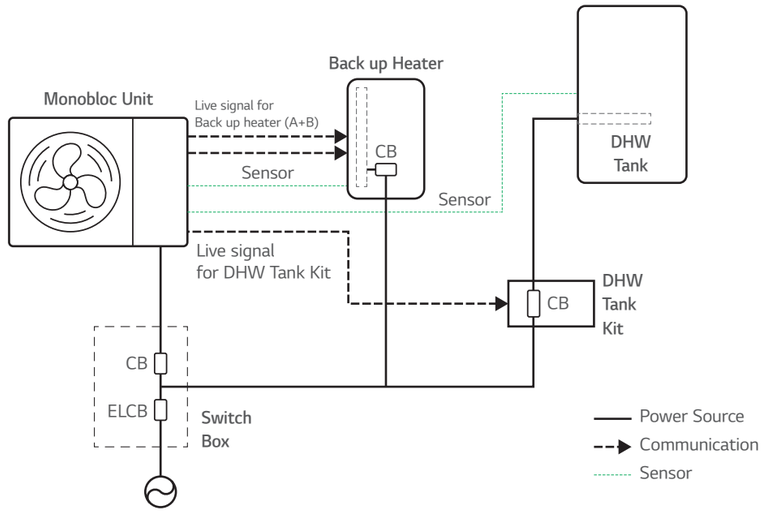
[Terminal block]

PRODUCT INFORMATION

THERMA V R32 MONOBLOC

POWER SUPPLY DIAGRAM

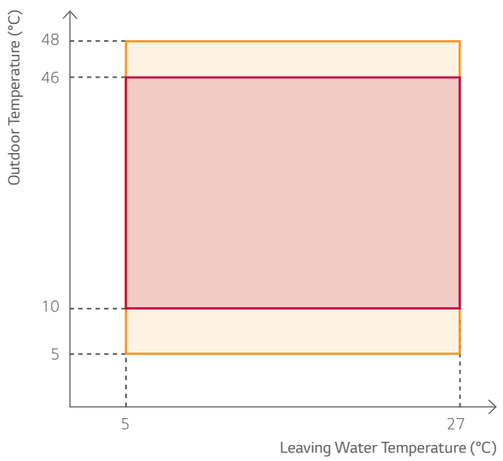
Power Supply for Heat Pump, Back up Heater, and DHW Booster Heater



* For selection of Circuit Breaker (CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

OPERATION RANGE

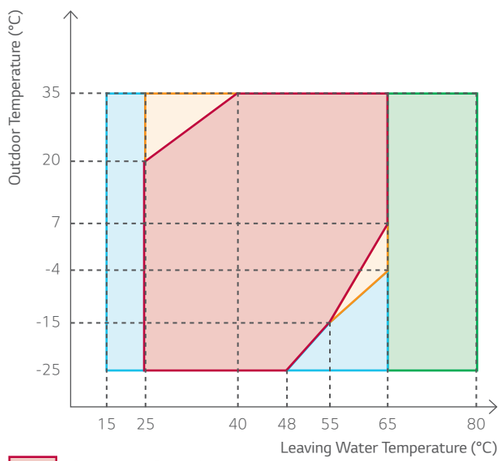
Cooling (Fan Coil Unit)



Continuous Operation

Operative

Heating



Continuous Operation

Operative

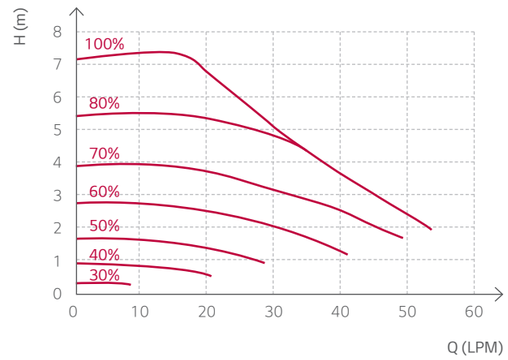
Booster heater operation only (DHW)

Back up heater (Accessory) required to achieve temp.

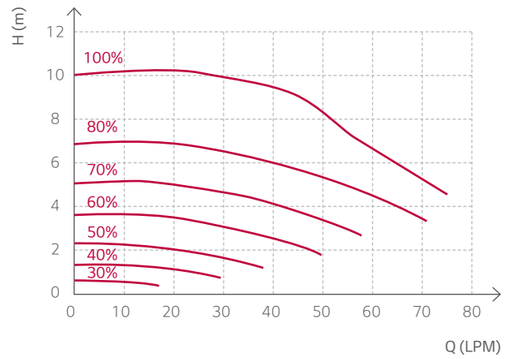
WATER PUMP

Capacity [kW]	Rated Flow Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure Drop [m] (Plate heat Ex.)	Serviceable Head [m]	Min. Flow Rate[LPM] (Recommend)
5	15.8	7.5	0.2	7.3	15
7	20.1	7.3	0.3	7.0	
9	25.9	6.1	0.4	5.7	
12	34.5	9.8	0.8	9.0	20
14	40.3	9.3	1.1	8.2	
16	46.0	9.0	1.4	7.6	

Model : GRUNDFOS UPM3K 20-75 CHBL
(5, 7, 9 kW)

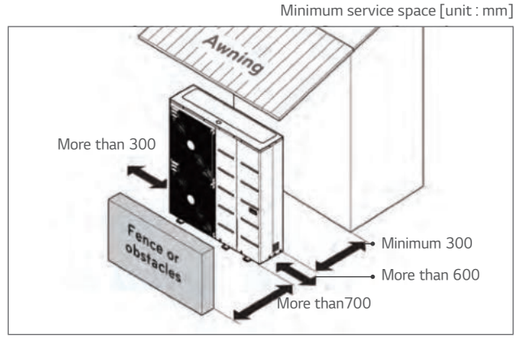


Model : GRUNDFOS UPML GEO 20 - 105 CHBL
(12, 14, 16kW)



INSTALLATION & SVC SPACE

Minimum service space [unit : mm]



Outdoor Unit SVC Space

PRODUCT INFORMATION

THERMA V R32 SILENT MONOBLOC R32

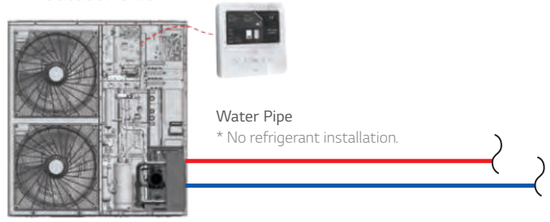
Outdoor Unit

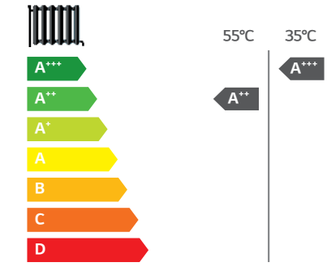
Controller

No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi Modem (Accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor Integrated in RS3
3	Temperature Control Definition	Leaving Water Temperature
		Entering Water Temperature
		Room Air Temperature Base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Solar Water Heating	Need Solar Thermal System (Field scope)
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintain Time : 1 ~ 12 Hours
8	Pump Setting	Capacity Control
9	LG Heating Configurator	For Installer Setting with PC
10	2nd Circuit	Need Mixing Valve System (Field scope)
11	External Water Pump	Contact Signal (On/Off)
12	3rd Party Boiler	On/Off Control
13	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
14	Energy State	ES1 ~ ES8
15	LG Central Controller	ACP, AC Smart, AC Ez Touch
16	PI485 Gateway	Accessory for Central Control
17	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus* (Need PI485 and Modbus RTU Gateway)
18	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

* Direct Modbus communication without Modbus RTU Gateway is not supported.

THE **LG THEMRA V R32 SILENT** is designed for lower noise level than conventional Monobloc series while retaining its previous advantages; All in one with eco-conscious refrigerant and LG's powerful yet stable R1 compressor. Thanks to its low noise level corresponding with DACH region noise regulations, THERMA V R32 Silent Monobloc offers maximized installation flexibility which allows installing within minimum safety space as 5m from neighboring houses. Moreover, the energy efficiency of THERMA V R32 SILENT MONOBLOC is remarkably enhanced compared to conventional Monobloc.





011-1W0191

* EHPA for Austria, and Germany.

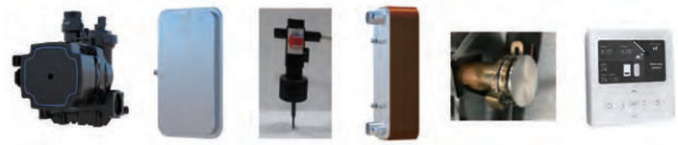
Key Features

No.	Name	Remark
1	Water Pump	Grundfos, INV
2	Expansion Tank	8ℓ, Max. 3bar
3	Electric Heater	Option (3/6kW)
4	Strainer	STS, 28mesh
5	Flow Switch	SIKA
6	Air Vent Valve	Max. 3.5bar
7	Relief Valve	3bar
8	Manometer	Max. 4bar
9	Shut off Valve	2ea

- Very Quiet Operation (Sound Power Level) : Rated 57 dB(A) / Low Noise Mode 54 dB(A)
- High Energy Efficiency (SCOP 4.68 / A+++)
- Excellent Performance at Low Ambient Temperature (100% @ -7°C)
- Wide Operation Range (Ambient : -25 ~ 35°C / Water side : 15 ~ 65°C)
- R32 Refrigerant with Low GWP
- Revolutionary Scroll compressor (R1 Compressor)
- Corrosion Resistance Heat Exchanger (Black Fin)
- Remote Control Solution via LG ThinQ

Main Components

PHE (Ref-Water) / Water Pump
Strainer / Relief Valve
Flow Switch / Expansion Tank
Remote Controller



Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		9
R32 Silent Monobloc	1Ø 230V	● (9.0) ● (9.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Unit	HM091MRS U33
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.68
		Rated Heat Output (Prated)	kW	8
		Seasonal Space Heating Efficiency (ηs)	%	184
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++
		Annual Energy Consumption	kWh	3,533
	Average Climate Water Outlet 55°C	SCOP	-	3.33
		Rated Heat Output (Prated)	kW	8
		Seasonal Space Heating Efficiency (ηs)	%	130
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A++
		Annual Energy Consumption	kWh	4,971

PRODUCT INFORMATION

THERMA V R32 SILENT MONOBLOC R32

SPECIFICATION

Technical Specifications					HM091MRS U33
Water Side	Operation Range (LWT)	Cooling[1]	Min. ~ Max.	°C DB	5 ~ 27
		Heating	Min. ~ Max.	°C DB	15 ~ 65
		DHW[2]	Min. ~ Max.	°C DB	15 ~ 80
	Water Pump	Type		-	Canned type for hot water circulation
		Model		-	GRUNDFOS UPM3K 20-75 CHBL
		Motor Type		-	BLDC
		Steps of Pumping Performance		-	Variable speed 10% to 100%
		Power input	Min. / Rated	W	6 / 60
		Water Flow Rate	Min. / Rated	˜/min	2.3 / 25.9
	Heat Exchanger	Type		-	Brazed Plate HEX
		Quantity		-	1
		Number of Plate		EA	76
		Water Volume		˜	1
		Water Flow Rate	Min. ~ Max.	˜/min	13 ~ 70
	Expansion Vessel	Volume	Max.	˜	8
		Water pressure	Max.	bar	3
			Pre-charged	bar	1.0
	Piping Connections	Inlet		mm	Male PT 25.4(1)
		Outlet		mm	Male PT 25.4(1)
	Strainer	Mesh size		-	28 mesh
		Material		-	Stainless Steel
	Relief Valve	Pressure Limit	Upper Limit	bar	3
	Devices for Water Circuit			-	Relief Valve / Flow Switch
				-	Drain hose
				-	Pressure gauge / Air Vent Valve
Refrigerant Side	Operation Range (OAT)	Cooling	Min. ~ Max.	°C DB	5 ~ 48
		Heating	Min. ~ Max.	°C DB	-25 ~ 35
	Compressor	Type		-	Hermetic Sealed Scroll
		Model		Model x No.	RJB036MAA x 1
		Motor Type		-	BLDC
		Displacement		cm³/Rev.	31.6
	Refrigerant	Type		-	R32
		GWP (Global Warming Potential)		-	675
		Precharged Amount		g	2,100
		t-CO_2 eq.		-	1.418
		Control		-	Electronic Expansion Valve
	Refrigerant Oil	Type		-	FW68D
		Charged Volume		cc x No.	1,100
	Fan	Type		-	Propeller
		Air Flow Rate	Rated	m³/min x No.	60.0 x 2
	Fan Motor	Type		-	BLDC
		Output		W x No.	124 x 2
Technical	Sound Power Level	Heating	Max,	dB(A)	63
			Rated	dB(A)	57
			Low noise	dB(A)	54
	Sound Pressure Level (at 5m)	Heating	Max,	dB(A)	41
			Rated	dB(A)	35
			Low noise	dB(A)	32
	Dimensions	Unit	W x H x D	mm	1,239 x 1,380 x 330
		Packed Unit	W x H x D	mm	1,364 x 1,532 x 461
	Weight	Unit		kg	115.5
		Packed Unit		kg	129.0
Electrical	Power Supply			V, Ø, Hz	220-240, 1, 50
	Maximum Running Current			A	15.0
	Peak Control Running Current			A	14.0
	Rated Running Current	Cooling		A	7.99
		Heating		A	7.83
	Circuit Breaker			A	16
	Wiring Connections	Power Supply Cable (Included Earth, H07RN-F)		mm² x cores	4.0 x 3

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 °C.
2) DHW 58 ~ 80°C Operating is available only when the booster heater is operating.

Nominal Capacity and Nominal Input					HM091MRS U33
Condition		OAT (°C) DB / WB	LWT (°C)	-	
Capacity	Cooling	35 / 24	18	kW	9.00
			7	kW	9.00
	Heating	7 / 6	35	kW	9.00
			55	kW	6.00
		2 / 1	35	kW	8.00
Power Input	Cooling	35 / 24	18	kW	1.80
			7	kW	3.00
	Heating	7 / 6	35	kW	1.76
			55	kW	2.14
		2 / 1	35	kW	2.16
EER	Cooling	35 / 24	18	W/W	5.00
			7	W/W	3.00
COP	Heating	7 / 6	35	W/W	5.10
			55	W/W	2.80
		2 / 1	35	W/W	3.70
Rated Water Flow Rate (at LWT 35 °C)					25.9

Back up Heater (Accessory)

Electrical Specification		HA031M E1	HA061M E1
Type	-	Sheath	Sheath
Number of Heating Coil	EA	1	2
Max. Power Consumption	kW	3	3.0 + 3.0
Operation	-	Automatic	Automatic
Heating Steps	Step	1	2
Power Supply	V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
Maximum Current	A	12.0	24.0
Power Cable (Included Earth, H07RN-F)	mm² x cores	1.5 x 3C	4.0 x 3C
Communication Cable (H07RN-F)	mm² x cores	0.75 x 2C	0.75 x 4C

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) : Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R32 SILENT MONOBLOC

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HM091MRS U33

Outdoor Temperature	Water Flow Rate 25.9 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	8.50	4.81	9.31	5.28	10.12	5.75	10.66	6.06	11.47	6.53	12.00	6.85	12.54	7.16
20°C DB	8.70	4.09	9.19	4.59	9.67	5.09	9.99	5.42	10.48	5.92	10.80	6.25	11.13	6.59
30°C DB	8.90	3.36	9.06	3.89	9.22	4.42	9.33	4.78	9.49	5.31	9.60	5.66	9.71	6.01
35°C DB	9.00	3.00	9.00	3.55	9.00	4.09	9.00	4.45	9.00	5.00	9.00	5.36	9.00	5.73
40°C DB	9.10	2.64	9.02	3.16	8.94	3.69	8.89	4.03	8.81	4.56	8.76	4.91	8.71	5.26
45°C DB	9.20	2.28	9.04	2.78	8.89	3.28	8.78	3.61	8.63	4.12	8.52	4.45	8.42	4.79

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

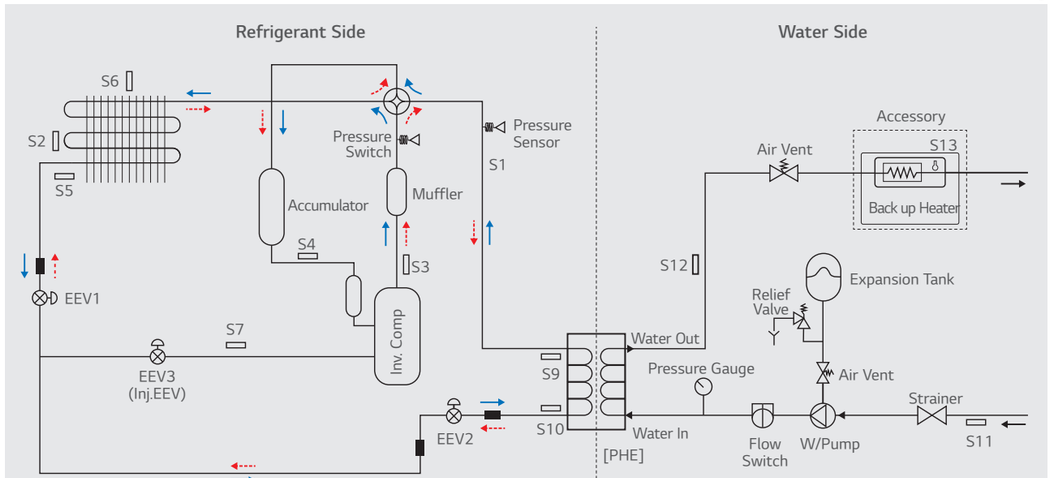
HM091MRS U33

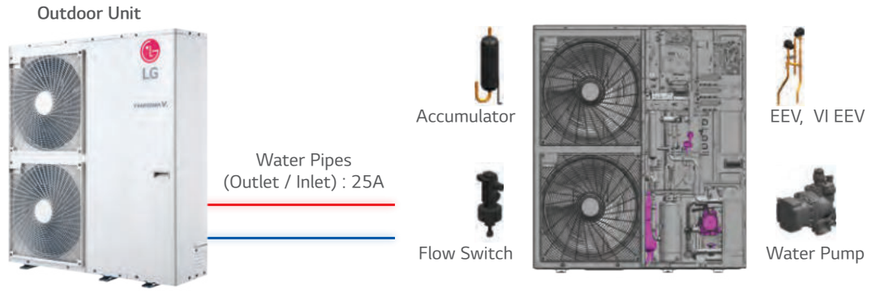
Outdoor Temperature	Water Flow Rate 25.9 LPM								Water Flow Rate 16.2 LPM				Water Flow Rate 12.9 LPM			
	LWT 30 °C		LWT 35 °C		LWT 40 °C		LWT 45 °C		LWT 50 °C		LWT 55 °C		LWT 60 °C		LWT 65 °C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	5.66	1.56	5.09	1.41	4.57	1.26	4.02	1.11	-	-	-	-	-	-	-	-
-20°C DB	6.61	2.08	6.50	1.79	5.61	1.55	4.89	1.35	4.32	1.19	-	-	-	-	-	-
-15°C DB	7.33	2.84	7.36	2.50	7.25	2.21	6.99	1.96	6.35	1.75	5.77	1.59	-	-	-	-
-7°C DB	9.00	3.56	9.00	3.26	9.00	2.98	9.00	2.73	9.00	2.51	8.42	2.32	-	-	-	-
-4°C DB	9.00	3.62	9.00	3.38	9.00	3.15	9.00	2.94	9.00	2.74	9.00	2.57	6.87	2.35	-	-
-2°C DB	9.00	3.53	9.00	3.36	9.00	3.20	9.00	3.03	9.00	2.87	9.00	2.72	7.09	2.48	-	-
2°C DB	9.00	3.56	9.00	3.48	9.00	3.38	9.00	3.26	9.00	3.14	9.00	3.01	7.48	2.73	-	-
7°C DB	9.00	5.65	9.00	5.10	9.00	4.59	9.00	4.13	9.00	3.71	9.00	3.34	7.87	3.01	7.14	2.72
10°C DB	9.00	5.97	9.00	5.39	9.00	4.85	9.00	4.36	9.00	3.91	9.00	3.51	8.06	3.15	7.34	2.84
15°C DB	9.00	6.47	9.00	5.84	9.00	5.25	9.00	4.71	9.00	4.22	9.00	3.77	8.28	3.36	7.58	3.00
18°C DB	9.00	6.75	9.00	6.09	9.00	5.47	9.00	4.91	9.00	4.38	9.00	3.90	8.36	3.46	7.68	3.07
20°C DB	9.00	6.92	9.00	6.25	9.00	5.61	9.00	5.02	9.00	4.48	9.00	3.98	8.40	3.52	7.72	3.11
35°C DB	9.00	8.03	9.00	7.21	9.00	6.43	9.00	5.69	9.00	5.00	9.00	4.36	8.45	3.91	7.80	3.32

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.

DRAWINGS

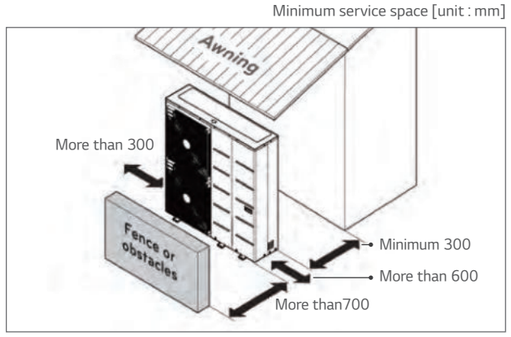
Product Schematic





Installation & SVC Space

Minimum service space [unit : mm]



Outdoor Unit SVC Space

THERMA V R32 SILENT MONOBLOC

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Thermostat	230V AC, H/C	TB3 (27 / 28 / 29 / 30)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	TB1 (8 / 9 / 10)
3	2 Way Valve	2 Wire, 230V AC	TB2 (18 / 19 / 20)
4	Solar Pump	230V AC	TB1 (4 / 5)
5	3 Way Valve (B) for Solar Pump	3 Wire, SPDT, 230V AC	TB1 (1 / 2 / 3)
6	Back up Heater	230V AC	TB3 (23 / 24 / 25 / 26)
7	Temp. Sensor for Back up Heater	-	TB4 (31 / 32)
8	Mixing Pump	230V AC	TB2 (13 / 14)
9	Mixing Valve	3 Wire, 230V AC	TB2 (15 / 16 / 17)
10	3rd Party Controller / LG Meter Interface	SV DC	TB2 (11 / 12)
11	DHW Tank Kit	PHLTB	TB1 (6 / 7)

TERMINAL BLOCK : TB1

1	2	3	4	5	6	7	8	9	10
BR	WH	BL	BR	BL	BR	BL	BR	WH	BL
L	L1	N	L	N	L	N	L	L1	N
3 Way VALVE (B)			WATER PUMP (B)		DHW Heater		3 Way VALVE (A)		

TERMINAL BLOCK : TB2

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

TERMINAL BLOCK : TB3

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

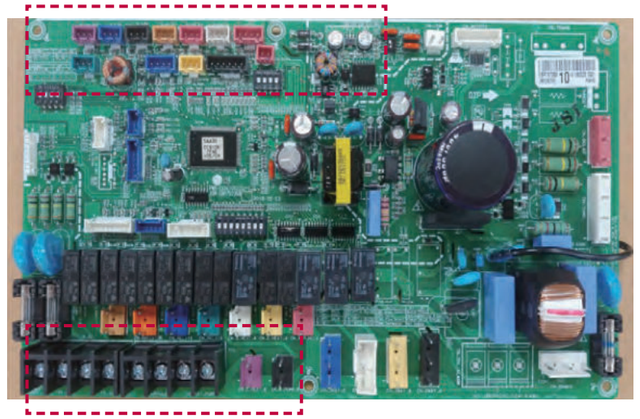
TERMINAL BLOCK : TB4 (ACCESSORY)

31	32
BK	BK
A	B
E/HEATER OUTSENSOR (5V DC)	

PCB INFORMATION

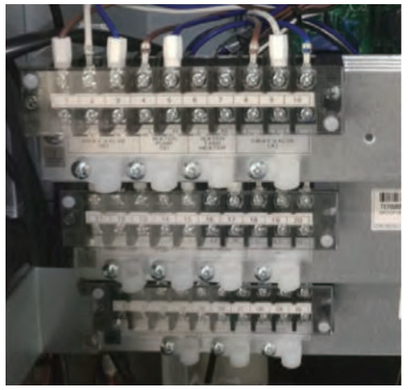
No.	Name	Remark	Connection
1	Remote Air Sensor	PQRSTA0	CN_ROOM
2	Add Remote Air Sensor	PQRSTA0	CN_LEAK_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	Water Tank Sensor	PHRSTA0	CN_TH4
5	Solar Pipe Sensor	Included in Solar Thermal Kit (PHLLA)	CN_TH4
6	RS3 Remote Controller	-	CN_REMO
7	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
8	Wi-Fi Modem	PWFMDD200	CN_WF
9	External Pump	Contact	TB_EXT_Pump
10	Boiler	Contact	TB_Boiler
11	Energy State (Smart Grid)	Contact	TB_SG1 / TB_SG2

CN_Connection



TB_SG / Boiler / Pump

[Main PCB]



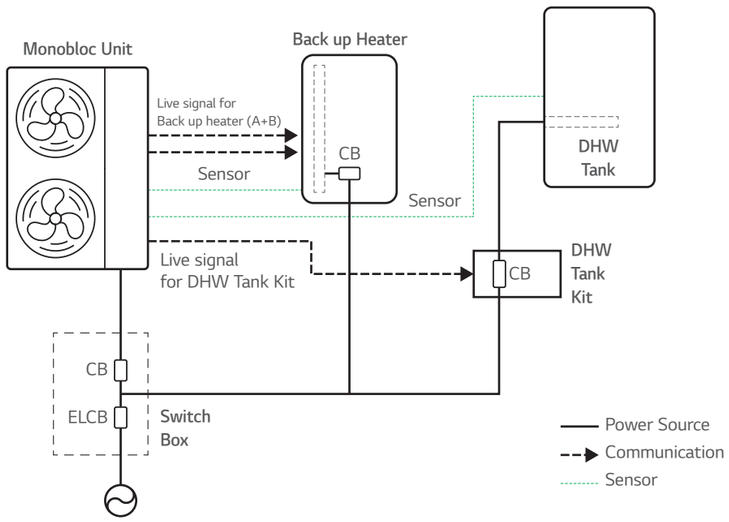
[Terminal block]

PRODUCT INFORMATION

THERMA V R32 SILENT MONOBLOC

POWER SUPPLY DIAGRAM

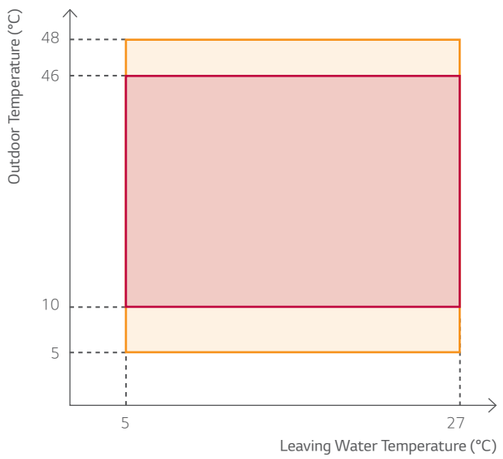
Power Supply for Heat Pump, Back up Heater, and DHW Booster Heater



* For selection of Circuit Breaker(CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

OPERATION RANGE

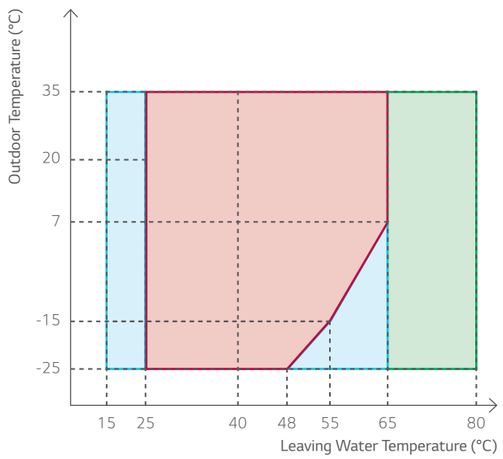
Cooling (Fan Coil Unit)



Continuous Operation

Operative

Heating



Continuous Operation

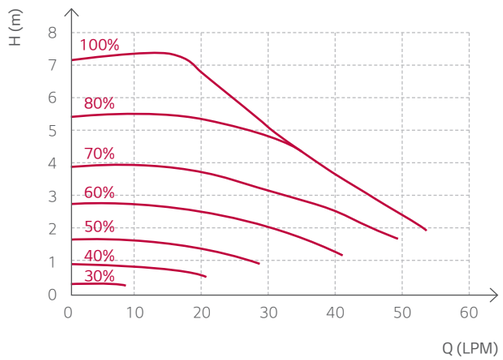
Booster heater operation only (DHW)

Back up heater (Accessory) required to achieve temp.

WATER PUMP

Capacity [kW]	Rated Flow Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure Drop [m] (Plate heat Ex.)	Serviceable Head [m]	Min. Flow Rate [LPM] (Recommend)
9	25.9	6.1	0.4	5.7	15

Model : GRUNDFOS UPM3K 20-75 CHBL

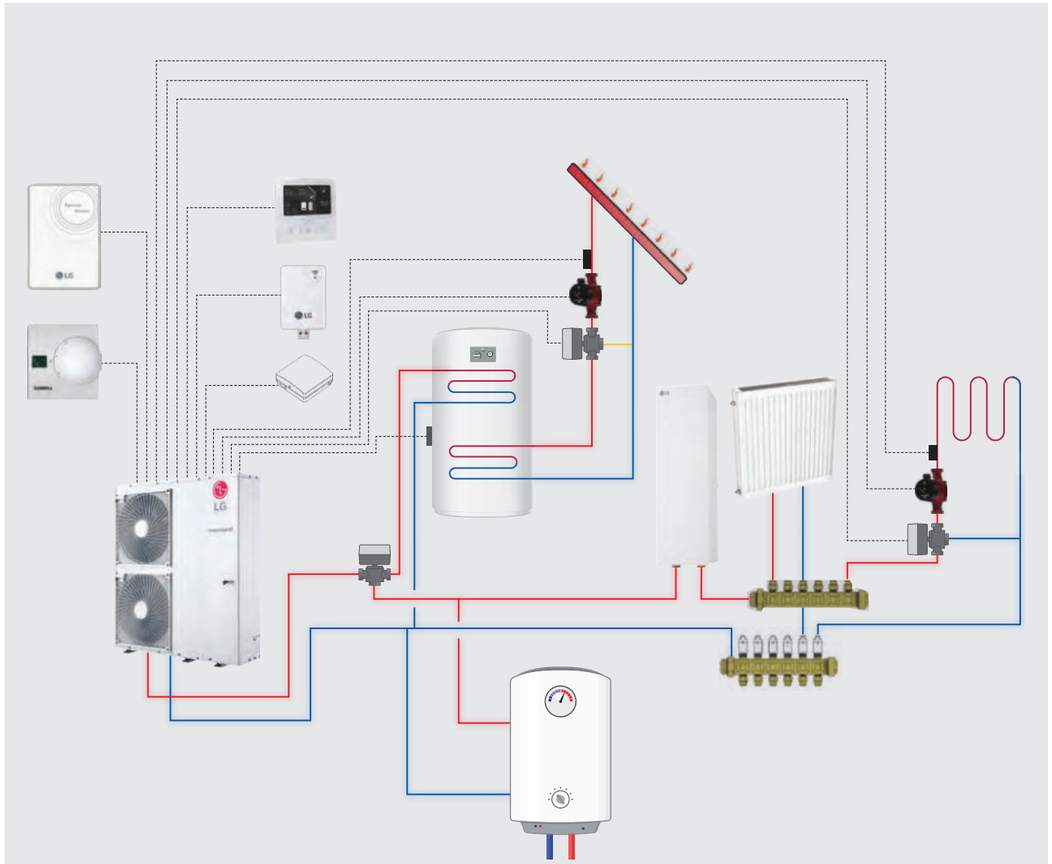


PRODUCT INFORMATION

THERMA V MONOBLOC - EXTERNAL DEVICE & WIRING

THERMA V - R32 Monobloc | THERMA V - R32 Silent Monobloc

SYSTEM SCHEMATIC



After calculating the water pipe head, additional pump should be installed if necessary.

ACCESSORY

Part Name	Part No.	Spec	Supply	Max. Length
DHW Tank kit	PHLTB (Monobloc)	5KΩ, Ø7, 12m ± 0.25m	Accessory	12m
Temp. Sensor for DHW Tank	PHRSTA0	5KΩ, Ø7, 12m ± 0.25m	Accessory	12m
Remote Controller (RS3)	PREMTW101	Wired, 10m	Default	
Extension wire for Remote Controller	PZCWRC1	10m	Accessory	10m
3 Way v/v actuator wire	-	AC 230V	Field scope	100m ↑
2 Way v/v actuator wire	-	AC 230V	Field scope	100m ↑
Mixing Temp. sensor	PRSTAT5K10	5kΩ thermistor, 10m	Accessory	10m
Temp. Sensor for Solar Thermal Kit	Included in PHLLA	Sensor 2EA 1) 5KΩ, Ø7, 12m 2) 5KΩ, Ø7, 12m	Accessory	12m
Room Temperature Sensor	PQRSTA0	Cable : 15m Sensor : 10KΩ	Accessory	15m
Back up Heater	HA031M E1 HA061M E1 HA063M E1	HA031M E1 : 3kW, 220-240V, 1Ø, 50Hz HA061M E1 : 6kW, 220-240V, 1Ø, 50Hz HA063M E1 : 6kW, 380-415V, 3Ø, 50Hz	Accessory	
Wire for Back up Heater	-	Power (H07RN-F) : 1.5mm² x 3C (1Ø 3kW), 4.0mm² x 3C (1Ø 6kW), 2.5mm² x 4C (3Ø 6kW) Comm.(H07RN-F) : 0.75mm² x 2C (1Ø 3kW / 3Ø 6kW), 0.75mm² x 4C (1Ø 6kW)	Field scope	
LG Wi-Fi Modem	PWFMDD200	USB Cable : 0.6 m Extension cable : 0.5 m	Accessory	
Extension cable for Wi-Fi Modem	PWYREW000	USB Extension cable : 10 m	Accessory	10m
Wire for Thermostat	-	220-240V	Field scope	100m ↑
Wire for 3rd Party boiler	-	Contact (H05RN-F) 0.75mm² x 2C	Field scope	
Dry Contact	PDRYCB000 (Simple Dry Contact) PDRYCB320 (8 Input))	PDRYCB000 : AC 220-240V PDRYCB320 : Non Voltage or 12 ~ 24V	Accessory	
Meter Interface	PENKTH000	DC 12V	Accessory	
Modbus RTU Gateway	PMBUSB00A	DC 12V	Accessory	
PI485 Gateway	PMNP14A1		Accessory	

PRODUCT INFORMATION

THERMA V R32 HYDROSPLIT

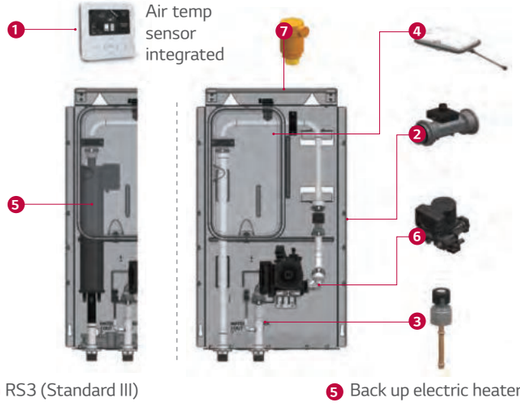
Outdoor Unit

Indoor Unit

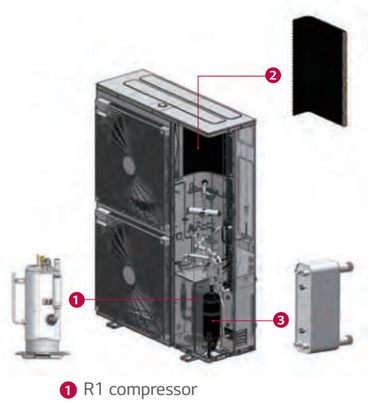
Controller

No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi Modem (Accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor Integrated in RS3
3	Temperature Control Definition	Leaving Water Temperature
		Entering Water Temperature
		Room Air Temperature Base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Solar Water Heating	Need Solar Thermal System (Field scope)
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintain Time : 1 ~ 12 Hours
8	Pump Setting	Capacity Control
		Fixed Flow Rate
		Fixed ΔT
		Optimal Flow Rate
9	LG Heating Configurator	For Installer Setting with PC
10	2nd Circuit	Need Mixing Valve System (Field scope)
11	External Water Pump	Contact Signal (On/Off)
12	3rd Party Boiler	On/Off Control
13	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
14	Energy State	ES1 ~ ES8
15	LG Central Controller	ACP, AC Smart, AC Ez Touch
16	PI485 Gateway	Accessory for Central Control
17	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus
18	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

Key Components

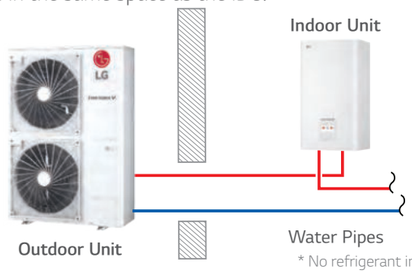


1. RS3 (Standard III) (Attached on the front panel)
2. Flow sensor (SIKA)
3. Water pressure sensor (SENSATA)
4. Expansion vessel (8ℓ)
5. Back up electric heater (6kW, accessory)
6. Water pump (GRUNDFOS)
7. Air vent valve

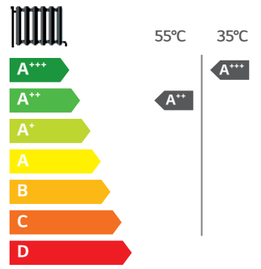


1. R1 compressor
2. Black Fin heat exchanger (Ref/air)
3. Plate type heat exchanger (Ref/water)

With innovation and safety in mind, the **LG THERMA V R32 HYDROSPLIT** separates the Indoor unit (IDU) and outdoor unit (ODU), connecting them through water pipes. The unit's heat exchanger is located within the ODU, reducing the risk of indoor refrigerant leakage. Quick and easy installation is made possible by the IDU's built-in hydronic components such as water pump, expansion tank, and air vent as well as the fact that the electric wiring can be done in the same space as the IDU.



- Space Heating



011-1W0382 Black Fin R1 Compressor™ LG ThinQ

Enhanced Installation Flexibility

- Water pipes connects IDU & ODU
- Hydronic components built into IDU : Water pump, expansion tank, air vent
- User-friendly installation settings interface

High Efficiency & Operational Range

- R32 Refrigerant
- SCOP up to 4.60 (Average climate / Low temp. application) : A+++
- COP up to 5.04 (Outdoor air 7°C / Leaving water 35°C)
- Leaving water temperature up to 65°C
- Expanded operative range of solar thermal system

Innovative Design & Technology

- Built-in water flow & pressure sensors to monitor real-time water circuit
- Advanced water pump control (Optimal flow rate, fixed capacity, fixed flow rate, fixed △T)
- Enhanced 2nd circuit control logic

Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		12	14	16
R32 Hydrosplit	1Ø 230V	● (12.0) ● (12.0)	● (14.0) ● (12.0)	● (16.0) ● (16.0)
	3Ø 400V	● (12.0) ● (12.0)	● (14.0) ● (14.0)	● (16.0) ● (16.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit	HU121MRB U30 HU123MRB U30	HU141MRB U30 HU143MRB U30	HU161MRB U30 HU163MRB U30
			Indoor Unit	HN1600MB NK0		
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.60	4.57	4.55
		Rated Heat Output (Prated)	kW	12	12	12
		Seasonal Space Heating Efficiency (ηs)	%	181	180	179
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A+++
		Annual Energy Consumption	kWh	5,165	5,425	5,586
	Average Climate Water Outlet 55°C	SCOP	-	3.50	3.47	3.45
		Rated Heat Output (Prated)	kW	12	12	12
		Seasonal Space Heating Efficiency (ηs)	%	137	136	135
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A++	A++	A++
		Annual Energy Consumption	kWh	6,788	6,992	7,187

PRODUCT INFORMATION

THERMA V R32 HYDROSPLIT

SPECIFICATION

Nominal Capacity and Nominal Input				Indoor unit	HN1600MB NK0		
Condition		OAT (°C) DB / WB	LWT (°C)	Outdoor Unit	HU121MRB U30 HU123MRB U30	HU141MRB U30 HU143MRB U30	HU161MRB U30 HU163MRB U30
Capacity	Cooling	35 / 24	18	kW	12.00	14.00	16.00
		35 / 24	7	kW	12.00	14.00	16.00
	Heating	7 / 6	35	kW	12.00	14.00	16.00
		7 / 6	55	kW	11.00	11.50	12.00
		2 / 1	35	kW	11.00	12.00	13.80
Power Input	Cooling	35 / 24	18	kW	2.53	3.26	4.00
		35 / 24	7	kW	4.44	5.38	6.40
	Heating	7 / 6	35	kW	2.38	2.86	3.33
		7 / 6	55	kW	3.79	4.04	4.29
		2 / 1	35	kW	3.01	3.31	3.83
EER	Cooling	35 / 24	18	W/W	4.75	4.30	4.00
		35 / 24	7	W/W	2.70	2.60	2.50
COP	Heating	7 / 6	35	W/W	5.04	4.89	4.80
		7 / 6	55	W/W	2.90	2.85	2.80
		2 / 1	35	W/W	3.65	3.63	3.60
Rated Water Flow Rate (at LWT 35 °C)				LPM	34.5	40.3	46.0

Indoor Unit				HN1600MB NK0
Operation Range (LWT)	Cooling[1]	Min. ~ Max.	°C DB	5 ~ 27
	Heating	Min. ~ Max.	°C DB	15 ~ 65
	DHW[2]	Min. ~ Max.	°C DB	15 ~ 80
Water Pump	Type		-	Canned type for hot water circulation
	Model			GRUNDFOS UPML 20-105 CHBL
	Motor Type		-	BLDC
	Steps of Pump Performance		-	Variable capacity 10% to 100%
	Power input	Min. ~ Max.	W	14 ~ 140
Flow Sensor	Type		-	Vortex
	Model		-	SIKA VVX20
	Measuring Range	Min. ~ Max.	ℓ/min	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	15
Water Pressure Sensor	Model	-	-	Sensata OFM(2HMP)
	Measuring Range	Min. ~ Max.	bar (G)	0 ~ 20
Expansion Vessel	Volume	Max.	ℓ	8
	Water pressure	Max.	bar	3
	Water pressure	Pre-charged	bar	1
Relief Valve	Pressure Limit	Upper Limit	bar	3
Devices for Water Circuit	-		-	Relief Valve / Flow Sensor
			-	Drain hose
			-	Pressure Sensor / Air Vent Valve
Piping Connections	Water Circuit	Inlet	mm (Inch)	Male PT 25.4(1)
		Outlet	mm (Inch)	Male PT 25.4(1)
Wiring Connections	Power and Communication Cable (Included Earth, H07RN-F)		mm^2 x cores	0.75 x 4
Sound Power Level	Heating	Rated	dB(A)	44
Dimensions	Unit	W x H x D	mm	490 x 850 x 315
	Packed Unit	W x H x D	mm	563 x1,082 x 375
Weight	Unit		kg	30.3
	Packed Unit		kg	34.3

Back up Heater[3](Accessory)

Electrical Specification		HA061B E1	HA063B E1
Type	-	Sheath	Sheath
Number of Heating Coil	EA	2	3
Max. Power Consumption	kW	3.0 + 3.0	2.0 + 2.0 +2.0
Operation	-	Automatic	Automatic
Heating Steps	Step	2	2
Power Supply	V, Ø, Hz	220-240, 1, 50	380-415, 3, 50
Power Cable (Included Earth, H07RN-F)	mm^2 x Cores	4.0 x 3C	2.5 x 4C
Communication Cable (H07RN-F)	mm^2 x Cores	0.75 x 4C	0.75 x 2C

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 °C.
2) DHW 58 ~ 80°C Operating is available only when the booster heater is operating.
3) This unit can be installed inside of indoor unit and will be available from 2021.

Outdoor Units				HU121MRB U30	HU141MRB U30	HU161MRB U30	HU123MRB U30	HU143MRB U30	HU163MRB U30
Operation Range (OAT)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Hermetic Sealed Scroll					
	Model		Model x No.	RJB036MAA x 1					
	Motor Type		-	BLDC	BLDC	BLDC	BLDC	BLDC	BLDC
	Displacement		cm^3/Rev.	31.6	31.6	31.6	31.6	31.6	31.6
Refrigerant	Type		-	R32	R32	R32	R32	R32	R32
	GWP (Global Warming Potential)		-	675	675	675	675	675	675
	Precharged Amount		g	2,100	2,100	2,100	2,100	2,100	2,100
	t-CO_2 eq.		-	1.418	1.418	1.418	1.418	1.418	1.418
	Control		-	Electronic Expansion Valve					
Refrigerant Oil	Type		-	FW68D	FW68D	FW68D	FW68D	FW68D	FW68D
	Charged Volume		cc x No.	1,100	1,100	1,100	1,100	1,100	1,100
Heat Exchanger	Type		-	Fin & Tube	Fin & Tube	Fin & Tube	Fin & Tube	Fin & Tube	Fin & Tube
	Quantity		-	2	2	2	2	2	2
	Specification	Row	EA	32	32	32	32	32	32
		Column	EA	2	2	2	2	2	2
		FPI	EA	14	14	14	14	14	14
Plate Heat Exchanger	Type		-	Brazed Plate HEX					
	Quantity		-	1	1	1	1	1	1
	Number of Plate		EA	76	76	76	76	76	76
Piping Connections	Water Circuit	Inlet	mm (Inch)	Male PT 25.4(1)					
		Outlet	mm (Inch)	Male PT 25.4(1)					
Strainer[1]	Mesh size		-	30 mesh	30 mesh	30 mesh	30 mesh	30 mesh	30 mesh
	Material		-	Stainless Steel					
Fan	Type		-	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	76.3 x 2	76.3 x 2	76.3 x 2	76.3 x 2	76.3 x 2	76.3 x 2
Fan Motor	Type		-	BLDC	BLDC	BLDC	BLDC	BLDC	BLDC
	Output		W x No.	124 x 2	124 x 2	124 x 2	124 x 2	124 x 2	124 x 2
Sound Power Level	Heating	Max.	dB(A)	67	68	69	67	68	69
		Rated	dB(A)	61	62	63	61	62	63
		Low Noise	dB(A)	60	60	60	60	60	60
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330					
	Packed Unit	W x H x D	mm	1,140 x 1,462 x 461					
Weight	Unit		kg	91.7	91.7	91.7	91.7	91.7	91.7
	Packed Unit		kg	104.7	104.7	104.7	104.7	104.7	104.7

Electrical Specification				HU121MRB U30	HU141MRB U30	HU161MRB U30	HU123MRB U30	HU143MRB U30	HU163MRB U30
Power Supply			V, Ø, Hz	220-240, 1, 50			380-415, 3, 50		
Maximum Running Current	Cooling		A	33	34	35	10	10.5	11
	Heating		A	33	34	35	12	12	13
Peak Control Running Current	Cooling	Step1	A	23	24	25	8	9	10
		Step2	A	20	21	22	6	7	8
	Heating	Step1	A	23	24	25	8	9	10
		Step2	A	20	21	22	6	7	8
Rated Running Current	Cooling		A	11.2	14.4	17.7	3.7	4.8	5.9
	Heating		A	10.6	12.7	14.8	3.5	4.2	4.9
Circuit Breaker (Minimum)			A	40	40	40	16	16	16
Wiring Connections	Power Supply Cable (Included Earth, H07RN-F)		mm^2 x cores	6.0 x 3	6.0 x 3	6.0 x 3	2.5 x 5	2.5 x 5	2.5 x 5

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature
1) Strainer is provided as a loose item.

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R32 HYDROSPLIT

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HU121MRB U30 + HN1600MB NK0 / HU123MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 34.5 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	12.00	5.19	12.00	5.61	12.00	6.08	12.00	6.44	12.00	7.04	12.00	7.50	12.00	8.01
20°C DB	12.00	5.00	12.00	5.60	12.00	6.36	12.00	6.99	12.00	8.17	12.00	9.19	12.00	10.49
30°C DB	12.00	3.89	12.00	4.38	12.00	5.02	12.00	5.55	12.00	6.57	12.00	7.49	12.00	8.68
35°C DB	12.00	3.29	12.00	3.68	12.00	4.19	12.00	4.60	12.00	5.39	12.00	6.08	12.00	6.96
40°C DB	11.75	2.69	12.00	3.06	12.00	3.44	12.00	3.75	12.00	4.32	12.00	4.81	12.00	5.42
45°C DB	11.50	2.20	12.00	2.53	12.00	2.81	12.00	3.04	12.00	3.45	12.00	3.80	12.00	4.21

HU141MRB U30 + HN1600MB NK0 / HU143MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 40.3 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	14.00	4.82	14.00	5.21	14.00	5.62	14.00	5.91	14.00	6.36	14.00	6.68	14.00	7.00
20°C DB	14.00	4.67	14.00	5.24	14.00	5.93	14.00	6.47	14.00	7.44	14.00	8.22	14.00	9.13
30°C DB	14.00	3.66	14.00	4.14	14.00	4.73	14.00	5.21	14.00	6.10	14.00	6.85	14.00	7.78
35°C DB	14.00	3.10	14.00	3.49	14.00	3.96	14.00	4.34	14.00	5.04	14.00	5.63	14.00	6.35
40°C DB	13.75	2.56	14.00	2.90	14.00	3.26	14.00	3.55	14.00	4.07	14.00	4.49	14.00	5.01
45°C DB	13.50	2.10	14.00	2.40	14.00	2.67	14.00	2.89	14.00	3.26	14.00	3.57	14.00	3.92

HU161MRB U30 + HN1600MB NK0 / HU163MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 46.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	16.00	4.49	16.00	4.92	16.00	5.34	16.00	5.60	16.00	5.94	16.00	6.12	16.00	6.25
20°C DB	16.00	4.11	16.00	4.65	16.00	5.26	16.00	5.69	16.00	6.39	16.00	6.86	16.00	7.34
30°C DB	16.00	3.26	16.00	3.71	16.00	4.24	16.00	4.64	16.00	5.33	16.00	5.85	16.00	6.43
35°C DB	16.00	2.82	16.00	3.19	16.00	3.64	16.00	3.97	16.00	4.56	16.00	5.01	16.00	5.51
40°C DB	15.75	2.38	16.00	2.72	16.00	3.08	16.00	3.35	16.00	3.82	16.00	4.18	16.00	4.59
45°C DB	15.50	2.01	16.00	2.31	16.00	2.60	16.00	2.81	16.00	3.18	16.00	3.46	16.00	3.77

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU121MRB U30 + HN1600MB NK0 / HU123MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 34.5 LPM								Water Flow Rate 21.6 LPM				Water Flow Rate 17.3 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	9.66	2.13	8.85	1.85	8.42	1.58	8.29	1.47	-	-	-	-	-	-	-	-
-20°C DB	10.13	2.34	10.00	2.13	9.88	1.91	9.75	1.70	9.63	1.49	-	-	-	-	-	-
-15°C DB	11.50	2.55	11.50	2.40	11.50	2.25	11.50	2.10	11.50	1.95	11.50	1.80	-	-	-	-
-7°C DB	12.00	3.16	12.00	3.00	12.00	2.85	12.00	2.70	12.00	2.55	12.00	2.40	12.00	2.25	-	-
-4°C DB	12.00	3.58	12.00	3.26	12.00	2.97	12.00	2.78	12.00	2.59	12.00	2.39	12.00	2.20	12.00	2.05
-2°C DB	12.00	3.80	12.00	3.45	12.00	3.14	12.00	2.90	12.00	2.77	12.00	2.53	12.00	2.34	12.00	2.15
2°C DB	12.00	4.42	12.00	3.86	12.00	3.46	12.00	3.16	12.00	2.93	12.00	2.73	12.00	2.54	12.00	2.35
7°C DB	12.00	5.25	12.00	5.04	12.00	4.28	12.00	3.93	12.00	3.60	12.00	3.10	12.00	2.82	12.00	2.60
10°C DB	12.00	5.58	12.00	5.29	12.00	4.62	12.00	4.17	12.00	3.83	12.00	3.46	12.00	3.10	12.00	2.75
15°C DB	12.00	6.49	12.00	5.89	12.00	5.26	12.00	4.90	12.00	4.35	12.00	3.87	12.00	3.45	12.00	3.09
18°C DB	12.00	6.94	12.00	6.30	12.00	5.60	12.00	5.33	12.00	4.71	12.00	4.18	12.00	3.72	12.00	3.32
20°C DB	12.00	7.23	12.00	6.56	12.00	5.93	12.00	5.38	12.00	4.96	12.00	4.38	12.00	3.89	12.00	3.47
35°C DB	12.00	8.50	12.00	7.87	12.00	7.22	12.00	6.90	12.00	6.20	12.00	5.25	12.00	4.94	12.00	4.54

HU141MRB U30 + HN1600MB NK0 / HU143MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 40.3 LPM								Water Flow Rate 25.2 LPM				Water Flow Rate 20.1 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	10.04	2.08	9.21	1.80	8.76	1.53	8.62	1.41	-	-	-	-	-	-	-	-
-20°C DB	11.82	2.26	11.25	2.05	10.95	1.84	10.67	1.63	10.59	1.55	-	-	-	-	-	-
-15°C DB	12.52	2.57	12.90	2.30	13.26	2.15	12.88	2.00	12.81	1.85	12.63	1.72	-	-	-	-
-7°C DB	14.00	3.12	14.00	2.95	14.00	2.79	14.00	2.63	14.00	2.46	14.00	2.30	14.00	2.14	-	-
-4°C DB	14.00	3.47	14.00	3.16	14.00	2.90	14.00	2.70	14.00	2.50	14.00	2.35	14.00	2.10	14.00	1.96
-2°C DB	14.00	3.68	14.00	3.34	14.00	3.04	14.00	2.82	14.00	2.68	14.00	2.43	14.00	2.24	14.00	2.05
2°C DB	14.00	4.26	14.00	3.72	14.00	3.34	14.00	3.04	14.00	2.83	14.00	2.63	14.00	2.44	14.00	2.25
7°C DB	14.00	5.09	14.00	4.89	14.00	4.17	14.00	3.85	14.00	3.50	14.00	3.10	14.00	2.82	14.00	2.51
10°C DB	14.00	5.42	14.00	4.94	14.00	4.48	14.00	4.17	14.00	3.83	14.00	3.38	14.00	3.03	14.00	2.73
15°C DB	14.00	6.30	14.00	5.72	14.00	5.13	14.00	4.90	14.00	4.35	14.00	3.87	14.00	3.45	14.00	3.09
18°C DB	14.00	6.74	14.00	6.12	14.00	5.43	14.00	5.33	14.00	4.71	14.00	4.18	14.00	3.72	14.00	3.32
20°C DB	14.00	7.02	14.00	6.37	14.00	5.76	14.00	5.38	14.00	4.96	14.00	4.38	14.00	3.89	14.00	3.47
35°C DB	14.00	8.24	14.00	7.64	14.00	7.00	14.00	6.90	14.00	6.20	14.00	5.25	14.00	4.94	14.00	4.54

HU161MRB U30 + HN1600MB NK0 / HU163MRB U30 + HN1600MB NK0

Outdoor Temperature	Water Flow Rate 46.0 LPM								Water Flow Rate 28.8 LPM				Water Flow Rate 23.0 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	10.98	1.96	10.00	1.70	9.50	1.44	9.33	1.36	-	-	-	-	-	-	-	-
-20°C DB	13.43	2.34	12.54	2.18	12.03	2.08	11.78	1.60	11.47	1.56	-	-	-	-	-	-
-15°C DB	14.23	2.70	14.39	2.26	14.50	2.17	13.95	1.92	13.86	1.78	13.12	1.65	-	-	-	-
-7°C DB	16.00	3.05	16.00	2.80	16.00	2.64	16.00	2.48	16.00	2.31	16.00	2.15	16.00	1.99	-	-
-4°C DB	16.00	3.36	16.00	3.07	16.00	2.80	16.00	2.59	16.00	2.40	16.00	2.20	16.00	2.05	16.00	1.82
-2°C DB	16.00	3.51	16.00	3.19	16.00	2.91	16.00	2.76	16.00	2.51	16.00	2.30	16.00	2.10	16.00	1.92
2°C DB	16.00	3.76	16.00	3.41	16.00	3.14	16.00	3.13	16.00	2.83	16.00	2.56	16.00	2.33	16.00	2.12
7°C DB	16.00	5.13	16.00	4.80	16.00	4.09	16.00	3.72	16.00	3.38	16.00	2.96	16.00	2.67	16.00	2.41
10°C DB	16.00	5.71	16.00	5.08	16.00	4.51	16.00	4.02	16.00	3.60	16.00	3.24	16.00	2.89	16.00	2.60
15°C DB	16.00	6.76	16.00	5.97	16.00	5.28	16.00	4.67	16.00	4.16	16.00	3.69	16.00	3.29	16.00	2.95
18°C DB	16.00	7.38	16.00	6.52	16.00	5.75	16.00	5.07	16.00	4.49	16.00	3.98	16.00	3.54	16.00	3.16
20°C DB	16.00	7.78	16.00	6.87	16.00	6.06	16.00	5.34	16.00	4.72	16.00	4.17	16.00	3.71	16.00	3.31
35°C DB	16.00	8.62	16.00	7.98	16.00	7.28	16.00	6.57	16.00	5.90	16.00	5.28	16.00	4.71	16.00	3.81

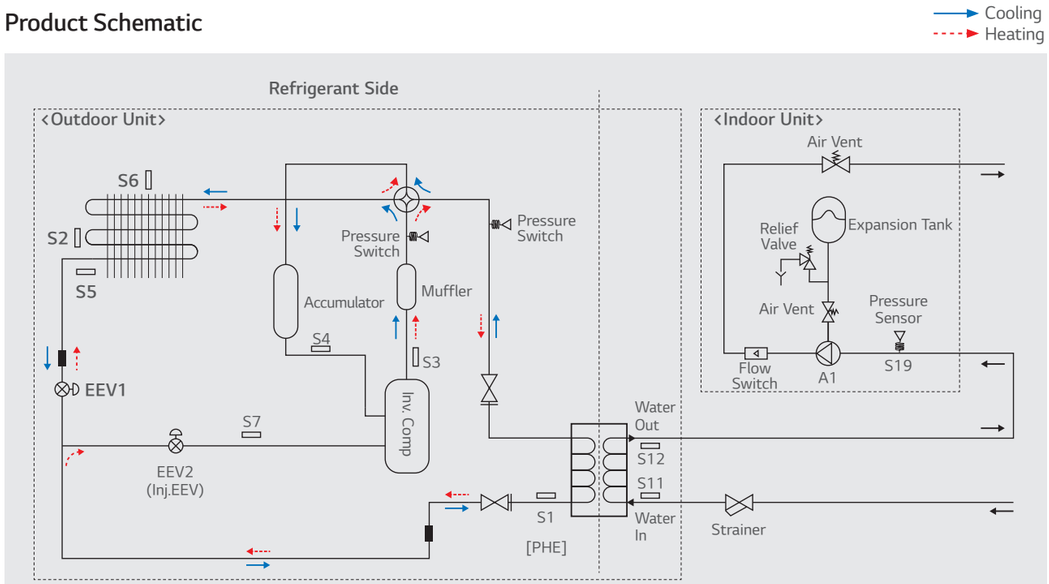
Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate. 4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.
5. The shaded areas are not guaranteed continuous operation.

PRODUCT INFORMATION

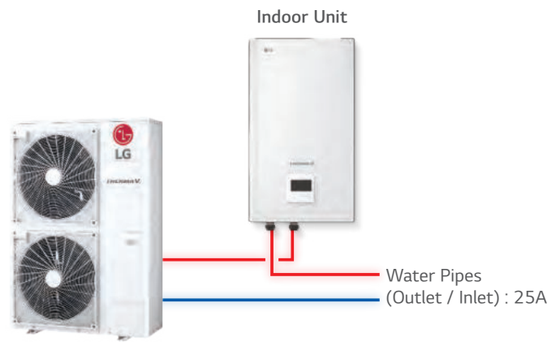
THERMA V R32 HYDROSPLIT

DRAWING

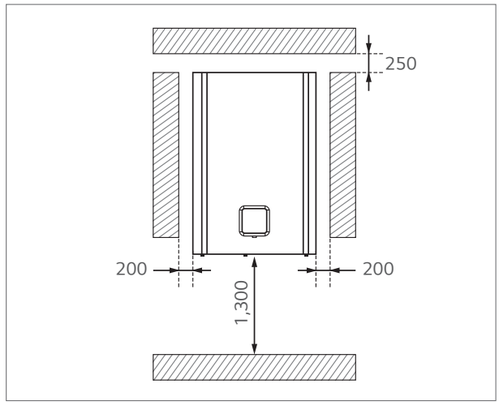
Product Schematic



<Inside of Hydrosplit Type>

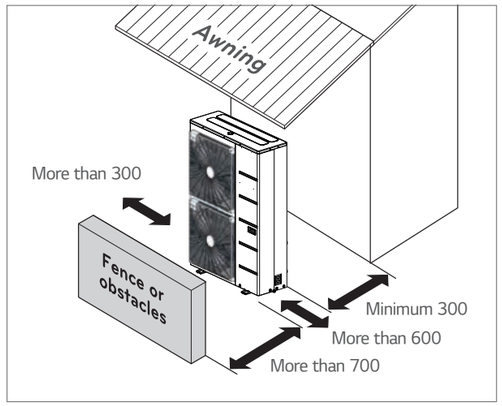


Installation & SVC Space



Indoor Unit SVC Space

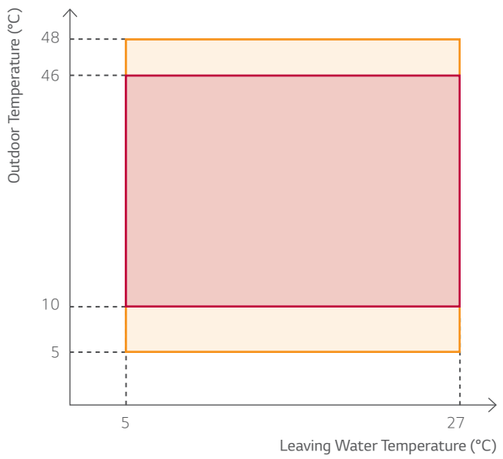
Minimum service space [unit : mm]



Outdoor Unit SVC Space

OPERATION RANGE

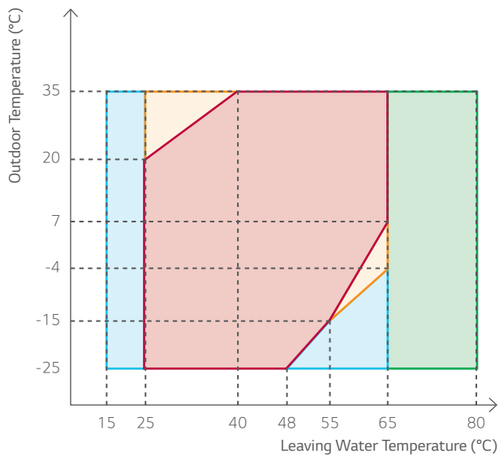
Cooling (Fan Coil Unit)



Continuous Operation

Operative

Heating



Continuous Operation

Operative

Booster heater operation only (DHW)

Back up heater (Accessory) required to achieve temp.

PRODUCT INFORMATION

THERMA V R32 HYDROSPLIT

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Thermostat	230V AC, H/C	TB2 (17 / 18 / 19 / 20), TB5 (28)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	TB1 (8 / 9 / 10)
3	2 Way Valve	2 Wire, 230V AC	TB2 (14 / 15 / 16)
4	Solar Pump	230V AC	TB1 (4 / 5)
5	3 Way Valve (B) for Solar Pump	3 Wire, SPDT, 230V AC	TB1 (1 / 2 / 3)
6	Outdoor Unit	230V AC	TB2 (11 / 12 / 13)
7	Booster Heater	230V AC	TB1 (6 / 7)
8	DHW Tank Kit	PHLTA (1Ø, Split)	TB3 (1 / 2)
9	Power Supply for Electric Heaters	1Ø, 220-240V, 50Hz 3Ø, 380-415V, 50Hz	TB3 (3 / 4 / 5 / 6)
10	3rd Party Controller / LG Meter Interface	5V DC	TB4 (21 / 22)
11	Mixing Pump	230V AC	TB5 (23 / 24)
12	Mixing Valve	3 Wire, 230V AC	TB5 (25 / 26 / 27)

TERMINAL BLOCK : TB1

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

TERMINAL BLOCK : TB2

11	12	13	14	15	16	17	18	19	20
1 (L)	2 (N)	3	L1	L2	N	L	N	L1	L2
OUTDOOR UNIT			2 WAY VALVE (A)			THERMOSTAT (Default : 230V AC)			

TERMINAL BLOCK : TB3

1	2	3	4	5	6
L	N	R(L)	S	T	N
TO ELB FOR DHW TANK E/HEATER		POWER SUPPLY (1Ø, 220-240V, 50Hz) (3Ø, 380-415V, 50Hz)			

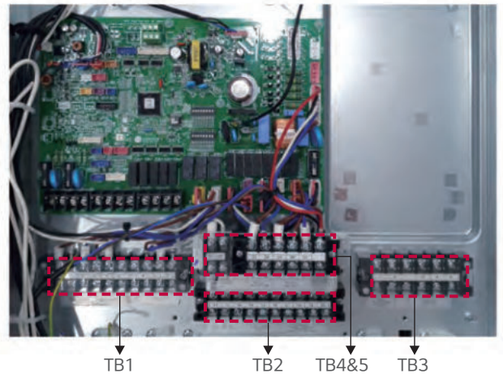
TERMINAL BLOCK : TB4 & 5

21	22
A	B
3rd PARTY CONTROLLER (5V DC)	

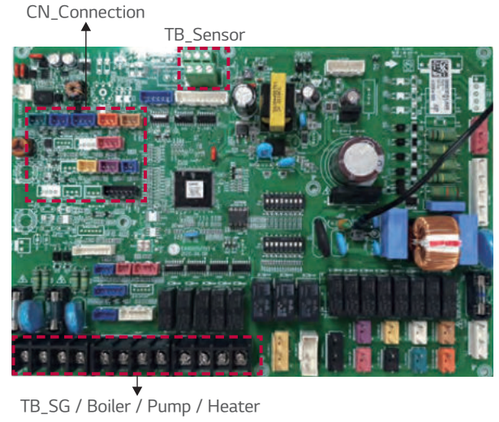
23	24	25	26	27	28
L	N	L1	L2	N	L3
MIX PUMP		MIXING VALVE			THERMOSTAT

PCB INFORMATION

No.	Name	Remark	Connection
1	Remote Air sensor	PQRSTA0	CN_ROOM1
2	Add Remote Air Sensor	PQRSTA0	CN_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	Water Tank Sensor	PHRSTA0	CN_TH4
5	Temp. Sensor for Back up Heater	Included in Back up Heater	CN_TH3
6	Solar Pipe Sensor	PT1000 (Field Scope)	TB_SENSOR
7	RS3 Remote Controller	-	CN_REMO
8	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
9	Wi-Fi Modem	PWFMDD200	CN_WF
10	External Pump	Contact	TB_EXT_PUMP
11	Boiler	Contact	TB_BOILER
12	Energy State (Smart Grid)	Contact	TB_SG1 / TB_SG2



[Terminal block]



[Main PCB]

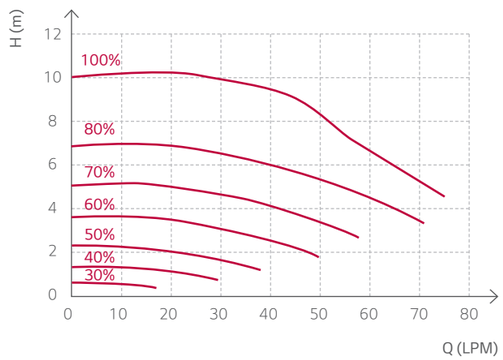
PRODUCT INFORMATION

THERMA V R32 HYDROSPLIT

WATER PUMP

Capacity [kW]	Rated Flow-Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure Drop [m] (Plate heat Ex.)	Serviceable Head [m]	Min. flow rate [LPM] (Recommend)
16	46.0	9.0	1.4	7.6	15
14	40.3	9.3	1.1	8.2	
12	34.5	9.8	0.8	9.0	

GRUNDFOS UPML 20-105 CHBL



Advanced Pump Control Options

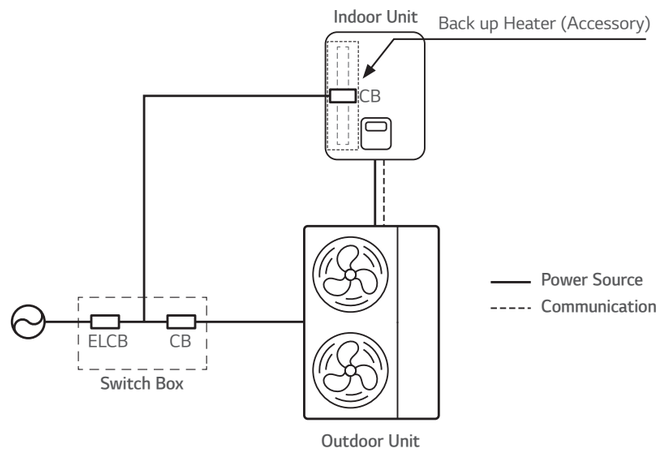
Various Pump Control Options are possible for the User's convenience. Now, water flow rate can be changed as per heat load condition, therefore it makes more energy efficient operation during low load condition.

Options	Description	Water Flow Change as per load condition
Pump Capacity	It operates with the capacity set for the water pump. (Range 10 ~ 100%)	No
Fixed Flow Rate	Automatically controlled to maintain the set flow rate. (Range 17 ~ 46 LPM)	No
Fixed ΔT*	Automatically controlled to maintain the set ΔT. (Range 5 ~ 13°C)	Yes
Optimal Flow Rate (Default)	ΔT is changed as per Target Temp.	Yes

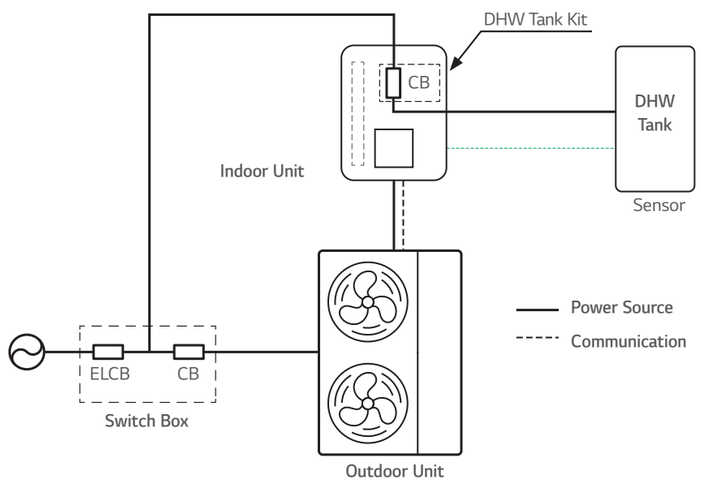
*ΔT = temperature difference between inlet and outlet water temperature.

POWER SUPPLY DIAGRAM

Power Supply for Heat Pump and Back up Heater



Power Supply for DHW Boost Heater



* For Hydrosplit, DHW Tank Kit (CB and Relay) should be installed into control box of Indoor unit.
* For selection of Circuit Breaker (CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

Outdoor Unit

Indoor Unit

Controller

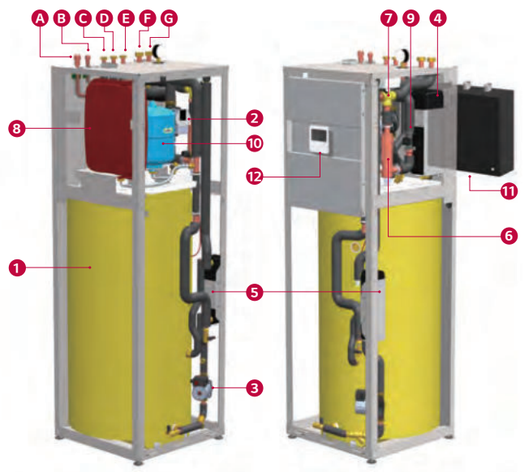
No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi module (accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor integrated in RS3
3	Temperature Control Definition	Leaving Water temperature
		Entering Water Temperature
		Room Air Temperature base Control
		Simultaneous Control with Room Air and Water Temperature
4	Weather Dependent Operation	Seasonal Auto Operation
5	Air Purge Operation	Pump Test Run (1 Hour)
6	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation maintain time : 1 ~ 12 hours
7	Pump Setting	Capacity Control
8	LG Heating Configurator	For Installer Setting with PC
9	2nd Circuit	Need Mixing Valve System (Field scope)
10	External Water Pump	Contact Signal (On/Off)
11	3rd Party Boiler	On/Off control
12	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
13	Smart Grid (SG)	SGN / SG1 / SG2 / SG3
14	LG Central Controller	ACP, AC Smart, AC Ez Touch
15	PI485 Gateway	Accessory for Central Control
16	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus* (Need PI485 and Modbus RTU Gateway)
17	Low Noise Mode Operation	Limiting Max. Fan RPM and Comp. Hz

* Direct Modbus communication without Modbus RTU Gateway is not supported.

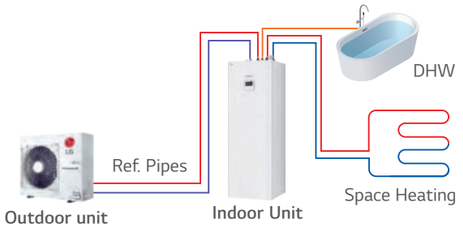
Key Components

1. DHW storage tank (200ℓ)
2. Main water pump
3. Water pump for DHW charging
4. Main plate heat exchanger (Ref / Water)
5. Plate heat exchanger for DHW (Water / DHW)
6. Back up electric heater (Max. 6kW)
7. 3 Way diverting valve
8. Expansion vessel for heating (12ℓ)
9. Flow sensor
10. Expansion vessel for DHW (8ℓ, Option)
11. Buffer tank (40ℓ, Option)
12. RS3 Remote controller (Attached on the front panel)

A. 5/8" Refrigerant gas pipe
B. 3/8" Refrigerant liquid pipe
C. G3/4" Domestic hot water outlet
D. G3/4" Domestic cold water inlet
E. G3/4" DHW Recirculation
F. G1" Heating circuit inlet
G. G1" Heating circuit outlet



IWT (Integrated Water Tank) is integrated unit that indoor unit is combined with domestic hot water tank while outdoor unit is separately located outside. It is more suitable for the house with less indoor space, because hydronic components such as DHW tank and buffer tank normally installed additionally are integrated as one unit.
THE **LG THERMA V R32 IWT** designed specifically for the new and renovated housing markets is LG's highly-efficient product that can deliver effective space heating and hot water supply, as it applies the low Global Warming Potential (GWP) R32 refrigerant and the revolutionary R1 scroll compressor.



All-in-one Integration

- Quick & easy installation
- DHW tank & hydronic component integration
- Integrated max. 6kW back up heater
- Integrated expansion tank for heating (12ℓ)

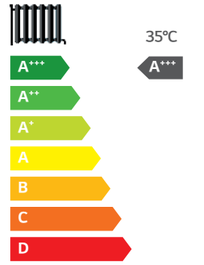
Enhanced Installation Flexibility

- Light weight & compact indoor unit : only 2 installers required
- Max. 50m refrigerant piping and 3 Way piping connection availability
- Insertable buffer tank (40ℓ) & expansion tank for DHW circuit (8ℓ) (Optional)

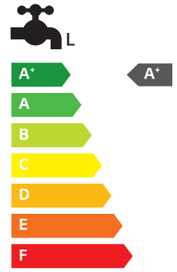
High Efficiency

- SCOP up to 4.52 (Average climate / Low temp. application): A+++
- DHW heating efficiency 125% (Profile L): A+

- Space Heating



- DHW Heating



011-1W0407

R32 | 65°C | A+++ Black Fin | R1 Compressor™ | LG ThinQ

Line up

● : Heating Capacity(kW)
● : Cooling Capacity(kW)

Capacity (kW)		5	7	9
R32 IWT	1Ø 230V	● (5.5) ● (5.5)	● (7.0) ● (7.0)	● (9.0) ● (9.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit	HU051MR U44	HU071MR U44	HU091MR U44
			Indoor Unit	HN0916T NB1		
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.52	4.47	4.45
		Rated Heat Output (P_{rated})	kW	6	6	6
		Seasonal Space Heating Efficiency (η_s)	%	178	176	175
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+++	A+++	A+++
		Annual Energy Consumption	kWh	2,557	2,658	2,922
	Average Climate Water Outlet 55°C	SCOP	-	3.01	3	3.03
		Rated Heat Output (Pr_{ated})	kW	6	6	6
		Seasonal Space Heating Efficiency (η_s)	%	117	117	118
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+	A+	A+
		Annual Energy Consumption	kWh	3,786	3,827	3,817
Domestic Hot Water Heating (According toEN16147)	General	Declared Load Profile	-	L	L	L
	Average Climate	Water Heating Efficiency (η_{wh})	%	125	125	125
		$SCOP_{DHW}$		2.89	2.89	2.89
		Water Heating Energy Eff. Class (A + to F Scale)	-	A+	A+	A+
		Annual Energy Consumption	kWh	815	815	815
	Warmer Climate	Water Heating Efficiency (η_{wh})	%	156	156	156
		$SCOP_{DHW}$		3.61	3.61	3.61
	Colder Climate	Water Heating Efficiency (η_{wh})	%	106	106	106
		$SCOP_{DHW}$		2.44	2.44	2.44

PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

SPECIFICATION

DHW Tank Integrated - Indoor Unit

Technical Specification				HN0916T NB1
Operation Range (LWT)	Cooling[1)]	Min. ~ Max.	℃	5 ~ 27
	Heating	Min. ~ Max.	℃	15 ~ 65
	DHW[2)]	Min. ~ Max.	℃	15 ~ 80
DHW Tank	Type		-	Hydro module with integrated hot water tank
	Material		-	Enameled steel
	Water Volume		ℓ	200
	Internal Thermal Protect limit		℃	85
	Rated pressure (Pressure limit)		bar	10
	Insulation	Material	-	Polyurethane foam
		Thickness	mm	50
		Heat loss (for 24hr)	kWh	1.46
Buffer Tank (Accessory)	Water Volume		ℓ	40
	Material		-	P235GH steel (DIN EN 10028 - 2)
	Insulation Material		-	Closed cell foamed rubber
	Dimensions(W x H x D)		mm	518 x 560 x 175
	Weight		kg	24
Main water pump	Type		-	Canned type for hot water circulation
	Model		-	WILO Para KU 25-130/8-75/12 iPWM1
	Motor type		-	BLDC
	Steps of Pump Performance		-	Variable speed 10% to 100%
	Power input		W	7.5 ~ 75
	Max. Head		m	7.7
DHW water Pump	Model		-	WILO ZRS 15/6-3 KU
	Steps of Speed		step	3
	Power input		W	45 ~ 85
	Max. Head		m	5.7
Expansion vessel	Water Volume		ℓ	12
	Factory pre-charge		bar	0.75
	Max.pressure		bar	3
DHW Expansion vessel (Accessory)	Water Volume		ℓ	8
	(Accessory)		bar	3
	Max. pressure		bar	10
	Weight		kg	2.5
Heat Exchanger (Refrigerant ↔ Water)	Type		-	Brazed Plate HEX
	Number of Plates		EA	24
Heat Exchanger (Water ↔ DHW)	Type		-	Brazed Plate HEX
	Number of Plates		EA	26
3 Way Valve	Flow coefficient		Kvs	8
Safety Valve	Pressure Limit	Upper Limit	bar	3
DHW Safety Valve	Pressure Limit	Upper Limit	bar	10
Flow Sensor	Model		-	SIKA VVXC9SNBUC00252P
	Measuring range	Min. ~ Max.	ℓ/min	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	7
Strainer	Type		-	Integrated to valve
	Mesh size		mesh	42.3 (0.6mm)
DHW Strainer	Mesh size		mesh	50.8 (0.5 mm)
Wiring Connections	Power and Communication Cable (H07RN-F)		mm² x cores	0.75 x 4
Piping Connections	Refrigerant Circuit	Gas		Ø 15.88 (5/8)
		Liquid	mm (Inch)	Ø 9.52 (3/8)
	Water Circuit	Inlet	mm (Inch)	Female Ø 22 (G1")
		Outlet	mm (Inch)	Female Ø 22 (G1")
	DHW Tank	Cold Inlet	mm (Inch)	Female Ø 19.75 (G3/4")
		Hot Outlet	mm (Inch)	Female Ø 19.75 (G3/4")
		Recirculation	mm (Inch)	Female Ø 19.75 (G3/4")
Sound Power Level			dB(A)	43
Dimensions (W x H x D)		Unit	mm	602 x 1,810 x 680
		Shipping	mm	640 x 2,050 x 790
Weight		Unit	kg	140
		Shipping	kg	152

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) When fan coil unit not used, Cooling Operation range is limited to 16 ~ 27 ℃.
2) DHW 58 ~ 80℃ Operating is available only when the booster heater is operating.

DHW Tank Integrated - Indoor Unit

Electrical Specification			HN0916T NB1
Electric Heater (Case 1)	Power Supply	V, Ø, Hz	220-240, 1, 50
	Power Supply Cable (H07RN-F) (Included Earth)	mm² x cores	4.0 x 3
	Power connection wiring[1)]	-	L1,N,Earth
	Heater Type	-	Sheath
	Number of Heating Coil	EA	1
	Capacity Combination	kW	2
	Operation	-	Automatic
	Rated Current	A	8.7
	Maximum Current	A	11.1
	Fuses	A	16
	Maximum electrical power	kW	2.52
Electric Heater (Case 2)	Power Supply	V, Ø, Hz	220-240, 1, 50
	Power Supply Cable (H07RN-F) (Included Earth)	mm² x cores	4.0 x 3
	Power connection wiring[1)]	-	L1,N,Earth (needs connect Bridge to L2 from L1)
	Heater Type	-	Sheath
	Number of Heating Coil	EA	2
	Capacity Combination	kW	2.0 + 2.0
	Operation	-	Automatic
	Rated Current	A	17.4
	Maximum Current	A	19.9
	Fuses	A	20
	Maximum electrical power	kW	4.52
Electric Heater (Case 3)	Power Supply	V, Ø, Hz	318-415, 3, 50
	Power Supply Cable (H07RN-F) (Included Earth)	mm² x cores	4.0 x 3
	Power connection wiring[1)]	-	L1,L2,L3,N,Earth
	Heater Type	-	Sheath
	Number of Heating Coil	EA	3
	Capacity Combination	kW	2.0 + 2.0 + 2.0
	Operation	-	Automatic
	Rated Current	A	8.7
	Maximum Current	A	11.1
	Fuses	A	16 + 16 + 16
	Maximum electrical power	kW	6.52

Nominal Capacity and Nominal Input				Indoor unit	HN0916T NB1		
Condition		OAT (℃) DB / WB	LWT (℃)	Outdoor Unit	HU051MR U44	HU071MR U44	HU091MR U44
Capacity	Cooling	35 / 24	18	kW	5.50	7.00	9.00
	Heating	7 / 6	35	kW	5.50	7.00	9.00
		7 / 6	55	kW	5.00	5.25	5.50
Power Input	Cooling	35 / 24	18	kW	1.20	1.59	2.20
	Heating	7 / 6	35	kW	1.22	1.56	2.05
		7 / 6	55	kW	1.92	2.02	2.12
EER	Cooling	35 / 24	18	W/W	4.60	4.40	4.10
COP	Heating	7 / 6	35	W/W	4.50	4.50	4.40
Rated Water Flow Rate (at LWT 35℃)				LPM	15.81	20.12	25.87

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature
1) The capacity of Electrical Heater and specification of circuit breaker depends on the choice of the connection power and wiring method.

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

SPECIFICATION

DHW Tank Integrated - Outdoor Unit

Outdoor Units				HU051MR U44	HU071MR U44	HU091MR U44
Operation Range (OAT)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Hermetic Sealed Scroll		
	Model		Model x No.	RJB036MAA x 1		
	Motor Type		-	BLDC	BLDC	BLDC
	Displacement		cm^3/Rev.	31.6	31.6	31.6
Refrigerant	Type		-	R32	R32	R32
	GWP (Global Warming Potential)		-	675	675	675
	Precharged Amount		g	1,500	1,500	1,500
	t-CO_2 eq.		-	1.013	1.013	1.013
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	FW68D	FW68D	FW68D
	Charged Volume		cc x No.	1,100	1,100	1,100
Piping Connections	Gas		Type	Flare	Flare	Flare
			mm (Inch)	Φ 15.88 (5/8)	Φ 15.88 (5/8)	Φ 15.88 (5/8)
	Liquid		Type	Flare	Flare	Flare
			mm (Inch)	Φ 9.52 (3/8)	Φ 9.52 (3/8)	Φ 9.52 (3/8)
	Piping Length	Standard	m	5	5	5
		Max.	m	50	50	50
	Piping Level	Max.	m	30	30	30
	Chargeless-Pipe Length		m	10	10	10
	Additional Charging Volume		g/m	30	30	30
Heat Exchanger	Quantity		EA	1	1	1
	Specification	Row	EA	2	2	2
		Column	EA	38	38	38
		FPI	EA	14	14	14
Fan	Type		-	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	60.0 x 1	60.0 x 1	60.0 x 1
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	124 x 1	124 x 1	124 x 1
Sound Power Level	Heating	Rated	dB(A)	60	61	61
		Low noise	dB(A)	58	58	58
Dimensions	Unit	W x H x D	mm	950 x 834 x 330	950 x 834 x 330	950 x 834 x 330
	Packed Unit	W x H x D	mm	1,065 x 618 x 461	1,065 x 618 x 461	1,065 x 618 x 461
Weight	Unit		kg	60	60	60
	Packed Unit		kg	65	65	65

Electrical Specification			HU051MR U44	HU071MR U44	HU091MR U44
Power Supply		V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50
Maximum Running Current	Cooling	A	14.2	15.7	23
	Heating	A	14.2	15.7	23
Peak Control Running Current	Cooling	A	13	14	15
	Heating	A	13	14	15
Rated Running Current	Cooling	A	5.3	7.1	9.8
	Heating	A	5.4	6.9	9.1
Circuit Breaker		A	16	20	25
Wiring Connections	Power Supply Cable (Included Earth)	mm^2 x cores	4.0 x 3	4.0 x 3	4.0 x 3

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HU051MR U44 + HN0916T NB1

Outdoor Temperature	Water Flow Rate 15.8 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	6.42	4.47	6.95	4.74	7.49	5.02	7.85	5.20	8.39	5.47	8.75	5.66	9.11	5.84
20°C DB	6.05	3.80	6.37	4.16	6.70	4.52	6.91	4.76	7.23	5.12	7.45	5.36	7.66	5.60
30°C DB	5.68	3.13	5.79	3.58	5.90	4.03	5.97	4.33	6.08	4.77	6.15	5.07	6.22	5.37
35°C DB	5.50	2.80	5.50	3.29	5.50	3.78	5.50	4.11	5.50	4.60	5.50	4.93	5.50	5.25
40°C DB	5.32	2.47	5.34	2.84	5.35	3.21	5.37	3.46	5.38	3.83	5.40	4.08	5.41	4.32
45°C DB	5.13	2.13	5.17	2.39	5.21	2.64	5.23	2.81	5.27	3.06	5.29	3.23	5.32	3.40

HU071MR U44 + HN0916T NB1

Outdoor Temperature	Water Flow Rate 20.1 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	8.17	4.27	8.85	4.54	9.54	4.80	9.99	4.97	10.68	5.23	11.13	5.41	11.59	5.58
20°C DB	7.70	3.62	8.11	3.97	8.52	4.32	8.80	4.55	9.21	4.90	9.48	5.13	9.75	5.37
30°C DB	7.23	2.97	7.37	3.40	7.51	3.84	7.60	4.13	7.74	4.57	7.83	4.86	7.92	5.15
35°C DB	7.00	2.64	7.00	3.12	7.00	3.60	7.00	3.92	7.00	4.40	7.00	4.72	7.00	5.04
40°C DB	6.77	2.31	6.79	2.68	6.81	3.05	6.83	3.29	6.85	3.66	6.87	3.90	6.88	4.14
45°C DB	6.53	1.99	6.58	2.24	6.63	2.49	6.66	2.66	6.70	2.91	6.74	3.08	6.77	3.25

HU091MR U44 + HN0916T NB1

Outdoor Temperature	Water Flow Rate 25.9 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
10°C DB	10.50	3.98	11.38	4.23	12.26	4.47	12.85	4.63	13.73	4.88	14.31	5.04	14.90	5.20
20°C DB	9.90	3.40	10.43	3.72	10.96	4.04	11.31	4.25	11.84	4.57	12.19	4.78	12.54	4.99
30°C DB	9.30	2.83	9.48	3.22	9.65	3.61	9.77	3.87	9.95	4.26	10.06	4.52	10.18	4.77
35°C DB	9.00	2.54	9.00	2.96	9.00	3.39	9.00	3.67	9.00	4.10	9.00	4.38	9.00	4.67
40°C DB	8.70	2.25	8.73	2.57	8.76	2.89	8.78	3.10	8.81	3.42	8.83	3.63	8.85	3.85
45°C DB	8.40	1.96	8.46	2.17	8.52	2.39	8.56	2.53	8.62	2.74	8.66	2.88	8.70	3.03

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the rating will vary slightly.

PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU051MR U44 + HN0916T NB1

Outdoor Temperature	Water Flow Rate 15.8 LPM								Water Flow Rate 9.9 LPM				Water Flow Rate 7.9 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	4.02	1.83	3.90	1.68	3.78	1.53	3.66	1.38	-	-	-	-	-	-	-	-
-20°C DB	4.64	1.99	4.51	1.84	4.38	1.69	4.26	1.54	4.13	1.39	-	-	-	-	-	-
-15°C DB	5.26	2.15	5.12	2.00	4.99	1.85	4.85	1.70	4.72	1.54	4.58	1.39	-	-	-	-
-7°C DB	5.50	2.97	5.50	2.72	5.50	2.47	5.50	2.23	5.50	1.98	5.50	1.73	5.50	1.48	-	-
-4°C DB	5.50	3.11	5.50	2.88	5.50	2.65	5.50	2.42	5.50	2.19	5.50	1.96	5.50	1.73	-	-
-2°C DB	5.50	3.19	5.50	2.99	5.50	2.80	5.50	2.61	5.50	2.41	5.50	2.22	5.50	2.03	-	-
2°C DB	5.50	3.42	5.50	3.21	5.50	3.00	5.50	2.79	5.50	2.57	5.50	2.36	5.50	2.15	5.50	1.94
7°C DB	5.50	4.91	5.50	4.50	5.50	4.09	5.50	3.69	5.50	3.28	5.50	2.87	5.50	2.47	5.50	2.06
10°C DB	5.50	5.09	5.50	4.66	5.50	4.24	5.50	3.82	5.50	3.40	5.50	2.98	5.50	2.56	5.50	2.14
15°C DB	5.50	5.38	5.50	4.94	5.50	4.49	5.50	4.04	5.50	3.60	5.50	3.15	5.50	2.71	5.50	2.26
18°C DB	5.50	5.56	5.50	5.10	5.50	4.64	5.50	4.18	5.50	3.72	5.50	3.26	5.50	2.80	5.50	2.34
20°C DB	5.50	5.68	5.50	5.21	5.50	4.74	5.50	4.27	5.50	3.80	5.50	3.33	5.50	2.86	5.50	2.39
35°C DB	5.50	6.57	5.50	6.03	5.50	5.48	5.50	4.94	5.50	4.39	5.50	3.85	5.50	3.30	5.50	2.76

HU071MR U44 + HN0916T NB1

Outdoor Temperature	Water Flow Rate 20.1 LPM								Water Flow Rate 12.6 LPM				Water Flow Rate 10.0 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	1.77	4.85	1.62	4.71	1.47	4.56	1.32	1.32	-	-	-	-	-	-	-	-
-20°C DB	1.95	5.43	1.80	5.27	1.64	5.11	1.49	1.49	4.95	1.34	-	-	-	-	-	-
-15°C DB	2.13	6.00	1.97	5.83	1.82	5.66	1.66	1.66	5.49	1.51	5.32	1.35	-	-	-	-
-7°C DB	2.96	7.00	2.71	7.00	2.46	7.00	2.22	2.22	7.00	1.97	7.00	1.72	7.00	1.47	-	-
-4°C DB	3.07	7.00	2.85	7.00	2.63	7.00	2.40	2.4	7.00	2.18	7.00	1.96	7.00	1.74	-	-
-2°C DB	3.12	7.00	2.94	7.00	2.76	7.00	2.58	2.58	7.00	2.39	7.00	2.21	7.00	2.03	-	-
2°C DB	3.31	7.00	3.12	7.00	2.93	7.00	2.74	2.74	7.00	2.55	7.00	2.36	7.00	2.17	7.00	1.98
7°C DB	4.89	7.00	4.50	7.00	4.11	7.00	3.72	3.72	7.00	3.33	7.00	2.93	7.00	2.54	7.00	2.15
10°C DB	5.12	7.00	4.71	7.00	4.30	7.00	3.89	3.89	7.00	3.48	7.00	3.07	7.00	2.66	7.00	2.25
15°C DB	5.50	7.00	5.06	7.00	4.62	7.00	4.18	4.18	7.00	3.74	7.00	3.30	7.00	2.86	7.00	2.42
18°C DB	5.73	7.00	5.27	7.00	4.81	7.00	4.36	4.36	7.00	3.90	7.00	3.44	7.00	2.98	7.00	2.52
20°C DB	5.88	7.00	5.41	7.00	4.94	7.00	4.47	4.47	7.00	4.00	7.00	3.53	7.00	3.06	7.00	2.59
35°C DB	7.03	7.00	6.47	7.00	5.90	7.00	5.34	5.34	7.00	4.78	7.00	4.22	7.00	3.65	7.00	3.09

HU091MR U44 + HN0916T NB1

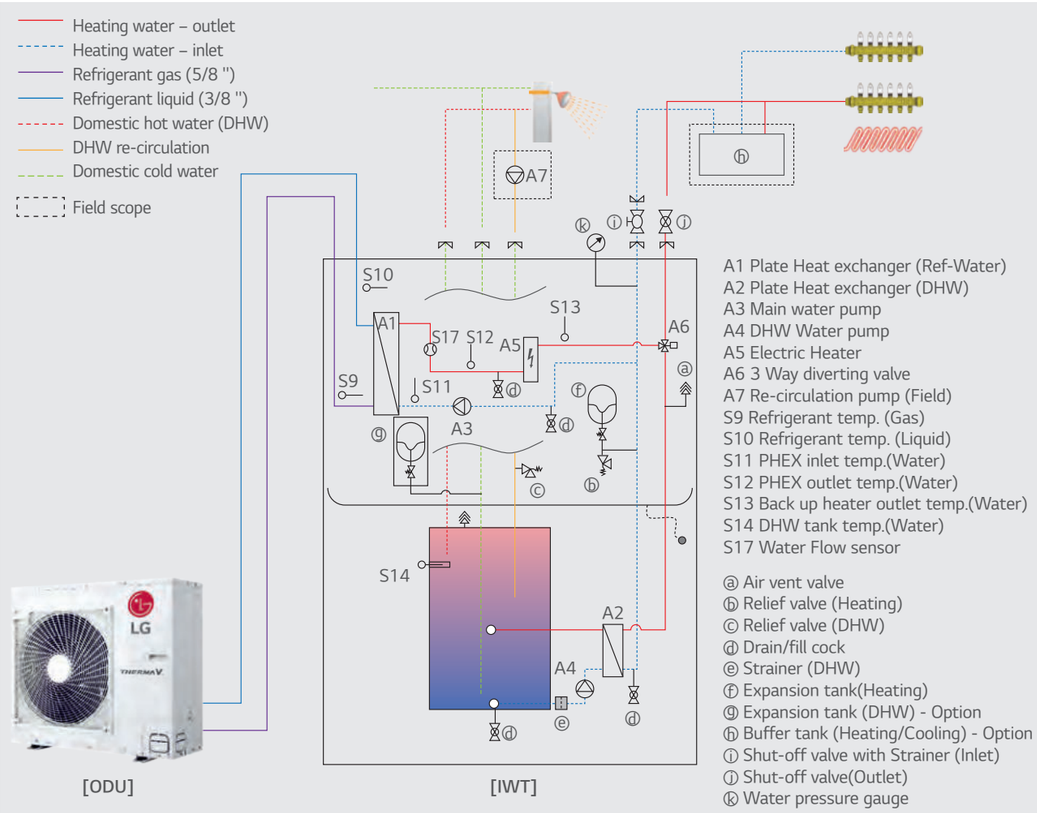
Outdoor Temperature	Water Flow Rate 25.9 LPM								Water Flow Rate 16.2 LPM				Water Flow Rate 12.9 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C		LWT 60°C		LWT 65°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	6.40	1.71	6.20	1.56	6.00	1.41	5.80	1.26	-	-	-	-	-	-	-	-
-20°C DB	7.23	1.87	7.00	1.72	6.77	1.57	6.54	1.42	6.31	1.27	-	-	-	-	-	-
-15°C DB	8.06	2.02	7.80	1.87	7.54	1.72	7.28	1.57	7.02	1.42	6.76	1.27	-	-	-	-
-7°C DB	9.00	2.97	9.00	2.70	9.00	2.43	9.00	2.17	9.00	1.90	9.00	1.63	9.00	1.36	-	-
-4°C DB	9.00	3.08	9.00	2.86	9.00	2.63	9.00	2.41	9.00	2.19	9.00	1.96	9.00	1.74	-	-
-2°C DB	9.00	3.15	9.00	2.96	9.00	2.78	9.00	2.59	9.00	2.40	9.00	2.22	9.00	2.03	-	-
2°C DB	9.00	3.36	9.00	3.17	9.00	2.98	9.00	2.79	9.00	2.60	9.00	2.40	9.00	2.21	9.00	2.02
7°C DB	9.00	4.76	9.00	4.40	9.00	4.04	9.00	3.68	9.00	3.32	9.00	2.96	9.00	2.60	9.00	2.24
10°C DB	9.00	5.04	9.00	4.66	9.00	4.28	9.00	3.89	9.00	3.51	9.00	3.13	9.00	2.75	9.00	2.37
15°C DB	9.00	5.50	9.00	5.08	9.00	4.67	9.00	4.25	9.00	3.84	9.00	3.42	9.00	3.00	9.00	2.59
18°C DB	9.00	5.78	9.00	5.34	9.00	4.90	9.00	4.47	9.00	4.03	9.00	3.59	9.00	3.16	9.00	2.72
20°C DB	9.00	5.96	9.00	5.51	9.00	5.06	9.00	4.61	9.00	4.16	9.00	3.71	9.00	3.26	9.00	2.81
35°C DB	9.00	7.35	9.00	6.80	9.00	6.24	9.00	5.68	9.00	5.13	9.00	4.57	9.00	4.02	9.00	3.46

Note

1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/m)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   - Rated values are based on standard conditions and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard (or nations), the rating will vary slightly.
5. The shaded areas are not guaranteed continuous operation.

DRAWING

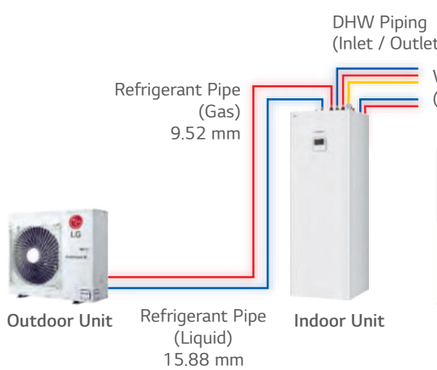
System Schematic



A1 Plate Heat exchanger (Ref-Water)
A2 Plate Heat exchanger (DHW)
A3 Main water pump
A4 DHW Water pump
A5 Electric Heater
A6 3 Way diverting valve
A7 Re-circulation pump (Field)
S9 Refrigerant temp. (Gas)
S10 Refrigerant temp. (Liquid)
S11 PHEX inlet temp.(Water)
S12 PHEX outlet temp.(Water)
S13 Back up heater outlet temp.(Water)
S14 DHW tank temp.(Water)
S17 Water Flow sensor

ⓐ Air vent valve
ⓑ Relief valve (Heating)
ⓒ Relief valve (DHW)
ⓓ Drain/fill cock
ⓔ Strainer (DHW)
ⓕ Expansion tank(Heating)
ⓖ Expansion tank (DHW) - Option
ⓗ Buffer tank (Heating/Cooling) - Option
ⓘ Shut-off valve with Strainer (Inlet)
ⓙ Shut-off valve(Outlet)
ⓚ Water pressure gauge

* For schematic of refrigerant side, please refer to the schematic of R32 Split, because same ODU is used.



Ref.	Capa. (kW)	Pipe Size (mm,Inch)		Elevation (m)		Length (m)			Add. Ref
		Gas	Liquid	STD	Max.	STD	Charge	Max.	
R32	5	15.88 (5/8)	9.52 (3/8)	0	30	5.0	10	50	30 g/m
	7								
	9								

PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

TERMINAL BLOCK INFORMATION

No.	Name	Remark	Connection
1	Mixing Pump	230V AC	TB1 (1 / 2)
2	Mixing Valve	3 Wire, 230V AC	TB1 (3 / 4 / 5)
3	2 Way Valve (A)	2 Wire, 230V AC	TB1 (6 / 7 / 8)
4	Thermostat	230V AC, H/C	TB2 (9 / 10 / 11 / 12)
5	Outdoor Unit	230V AC	TB2 (13 / 14 / 15 / 16)
6	Power Supply for Electric Heaters	1Ø, 220-240V, 50Hz 3Ø, 380-415V, 50Hz	TB3 (L1 / L2 / L3 / N / G)
7	3rd Party Controller / LG Meter Interface	5V DC	TB4 (17 / 18)
8	External Controller	DC 5 V ~ 12 V	TB4 (19 / 20)

TERMINAL BLOCK 1

1	2	3	4	5	6	7	8
L	N	L1	L2	N	L1	L2	N
MIX PUMP		MIX VALVE			2 Way VALVE (A)		

Opening or closing
Water flow for FCU cooling

Power supply for 2nd circuit kit

TERMINAL BLOCK 2

9	10	11	12		13	14	15		16
L	N	L1	L2		1(L)	2(L)	3		⏚
THERMOSTAT (Default : 230 V AC)					OUTDOOR UNIT				

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

Power supply for Indoor unit and communication

TERMINAL BLOCK 3

L1	L2	L3	N		⏚
POWER SUPPLY L3 : 1Ø, 220-240V, 50Hz ; 2kW;16A L3, L2 : 1Ø, 220-240V, 50Hz ; 4kW;20A L3, L2, L1 : 3Ø, 380-415V, 50Hz ; 6kW;16A					

Connecting external electric power supply for internal back up heater

TERMINAL BLOCK 4

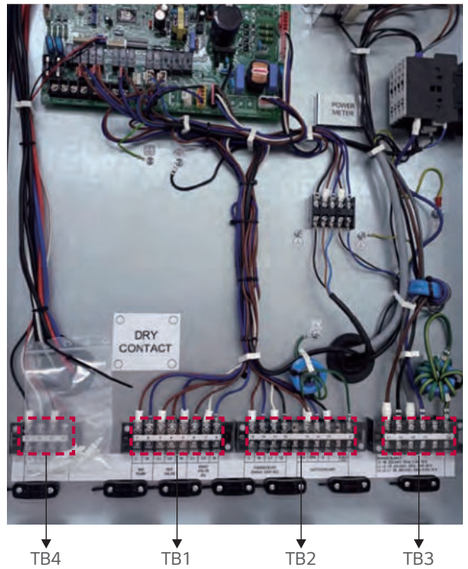
17	18	19	20
A	B		
CN_COM		CN_EXT	

Connection for
3rd Party Controller
(5 V DC)

Connection for
External Controller

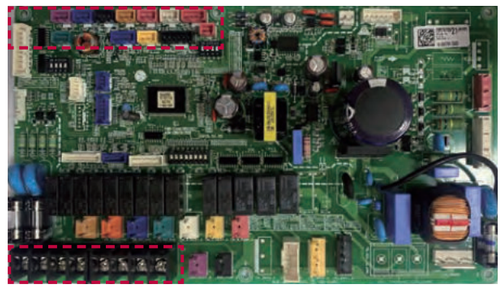
PCB INFORMATION

No.	Name	Remark	Connection
1	Remote Air sensor	PQRSTA0	CN_ROOM
2	Add Remote Air Sensor	PQRSTA0	CN_LEAK_ROOM2
3	Mix Kit Water Pipe Sensor	PRSTAT5K10	CN_MIX_OUT
4	RS3 Remote Controller	-	CN_REMO
5	Dry Contact	PDRYCB000 / PRRYCB320	CN_CC
6	Wi-Fi Modem	PWFMDD200	CN_WF
7	External Pump	Contact	TB_EXT_PUMP
8	Boiler	Contact	TB_BOILER
9	Smart Grid (SG)	Contact	TB_SG1 / TB_SG2



[Terminal block]

CN_Connection



TB_SG / Boiler / Pump

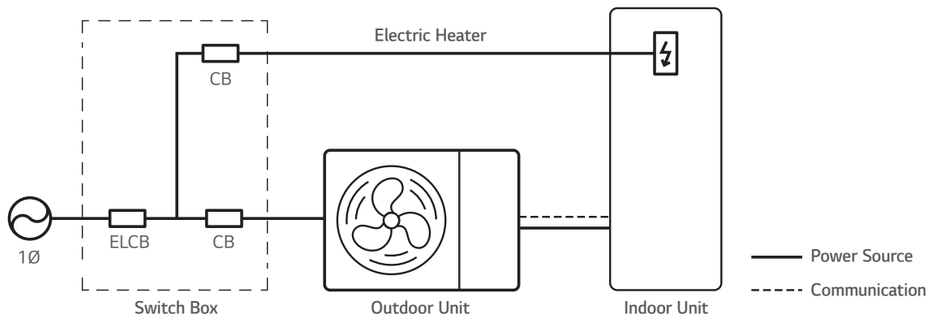
[Main PCB]

PRODUCT INFORMATION

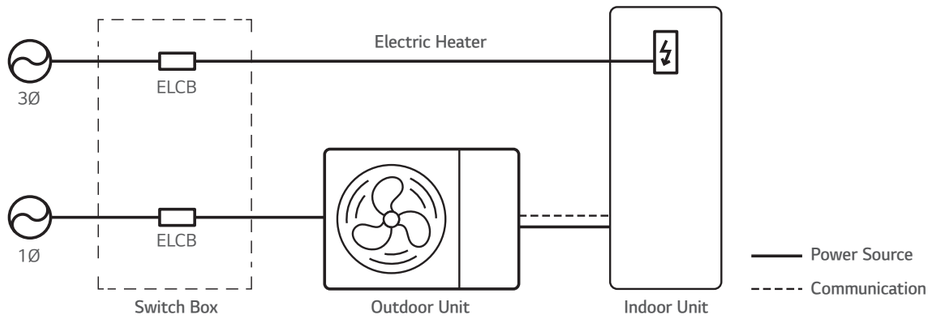
THERMA V R32 IWT(INTEGRATED WATER TANK)

POWER SUPPLY DIAGRAM

Power Supply for 1Ø Electric heater

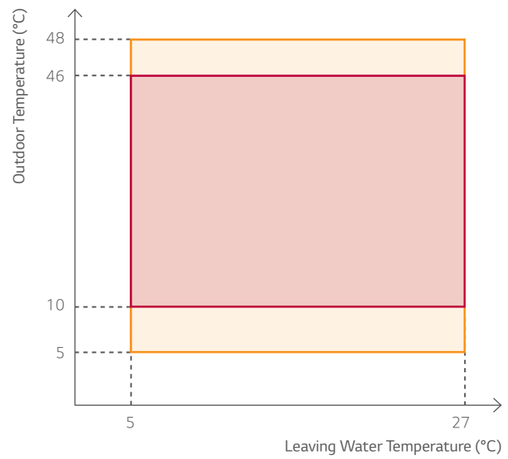


Power Supply for 3Ø Electric heater



OPERATION RANGE

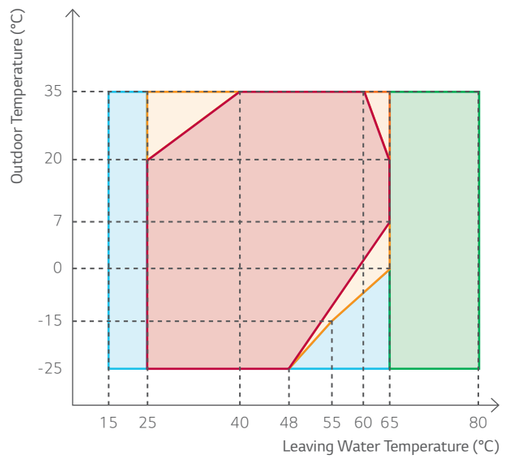
Cooling (Fan Coil Unit)



Continuous Operation

Operative

Heating



Continuous Operation

Operative

Electric heater operation only (DHW)

Electric heater required to achieve temp.

* For selection of Circuit Breaker (CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

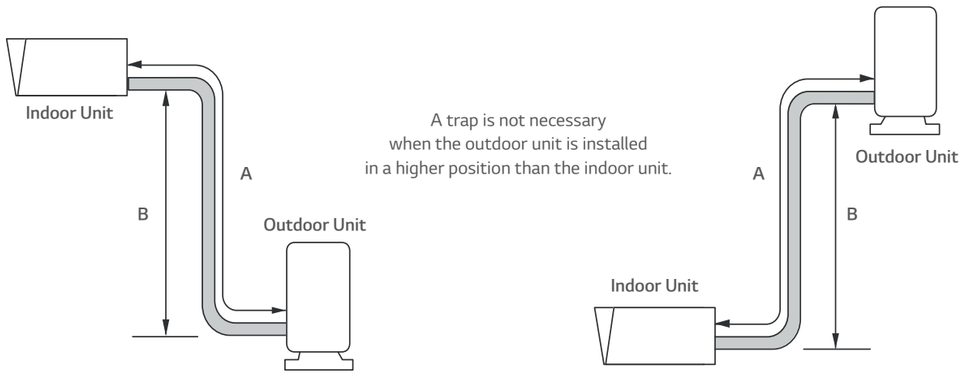
PRODUCT INFORMATION

THERMA V R32 IWT(INTEGRATED WATER TANK)

INSTALLATION & SVC SPACE

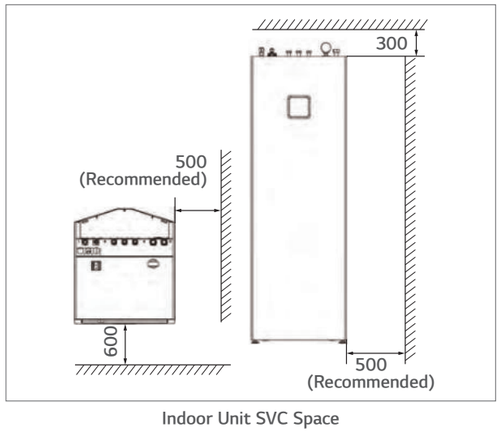
Refrigerant	Capacity (kW)	Pipe Diameter [mm (Inch)]		Length A (m)		Elevation B (m)	Additional Refrigerant(g/m)
		Gas	Liquid	Standard	Max.	Max.	
R32	5 / 7 / 9	15.88(5/8")	9.52(3/8")	5	50	30	30 (longer than 10 m)

Constraints in Pipe Length and Elevation

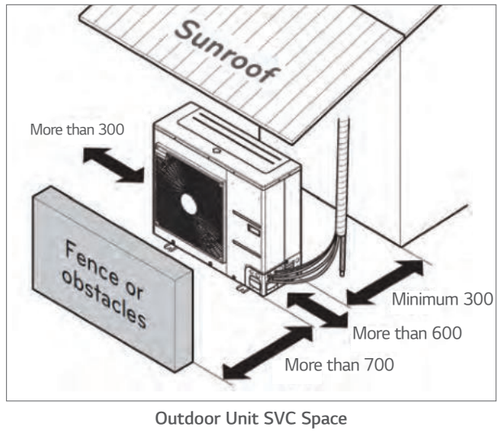


Required Minimum Clearances

Minimum service space [unit : mm]



Indoor Unit SVC Space

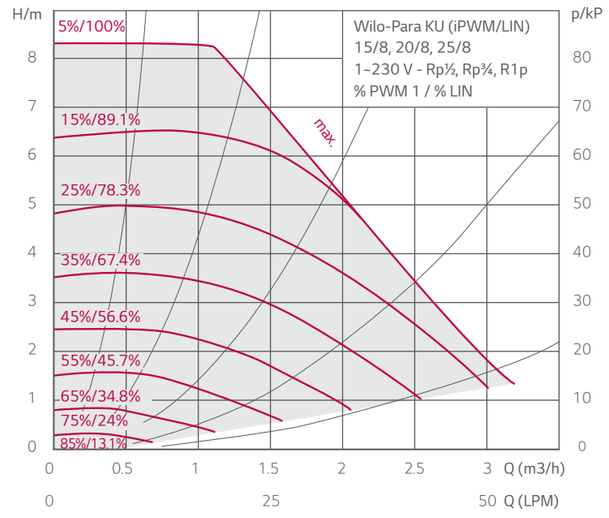


Outdoor Unit SVC Space

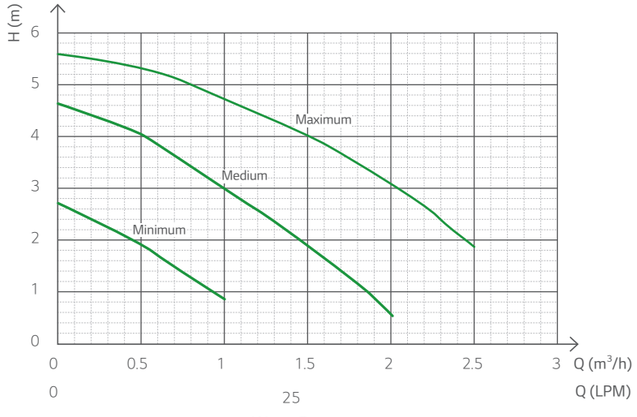
WATER PUMP

Capacity [kW]	Rated Flow Rate [LPM]	Pump Head [m] (at rated flow rate)	Product Pressure drop [m] (Plate heat Ex.)	Serviceable Head [m]	Min. Flow Rate [LPM] (Recommend)
5	15.8	8.2	1.1	7.1	15
7	20.1	7.8	1.8	6.0	
9	25.9	6.8	2.9	3.9	

Main Water Pump (Wilo PARA KU 25 -130/8 - 75/12 iPWM1)



DHW Water Pump (Wilo ZRS 15/6-3 KU)



PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

Outdoor Unit

Indoor Unit

PI485 Gateway *

No.	Contents	Remark
1	Plug & Play (All in One)	Default
2	Leaving Water temperature Control	Default
3	Weather Dependent Operation	Default
4	Water Pump Setting	3 Step Control (Max. / Mid. / Min.)
5	1 Mixing Circuit	Mixing Valve to be Installed at Field
6	2 Mixing Circuits	With Extension Kit (T3003)
7	Screed Drying	Default
8	Modbus Communication	PP485B00K (Modbus Converter (PI485))
9	Web Cloud Service Connection	with Web Module (Option)
10	Room Thermostat with Curve Correction	with KT1 (Option)
11	Tap Water Recirculation	with Extension Kit (T3003)

No.	Contents	Remark
1	Water Pump	Wilo
2	DHW Tank	200ℓ, Max. 10bar
3	Buffer Tank	40ℓ, 3bar
4	Electric Heater	2kW (1Ø), 4kW (1Ø), 6kW (3Ø)
5	Flow Switch	SIKA
6	Air Vent Valve	-
7	Relief Valve	3bar
8	Manometer	-
9	Shut off Valve	2ea

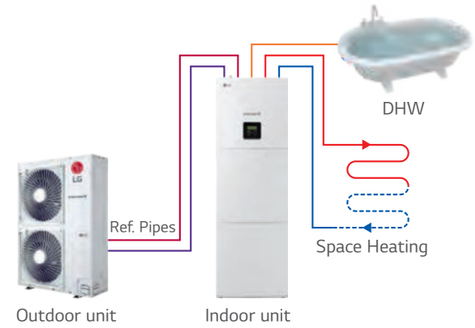
* PI485 Gateway(PP485B00K) is required for communication between outdoor unit and indoor unit. (Install at outdoor unit)

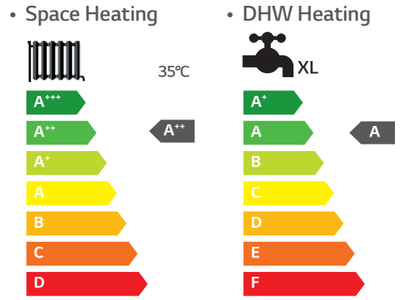
Key Features

- All in One Design
  (IDU + DHW Tank + Buffer Tank + Pipe)
- Hot Water Supply Up to 58°C for Heating
- Cold Water Supply Up to 7°C for Cooling
- 2nd Heating Circuit Control
  (Max. 4th with Extension Module)
- Weather Dependent Operation
- Quiet Operation
- High Efficiency Water Pump
- Embedded Flow Switch
- 3 Way Valve Integrated for Mode Change

All in One

IWT (Integrated Water Tank) is integrated unit that indoor unit is combined with domestic hot water tank while outdoor unit is separately located outside. It is more suitable for the house with less indoor space, because hydronic components such as DHW tank and buffer tank normally installed additionally are integrated as one unit.
THE **LG THERMA V R410A IWT** is providing generous benefits supported by LG THERMA V's powerful and durable Outdoor units.





R410A 58°C A++

* EHPA for Austria, and Germany.

Line up

● : Heating Capacity(kW), ● : Cooling Capacity(kW)

Capacity (kW)		9	12	14	16
R410A IWT	1Ø 230V	● (9.0) ● (9.0)	● (12.0) ● (10.4)	● (14.0) ● (11.0)	● (16.0) ● (12.0)
	3Ø 400V	-	● (12.0) ● (10.4)	● (14.0) ● (11.0)	● (16.0) ● (12.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit	HU091 U43	HU121 U33 HU123 U33	HU141 U33 HU143 U33	HU161 U33 HU163 U33
			Indoor Unit	HN1616T NB0			
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	4.04	4.2	4.15	4.15
		Rated Heat Output (Prated)	kW	7	10	10	11
		Seasonal Space Heating Efficiency (ηs)	%	159	165	163	163
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A++	A++	A++	A++
		Annual Energy Consumption	kWh	3,321	4,820	5,183	5,376
	Average Climate Water Outlet 55°C	SCOP	-	2.88	3	3	3
		Rated Heat Output (Prated)	kW	6	10	10	10
		Seasonal Space Heating Efficiency (ηs)	%	112	117	117	117
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+	A+	A+	A+
		Annual Energy Consumption	kWh	4,020	6,755	6,755	6,755
Domestic Hot Water Heating	General	Declared Load Profile	-	XL	XL	XL	XL
	Average Climate	Water Heating Efficiency (ηwh)	%	98	89	89	89
		Water Heating Energy Eff. Class (A + to F Scale)	-	A	A	A	A
		Annual Energy Consumption	kWh	1,710	1,881	1,881	1,881

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

SPECIFICATION

DHW Tank Integrated - Indoor Unit

Technical Specification					HN1616T NB0
Operation Range (LWT)	Cooling		Min.~Max.	℃	7 ~ 25
	Heating		Min.~Max.	℃	25 ~ 58
	Domestic Hot Water		Min.~Max.	℃	10 ~ 60
Operation Range (OAT) for Indoor Unit				℃	5 ~ 35
DHW Tank	Type				Hydro module with integrated boiler
	Material			-	Enameled steel
	Water Volume		Rated	ℓ	200
	Internal Thermal Protect limit			℃	95
	Maximum Water Temperature			℃	52
	Maximum Water Pressure Limit			bar	10
	Insulation	Material		-	Polyurethane foam
		Thickness		mm	50
		Heat loss (for 24hr)		kWh	1.67
Buffer Tank	Water Volume		Rated	ℓ	40
	Material			-	Steel powder coated
	Insulation Material			-	Closed cell foamed rubber
Water Pump	Type			-	Canned type for hot water circulation
	Model			-	Yonos PARA RS25/7 PWM1
	Motor Type			-	BLDC
	Steps of Speed			EA	Variable speed 13% to 100%
	Power Input			W	3 ~ 45
	Water Flow Rate		Min.	ℓ / min	16
			Rated	ℓ / min	46
Heat Exchanger (Water Side)	Pressure Drop		Max.	kPa	70
	Type			-	Brazed Plate HEX
	Quantity			-	1
	Water Volume			ℓ	3.3
	Water Flow Rate (Min. ~ Max.)			ℓ / min	13 ~ 70
	Insulation Material			-	Closed cell foamed rubber
Safety Valve	Pressure Limit			bar	3
Devices for Water Circuit				-	Manometer
				-	Drain Valve / Fill Valve
				-	Shut off Valve
				-	Air Vent
Piping Connections	Refrigerant Circuit	Gas (Outer Dia.)		mm (Inch)	Ø 15.88 (5/8)
		Liquid (Outer Dia.)		mm (Inch)	Ø 9.52 (3/8)
	Water Circuit	Inlet		mm (Inch)	Male PT 25.4 (1)
		Outlet		mm (Inch)	Male PT 25.4 (1)
	DHW Tank Water Circuit	Cold Inlet		mm (Inch)	Male PT 19.05 (3/4)
		Hot Outlet		mm (Inch)	Male PT 25.4 (1)
		Recirculation		mm (Inch)	Male PT 19.05 (3/4)
Sound Pressure Level				dB(A)	27
Sound Power Level				dB(A)	36
Dimensions (W x H x D)		Unit		mm	607 x 2,079 x 725
		Shipping		mm	640 x 2,195 x 790
Weight (without water)		Unit		kg	228
		Shipping		kg	238

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

DHW Tank Integrated - Indoor Unit

Electrical Specification		Unit	HN1616T NB0
Back up Heater (1) (1 phase)	Type	-	Sheath
	Number of Heating Coil	EA	1
	Capacity Combination	kW	2
	Operation	-	Automatic
	Heating Steps	Step	1
	Power Supply	V, Ø, Hz	230, 1, 50
	Rated Current	A	8.7
	Maximum Current	A	11.1
	Circuit Breaker	A	16
	Power Cable (H07RN-F) (Included Earth)	mm^2 x cores	4.0 x 3
Back up Heater (2) (1 phase)	Type	-	Sheath
	Number of Heating Coil	EA	2
	Capacity Combination	kW	2.0 + 2.0
	Operation	-	Automatic
	Heating Steps	Step	1
	Power Supply	V, Ø, Hz	230, 1, 50
	Rated Current	A	17.4
	Maximum Current	A	19.9
	Circuit Breaker	A	20
	Power Cable (H07RN-F) (Included Earth)	mm^2 x cores	4.0 x 3
Back up Heater (3) (3 phase)	Type	-	Sheath
	Number of Heating Coil	EA	3
	Capacity Combination	kW	2.0 + 2.0 + 2.0
	Operation	-	Automatic
	Heating Steps	Step	1
	Power Supply	V, Ø, Hz	400, 3, 50
	Rated Current	A	8.7
	Maximum Current	A	11.1
	Circuit Breaker	A	16
	Power Cable (H07RN-F) (Included Earth)	mm^2 x cores	2.5 x 5

Nominal Capacity and Nominal Input				Outdoor Unit	HU091 U43	HU121 U33 / HU123 U33	HU141 U33 / HU143 U33	HU161 U33 / HU163 U33
Condition		OAT (℃) DB / WB	LWT (℃)	Indoor Unit	HN1616T NB0			
Capacity	Cooling	35 / 24	18	kW	9.0	10.4	11.0	12.0
	Heating	7 / 6	35	kW	9.0	12.0	14.0	16.0
Power Input	Cooling	35 / 24	18	kW	2.88	3.30	3.53	4.00
	Heating	7 / 6	35	kW	2.23	2.78	3.43	4.18
EER	Cooling	35 / 24	18	W/W	3.12	3.15	3.12	3.00
COP	Heating	7 / 6	35	W/W	4.04	4.32	4.08	3.83
Rated Water Flow Rate (at LWT 35°C)				LPM	26.0	34.0	40.0	46.0

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

SPECIFICATION

DHW Tank Integrated - Outdoor Unit

Outdoor Units				HU091 U43	HU121 U33	HU141 U33	HU161 U33
Operation Range (OAT)	Cooling	Min. ~ Max.	℃ DB	5 ~ 48	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	℃ DB	-20 ~ 35	-20 ~ 35	-20 ~ 35	-20 ~ 35
Compressor	Type		-	Hermetic Motor	Hermetic Motor	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GJT240MAA x 1	GPT442MAA x 1	GPT442MAA x 1	GPT442MAA x 1
	Displacement		cm^3/Rev.	24	44.2	44.2	44.2
	Capacity		kW	7.41	13.92	13.92	13.92
	Motor Type		-	BLDC	BLDC	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	4,000 x 1	4,000 x 1	4,000 x 1
Refrigerant	Type		-	R410A	R410A	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.50	2,087.50	2,087.50	2,087.50
	Precharged Amount 1)		g	1,800	2,300	2,300	2,300
	t-CO_2 eq.		-	3.758	4.801	4.801	4.801
	Chargeless-Pipe Length		m	7.5	7.5	7.5	7.5
	Additional Charging Volume		g/m	40	40	40	40
	Control		-	Electronic Expansion Valve			
Refrigerant Oil	Type		-	FVC68D	FVC68D	FVC68D	FVC68D
	Charged Volume		cc x No.	570 x 1	1,300 x 1	1,300 x 1	1,300 x 1
Heat Exchanger	Row x Column x FPI		-	2 x 38 x 14	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14
	No.		EA	1	2	2	2
Fan	Type		-	Propeller	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	58 x 1	55 x 2	55 x 2	55 x 2
Fan Motor	Type		-	BLDC	BLDC	BLDC	BLDC
	Output		W x No.	124 x 1	124 x 2	124 x 2	124 x 2
Sound Power Level	Heating	Rated	dB(A)	65	66	66	66
Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	57	58	58	58
Piping Connections	Liquid	Type	-	Flare	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Standard	m	7.5	7.5	7.5	7.5
		Max.	m	50	50	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30	30	30
Dimensions	Unit	W x H x D	mm	950 x 834 x 330	950 x 1,380 x 330	950 x 1,380 x 330	950 x 1,380 x 330
	Packed Unit	W x H x D	mm	1,065 x 918 x 461	1,140 x 1,462 x 461	1,140 x 1,462 x 461	1,140 x 1,462 x 461
Weight	Unit		kg	59.0	94.0	94.0	94.0
	Packed Unit		kg	65.0	107.0	107.0	107.0
Electrical Specification				**HU091 U43**	**HU121 U33**	**HU141 U33**	**HU161 U33**
Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50	220-240, 1, 50
Current (Rated)	Cooling		A	12.5	14.3	15.3	17.4
	Heating		A	9.7	12.1	14.9	18.2
Maximum Running Current	Cooling		A	19.0	25.0	25.0	25.0
	Heating		A	19.0	25.0	25.0	25.0
Circuit Breaker			A	30	40	40	40
Wiring Connections	Power Supply Cable (H07RN-F) (Included Earth)		mm^2 x cores	4.0 x 3	6.0 x 3	6.0 x 3	6.0 x 3

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature
1) In case of IWT, more refrigerant charge is required at site for stable performance. (9kW : 800g, 12/14/16kW : 1,200g)

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor – Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

DHW Tank Integrated - Outdoor Unit

Outdoor Units				HU123 U33	HU143 U33	HU163 U33
Operation Range (OAT)	Cooling	Min. ~ Max.	℃ DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	℃ DB	-20 ~ 35	-20 ~ 35	-20 ~ 35
Compressor	Type		-	Hermetic Motor	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GPT442MAA x 1	GPT442MAA x 1	GPT442MAA x 1
	Displacement		cm^3/Rev.	44.2	44.2	44.2
	Capacity		kW	13.92	13.92	13.92
	Motor Type		-	BLDC	BLDC	BLDC
	Motor Output	Rated	W x No.	4,000 x 1	4,000 x 1	4,000 x 1
Refrigerant	Type		-	R410A	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.50	2,087.50	2,087.50
	Precharged Amount 1)		g	2,300	2,300	2,300
	t-CO_2 eq.		-	4.801	4.801	4.801
	Chargeless-Pipe Length		m	7.5	7.5	7.5
	Additional Charging Volume		g/m	40	40	40
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	FVC68D	FVC68D	FVC68D
	Charged Volume		cc x No.	1,300 x 1	1,300 x 1	1,300
Heat Exchanger	Row x Column x FPI		-	2 x 32 x 14	2 x 32 x 14	2 x 32 x 14
	No.		EA	2	2	2
Fan	Type		-	Propeller	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	55 x 2	55 x 2	55 x 2
Fan Motor	Type		-	BLDC	BLDC	BLDC
	Output		W x No.	124 x 2	124 x 2	124 x 2
Sound Power Level	Heating	Rated	dB(A)	66	66	66
Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	58	58	58
Piping Connections	Liquid	Type	-	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare	Flare
		Outer Dia.	mm (Inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Standard	m	7.5	7.5	7.5
		Max.	m	50	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30	30
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330	950 x 1,380 x 330
	Packed Unit	W x H x D	mm	1,140 x 1,462 x 461	1,140 x 1,462 x 461	1,140 x 1,462 x 461
Weight	Unit		kg	94.0	94.0	94.0
	Packed Unit		kg	107.0	107.0	107.0
Electrical Specification				**HU123 U33**	**HU143 U33**	**HU163 U33**
Power Supply			V, Ø, Hz	380-415, 3, 50	380-415, 3, 50	380-415, 3, 50
Current (Rated)	Cooling		A	8.3	8.8	10.0
	Heating		A	7.0	7.6	10.5
Maximum Running Current	Cooling		A	16.1	16.1	16.1
	Heating		A	16.1	16.1	16.1
Circuit Breaker			A	20	20	20
Wiring Connections	Power Supply Cable (H07RN-F) (Included Earth)		mm^2 x cores	2.5 x 5	2.5 x 5	2.5 x 5

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature
1) In case of IWT, more refrigerant charge is required at site for stable performance. (9kW : 800g, 12/14/16kW : 1,200g)

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor – Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

PERFORMANCE TABLE FOR COOLING OPERATION

MAXIMUM COOLING CAPACITY

HU091 U43 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 26.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	9.00	3.41	9.33	3.55	9.66	3.68	9.88	3.77	10.21	3.91	10.75	4.09	-	-
30°C DB	9.00	2.83	9.11	2.96	9.22	3.11	9.29	3.21	9.40	3.37	9.89	3.52	-	-
35°C DB	9.00	2.61	9.00	2.73	9.00	2.87	9.00	2.96	9.00	3.13	9.47	3.27	9.94	3.42
40°C DB	7.80	2.33	8.13	2.46	8.45	2.59	8.67	2.68	9.00	2.82	9.25	2.98	9.49	3.15
45°C DB	6.60	2.03	7.25	2.18	7.91	2.33	8.35	2.43	9.00	2.56	9.02	2.73	9.04	2.92

HU121 U33 + HN1616T NB0 / HU123 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 34.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	10.40	2.87	10.51	3.17	10.63	3.54	10.71	3.83	10.82	4.35	11.51	4.60	-	-
30°C DB	10.40	2.43	10.44	2.65	10.48	2.91	10.50	3.12	10.54	3.48	11.21	3.68	-	-
35°C DB	10.40	2.26	10.40	2.45	10.40	2.67	10.40	2.84	10.40	3.15	11.07	3.33	11.73	3.51
40°C DB	9.73	2.01	9.91	2.18	10.09	2.38	10.22	2.52	10.40	2.77	10.99	2.99	11.57	3.20
45°C DB	9.06	1.78	9.42	1.94	9.79	2.13	10.03	2.26	10.40	2.48	10.91	2.70	11.41	2.93

HU141 U33 + HN1616T NB0 / HU143 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 40.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	11.00	2.86	11.12	3.15	11.25	3.51	11.33	3.80	11.45	4.30	12.18	4.54	-	-
30°C DB	11.00	2.42	11.04	2.63	11.08	2.89	11.11	3.09	11.15	3.44	11.86	3.64	-	-
35°C DB	11.00	2.24	11.00	2.43	11.00	2.65	11.00	2.82	11.00	3.12	11.70	3.30	12.40	3.47
40°C DB	10.29	1.99	10.48	2.17	10.68	2.37	10.81	2.52	11.00	2.77	11.62	2.97	12.23	3.17
45°C DB	9.58	1.77	9.97	1.94	10.35	2.13	10.61	2.26	11.00	2.49	11.53	2.69	12.06	2.90

HU161 U33 + HN1616T NB0 / HU163 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 46.0 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	12.00	2.71	12.13	3.00	12.27	3.35	12.36	3.63	12.49	4.14	13.29	4.39	-	-
30°C DB	12.00	2.43	12.04	2.62	12.09	2.84	12.12	3.01	12.16	3.31	12.94	3.51	-	-
35°C DB	12.00	2.31	12.00	2.46	12.00	2.64	12.00	2.77	12.00	3.00	12.77	3.17	13.53	3.34
40°C DB	11.23	2.01	11.44	2.17	11.65	2.35	11.79	2.49	12.00	2.71	12.68	2.88	13.35	3.05
45°C DB	10.45	1.76	10.87	1.92	11.30	2.11	11.58	2.25	12.00	2.47	12.58	2.63	13.16	2.79

Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. This performance data is based on the following amount of refrigerant. : 9kW - 2.6kg, 12/14/16kW - 3.5kg
6. The shaded areas are not guaranteed continuous operation.

PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU091 U43 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 26.0 LPM								Water Flow Rate 16.2 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	7.00	1.99	6.58	1.75	6.24	1.43	5.89	1.19	-	-	-	-
-15°C DB	7.39	2.28	6.95	2.01	6.59	1.66	6.22	1.37	5.84	1.20	-	-
-7°C DB	8.01	2.87	7.53	2.53	7.44	2.33	7.33	2.17	7.24	2.02	7.13	1.88
-4°C DB	7.95	3.11	7.47	2.73	7.47	2.53	7.47	2.37	7.45	2.22	7.43	2.09
-2°C DB	7.89	3.27	7.42	2.88	7.48	2.65	7.54	2.48	7.60	2.31	7.64	2.17
2°C DB	7.77	3.65	7.30	3.22	7.50	2.90	7.69	2.69	7.87	2.50	8.04	2.34
7°C DB	9.58	4.58	9.00	4.04	8.89	3.55	8.78	3.16	8.66	2.84	8.55	2.57
10°C DB	9.82	5.14	9.23	4.52	9.09	3.83	8.95	3.31	8.81	2.90	8.67	2.58
15°C DB	10.22	6.35	9.61	5.59	9.43	4.39	9.24	3.59	9.06	3.02	8.88	2.59
18°C DB	10.46	7.31	9.84	6.43	9.63	4.79	9.42	3.78	9.21	3.09	9.00	2.60

HU121 U33 + HN1616T NB0 / HU123 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 34.0 LPM								Water Flow Rate 21.6 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	10.29	3.87	10.39	3.17	10.72	2.07	10.61	1.88	-	-	-	-
-15°C DB	10.32	3.94	10.41	3.22	10.75	2.76	11.07	2.05	10.53	1.86	-	-
-7°C DB	10.34	4.07	10.44	3.32	10.51	2.81	10.78	2.43	10.57	2.14	10.63	1.92
-4°C DB	10.12	4.06	10.23	3.33	10.47	2.92	10.77	2.59	10.84	2.35	10.92	2.14
-2°C DB	10.01	4.09	10.11	3.34	10.42	2.95	10.73	2.65	10.96	2.41	11.12	2.21
2°C DB	9.71	4.08	9.81	3.14	10.23	3.01	10.65	2.75	11.08	2.54	11.51	2.36
7°C DB	11.88	5.28	12.00	4.32	12.00	3.69	12.00	3.22	12.00	2.85	12.00	2.56
10°C DB	12.38	5.98	12.51	4.89	12.55	4.17	12.59	3.64	12.63	3.23	12.67	2.91
15°C DB	13.23	7.43	13.37	6.11	13.47	5.19	13.58	4.53	13.68	4.02	13.79	3.62
18°C DB	13.73	8.58	13.88	7.05	14.03	5.97	14.17	5.20	14.32	4.61	14.46	4.16

HU141 U33 + HN1616T NB0 / HU143 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 40.0 LPM								Water Flow Rate 25.2 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	11.72	3.28	11.42	2.86	11.12	2.07	10.61	1.88	-	-	-	-
-15°C DB	11.94	3.43	11.63	2.99	11.46	2.64	11.07	2.04	10.53	1.86	-	-
-7°C DB	12.29	3.69	11.97	3.21	11.81	2.78	11.66	2.41	11.47	2.14	11.30	1.92
-4°C DB	11.76	3.75	11.45	3.26	11.54	2.87	11.61	2.58	11.65	2.34	11.73	2.14
-2°C DB	11.51	3.80	11.21	3.31	11.42	2.93	11.64	2.65	11.83	2.42	12.01	2.22
2°C DB	10.65	3.86	10.37	3.14	10.94	3.03	11.50	2.78	12.04	2.57	12.59	2.39
7°C DB	14.38	4.68	14.00	4.08	13.83	3.60	13.65	3.21	13.48	2.89	13.30	2.62
10°C DB	15.02	5.11	14.63	4.45	14.38	3.92	14.14	3.48	13.89	3.13	13.64	2.83
15°C DB	16.09	5.89	15.67	5.14	15.30	4.52	14.94	4.01	14.57	3.59	14.21	3.23
18°C DB	16.73	6.43	16.29	5.60	15.86	4.93	15.42	4.37	14.99	3.91	14.55	3.51

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

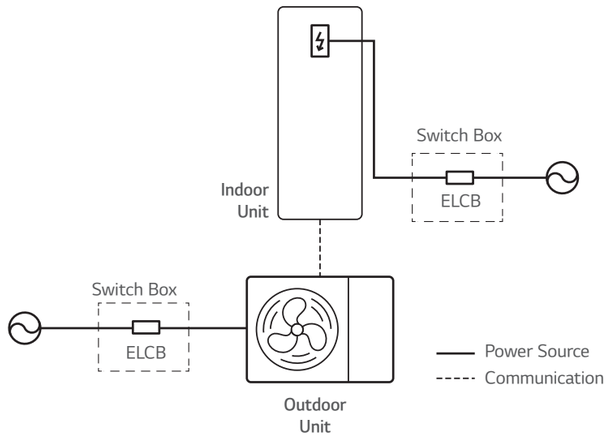
PERFORMANCE TABLE FOR HEATING OPERATION

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU161 U33 + HN1616T NB0 / HU163 U33 + HN1616T NB0

Outdoor Temperature	Water Flow Rate 46.0 LPM								Water Flow Rate 28.8 LPM			
	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	12.25	2.49	11.61	2.26	11.12	2.07	10.61	1.88	-	-	-	-
-15°C DB	12.78	2.70	12.12	2.45	11.61	2.24	11.07	2.04	10.53	1.86	-	-
-7°C DB	13.64	3.07	12.93	2.79	12.55	2.52	12.16	2.29	11.75	2.08	11.33	1.89
-4°C DB	13.15	3.20	12.47	2.91	12.42	2.69	12.36	2.49	12.26	2.31	12.16	2.15
-2°C DB	12.81	3.29	12.14	2.98	12.32	2.79	12.47	2.59	12.61	2.43	12.71	2.27
2°C DB	12.07	3.47	11.45	3.15	12.08	2.96	12.67	2.80	13.26	2.66	13.82	2.52
7°C DB	16.88	4.22	16.00	3.83	15.80	3.54	15.60	3.28	15.40	3.06	15.20	2.86
10°C DB	17.79	4.59	16.87	4.16	16.51	3.80	16.14	3.49	15.78	3.22	15.42	2.98
15°C DB	19.31	5.23	18.31	4.74	17.68	4.28	17.05	3.87	16.41	3.51	15.78	3.19
18°C DB	20.22	5.65	19.17	5.13	18.38	4.59	17.59	4.11	16.79	3.70	16.00	3.33

POWER SUPPLY DIAGRAM



Model		Phase	ELCB	Remark
Indoor Unit	HN1616T NB0	1	16	2kW heater is used
		1	20	4kW heater is used
		3	16	6kW heater is used
Outdoor Unit	HU091 U43	1	30	
	HU121 U33	1	40	-
	HU141 U33			
	HU161 U33			
	HU123 U33	3	20	-
	HU143 U33			
	HU163 U33			

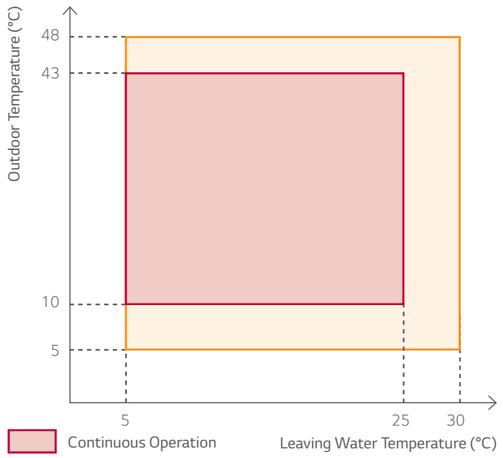
Note
1. DB : Dry Bulb Temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. This performance data is based on the following amount of refrigerant. : 9kW - 2.6kg, 12/14/16kW - 3.5kg
6. The shaded areas are not guaranteed continuous operation.

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

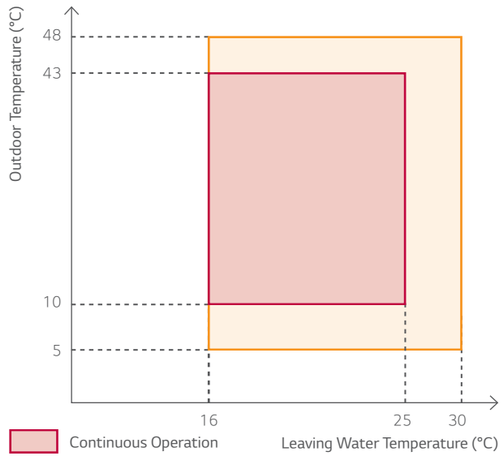
OPERATION RANGE

Fan Coil

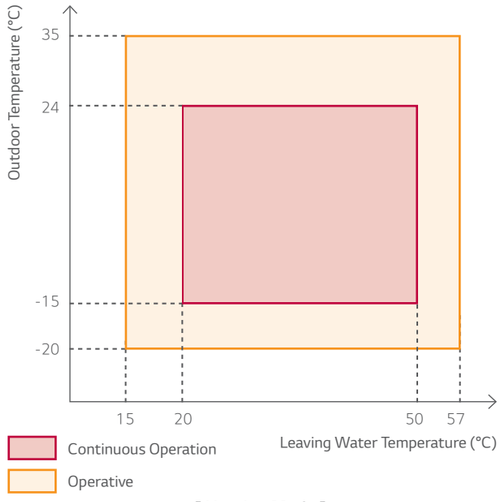


[Cooling Mode]

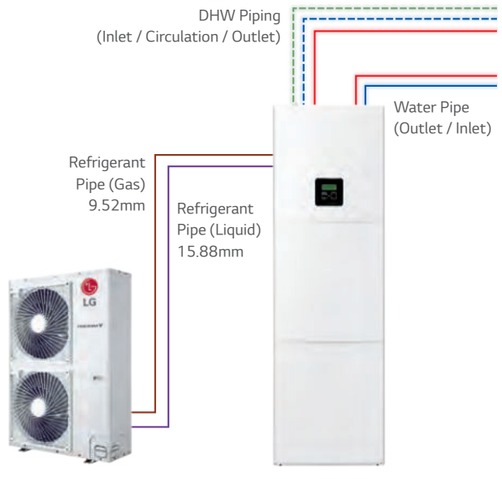
Underfloor



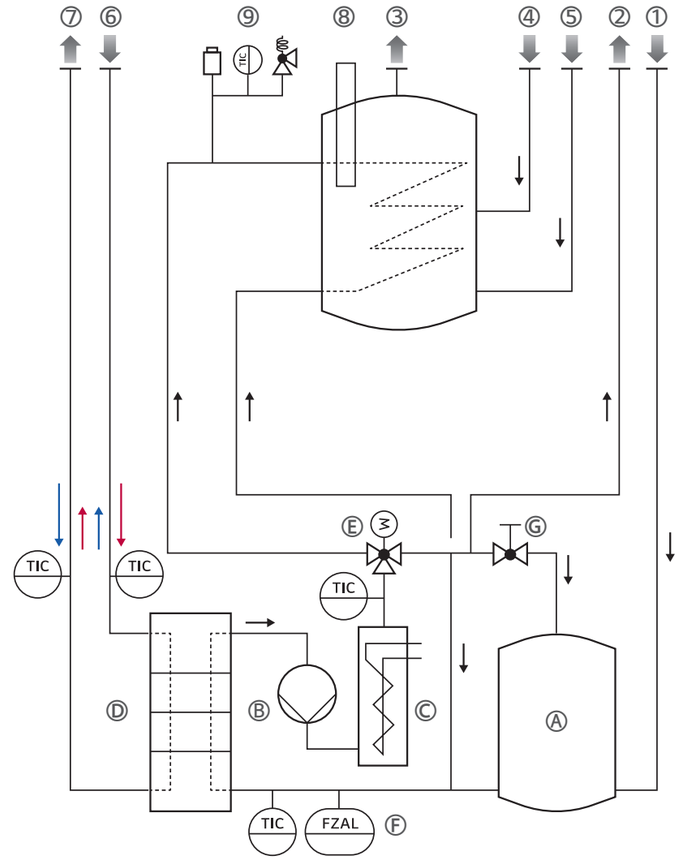
[Cooling Mode]



[Heating Mode]



DHW TANK INTEGRATED UNIT SCHEMATIC



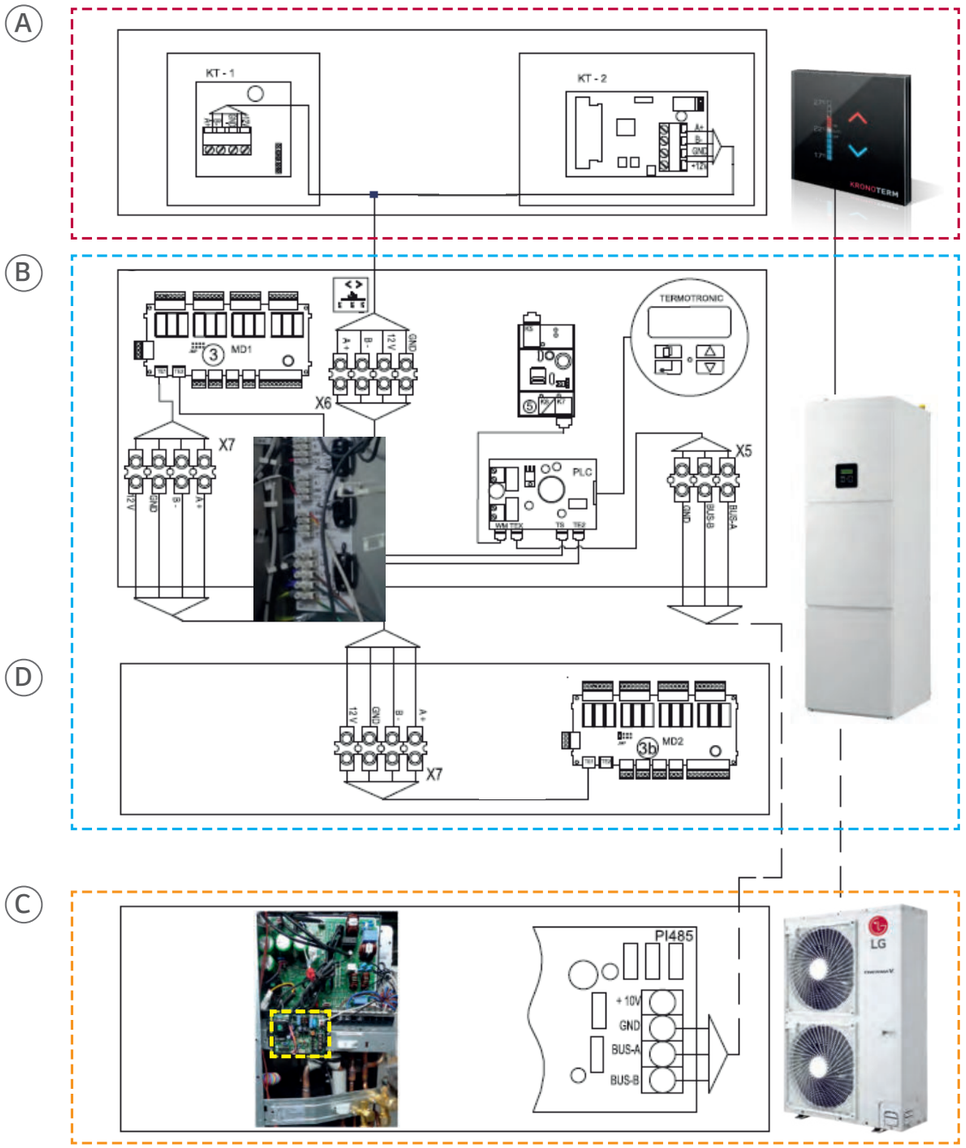
No.	Name	Description
①	Water Inlet	Male PT 25 (1 inch)
②	Water Outlet	Male PT 25 (1 inch)
③	Hot Water Supply	-
④	Hot Water Recirculation	-
⑤	Cold Inlet	-
⑥	Refrigerant Inlet	9.52 Ø (3/8)
⑦	Refrigerant Outlet	15.88 Ø (5/8)
⑧	Anode Bar	D33 x 480mm / M8 x 10mm
⑨	Air Vent Valve, Relief Valve	3bar

No.	Name	Description
Ⓐ	Buffer Tank	40ℓ
Ⓑ	Water Pump	-
Ⓒ	Electric Heater	1P (2+2) / 3P (2+2+2)
Ⓓ	Plate Heat Exchanger	-
Ⓔ	3 Way Valve	-
Ⓕ	Flow Switch	-
Ⓖ	Shut off Valve	-

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

WIRING SCHEMATIC

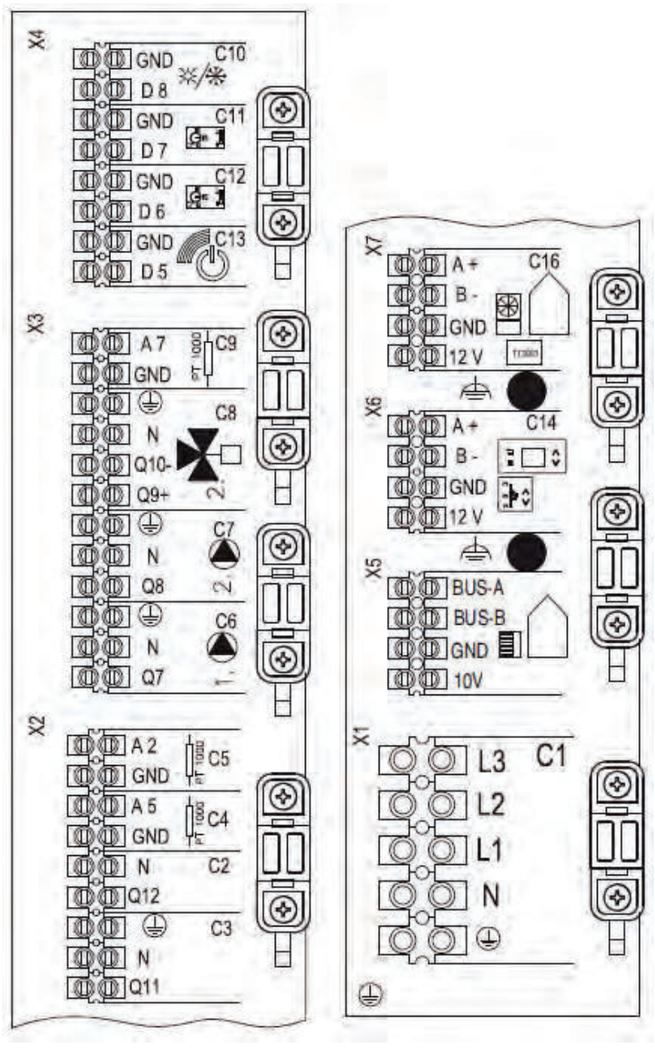


Elements Mark	Connecting Terminals	Characteristics
A		Spatial Corrector KT-1(2)
KT-1		Spatial Corrector KT-1 (Optional)
	A +, B -	Communication
	GND, 12V	Power Supply
KT-2		Spatial Corrector KT-2 (Optional, KRONOTERM Brand)
	A +, B -	Communication
	GND, 12V	Power Supply
B		Indoor Unit TT3000
3		Basic Input/Output Module MD1
	TE1	Communication with I/O Module MD2
	TE2	Communication with the Control Electronics of the PLC Screen Module
JMP		Set-up of Bridges (without)
X7		Connecting Terminal for Communication with Expansion Module MD2
	A +, B -	Communication
	GND, 12V	Power Supply
X6		Connecting Terminal for the Spatial Correctors (Optional)
	A +, B -	Communication
	GND, 12V	Power Supply
X5		Connecting Terminal for Communication with External Module Gateway PI485 in WPLV Device
	BUS-A, BUS-B	Communication
	GND	Power Supply
5		Web Module
	TW MODBUS	Communication with PLC
	TX MODUBUS	Not in Use
	Ethernet	Ethernet
PLC		Process Module
	WM	Communication with Web Module
	TEX	Communication with Outdoor Unit – PI485 Gateway
	TS	Communication with the Spatial Corrector
	TE2	Communication with the Basic V/I Module MD1
D		Expansion Wall Unit TT3003 (Option)
3b		Expansion Input/Output Module MD2
	TE1	Not in Use
	TE2	Communication with the Basic V/I Module MD1
JMP		Set-up of Bridges (in First Position)
X7		Connecting Terminal for Communication with I/O Module MD1
	A +, B -	Communication
	GND, 12V	Power Supply
C		Gateway PI485 in the Outdoor Unit
PI485		External Module Gateway PI485
	BUS–A , BUS–B	Communication with the Control Electronics of the Process Module PLC
	GND	Power Supply
	+ 10V	Not in Use

PRODUCT INFORMATION

THERMA V R410A IWT (INTEGRATED WATER TANK)

TERMINAL INFORMATION



Connection Board

Mark	Connecting Terminals	Dimensions of Cables	Description
X1	L1, L2, L3, N	-	Power Cable
X2	A5, GND	2 x 0.75mm²	Temperature Sensor of Outdoor Temperature
	Q12, N	2 x 0.75mm²	Additional External Source
	N, Q11	3 x 0.75mm²	Cooling Valve
X3	Q7, N	3 x 0.75mm²	Circulation Pump of Heating Cycle 1 (Optional)
	Q8, N	3 x 0.75mm²	Circulation Pump of Heating Cycle 2 (Optional)
	N, Q9+, Q10-	3 x 0.75mm²	Mixing Valve of Heating Cycle 2 (Optional)
	A7, GND	2 x 0.75mm²	Temperature Sensor of Mixing-Heating Cycle 2 (Optional)
X4	D8, GND	2 x 0.75mm²	Switch for Heating / Cooling (Optional)
	D7, GND	2 x 0.75mm²	Thermostat of Mixing Cycle 2 (Optional)
	D6, GND	2 x 0.75mm²	Thermostat of Mixing Cycle 1 (Optional)
	D5, GND	2 x 0.75mm²	Remote On/Off (Optional)
X5	BUS–A, BUS – B, GND	2	Communication of the External Control Unit in the WPLV Device
X6	A+, B-, 12V, GND	4 x 0.75mm²	Communication Spatial Corrector (Optional)
X7	A+, B-, 12V, GND	4 x 0.75mm²	Communication with the Expansion Unit TT3003

• Power supply + Electrical heater
- X1 : L1, L2, L3, N, G

• Communication to ODU
- X5 : BUS-A, BUS-B, GND

• Temp. sensors, Digital outputs & inputs
- X2 : DHW temp. – A2, external temp. - A5, output external heat source - Q12, output cooling - Q11
- X3 : supply temp. loop #2 - A7, output opening / closing mixing valve loop #2, - Q9 / Q10, output pump loop #1 - Q7, output pump loop #2 - Q8
- X4 : input remote deactivation - D5, input thermostat loop #1 - D6, input thermostat loop #2 D7, input mode switch - D8

• Room corrector KT-1 / KT-2
- X6 : A+, B-, GND, 12V

• Extended module TT3003
- X7 : A+, B-, GND, 12V

PRODUCT INFORMATION

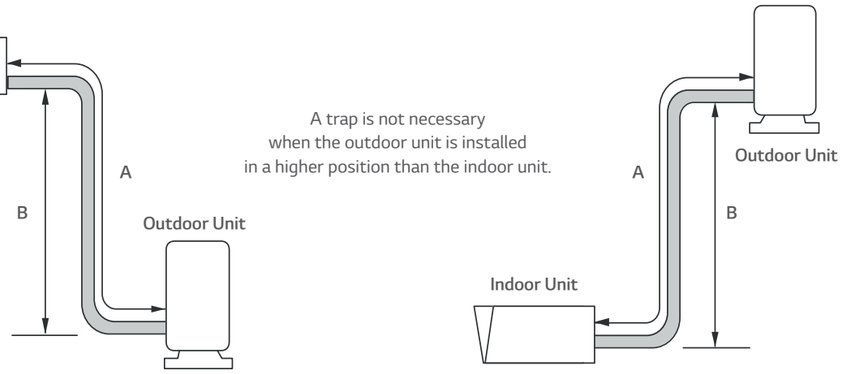
THERMA V R410A IWT (INTEGRATED WATER TANK)

INSTALLATION & SVC SPACE

Pipe Size (mm : inch) (Diameter : Ø)		Length A (m)		Elevation B (m)		* Additional Refrigerant (g/m)
Gas	Liquid	Standard	Max.	Standard	Max.	
15.88 (5/8")	9.52 (3/8")	7.5	50	0	30	40

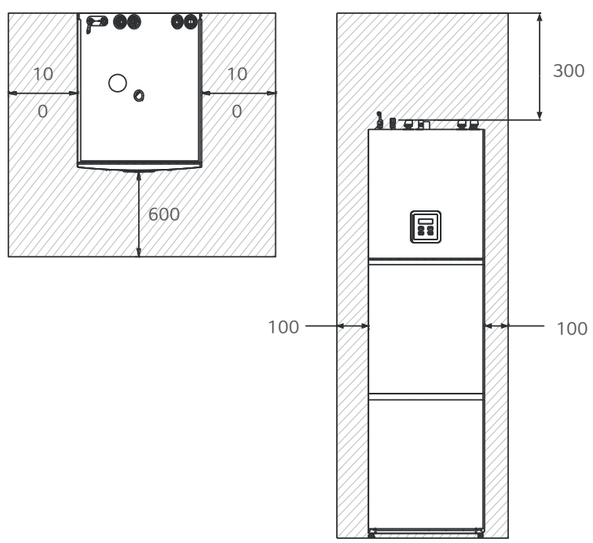
* In split of Standard Condition, More refrigerant charge is required at site for stable performance. (9kW : 800g, 12/14/16kW : 1,200g) Furthermore, additional refrigerant should be charged more for exceeding Standard Piping Length.

Constraints in Pipe Length and Elevation



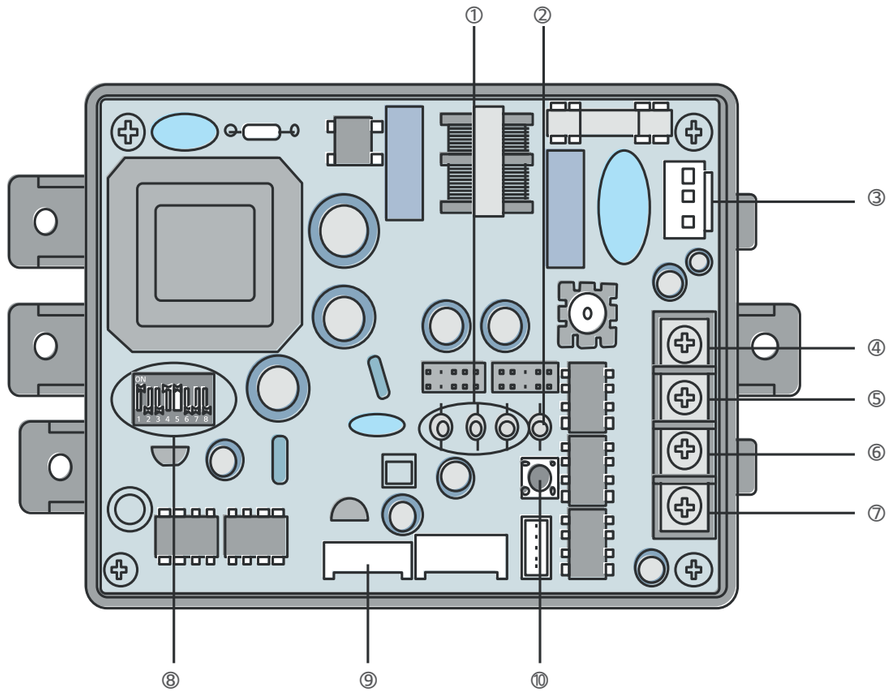
Required Minimum Clearances

[Unit : mm]



MODBUS CONVERTER (PP485B00K)

It is installed to bridge communication between outdoor units and indoor units.



• **Modbus Gateway for Indoor Unit**

① LED01G, 02G, 03G : Communication Status LED
② LED1 : RS-485 Status LED
③ CN_PWR : 220V ~ Connector
④ +10V : DC 10 V Terminal
⑤ GND : Ground
⑥ BUS_A : *RS-485 (+) Terminal (Refer to note)
⑦ BUS_B : *RS-485 (-) Terminal
⑧ DIP Switch : Product Selection
⑨ CN_OUT : Outdoor Unit Connector
⑩ Reset Switch : Modbus Converter Reset

* RS-485 is one of the international interface standards for serial communication.

PRODUCT INFORMATION

THERMA V HIGH TEMP.

Outdoor Unit

Indoor Unit

Controller

No.	Contents	Remark
1	Wi-Fi Control	Need Wi-Fi Modem (Accessory)
2	Control by Room Air Temp. Sensor	Air Temp. Sensor Integrated in RS3
3	Temperature Control Definition	Leaving Water Temperature
		Room Air Temperature Base Control
4	Weather Dependent Operation	Auto (Heat) Operation
5	PI485 Gateway	Accessory for Central Control
6	Air Purge Operation	Pump Test Run (1 Hour)
7	DHW Tank Anti-Legionella Operation	Target Temperature 60 ~ 80°C
		Operation Maintain Time : 1 ~ 12 Hours
8	Main Water Pump	230V AC, On/Off Control
9	External Water Pump	Contact Signal (On/Off)
10	Energy Monitoring	Need Meter Interface (Accessory), Heat Meter & Electricity Meter (Field scope)
11	Smart Grid (SG)	SGN / SG1 / SG2 / SG3
12	LG Central Controller	ACP, AC Smart, AC Ez Touch
13	Connection with External Controller	Thermostat (230V AC Signal)
		Dry Contact (Accessory)
		Programmable Digital Input Operation
		Modbus * (Need PI485 and Modbus RTU Gateway)

* Direct Modbus communication without Modbus RTU Gateway is not supported.

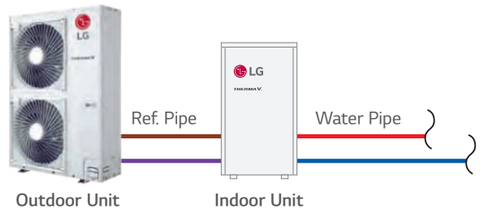
Key Features

- Inverter Compressor
- 80°C Leaving Water Temperature
- 3 Way Piping Installation (ODU)
- Compact Design
- High Reliability by Flow Switch

Main Components

- PHE (Ref.-Water)
- Flow Switch
- Remote Controller
- Strainer (Packed Inside Box)

THERMA V HIGT TEMP is a kind of split type that consists of indoor unit and outdoor unit. Thanks to the cascade two(2) stage compression technology, it can supply such high leaving water temperature up to 80°C with high energy efficiency. THE **LG THERMA V HIGH TEMP** is suitable for houses which have poor insulation or existing old radiator, or have to meet sanitary water regulation which requires high water temperature.



Piping Length	Standard	m	7.5
	Max.	m	50
Piping Level Difference	Max.	m	30
Chargeless-Pipe Length		m	7.5

• Space Heating

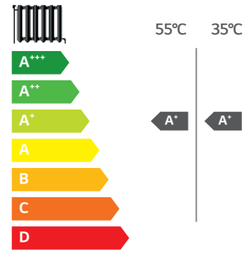
011-1W0336

80°C

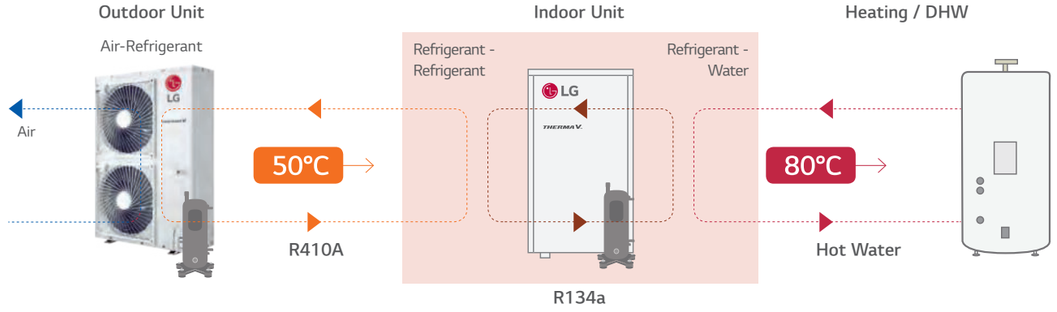
R410A / R134a

Black Fin

LG ThinQ



THERMA V High Temp – Cycle Diagram



Line up

● : Heating Capacity(kW)

Capacity (kW)		16
High Temp.	1Ø 230V	● (16.0)

* Production of above indicated models could be discontinued without prior notice considering manufacturer's circumstances.

Seasonal Energy

Description			Outdoor Unit / Indoor Unit	HU161HA U33 / HN1610H NK3
Space Heating (According to EN14825)	Average Climate Water Outlet 35°C	SCOP	-	3.23
		Rated Heat Output (Prated)	kW	13
		Seasonal Space Heating Efficiency (ηs)	%	126
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+
		Annual Energy Consumption	kWh	8,618
	Average Climate Water Outlet 55°C	SCOP	-	3.01
		Rated Heat Output (Prated)	kW	11
		Seasonal Space Heating Efficiency (ηs)	%	117
		Seasonal Space Heating Eff. Class (A+++ to D Scale)	-	A+
		Annual Energy Consumption	kWh	7,424

PRODUCT INFORMATION

THERMA V HIGH TEMP.

SPECIFICATION

Technical Specification					INDOOR	OUTDOOR
					HN1610H NK3	HU161HA U33
Water Side	Operation Range (LWT)	Heating	Min. ~ Max.	℃ DB	25 ~ 80	-
		DHW	Min. ~ Max.	℃ DB	25 ~ 80	-
	Heat Exchanger	Type		-	Brazed Plate HEX	-
		Quantity			1	-
		Number of Plate		EA	76	-
		Water Volume		ℓ	1	-
	Piping Connections	Inlet		mm	Male PT 25(1)	-
		Outlet		mm	Male PT 25(1)	-
	Rated Water Flow		Min. ~ Max.	ℓ/min	46 (15 - 70)	-
	Head loss			kPa	30.68	-
	Strainer[1)]	Mesh Size		-	28 mesh	-
		Material		-	Stainless Steel	-
	Devices for Water Circuit			-	Flow Switch	-
Refrigerant Side	Operation Range (OAT)	Heating	Min. ~ Max.	℃ DB	-	-25 ~ 35
	Compressor	Type		-	Hermetic Motor Compressor	Hermetic Motor Compressor
		Model		Model x No.	EPT525MBA x 1	RJB036MAA x 1
		Motor Type		-	Scroll	Scroll
		Displacement		cm^3/Rev.	52.5	31.6
	Heat Exchanger	Type		-	Brazed Plate HEX	Fin & Tube
		Quantity			1	2
		Number of Plate		EA	50	-
	Refrigerant	Type		-	R134a	R410A
		GWP (Global Warming Potential)		-	1,430.00	2,078.50
		Precharged Amount		g	1,800	3,800
		t-CO_2 eq.		-	2.57	7.9
		Control		-	Electronic Expansion Valve	Electronic Expansion Valve
	Refrigerant Oil	Type		-	FVC68D	FVC68D
		Charged Volume		cc x No.	1,300	1,000
	Piping Connections	Liquid Side		mm	9.52 (3/8)	9.52 (3/8)
		Gas Side		mm	15.88 (5/8)	15.88 (5/8)
		Piping Length	Standard	m	-	7.5
			Max.	m	-	50
		Piping Level Difference	Max.	m	-	30
		Chargeless Pipe Length		m	-	7.5
		Additional Charging Volume		g/m	-	40
	Fan	Type		-	-	Propeller
		Air Flow Rate	Rated	m^3/min x No.	-	60.0 x 2
	Fan Motor	Type		-	-	BLDC
		Output		W x No.	-	124 x 2
Technical	Sound Power Level	Heating	Rated	dB(A)	58 (63_Cooling Fan On)	63
	Sound Pressure Level (at 1m)	Heating	Rated	dB(A)	50	55
	Dimensions	Unit	W x H x D	mm	520 x 1,080 x 330	950 x 1,380 x 330
		Packed Unit	W x H x D	mm	682 x 1,168 x 423	1,140 x 1,553 x 466
	Weight	Unit		kg	84	89
		Packed Unit		kg	92	102
Electrical	Power Supply			V, Ø, Hz	220-240, 1, 50	220-240, 1, 50
	Maximum Power Input			W	4,750	4,445
	Maximum Running Current			A	20.2	18.9
	Circuit Breaker			A	25.0	20.0
	Wiring Connections	Power Cable (H07RN-F) (Included Earth)		mm^2 x cores	4.0 x 3	4.0 x 3
		Communication Cable (VCTF-SB) (Included Earth)		mm^2 x cores	1.0~1.5 x 2	-

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature, DHW : Domestic Hot Water
1) Strainer is provided as a loose item.

Nominal Capacity and Nominal Input				Outdoor Unit	HU161HA U33
Condition		OAT (℃) DB / WB	LWT (℃)	Indoor Unit	HN1610H NK3
Capacity	Heating	7 / 6	35	kW	16.0
		7 / 6	55	kW	14.0
Power Input	Heating	7 / 6	35	kW	4.89
		7 / 6	55	kW	5.00
COP	Heating	7 / 6	35	W/W	3.27
		7 / 6	55	W/W	2.78
Rated Water Flow Rate (at LWT 35℃)				LPM	46.0

* OAT : Outdoor Air Temperature, LWT : Leaving Water Temperature

Note
1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes.
3. Sound power level is measured on the rated condition in accordance with ISO 9614 standard and these sound values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (In accordance with EN14511) :
   Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is zero.
5. This product contains Fluorinated greenhouse gases.

PRODUCT INFORMATION

THERMA V HIGH TEMP.

PERFORMANCE TABLE IN HEATING

MAXIMUM HEATING CAPACITY (INCLUDING DEFROST EFFECT)

HU161HA U33 + HN1610H NK3

Outdoor Temperature	Water Flow Rate 46.0 LPM								Water Flow Rate 28.8 LPM	
	LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	13.50	2.30	13.29	2.20	13.07	2.10	12.86	2.00	12.64	1.90
-20°C DB	14.19	2.45	14.04	2.42	13.88	2.31	13.73	2.20	13.58	2.05
-15°C DB	14.89	2.60	14.79	2.65	14.70	2.52	14.60	2.40	14.51	2.21
-7°C DB	16.00	3.15	16.00	3.01	16.00	2.86	16.00	2.72	16.00	2.45
-2°C DB	16.00	3.18	16.00	3.12	16.00	2.97	16.00	2.81	16.00	2.54
0°C DB	16.00	3.20	16.00	3.20	16.00	3.04	16.00	2.88	16.00	2.60
2°C DB	16.00	3.25	16.00	3.35	16.00	3.18	16.00	3.00	16.00	2.73
7°C DB	16.00	3.27	16.00	3.54	16.00	3.35	16.00	3.16	16.00	2.79
10°C DB	16.00	3.44	16.00	3.66	16.00	3.45	16.00	3.25	16.00	2.97
15°C DB	16.00	3.74	16.00	3.85	16.00	3.63	16.00	3.41	16.00	3.13
18°C DB	16.00	3.91	16.00	3.96	16.00	3.73	16.00	3.50	16.00	3.22
20°C DB	16.00	4.03	16.00	4.04	16.00	3.80	16.00	3.56	16.00	3.28
35°C DB	16.00	4.90	16.00	4.61	16.00	4.32	16.00	4.03	16.00	3.74

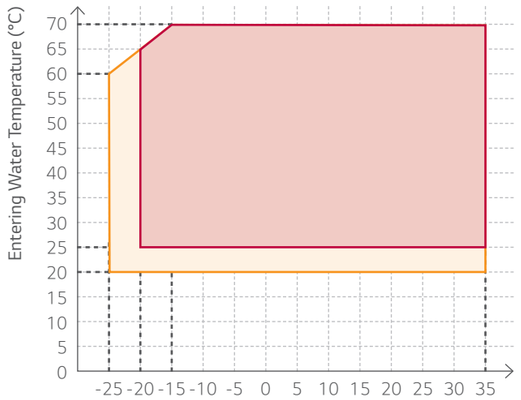
Outdoor Temperature	Water Flow Rate 28.8 LPM		Water Flow Rate 23.0 LPM							
	LWT 60°C		LWT 65°C		LWT 70°C		LWT 75°C		LWT 80°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25°C DB	12.43	1.80	12.21	1.70	12.00	1.60	-	-	-	-
-20°C DB	13.42	1.98	13.27	1.86	13.11	1.75	12.96	0.56	-	-
-15°C DB	14.41	2.15	14.32	2.03	14.22	1.90	14.10	1.11	14.00	1.72
-7°C DB	16.00	2.43	16.00	2.29	16.00	2.15	16.00	2.00	16.00	1.86
-2°C DB	16.00	2.51	16.00	2.35	16.00	2.20	16.00	2.05	16.00	1.89
0°C DB	16.00	2.56	16.00	2.39	16.00	2.23	16.00	2.07	16.00	1.91
2°C DB	16.00	2.65	16.00	2.48	16.00	2.30	16.00	2.13	16.00	1.95
7°C DB	16.00	2.77	16.00	2.58	16.00	2.39	16.00	2.20	16.00	2.18
10°C DB	16.00	2.85	16.00	2.64	16.00	2.44	16.00	2.24	16.00	2.04
15°C DB	16.00	2.97	16.00	2.75	16.00	2.53	16.00	2.31	16.00	2.09
18°C DB	16.00	3.04	16.00	2.81	16.00	2.58	16.00	2.35	16.00	2.12
20°C DB	16.00	3.09	16.00	2.85	16.00	2.62	16.00	2.38	16.00	2.14
35°C DB	16.00	3.46	16.00	3.17	16.00	2.88	16.00	2.59	16.00	2.30

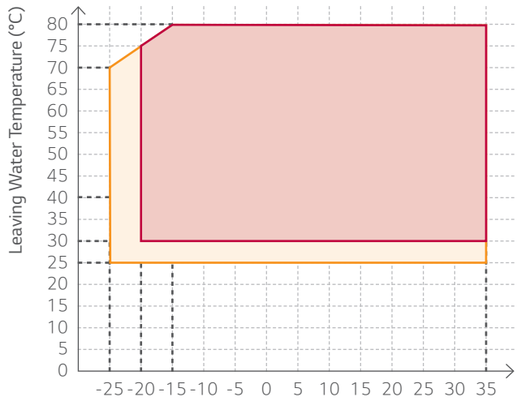
Note
1. DB : Dry bulb temperature (°C), LWT : Leaving Water Temperature (°C), LPM : Liters Per Minute (ℓ/min)
2. TC : Total Capacity (kW), COP : Coefficient Of Performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN-14511.
   • Rated values are based on standard conditions, and it can be found on specifications.
   • Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   • In accordance with the test standard (or nations), the results may vary.
5. The shaded areas are not guaranteed continuous operation.

OPERATION RANGE

HU161HA U33 + HN1610H NK3

Heating

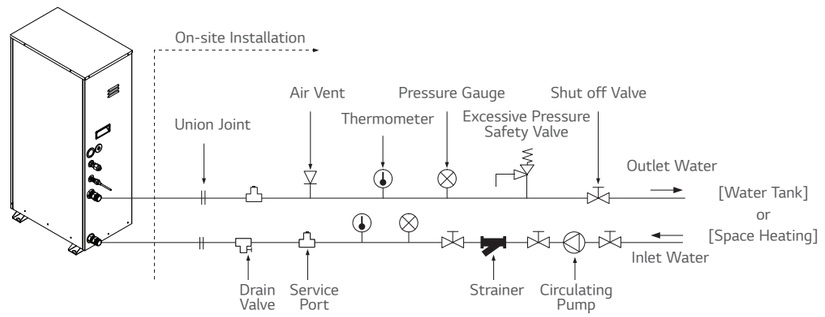




* The remote control settings are only available in the continuous operation area.

WATER PIPING SYSTEM

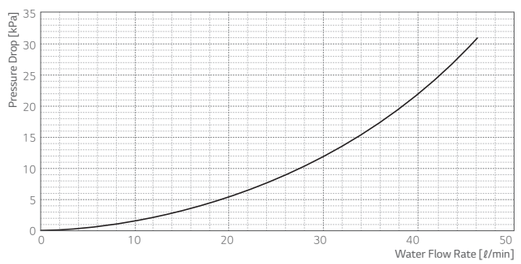
Unlike other models, there is no water side components inside of it, therefore please install water side components separately.



Head Loss by Water Flow

The head loss by water flow is based on test results in the unit, not a plate exchanger.

Kv (Flow coefficient) : 4.98 (46 LPM)

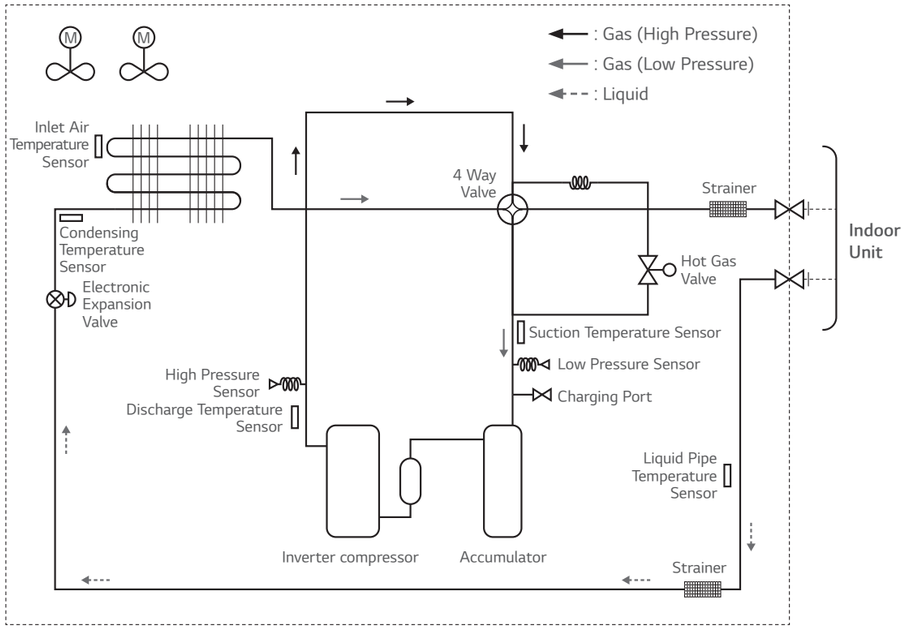


PRODUCT INFORMATION

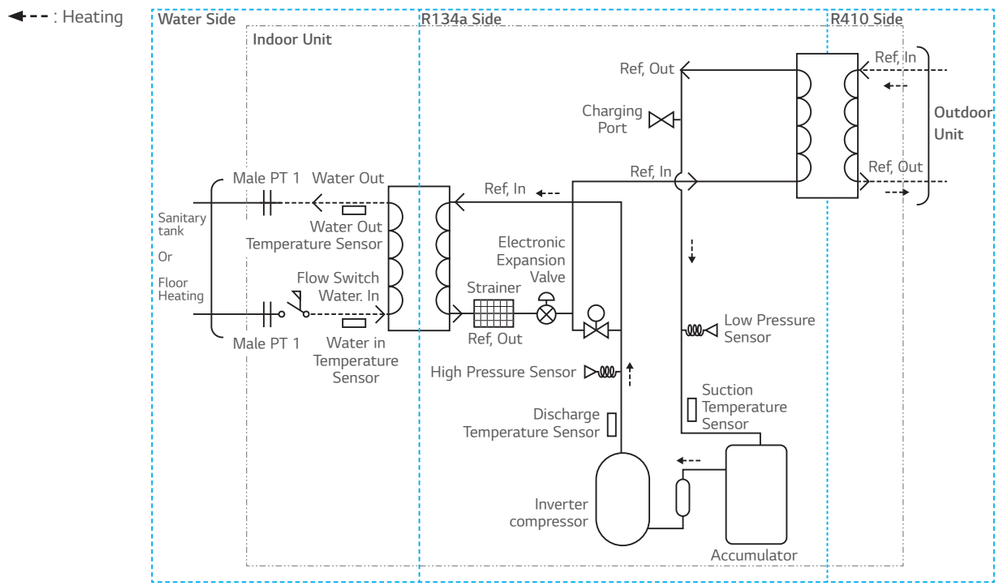
THERMA V HIGH TEMP.

DRAWINGS

Outdoor Unit (HU161HA U33)



Indoor Unit (HN1610H NK3)

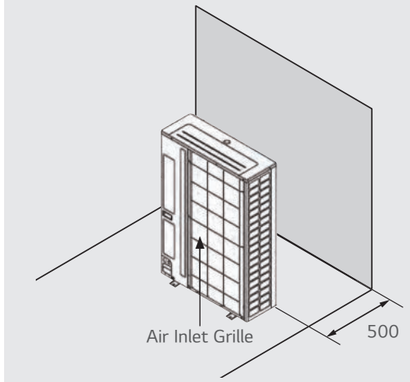


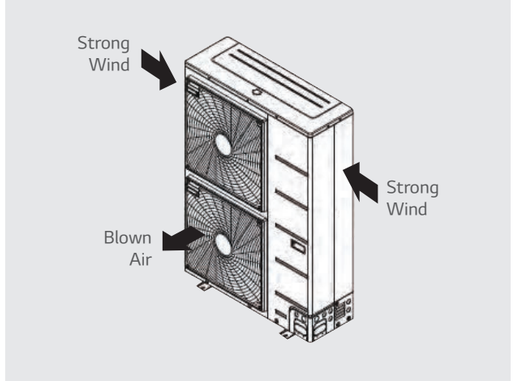
INSTALLATION

Outdoor Unit (HU161HA U33)

- Install the unit so that its discharge port faces to the wall of the building. Keep a distance 500 mm or more between the unit and the wall surface.
- Supposing the wind direction during the operation season of the air conditioner, install the unit so that the discharge port is set at right angle to the wind direction.

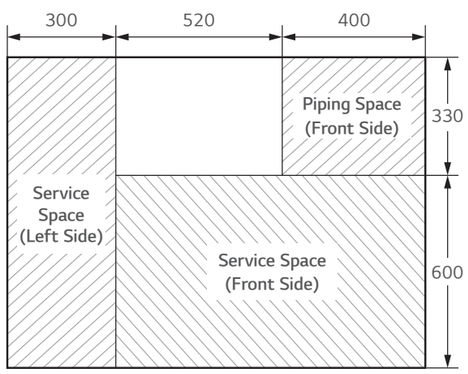
[Unit : mm]





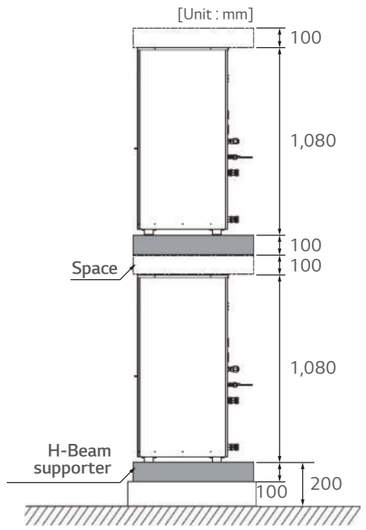
Indoor Unit (HN1610H NK3)

The following values are the least space for installation. If any service area is needed for service according to field circumstance, obtain enough service space.



[Unit : mm]

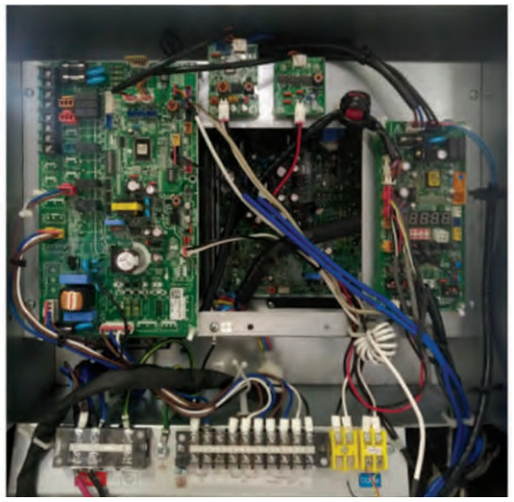
[Unit : mm]



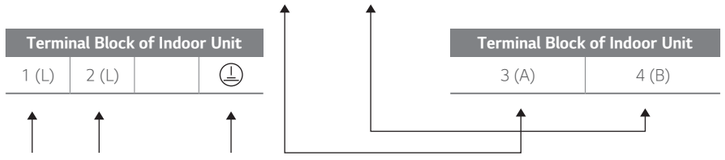
PRODUCT INFORMATION

THERMA V HIGH TEMP.

PCB & TERMINAL BLOCK INFORMATION



Terminal Block of Outdoor Unit									
Outdoor Unit		Indoor Unit		Central Control		DRY1	DRY2	GND	12V
A	B	A	B	A	B	-	-	-	-



PCB Information

No.	Name	Remark	Connection
1	Dry Contact	PDRYCB000 / PRRYCB320	CN-CC
2	RS3 Remote Controller	-	CN_REMO
3	DHW Temp. Sensor	PHRSTA0	CN_TH4
4	Wi-Fi Modem	PWFMDD200	CN_WF
5	Remote Air Sensor	PQRSTA0	CN_ROOM
6	Ext. Pump	Contact Signal	TB_EXT_Pump
7	Smart Grid (SG)	Contact	TB_SG1 / TB_SG2

Terminal block information

L	N		L	L1	N	L	N	L1	L2
PUMP (A)			3 Way VALVE (A)			THERMOSTAT (Default : 230V AC)			

No.	Name	Remark	Connection
1	Pump (A)	230V AC	L / N (1 / 2)
2	3 Way Valve (A) for Hot Water	3 Wire, SPDT, 230V AC	L / L1 / N (4 / 5 / 6)
3	Thermostat	230V AC	L / N / L1 / L2 (7 / 8 / 9 / 10)

Wiring

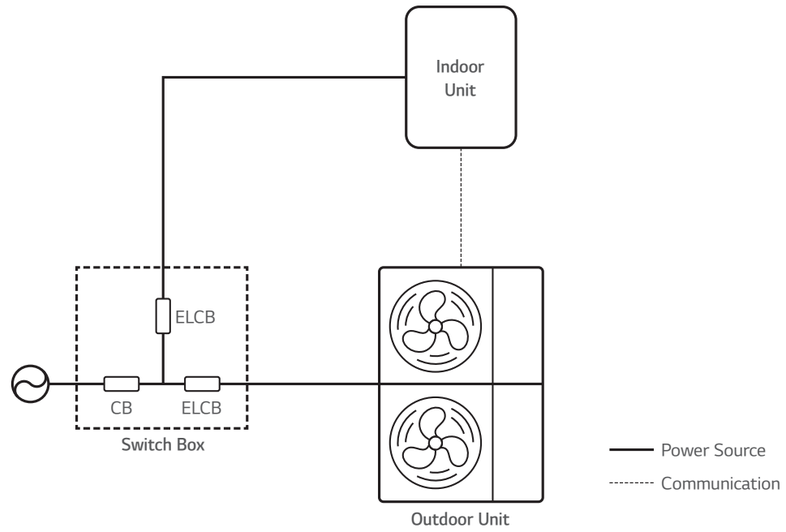
Thermostat (Default : 1 ~ 230V)			
7	8	9	10
L	N	1L	2N
BR	BL	WH	BK
↓ (L)	↓ (N)		↑ (H)
Thermostat			

3 Way Valve (A)		
4	5	6
L	L1	N
BR	WH	BL
↓ (W)	↓ (U)	↓ (N)
3 Way Valve		

(L) : Live signal from PCB to Thermostat
(N) : Neutral signal from PCB to Thermostat
(H) : Heating signal from Thermostat to PCB

(W) : Live signal (Water tank heating) from PCB to 3 way valve
(U) : Live signal (Underfloor heating) from PCB to 3 way valve
(N) : Neutral signal from PCB to 3 way valve

Power Supply Diagram



* For selection of Circuit Breaker(CB), please refer to electrical specification of Product and Check List (Page 216 ~ 217) included in this Book.

CONTROL & ACCESSORIES

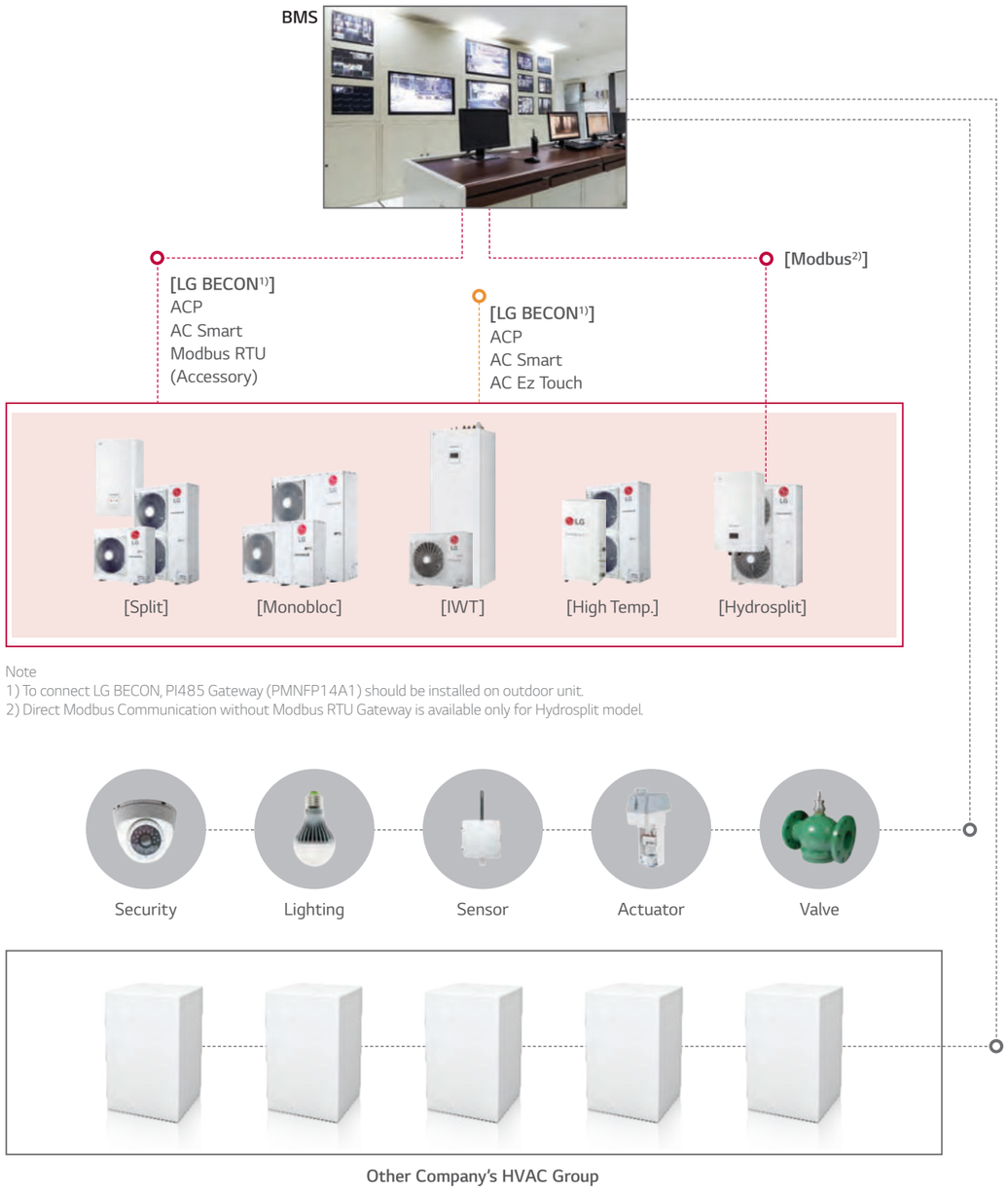
1. Control Solutions
2. Accessories

CONTROL & ACCESSORIES

CONTROL SOLUTIONS

CENTRAL CONTROL

Integrated control is possible by LG BECON or BMS. (Building Management System)



Note
1) To connect LG BECON, PI485 Gateway (PMNFP14A1) should be installed on outdoor unit.
2) Direct Modbus Communication without Modbus RTU Gateway is available only for Hydrosplit model.

INDIVIDUAL CONTROL

LG's control system provides a variety of solutions that save operational costs and deliver efficient energy control. Standard III Remote Controller with relevant accessories offers not only simple interface to make it easier to control but also diverse information and management function.

Individual Control

Mobile Remote Control
- LG Mobile App, Control (LG ThinQ)
- Operation Schedule
- Error Check

Energy Monitor
- Power Consumption Check
- Produced Heat Energy Check
- Yearly Trend

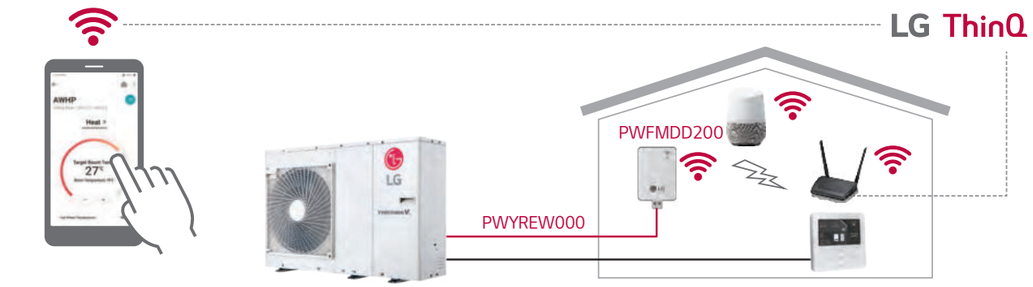
Remote Controller
- 4.3" Color Display
- Easy Interface
- Multi Language

Dry Contact for Thermostat
- Interface for 3rd Party Thermostat
- On/Off and Operation Mode Control
- Operation and Error Status Monitor

Interface
- Annual Operation Schedule
- Operation History
- Easy Commissioning

LG ThinQ & Google Voice Control

Access your THERMA V anytime from anywhere



* Search "LG ThinQ" on Google Play or App store then download the app.
* Google home voice is supported in UK, France, Germany, Spain, Italy, Austria, Ireland and Portugal.

Simple operation by ThinQ
- Operation 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
- Operation On/Off
- DHW On/Off
- Operation Mode Selection

* Mandatory Accessory : PWFMDD200 (LG Wi-Fi Modem) and PWYREW000 (10m extension connect cable in between THERMA V and Wi-Fi Modem)

CONTROL & ACCESSORIES

CONTROL SOLUTIONS

Category	Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Remote Controller	Wired Remote Controller	PREMTW101		All except for R410A IWT model	2-Remote Control	To control AWHP using two remote controller (Additional remote controller)	• 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-remote cable (PZCWRC2, 0.25m) are included.
Central Controller	AC Ez Touch	PACEZA000		All except for R410A IWT model	Centralized Control	To control AWHP using LG central controller	• 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) • Operation History • Remote Controller Lock (All, Temp, Mode) • PC Access Supported (IPv6 supported) • DI 1EA (Emergency Stop Only) • Size (W x H x D) : 137 x 121 x 25
	AC Smart	• PACS4B000 (Smart 4) • PACS5A000 (Smart 5)					• 10.2 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, Temp, Mode) • 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, Temp, Mode) • 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
Gateway	ACP Lonworks	PLNWKB000		All except for R410A IWT model	Centralized Control	To link with AWHP and other existing building control system	• Web Access Controller • Max. 64 Unit Control • ACP Function Included • Lonworks Protocol Support • Size (W x H x D) : 270 x 155 x 65

Category	Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Gateway	Modbus RTU Gateway	PMBUSB00A		All except for R410A IWT model	Centralized Control	To communicate and control through the central controller (Providing Modbus RTU connection between AWHP and BMS)	• 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 Gateway	PMNFP14A1[1]		All except for R410A IWT model		To communicate and control through the central controller (Converting LG protocol to RS485 protocol)	• 1 for each outdoor unit • Power : supplied by outdoor unit
	PI485 Gateway	PP485B00K[2]		R410A IWT		To communicate between outdoor unit and IWT type indoor unit	• 1 for each outdoor unit • Power : supplied by outdoor unit
Dry Contact	Simple Dry Contact	PDRYCB000		All except for R410A IWT model	-	To connect between the AWHP and external devices to control various functions	• 1 Set Per 1 Unit • 1 Input Contact for Turning On/Off • Input Power : 220-240V • 2 Output Contacts - Operation Status - Error Status
	Dry Contact for Thermostat	PDRYCB320					• 1 Set Per 1 Unit • Non Voltage or 12 ~ 24V • 1 Analog input for Set point • 8 Digital Input Contacts for Thermostat - On/Off, Operation Mode, DHW Heating - Emergency Mode, Silent Mode • 2 Output Contacts - Operation Status - Error Status
ETC	LG Wi-Fi Modem	PWFMDD200		All except for R410A IWT model	Wi-Fi Control via LG ThinQ	To control AWHP via smartphone	• Basic Control Function - On/Off, Operation Mode, Set Temp. - DHW Heating and Set Temp. • Weekly On/Off Schedule • Error Status Check • Frequency : 2.4GHz • IEEE 802.11b/g/n Supported
	Meter Interface	PENKTH000		All except for R410A IWT model	Energy Monitoring	To measure production / consumption power	• Energy Meter Interface to Monitor Electricity and Heat Energy - Max. 3 Watt-Hour Meter - Max. 1 Heat Meter - Pulse Width : 40ms ~ 100ms • Modbus RTU Comm. with THERMA V - 2 Wire RS485 / 9600bps • Power : DC 12V • Size (W x H x D) : 54 x 90 x 61
	2 Zone Valve Controller	PZNVVB200		All except for R410A IWT model	Zone Valve Control	To control individual zone valves with room temperature sensor or room thermostat	• Individual temperature setting possible. (To be set through wired remote control in room temperature input mode) • Room temperature detection (AI : 2 ports) • 3rd party thermostat interlock input. (DI : 2 port) • Can read one DI or AI for each zone. • Maximum number of connections : Max. 4EA (Expandable up to 8-zone) • Size (W x H x D) : 53.6 x 89.7 x 60.7 • Power : DC12V for Module, AC24V for valve

1) PI485 Gateway (PMNFP14A1) should be installed on outdoor unit to use Central controller.
2) PI485 Gateway (PP485B00K) should be purchased separately and installed on outdoor unit for connection with R410A IWT IDU.

CONTROL SOLUTIONS

LG HEATING CONFIGURATOR

Easy Installation and Commissioning

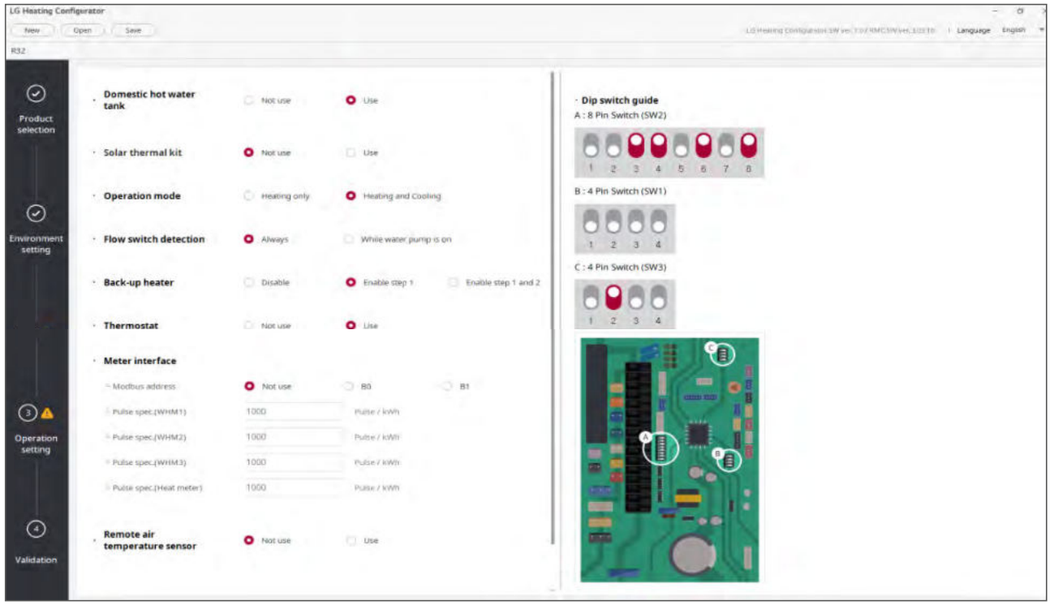
• Installer Office

- Download the software from our LG B2B Portal website.
- Install the program on your PC.
- Run the program and set it according to the user conditions.
- After finishing setting, save to micro SD memory card.

• On Site

- Insert the card on back of RS3 wired remote controller.
- Go to configuration mode and load the saved file.

Features



Configurator on PC Screen

Note
1. PI485 Gateway (PMNFP14A1) should be installed on outdoor unit to use Central controller.
2. PI485 Gateway (PP485B00K) should be purchased separately and installed on outdoor unit for connection with R410A IWT IDU.

- Environment Setting
- Operation Setting
- Display Setting of Dip S/W

The configurator consists of an install software and a language pack as excel format.
You can down the packages in our LG B2B Portal. In addition, the user can register and use the desired language.

Install S/W + Language Pack

CONTROL & ACCESSORIES

ACCESSORIES

DOMESTIC HOT WATER TANK

Single Coil
OSHW-200F AEU
OSHW-300F AEU
OSHW-500F AEU

Double Coil
OSHW-300FD AEU

Double Coil Single Coil

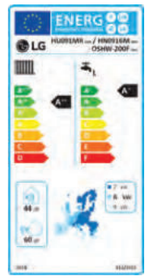
Domestic Hot Water Tank			OSHW-200F	OSHW-300F	OSHW-500F	OSHW-300FD
General Characteristics	Water Volume	ℓ	200	300	500	300
	Diameter	mm	640	640	810	640
	Height	mm	1,350	1,850	1,900	1,850
	Empty Weight	kg	61	100	146	106
	Tank Materials	-	STS, F18	STS, F18	STS, F18	STS, F18
	Color	-	Grey	Grey	Grey	Grey
Specification of Electric Back up	Additional Electric Heater	W	2,400	2,400	2,400	2,400
	Power Supply	V, Ø, Hz	230, 1, 50-60	230, 1, 50-60	230, 1, 50-60	230, 1, 50-60
	Adjustable Thermostat	℃	0 ~ 90	0 ~ 90	0 ~ 90	0 ~ 90
Specification of Heat Exchanger	Heat Exchanger Type	-	Single	Single	Single	Single
	Material	-	F18 STEEL	F18 STEEL	F18 STEEL	F18 STEEL
	Maximum Water Temp.	℃	90	90	90	90
	Coil Surface	m²	2.3	3.1	4.8	3.1 + 0.97
Water Connections	Heat Pump Inlet	inch	1 BSP Female	1 BSP Female	1 1/4 BSP Female	3/4 BSP Female (Upper Coil)
	Heat Pump Outlet	inch	1 BSP Female	1 BSP Female	1 1/4 BSP Female	3/4 BSP Female (Upper Coil)
	Solar Inlet	inch	-	-	-	1 BSP Female (Lower Coil)
	Solar Outlet	inch	-	-	-	1 BSP Female (Lower Coil)
	City Water Inlet	inch	3/4 BSP Male	3/4 BSP Male	1 BSP Male	3/4 BSP Male
	City Water Inlet	inch	3/4 BSP Female	1 BSP Female	1 BSP Female	1 BSP Female
Energy Efficiency Class		-	B	B	B	B
Standing Heat Loss		W	61	70	83	70

Mandatory Optional Accessories	
Domestic Hot Water Tank Installation Kit	PHLTA (1Ø, Split), PHLTB (Monobloc), PHLTC (3Ø, Split)
Optional Accessories	
Thermostatic Mixing Valve (¾" dn20)	OSHA-MV
Thermostatic Mixing Valve (1" dn25)	OSHA-MV1
3 Way Valve	OSHA-3V

COMBINED TEST WITH DHW TANK

LG has conducted a combination test of THERMA V with DHW tanks in accordance with EN16147 and obtained an ErP label for packages in order to cope with European nZEB regulations.

- R32 Monobloc (5, 7, 9 kW) + OSHW-200F
- R32 Monobloc (12, 14, 16 kW) + OSHW-200F
- R32 Monobloc (5, 7, 9 kW) + OSHW-300F
- R32 Split Hydro Box (5, 7, 9 kW) + OSHW-200F

Model		R32 Split (5/7/9 kW)	R32 Monobloc (5/7/9 kW)	R32 Monobloc (12/14/16 kW)	R32 Monobloc (5/7/9 kW)
	AWHP				
	IDU	HN0916M NK4	HM051M U43 HM071M U43 HM091M U43	HM121M U33 HM141M U33 HM161M U33	HM051M U43 HM071M U43 HM091M U43
	ODU	HU051MR U44 HU071MR U44 HU091MR U44			
	Tank	OSHW-200F AEU	OSHW-200F AEU	OSHW-200F AEU	OSHW-300F AEU
Declared Load Profile		L	L	L	XL
Average Climate	Grade	A+	A+	A	A+
	Efficiency	118%	122%	109%	134%
	Annual Energy Consumption	865 kWh	839 kWh	940 kWh	1,254 kWh
Energy Label					

CONTROL & ACCESSORIES

ACCESSORIES

ELECTRIC BACK UP HEATER

HA031M E1
HA061M E1
HA063M E1

Applicable Product : R32 Monobloc and R32 Silent Monobloc

Electrical Specification		HA031M E1	HA061M E1	HA063M E1
Type	-	Sheath	Sheath	Sheath
Number of Heating Coil	EA	1	2	3
Capacity Combination	kW	3.0	3.0 + 3.0	2.0 + 2.0 + 2.0
Heating Steps	Step	1	2	1
Power Supply	V, Ø, Hz	220-240, 1, 50	220-240, 1, 50	380-415, 3, 50
Maximum Current	A	12.0	24.0	8.7
Dimensions (W x H x D)	mm	210 x 607 x 220		
Net Weight (Unit)	kg	13.0	13.8	14.1
Power Cable (H07RN-F)	mm^2 x Cores	1.5 x 3C	4.0 x 3C	2.5 x 4C
Communication Cable (H07RN-F)	mm^2 x Cores	0.75 x 2C	0.75 x 4C	0.75 x 2C

HA061B E1*
HA063B E1*

❶ Heater Element
❷ ELCB
❸ Heater relay PCB
❹ Magnet Switch

[HA061B E1 (1Ø)] [HA063B E1 (3Ø)]

Applicable Product : R32 Hydrosplit

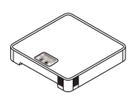
Electrical Specification		HA061B E1	HA063B E1
Type	-	Sheath	Sheath
Number of Heating Coil	EA	2	3
Max. Power Consumption	kW	3.0 + 3.0	2.0 + 2.0 +2.0
Operation	-	Automatic	Automatic
Heating Steps	Step	2	2
Power Supply	V, Ø, Hz	220-240, 1, 50	380-415, 3, 50
Power Cable (Included Earth, H07RN-F)	mm^2 x Cores	4.0 x 3C	2.5 x 4C
Communication Cable (H07RN-F)	mm^2 x Cores	0.75 x 4C	0.75 x 2C

* This unit can be installed inside of indoor unit and it will be available from 2021.

INSTALLATION KIT

Category	Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Installation Kits	Domestic Hot Water Tank Kit	PHLTA (1Ø, Split)		All except for IWT and High temp. models	Domestic Hot Water Heating	To operate with DHW tank	• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay
		PHLTC (3Ø, Split)					
		PHLTB (Monobloc)					• Parts included : DHW tank sensor (Thermistor), Circuit breaker, Relay, Multi harness
	Solar Thermal Kit	PHLLA		All except for IWT, Hydrosplit and High temp. models	Solar Thermal Heat Utilization	To Operate With Solar Thermal System	• Length of thermistor : 12m • Size of tube connector (W x H x D) : 110 x 55 x 22

SENSOR / VALVE / VESSEL / ETC

Category	Model Name	Model Number	Figure	Applicable Product	Relevant Function	Purpose	Feature
Sensors	Room Temperature Sensor	PQRSTA0		All except for R410A IWT	Room Temperature Based Control	To detect room air temperature for room temperature based control	• Max. Wire Length : 15m
	2nd Circuit Thermistor	PRSTAT5K10		All except for R410A IWT and High temp.	2nd Circuit	To detect 2nd circuit temperature when using 2nd circuit function	• 5kΩ thermistor, 10m
	Domestic Hot Water Sensor	PHRSTA0		All except for IWT and High temp. models	Domestic Hot Water Heating	To detect DHW tank temperature	• Included in PHLTA kit
Valves	3 Way Valve	OSHA-3V		All except for IWT models	Domestic Hot Water Heating	To divert water flow between space heating and DHW heating	• Size : DN 20 G 1" connection, male threaded
	Thermostatic Mixing Valve	OSHA-MV		Regardless of model	Domestic Hot Water Supply	To blend hot water with cold water for ensuring constant, safe shower and bath outlet temperature, preventing scalding	• Size : 3/4" DN20 male threaded
		OSHA-MV1					• Size : 1" DN25, male threaded
Vessels	Buffer tank for space heating	OSHB-40KT		R32 IWT	-	To provide the buffer volume of water to the heating circuit	• Volume : 40L • Size (W x H x D) : 518 x 560 x 175
	Expansion vessel for DHW	OSHE-12KT		R32 IWT	-	To absorb the volume changes by temperature of water for the DHW circuit	• Volume : 8L • Connection : 3/4" • Max. pressure : 10 bar • Size (W x H x D) : 416 x 238 x 502
ETC	Extension wire for wire remote controller	PZCWRC1		All except for R410A IWT	-	To extend wire between wired remote controller and indoor unit	• Length : 10m
	Extension cable for Wi-Fi Modem	PWYREW000		All except for R410A IWT	Wi-Fi Control via LG ThinQ	To extend wire between WI-Fi Modem and indoor unit	• Length : 10m
	2-Remote Control Wire	PZCWRC2		All except for R410A IWT model	2-Remote Control	To connect two remote controller on the one indoor unit	• Length : 0.25m • Service part
	Drain Pan	PHDPB		R32 Split, R410A Split	Cooling Operation	To collect condensed water in indoor unit when cooling operation	-
		PHDPC		R32 Hydrosplit			
	Cover Plate	PDC-HK10		R32 IWT, R32 Hydrosplit, R32 Split, R410A Split	-	To fill the blank space of the indoor unit front panel when the remote controller is relocated indoor	-

ENERGY PACKAGE

1. LG Smart Home Energy Package
2. Solar (Photovoltaic)
3. ESS (Energy Storage System)
4. Integrated Solution

ENERGY PACKAGE

LG SMART HOME ENERGY PACKAGE

OUR COMPLETE SOLUTION

With efficient, premium-designed solar modules and a smart energy storage system, LG Smart Home Energy Package can be integrated into all types of houses.

The integrated all-in-one LG Smart Home Energy Package comprises of three products (PV Solar, Energy Storage System and Air-to-Water Heat Pump), enabling customers to generate their own renewable energy and store it intelligently to use it later when needed.

1

PV SOLAR
MODULE

2

ENERGY STORAGE
SYSTEM (ESS)

3

AIR TO WATER
HEAT PUMP (AWHP)

ENERGY PACKAGE

LG SMART HOME ENERGY PACKAGE

ONE LG SYSTEM : VARIOUS ADVANTAGES

LG's innovative Smart Home Energy Package offers you the most efficient, eco-friendly and reliable solution suitable for new built and renovation projects.
Thanks to the integrated system, it will allow you an easier installation and ordering process. Also, The cloud-based Energy Simulator tool will help our partners to generate quotations, as well as easily develop designs and energy simulations.

In addition, end user will benefit from high-quality components, long warranty periods, and service commitment from a company with 60 years of history.

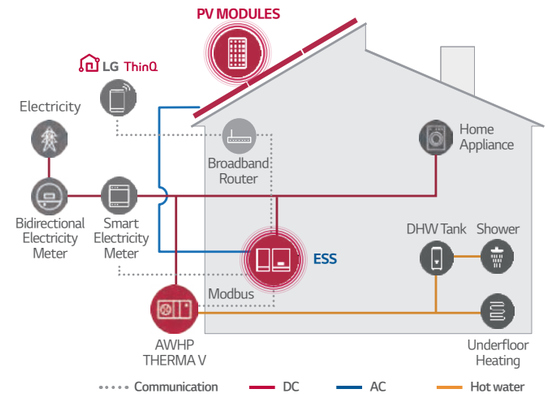
All-integrated System : One-stop shopping for all components
Reliable : Industry-leading warranty periods, high-quality products and service
Energy-efficient, cost-saving solution : Integrated Home Solution
Generating your own electricity and heating : Saves from rising energy cost
Eco-friendly : Reduced CO_2 footprint compared to conventional power sources

USAGE SCENARIO

SCENARIO #1(PV → ESS)

1:00 PM

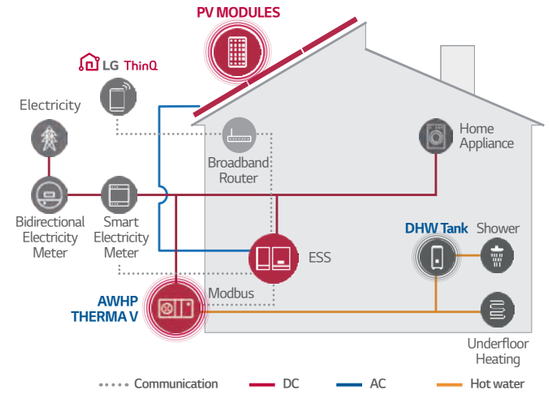
- The sun is shining brightly.
- LG PV Modules are generating electricity at maximum capacity under the bright sun.
- Almost no one is at home, so the electricity consumption is very low.
- Excess electricity is charging the LG ESS system.



SCENARIO #2 (PV → AWHP → DHW Tank)

3:00 PM

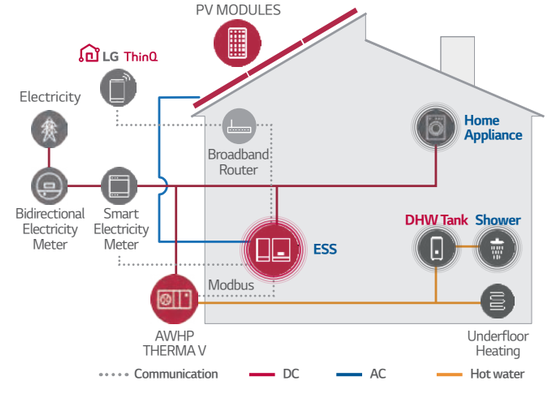
- The battery is now fully charged.
- But Home energy consumption is still at minimal.
- Home owner can sell the electricity back to the grid.
  – but LG Smart Home Energy Package has a better plan.
- It automatically routes the excess electricity to the LG Air-to-Water Heat Pump, filling up hot water tank.



SCENARIO #3 (ESS → Home Appliance)

6:00 PM

- Power consumption increases rapidly in the evening. At the same time, the power produced by the photovoltaic system gradually decreases with the sunset.
- The photovoltaic system can no longer meet the electricity demand in the house.
- Now the LG ESS system provides the stored electricity to power other devices.
- In the DHW (Domestic Hot Water) tank, hot water is ready to be used.

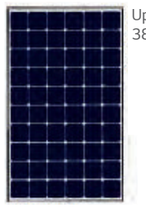


ENERGY PACKAGE

SOLAR (PHOTOVOLTAIC)

PRODUCT LINE UP

LG NeON® R



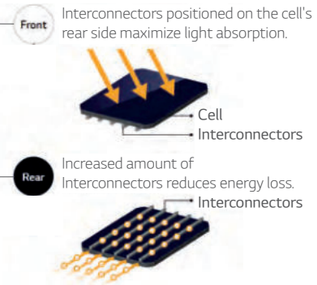
Up to 380W

LG NeON® R 60Cell

The LG NeON® R is a sleek molecule that eliminates metal electrodes on the front side. The module's aesthetic design offers a clean, sleek and modern roof, ultimately increasing the house value.

Delivers Premium Black Frame

Eliminates Electrodes on the Front of Cells



LG NeON® 2

360W
365W
370W

LG NeON® 2 60Cell

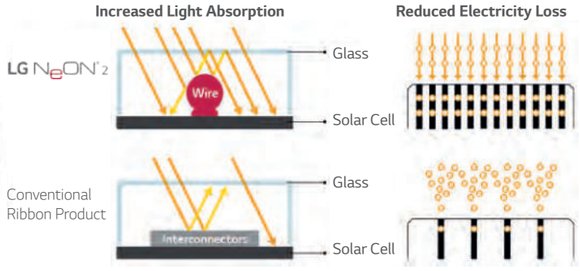
The LG NeON® 2 features LG's Cello Technology™ which increases its power output and reliability making it one of the most powerful and versatile modules on the market.

Cello Technology™

12 Wires

Increased Light Absorption

Reduced Electricity Loss



LG NeON® 2 Black

350W
355W

LG NeON® 2 Black 60Cell

The LG NeON® 2 black is equipped with a sophisticated matte black frame, a complementary black back sheet, and black cells with thin electrodes. This module is suitable to any rooftop.

Matte Black Frame

Black Back Sheet

Black Cell with Cello Technology

SPECIFICATIONS

Product Model	LG NeON® R 60cell
Cell Type	Monocrystalline / N-type
# of Cells	60cell (6 x 10)
Maximum Power	380W
Module Efficiency	22.00%
Dimensions (L x W x H)	1,700 x 1,016 x 40 mm
Weight	17.5kg
Glass (Material)	High Transmission Tempered Glass
Frame (Material)	Anodized Aluminium
Output Warranty of Pmax	Linear Warranty (First year : 98%, After 1st year : 0.3% annual degradation, 25 Years : 90.8%)
Product Warranty	25 Years

Product Model	LG NeON® 2 60cell		
Cell Type	Monocrystalline / N-type		
# of Cells	60cell (6 x 10)		
Maximum Power	360W	365W	370W
Module Efficiency	20.80%	21.10%	21.40%
Dimensions (L x W x H)	1,700 x 1,016 x 40 mm		
Weight	18kg		
Glass (Material)	Tempered Glass with AR Coating		
Frame (Material)	Anodized Aluminium		
Output Warranty of Pmax	Linear Warranty (First year : 98%, After 1st year : 0.3% annual degradation, 25 Years : 90.8%)		
Product Warranty	25 Years		

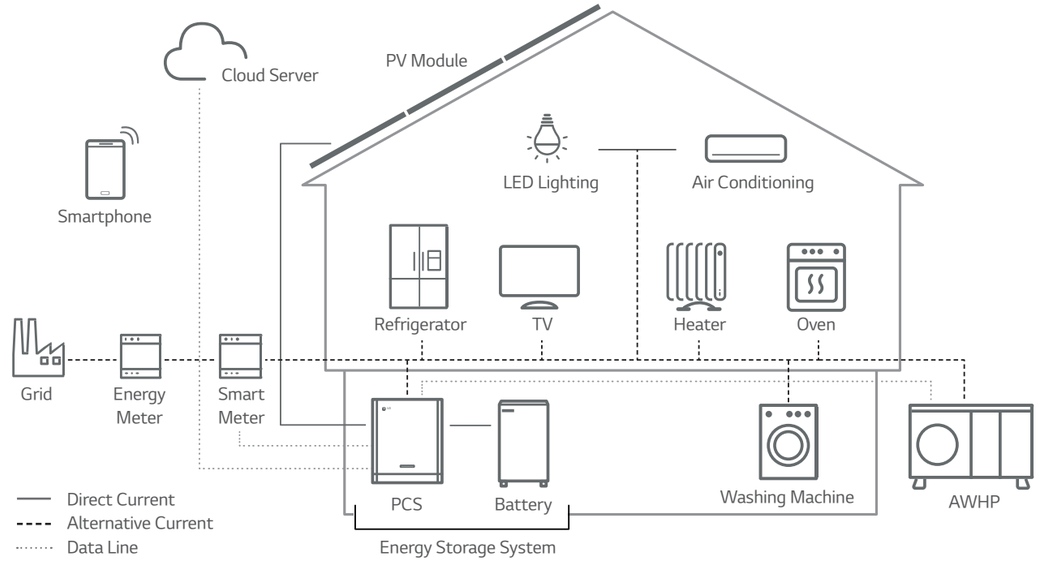
Product Model	LG NeON® 2 Black 60cell	
Cell Type	Monocrystalline / N-type	
# of Cells	60cell (6 x 10)	
Maximum Power	350W	355W
Module Efficiency	20.30%	20.60%
Dimensions (L x W x H)	1,700 x 1,016 x 40 mm	
Weight	18kg	
Glass (Material)	Tempered Glass with AR Coating	
Frame (Material)	Anodized Aluminium	
Output Warranty of Pmax	Linear Warranty (First year : 98%, After 1st year : 0.3% annual degradation, 25 Years : 90.8%)	
Product Warranty	25 Years	

* Due to our policy of innovation, some specifications may be changed without notification.

ENERGY PACKAGE

ESS (ENERGY STORAGE SYSTEM)

SCHEMATIC DIAGRAM & LINE UP



LG Electronics provides Energy Storage Systems (ESS) to enhance self-consumption rate of photovoltaic systems.
LG's high power, three-phase and DC-coupled ESS converts energy more efficiently than AC-coupled ESS.
Thus, LG ESS can achieve higher efficiency with balanced power.
Also, emergency power function is supported to protect your home in the event of a sudden power outage.
Above all, the user-friendly EnerVu mobile application helps the easy system set-up.
The web monitoring function also allows installers and users to check their system status anytime and anywhere.

LG ESS Home 8 / LG ESS Home 10

PCS 8/10kW, Battery 7/9.8kWh

SPECIFICATIONS

Models (PCS)	LG ESS Home 8	LG ESS Home 10
DC Input		
Max. Input Voltage	1,000V	
Min. Input Voltage	150V	
Max. DC Power (per channel)	12kW (6kW)	13.5kW (7.5kW)
Usable MPP Voltage Range	150 ~ 800V	
Number of MPPT	3	
Number of String per MPPT	1	
Max. Input Current per MPPT	13A	
AC Output		
Rated Grid Voltage	3-NPE 400V / 230V	
AC Voltage Range	319 ~ 458V / 184 ~ 264.5V	
Frequency (Frequency Range)	50 Hz (47.5 Hz ~ 51.5 Hz)	
Rated Output Power	8kVA	10kVA
Rated Output Current	11.5A	14.4A
THD / Power Factor	< 5% / ±0.8	
Phases	3	
Efficiency (PCS)		
Max. Efficiency (PV to Grid)	> 97.7%	
European Efficiency (PV to Grid)	> 97.0%	
General Data		
Dimension (W x H x D, mm)	450 x 599 x 210	
Weight	34kg	
Operation Temperature	0 ~ 60°C (Derating at 40~60°C)	
Feature & Function		
Noise emission (Typical)	40dB	
Cooling Type	Forced Convection	
Topology	Transformerless	
Degree of Protection	IP21	
Max. Permissible value of RH	85%	
Warranty (PCS)	10 years	
Certification (PCS)	IEC / EN 62109-1 / -2, VDE-AR-N 4105: 2018, VDE 0126-1-1, ÖVE / ÖNORM E 8001-4-712, TOR D4:2016, IEC61000, EN50438	
Compatibility List		
Energy Meter	ABB (B23 112-100, B23 212-100, B23 312-100)	
AWHP (Air to Water Heat Pump)	LGE (R32 Monobloc)	
PV Optimizer	Tigo (TS4-R-S, TS4-R-O)	
Auto Transfer Switch (Option)	Enwitec (10013677, 10013678, 10013679)	
Battery	LG HB 7H, LG HB 10H	

Model (Battery)	LG HB 7H	LG HB 10H
DC Input / Output		
Battery Type	Lithium Polymer High Voltage	
Total Capacity	7kWh	9.8kWh
Usable Capacity	6.6kWh	9.3kWh
Max. Charge / Discharge Power (Single / Dual)	3.5kW / 7kW	5kW / 7kW
Peak Power (Single / Dual)	5kW / 10kW for 5sec.	7kW / 10kW for 10sec.
Rated Output Voltage	400V	
Max. Charge / Discharge Current	8.5A@420V / 10A@350V	11.9A@420V / 14.3A@350V
General Data		
Dimension (W x H x D, mm)	746 x 688 x 206	746 x 903 x 206
Weight	75kg	97kg
Operation Temperature	-10°C ~ 45°C	
Feature & Function		
Degree of Protection	IP55	
Warranty (Battery)	10 years (SOH 80%)	
Certification (Battery)	CE, IEC62619, IEC61000, UN38.3	

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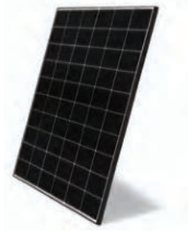
ENERGY PACKAGE

INTEGRATED SOLUTION

INTEGRATED HOME SOLUTION

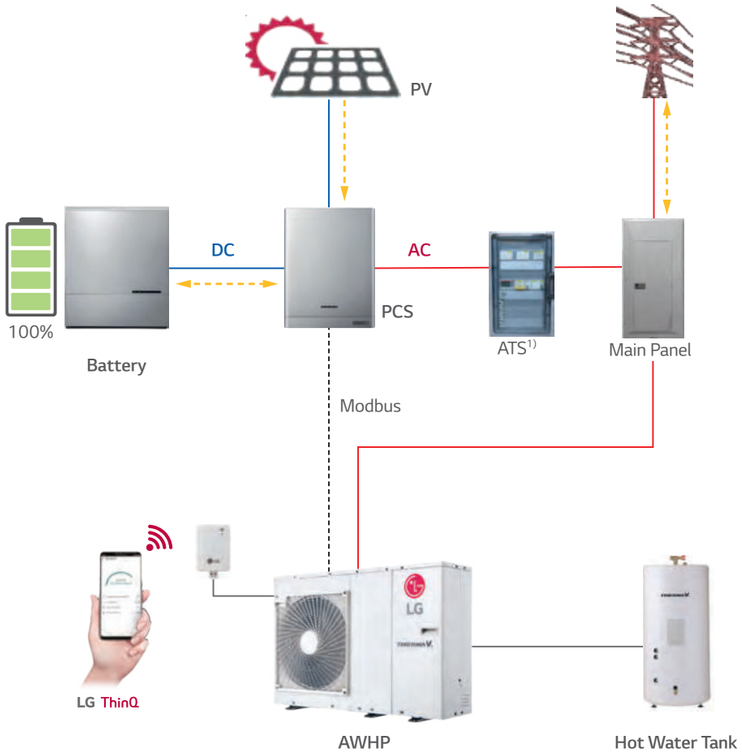
By combining three products in one package (PV Solar, Energy Storage System, Air to Water Heat Pump), LG Smart Home Energy Package enables enables customers to generate their own renewable energy and store it intelligently to use it later when needed.
As one manufactured, LG Electronics provides a convenient solution combining three products based on network communication.

Energy Storage System



PV Solar Module

Air to Water Heat Pump

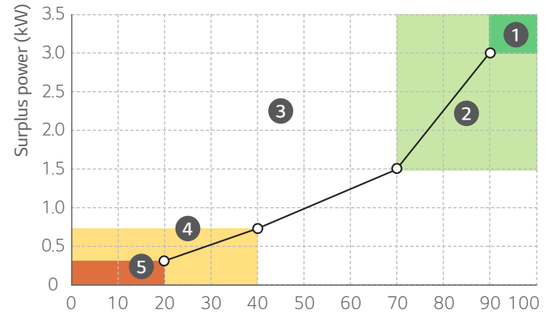


1) ATS : Automatic Transfer Switch

* PV + LG ESS + LG THERMA V integration through Modbus

LG's exclusive mobile application ThinQ can not only control AWHP but also monitor the current ESS operation status from anywhere. Our 5-step energy level indicator allows you to easily grasp the surplus energy status. Depending the energy level, AWHP target temperature can be adjusted to increase the self-consumption rate and purchase less electricity from the grid.

- Energy Level
  1) On Command : Maximum energy consumption for AWHP
  2) On Recommend : More energy consumption for AWHP
  3) Normal : Maintaining current setting of AWHP
  4) Energy Saving : Less energy consumption for AWHP
  5) Super Energy Saving : Minimum energy consumption for AWHP



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

Energy Level on EnerVu App	Set Temperature Adjustment (°C)		
	Heating	Cooling	DHW
❶ On Command (++)	+5	-5	+30
❷ On Recommend (+)	+2	-2	+10
❸ Normal	0	0	0
❹ Energy Saving (-)	-2	+2	0
❺ Super Energy Saving (--)	-5	+5	0

* Above indicated Energy State condition and Adjusting Temp. of AWHP can be changed as per user preference.

CHECK LIST

1. General
2. Refrigerant side
3. Electrical
4. Water side

CHECK LIST

GENERAL

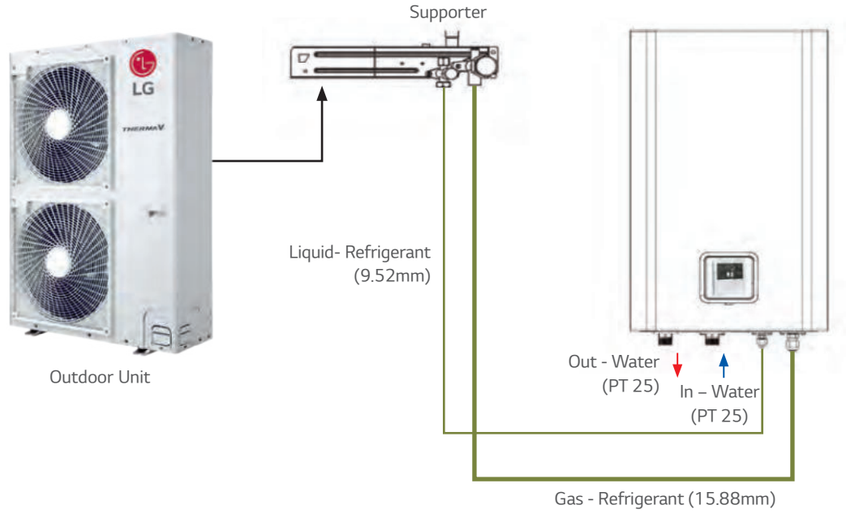
Make sure to check for OK on all items in the checklist below after installing the product.

Category	Applicable Product	Contents	Check (OK / NO)
General	All	Are pipings correctly connected? (Water piping, refrigerant piping)	
	Split	Is the indoor unit installed in the building and installed and fixed according to the installation manual?	
	All	Is it possible to secure appropriate service area for the indoor unit and Back up heater?	
	All	Is the outdoor unit installed and fixed firmly? Removal of wooden pallet and fixing with anchor	
	All	Is the outdoor unit installed at an appropriate location? (Consider air flow, noise and being under the eaves and etc.)	
Refrigerant Side	Split	Was the standard airtight test run to check if there is any leakage from piping and the product?	
	Split	Is vacuum level kept at or below 0.8 torr or is there any change with vacuum for 1 hour after stopping the vacuum pump?	
	Split	Was additional amount of refrigerant correctly calculated based on the length of added piping and was the weight of refrigerant measured correctly with an electronic scale before injection?	
	Split	Does minimum area of installation comply with regulation for R32 refrigerant?	
Electrical	All	Are Power Supply and Circuit Breaker for Heat Pump, Back up Heater, and DHW Booster Heater installed in accordance with guideline(PDB or Installation Manual) ?	
	All	Is there a proper protective measure or earthing against lightning?	
Water Side	All	Are buffer tank and auxiliary pump installed? (Option)	
	All	Is it proper to design the pipe diameter?	
	All	Is it flushed?	
	All	Is water quality acceptable?	
	All	Is air vent valve installed and opened at the angled part of water piping?	
	All	Is there an appropriate measure against freezing and bursting plate heat exchanger in winter? (Use Anti-freeze solution or operate either pumps or auxiliary heater)	
	All	Is water filled in the system? Is water piping pressure at the appropriate level?	
	All	Is the magnetic type strainer installed?	

Items to Check	Are pipings correctly connected? (Water piping, refrigerant piping)	Result
Purpose	**Check piping connection**	
Applicable Product	All	

Check In/Out flow of water pipe connections.
Check connections of refrigerant piping and gas / liquid piping.

THERMA V - Split



THERMA V - Monobloc

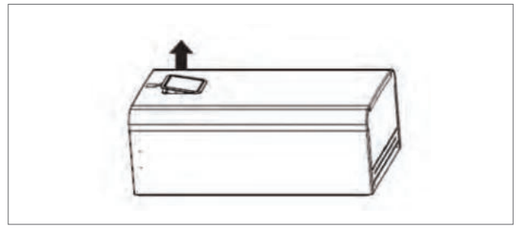
CHECK LIST

GENERAL

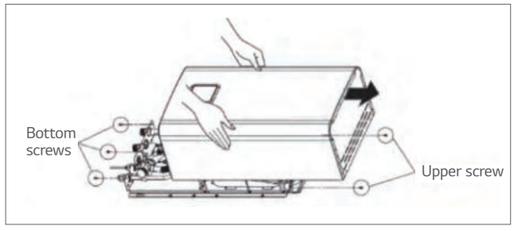
Items to Check	Is the indoor unit installed in the building and installed and fixed according to the installation manual?	Result
Purpose	**Installation of indoor unit**	
Applicable Product	Split	

The installation place should be free from outdoor weather conditions such as rain, snow, wind, frost, etc.

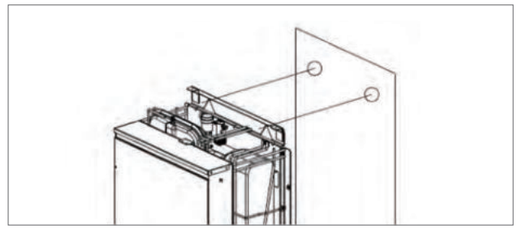
- Choose the place where is water-resistant or good drainage.
- Service space should be secured.
- No flammable materials around the indoor unit.
- The place should be free of mouse from entering the indoor unit or attacking wires.
- Do not place anything in front of the indoor unit to ensure air circulation around the indoor unit.
- Do not locate anything under the indoor unit to be free from unexpected water out.
- In case of water pressure increasing to 3 bar, water drainage should be treated when water is drained by safety valve.



Step 1.
Disconnect the remote control case from the front panel and disconnect the remote control cable.

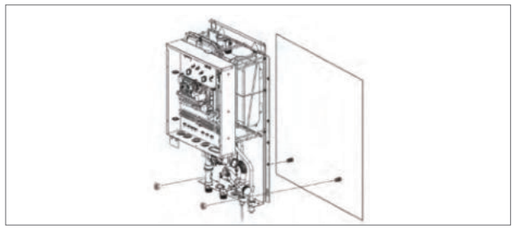


Step 2.
After releasing five screws, detach front cover from the indoor unit. While detaching the front cover, grab the left and right sides of the front cover. Then pull into upward direction.



Step 3.
Attach "Installation Sheet" to the wall and mark the location of bolts. This sheet helps to find correct location to the bolts.

Step 4.
Detach the Installation sheet. Screw bolts at the hole marks on the wall. When screwing bolts, use M8 ~ M11 anchor bolts to secure hanging the indoor unit.



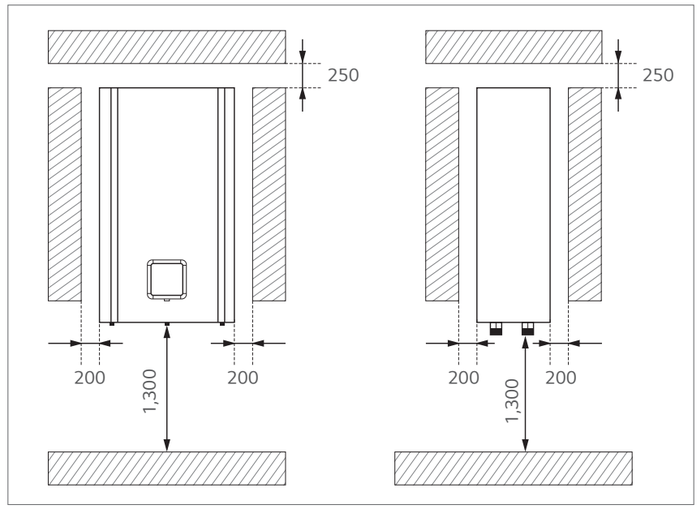
Step 5.
Hang the indoor unit at the supporting plate.

Items to Check	Is it possible to secure appropriate service area for the indoor unit and Back up heater?	Result
Purpose	**Installation of indoor unit and back up heater**	
Applicable Product	All	

Ensure that the spaces indicated by arrows around bottom, side, and top side.

- Wider spaces are preferred for easy maintenance and piping.
- If minimum service space is not secured, air circulation can be a problem and internal parts of the indoor unit can be damaged by overheating.

[Unit : mm]



Minimum Service Space

CHECK LIST

GENERAL

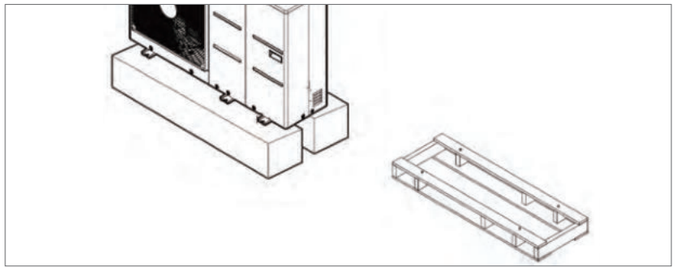
Items to Check	Is the outdoor unit installed and fixed firmly? Removal of wooden pallet and fixing with anchor.	**Result**
Purpose	**Installation of Outdoor unit**	
Applicable Product	All	

Check the strength and level of the installation ground so that the unit will not cause any vibration or noise after installation.

- Fix the unit securely by means of the foundation bolts.
  (Prepare 4 sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- It is best to screw in the foundation bolts until their length are 20mm from the foundation surface.

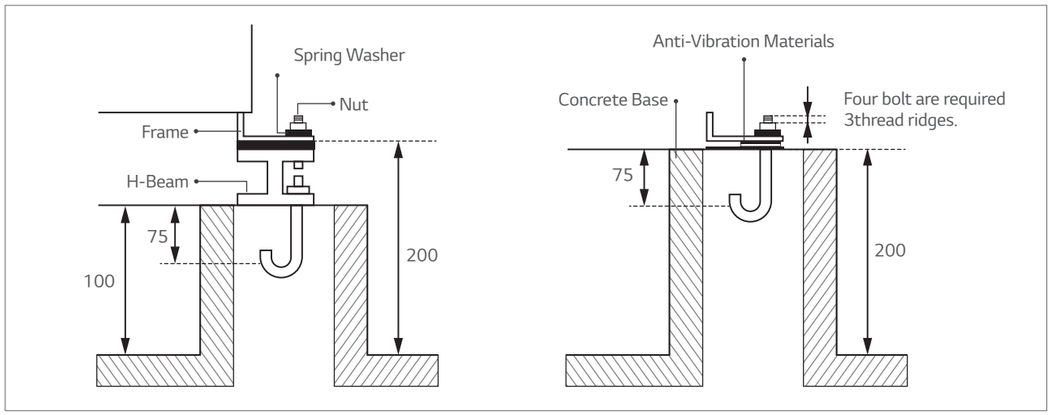
Be sure to remove the Pallet (Wood support) of the bottom side of the unit Base Pan before fixing the bolt.
It may cause the unstable state of the unit settlement, and may cause freezing of the heat exchanger resulting in abnormal operations.

- Be sure to remove the Pallet (Wood support) of the bottom side of the unit before welding.
  Not removing Pallet (Wood support) causes hazard of fire during welding.



Pallet (Wood support)
- Remove before Installation

[Unit : mm]

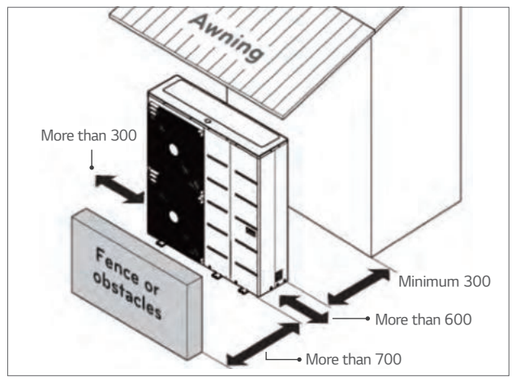


Items to Check	Is the outdoor unit installed at an appropriate location? (Consider air flow, noise and being under the eaves and etc.)	**Result**
Purpose	**Installation of Outdoor unit**	
Applicable Product	All	

If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.

- Ensure that the spaces indicated by arrows around front, back and side of the unit.
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are minimum.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.
- Place that can sufficiently endure the weight and vibration of the outdoor unit and where even installation is possible.
- Place that has no direct influence of snow or rain.
- Place with no danger of snowfall or icicle drop.
- Place without weak floor or base such as decrepit part of the building or with a lot of snow accumulation.

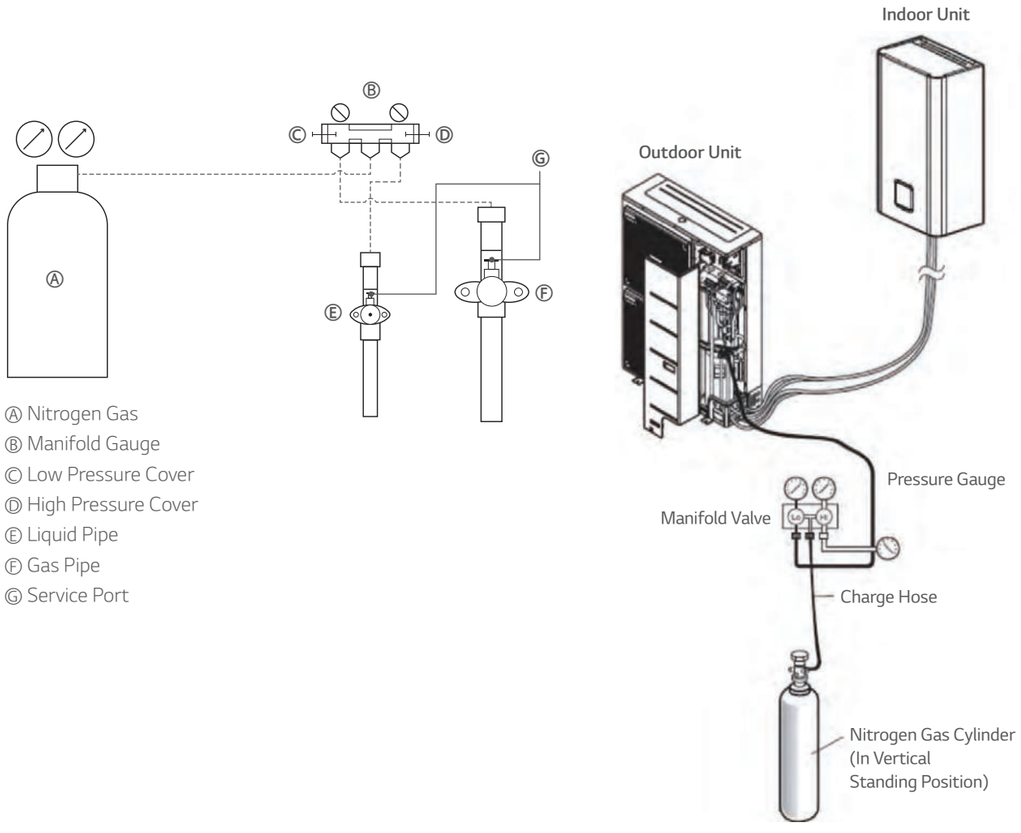
[Unit : mm]



CHECK LIST

REFRIGERANT SIDE

Items to Check	Was the standard airtight test run to check if there is any leakage from piping and the product?	Result
Purpose	**Check for leakage on pipings**	
Applicable Product	Split	



Ⓐ Nitrogen Gas
Ⓑ Manifold Gauge
Ⓒ Low Pressure Cover
Ⓓ High Pressure Cover
Ⓔ Liquid Pipe
Ⓕ Gas Pipe
Ⓖ Service Port

Be sure to use a manifold valve for leakage test.
If it is not available, use a stop valve for this purpose.
The "Hi" knob of the manifold valve must always be kept close.

Pressurize the system to no more than 3.0Mpa with dry nitrogen gas and close the cylinder valve when the gauge reading reaches 3.0Mpa. Next, test for leaks with liquid soap.
After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder.
When the system pressure is reduced to normal, disconnect the hose from the cylinder.

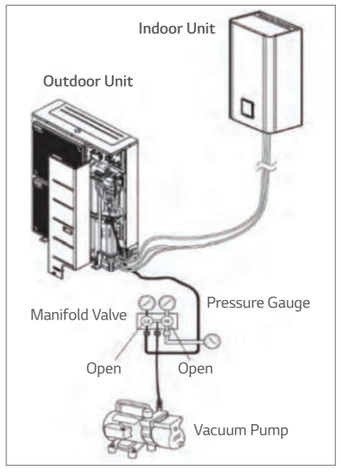
Items to Check	Is the vacuum level kept at or below 0.8 torr or is there any change with vacuum for 1 hour after stopping the vacuum pump?	Result
Purpose	**Evacuate residual gas prior to refrigerant charging**	
Applicable Product	Split	

The operation time for evacuation varies with tubing length and capacity of the pump.
The following table shows the time required for evacuation.

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10 m (33 ft)	If tubing length is longer than 10 m (33 ft)
30 min or more	60 min or more
0.8 torr or less	

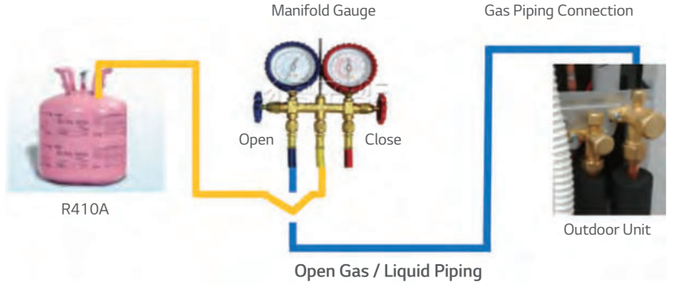
Finishing the Job

- With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
- Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
- Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
- Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench.
  This process is very important to prevent leakage from the system.
- Replace the valve caps at both gas and liquid side service valves and fasten them tight. This completes air purging with a vacuum pump.
  The air conditioner is now ready to test run.



Filling Refrigerant
(If refrigerant is filled additionally after repair or additional charging is needed)

- Close both valves of manifold gauge, connect center house (Connection part of vacuum pump) to refrigerant tank to release air from hose from manifold gauge to charging cylinder (Open charging cylinder valve shortly to release air).
- Open manifold gauge (Low compression : Blue) to fill gas first time and power on / operate the product and fill more gas.



Open Gas / Liquid Piping
Open Cap and Turn Counter Clock Wise

CHECK LIST

REFRIGERANT SIDE

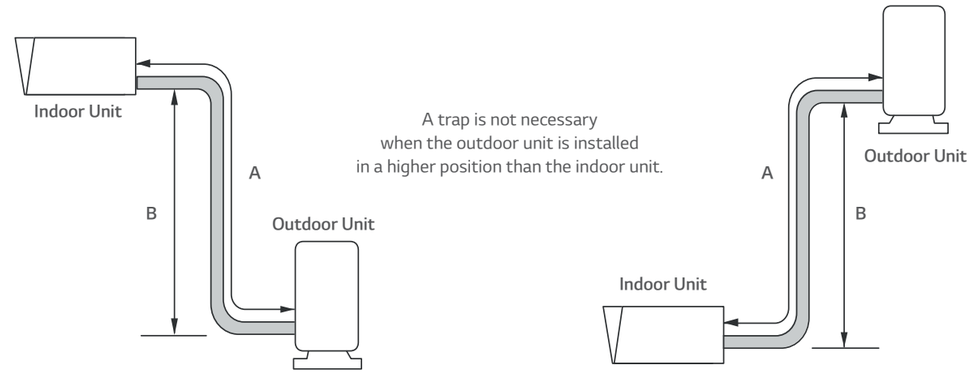
Items to Check	Was additional amount of refrigerant correctly calculated based on the length of added piping and was the weight of refrigerant measured correctly with an electronic scale before injection?	Result
Purpose	**Add refrigerant according to length of pipings**	
Applicable Product	Split	

- If the pipe length is longer than chargeless piping length, additional charge of the refrigerant is required according to the table.
  Ex) If R32 IWT 9kW model is installed at a distance of 50m, 1,200g of refrigerant should be added according to following formula : (50 - 10) x 30g = 1,200g
- Rated capacity of the product is based on standard length and maximum allowable length is based on the product reliability in the operation.
- Improper refrigerant charge may result in abnormal operation.

Capacity		Pipe Size (mm : inch)		Factory Charged Refrigerant (g)	Length A (m)		Elevation B (m)	Additional Refrigerant (g/m)
		Gas	Liquid		Chargeless	Max.	Max.	
R410A SPLIT & IWT	9kW	15.88 Ø (5/8)	9.52 Ø (3/8)	1,800	7.5	50	30	40
	12kW	15.88 Ø (5/8)	9.52 Ø (3/8)	2,300	7.5	50	30	40
	14kW	15.88 Ø (5/8)	9.52 Ø (3/8)	2,300	7.5	50	30	40
	16kW	15.88 Ø (5/8)	9.52 Ø (3/8)	2,300	7.5	50	30	40
R32 SPLIT & IWT	5kW	15.88 Ø (5/8)	9.52 Ø (3/8)	1,500	10	50	30	30
	7kW	15.88 Ø (5/8)	9.52 Ø (3/8)	1,500	10	50	30	30
	9kW	15.88 Ø (5/8)	9.52 Ø (3/8)	1,500	10	50	30	30

- In case of R410A IWT(Integrated Water Tank), more refrigerant charge is required at site for stable performance even though it is within Chargeless Piping Length. (9kW : 800g, 12/14/16kW : 1,200g)
  Ex) If R410A IWT 16kW model is installed at a distance of 30m, 2,100g of refrigerant should be added according to following formula : 1,200g + (30 - 7.5) x 40g = 2,100g

Constraints in Pipe Length and Elevation



CHECK LIST

REFRIGERANT SIDE

Items to Check	Does minimum area of installation comply with regulation for R32 refrigerant?	Result
Purpose	**To judge minimum floor area depending on R32 charging amount**	
Applicable Product	R32 Series	

[Regulation for R32]

IEC 60335-2-40, 6th Edition

$m_c \le m_1$
$m_c \le 1.842$ kg[1)] → No room size restriction

$m_1 < m_c \le m_2$
$1.842 < m_c \le 15.964$ kg[2)] →

① Minimum Floor Area Requirement
$A_{min} = (m_c/(2.5 \times (LFL)^{(5/4)} \times h_0))^2$,
not less than $A_{min} = m_c/(0.75 \times LFL \times h_0)$

② Natural ventilation
- To occupied indoor space in accordance with GG.8.2.2 of IEC 60335-2-40 (6th edition)[3)]

$$Anv_{min} = \frac{m_c - m_{max}}{LFL \times 104} \times \sqrt{\frac{A}{g \times m_{max}} \times \frac{M}{M-29}}$$

- To outdoors or unoccupied indoor space in accordance with GG.8.2.3 of IEC 60335-2-40 (6th edition)[4)]

$$Anv_{min} = 0.14 \times \sqrt{m_c \times \frac{0.04}{LFL}}$$

③ Mechanical Ventilation in accordance with GG.8.3 of IEC 60335-2-40 (6th edition)[4)]

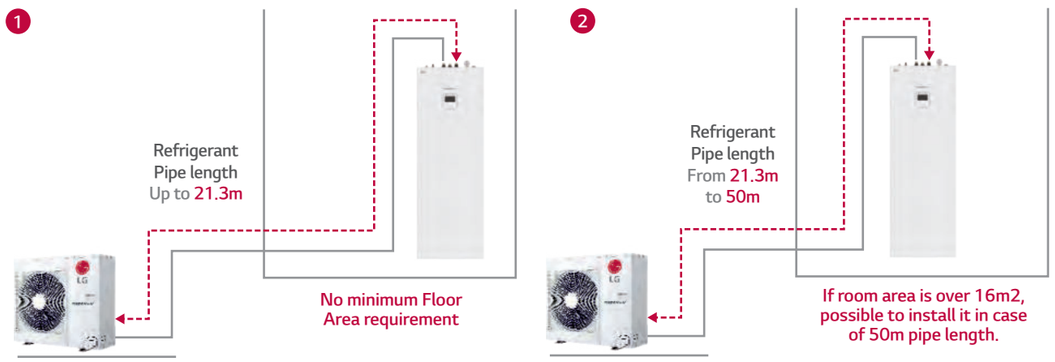
$$Q = \frac{m_c - m_{max}}{4 \times LFL} \times 2 \times 60$$

* m_c : Total refrigerant charge in the system (kg)
m_{max} (kg) : Maximum refrigerant charge (kg)
$m_{max} = 2.5 \times (LFL)^{(5/4)} \times h_0 \times (A)^{1/2}$, not to exceed $m_{max} = 0.75 \times LFL \times h_0 \times A$
m_1 : (6 m³) x LFL = 1.842 kg
m_2 : (52 m³) x LFL = 15.964 kg
LFL : Lower Flammability Limit (R32 0.307 kg/m³)
A_{min} : The minimum opening area for natural ventilation (m²)
A : Room area (m²)
Anv_{min} : Total minimum opening area (m²)
M : Molar mass of the refrigerant (R32 52.0 kg/kmol)
g : Gravity acceleration 9.81m/s2
Q : Required airflow volume (m³/h)
h_0 : Release height (m)

Note
1) If total refrigerant charge is less than 1.842kg, there is no room size restriction.
2) If total refrigerant charge is over 1.842kg, one of three options (①, ②, ③) should be met.
3) For specific requirements of natural ventilation to occupied indoor, please refer to Installation Manual for relevant products.
4) Please make sure to contact your regional engineer / dealer for specific requirements.

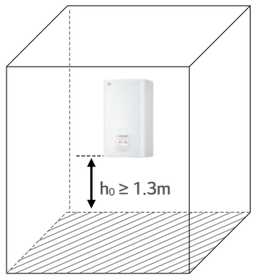
Total Ref. Amount m^c (kg)	Minimum Floor Area A_{min} (m²)						
	R32 IWT	R32 Split (Hydro Box) - Based on h_0 (m)					
		1.3	1.4	1.5	1.6	1.7	1.8
1.84	7.20	6.15	5.71	5.33	4.99	4.70	4.44
1.86	7.36	6.27	5.77	5.39	5.05	4.75	4.49
1.88	7.52	6.41	5.83	5.44	5.10	4.80	4.54
1.90	7.68	6.54	5.89	5.50	5.16	4.85	4.58
1.92	7.84	6.68	5.96	5.56	5.21	4.91	4.63
1.94	8.01	6.82	6.02	5.62	5.27	4.96	4.68
1.96	8.17	6.96	6.08	5.67	5.32	5.01	4.73
1.98	8.34	7.11	6.14	5.73	5.37	5.06	4.78
2.00	8.51	7.25	6.25	5.79	5.43	5.11	4.83
2.02	8.68	7.40	6.38	5.85	5.48	5.16	4.87
2.04	8.85	7.54	6.51	5.91	5.54	5.21	4.92
2.06	9.03	7.69	6.63	5.96	5.59	5.26	4.97
2.08	9.21	7.84	6.76	6.02	5.65	5.31	5.02
2.10	9.38	8.00	6.89	6.08	5.70	5.37	5.07
2.12	9.56	8.15	7.03	6.14	5.75	5.42	5.12
2.14	9.74	8.30	7.16	6.24	5.81	5.47	5.16
2.16	9.93	8.46	7.29	6.35	5.86	5.52	5.21
2.18	10.11	8.62	7.43	6.47	5.92	5.57	5.26
2.20	10.30	8.77	7.57	6.59	5.97	5.62	5.31
2.22	10.49	8.93	7.70	6.71	6.03	5.67	5.36
2.24	10.68	9.10	7.84	6.83	6.08	5.72	5.40
2.26	10.87	9.26	7.98	6.96	6.13	5.77	5.45
2.28	11.06	9.42	8.13	7.08	6.22	5.82	5.50
2.30	11.26	9.59	8.27	7.20	6.33	5.88	5.55
2.32	11.45	9.76	8.41	7.33	6.44	5.93	5.60
2.34	11.65	9.93	8.56	7.46	6.55	5.98	5.65
2.36	11.85	10.10	8.71	7.58	6.67	6.03	5.69
2.38	12.05	10.27	8.85	7.71	6.78	6.08	5.74
2.40	12.26	10.44	9.00	7.84	6.89	6.13	5.79
2.42	12.46	10.62	9.15	7.97	7.01	6.21	5.84
2.44	12.67	10.79	9.31	8.11	7.13	6.31	5.89
2.46	12.88	10.97	9.46	8.24	7.24	6.42	5.94
2.48	13.09	11.15	9.61	8.38	7.36	6.52	5.98
2.50	13.30	11.33	9.77	8.51	7.48	6.63	6.03
2.52	13.51	11.51	9.93	8.65	7.60	6.73	6.08
2.54	13.73	11.70	10.09	8.79	7.72	6.84	6.13
2.56	13.94	11.88	10.24	8.92	7.84	6.95	6.20
2.58	14.16	12.07	10.41	9.06	7.97	7.06	6.29
2.60	14.38	12.26	10.57	9.21	8.09	7.17	6.39
2.62	14.61	12.44	10.73	9.35	8.22	7.28	6.49
2.64	14.83	12.64	10.89	9.49	8.34	7.39	6.59
2.66	15.05	12.83	11.06	9.64	8.47	7.50	6.69
2.68	15.28	13.02	11.23	9.78	8.60	7.61	6.79
2.70	15.51	13.22	11.40	9.93	8.72	7.73	6.89

For R32 IWT

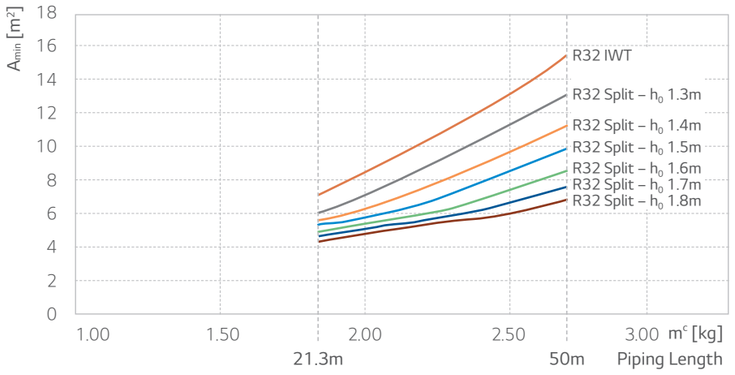


For R32 Split (Hydro box)

h_0 : Release height
(= Installed height)



Minimum Floor Area



CHECK LIST

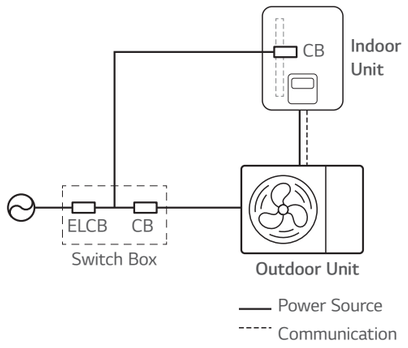
ELECTRICAL

Items to check	**Are Power Supply and Circuit Breaker for Heat Pump, Back up Heater, and DHW Booster Heater installed in accordance with guideline(PDB or Installation Manual) ?**	**Result**
Purpose	To guarantee stable operation and protect equipment from overcurrent	
Applicable Product	All	

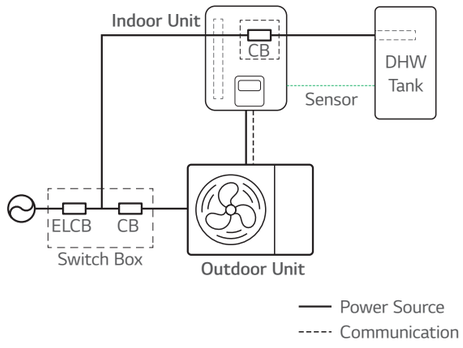
Except for Heat Pump, it is required to provide power supply to Back up Heater and DHW Booster Heater stably, because they consume huge electricity. Therefore, power supply and circuit breaker should be installed in accordance with guideline in the PDB or Installation Manual.

1) Split (R32 and R410A) / Hydrosplit (R32)

Power Supply for Heat Pump and Back up Heater



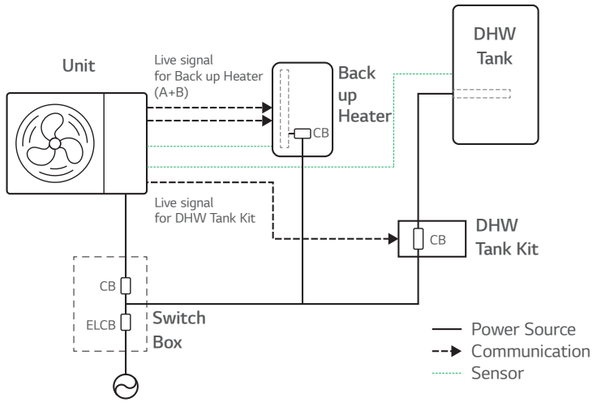
Power Supply for DHW Booster Heater



* For Split, DHW Tank Kit (CB and Relay) should be installed into control box of Indoor unit.

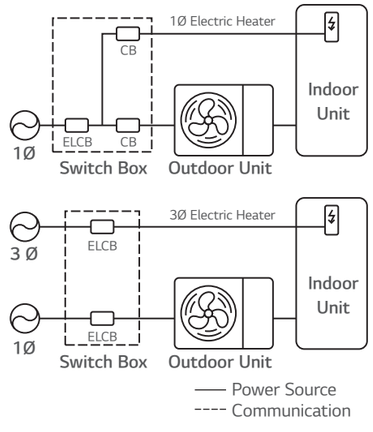
2) R32 Monobloc

Power Supply for Heat Pump, Back up Heater, and DHW Booster Heater



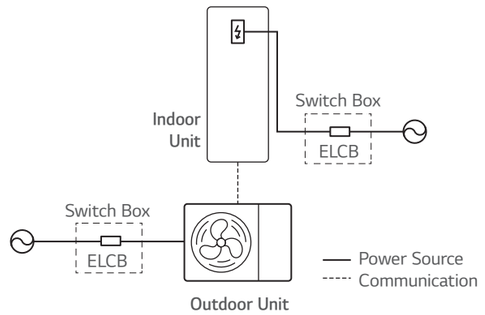
3) R32 IWT

Power Supply for Heat Pump and Back up Heater



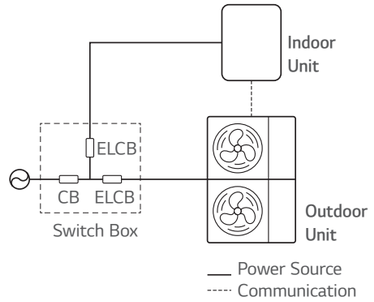
4) R410A IWT

Power Supply for Heat Pump and Back up Heater



5) High Temp.

Power Supply for Heat Pump



Heat Pump		Power Supply (V, Ø, Hz)	Heating Capacity (kW)	Maximum Current (A)	Circuit Breaker (A)
Monobloc	HM051M U43	220-240, 1, 50	5.5	14.2	16
	HM071M U43		7	15.7	20
	HM091M U43		9	23.0	25
	HM091MRS U33		9	15.0	16
	HM121M U33		12	33.0	40
	HM141M U33		14	34.0	
	HM161M U33		16	35.0	
	HM123M U33	380-415, 3, 50	12	12.0	16
	HM143M U33		14	12.5	
	HM163M U33		16	13.0	
R32 Split & IWT (ODU)	HU051MR U44	220-240, 1, 50	5.5	14.2	16
	HU071MR U44		7	15.7	20
	HU091MR U44		9	23.0	25
R32 Hydrosplit (ODU)	HU121MRB U30	220-240, 1, 50	12	33.0	40
	HU141MRB U30		14	34.0	
	HU161MRB U30		16	35.0	
	HU123MRB U30	380-415, 3, 50	12	12.0	16
	HU143MRB U30		14	12.5	
	HU163MRB U30		16	13.0	
R410A Split & IWT (ODU)	HU091 U43	220-240, 1, 50	9	19.0	30
	HU121 U33		12	25.0	40
	HU141 U33		14	25.0	
	HU161 U33		16	25.0	
	HU123 U33	380-415, 3, 50	12	16.1	20
	HU143 U33		14	16.1	
	HU163 U33		16	16.1	
High Temp.	HU161HA U33 (ODU)	220-240, 1, 50	16	18.9	20
	HN1610H NK3 (IDU)			20.2	25

Back up Heater		Power Supply (V, Ø, Hz)	Capacity (kW)	Maximum Current (A)	Circuit Breaker (A)
R32 Split (IDU)	HN0916M NK4[1)]	220-240, 1, 50	3 + 3	32.0	35
R410A Split (IDU)	HN1616 NK3[1)]	220-240, 1, 50	3 + 3	32.0	35
	HN1639 NK3[1)]	380-415, 3, 50	3 + 3 + 3	16.3	20
IWT (R32 & R410A)(IDU)	HN1616T NB0 HN0916T NB1	220-240, 1, 50	2	11.1	16
			2 + 2	19.9	20
		380-415, 3, 50	2 + 2 + 2	11.1	16
Accessory for Monobloc	HA031M E1[1)]	220-240, 1, 50	3	12.0	20
	HA061M E1[1)]		3 + 3	24.0	40
	HA063M E1[1)]	380-415, 3, 50	2 + 2 + 2	8.7	20
Accessory for Hydrosplit	HA061B E1[1)]	220-240, 1, 50	3 + 3	24.0	40
	HA063B E1[1)]	380-415, 3, 50	2 + 2 + 2	8.7	20

DHW Booster Heater		Power Supply (V, Ø, Hz)	Capacity (kW)	Maximum Current (A)	Circuit Breaker (A)
Accessory (DHW Tank Kit)	PHLTA (Split, 1ph)[1)]	220-240, 1, 50	3	-	20
	PHLTB (Monobloc)[1)]				
	PHLTC (Split, 3ph)[1)]				

1) Dedicated CB for Electric Heater is included in the Product. However, it is recommended to install an additional ELCB for Electric Heater in the Switch Box.

Note
1. Selection of Circuit Breaker must comply with the applicable local and national codes.
2. Please make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.

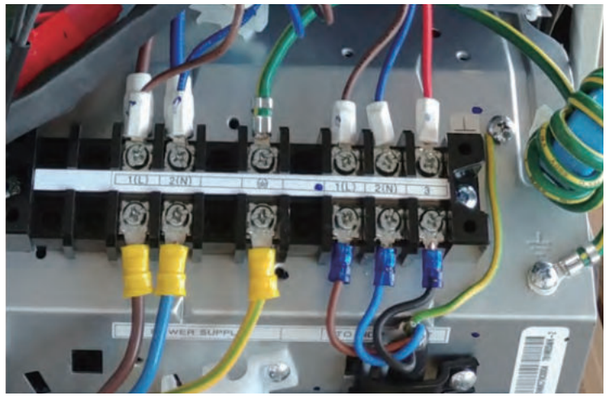
CHECK LIST

ELECTRICAL

Items to Check	Is there a proper protective measure or earthing against lightning?	**Result**
Purpose	**Protection of product from lightning**	
Applicable Product	All	

When connecting earth cable, the diameter of cable should be bigger than 1.6mm^2 to secure safety.
The earth cable is connected to the terminal block where earth symbol is marked.

Be sure to correct the outdoor unit to earth. Do not connect earth line to any gas pipe, liquid pipe, lightening rod or telephone earth line. If earth is incomplete, it may cause an electric shock.
In order to ensure compliance with regulations on electrical equipment and cabling, follow the government regulations and instructions of power company.



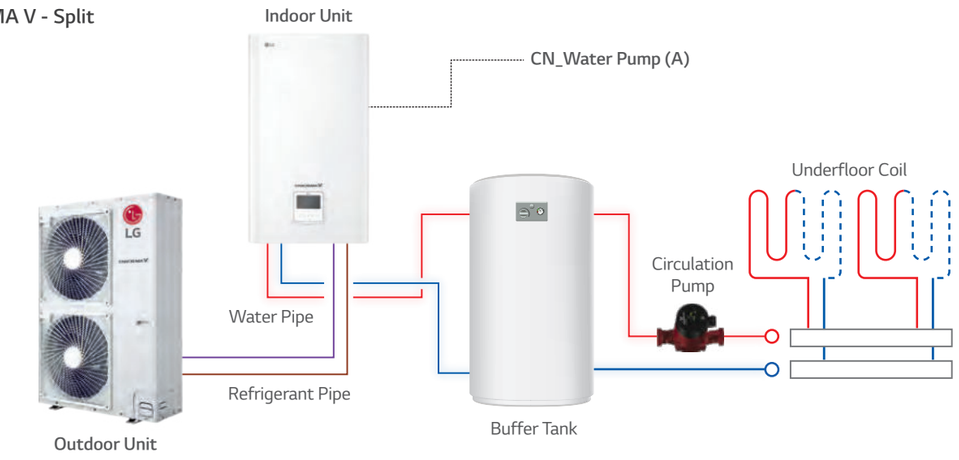
Items to Check	Are buffer tank and auxiliary pump installed?	**Result**
Purpose	**Secure flow and see if system is stabilized**	
Applicable Product	All	

Install the buffer tank with the following goals. (Field scope)

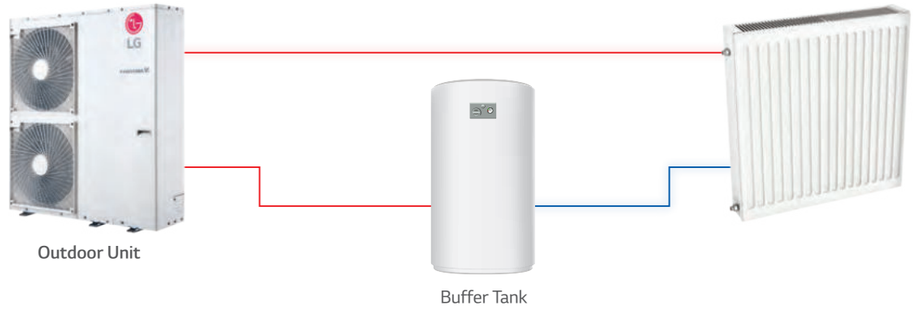
- For floor heating and if flow resistance is too high.
- For defrosting, oil retrieval operation and continuous heating.
- Preventing short cycle from load variation.

Secondary pump needs to be installed if the buffer tank is to be installed. (Field scope)
Generally a 3rd party controller is installed to control the pump at the load side.

THERMA V - Split



THERMA V - Monobloc



CHECK LIST

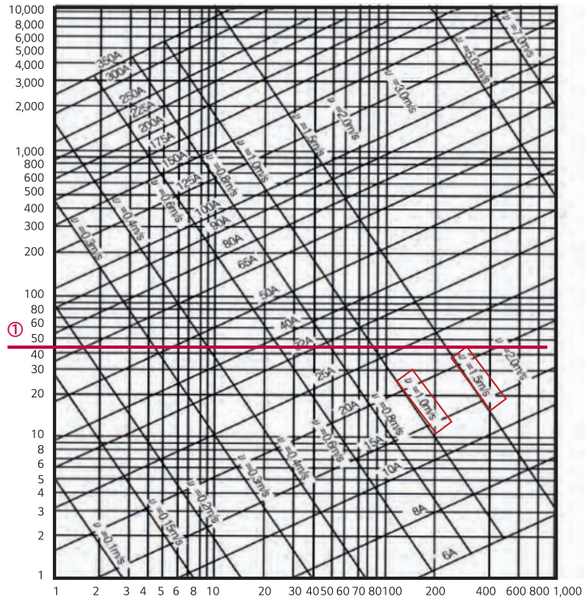
WATER SIDE

Items to Check	Is it proper to design the pipe diameter?	Result
Purpose	**Check water velocity and pressure drop**	
Applicants	Common	

An easy method for selecting the piping diameter is as follows.

- Method by water Velocity (0.3m/s ~ 3m/s)
- Method by Pressure drop (40kPa/m ~ 100kPa/m)

Method by Water Velocity (0.3m/s ~ 3m/s)



Ex) 16kW THERMA V

① Rated water flow rate : 46lpm (Δ5°C)

② Velocity 1 ~ 1.5m/s

③ Select the pipe in the flow velocity range based on the y-axis flow line.

Result : 25A or 32A (Pipe spec)

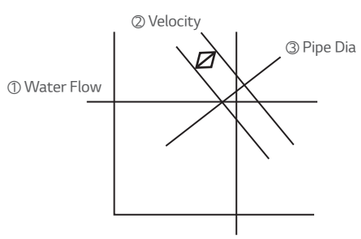
Remark)

If select 32A :

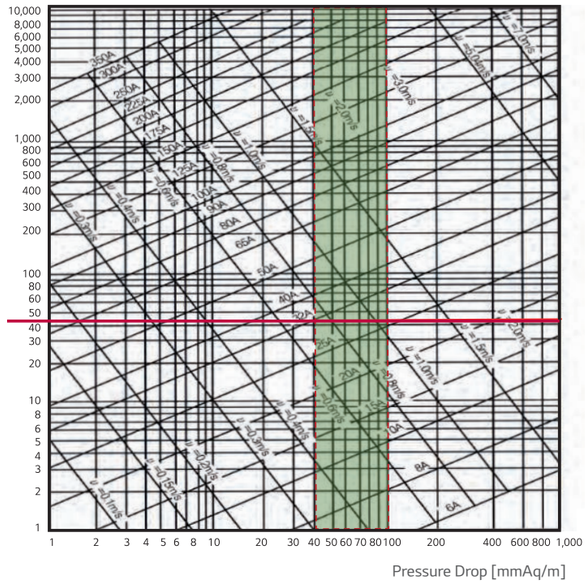
1) High material cost
2) Difficult to make layout

If select 20A :

1) High pressure drop by high velocity
2) Noise



Method by Pressure Drop (40kPa/m ~ 100kPa/m)



Ex) 16kW THERMA V

① Rated water flow rate : 46lpm (Δ5°C)

② Pressure drop range : 40 ~ 100kPa/m

③ Select the pipe in the pressure drop range based on the y-axis flow line. Considering flow velocity, select the pipe diameter.

Result : 25A or 32A (Pipe spec)

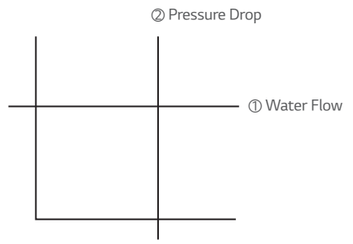
Remark)

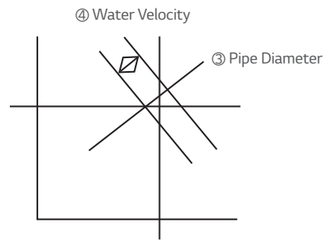
If select 32A :

1) High material cost
2) Difficult to make layout

If select 25A :

1) Higher pressure drop than 32A
2) Cost-effective





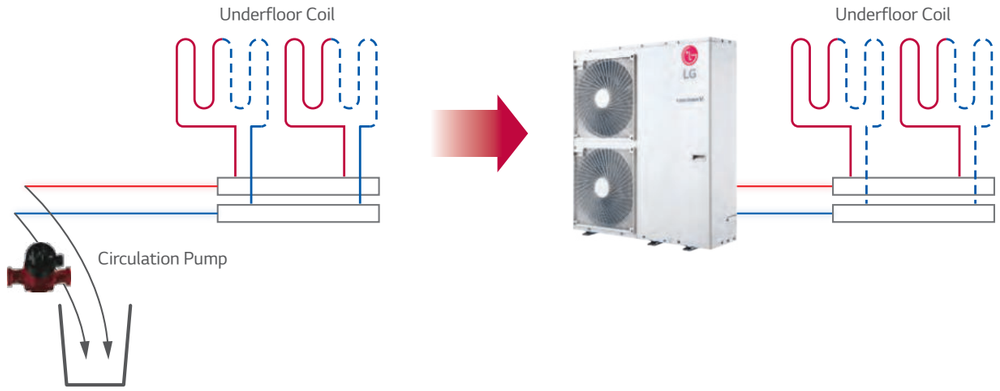
CHECK LIST

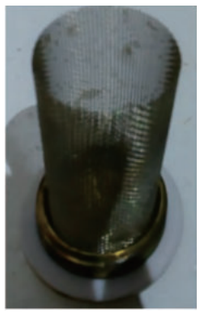
WATER SIDE

Items to Check	Was flushing done?	**Result**
Purpose	**Remove foreign objects and secure flow**	
Applicable Product	All	

There may be some foreign objects after new piping installation or equipment replacement.
Thus, connect the indoor unit only after clearing pipings so that there may be no foreign object in the piping.

Flushing can be done with the service valve and a separate pump and tap water.





Strainer Fine

Strainer No Flushing Done

Items to Check	Is water quality acceptable?	**Result**
Purpose	**Protect product, secure flow**	
Applicable Product	All	

Water quality check should be implemented before completing the installation of system.
(Water range will be accordings / UNE 122076 : 2004 IN and EN12499) Detailed guide can be found in the table as below.

If the product is installed at existing hydronic water loop, it is important to clean hydronic pipes to remove sludge and scale.

- Installing sludge strainer in the water loop is very important to prevent performance degrade.
- Chemical treatment to prevent rust should be performed by installer.
- It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic particles from the heating piping, it is advised to use a magnetic or cyclone filter, which can remove small particles. Small particles may damage the unit and will NOT remove by the standard filter of the heat pump system.

Use a simple measuring instrument or diagnosis kit to check water quality to verify the following.
Also, LSI (Langelier Saturation Index) can be used as a reference by checking pH, TDS (Total Dissolved Solid), and water quality contents into formula. To calculate LSI, Need to measure pH, Temperature, Calcium Hardness (ppm), Alkalinity (ppm_CaCO3), Total Dissolved Solids (ppm) by using water quality test kits.

[Table]

Water Contents	Concentration			
pH	7.5 ~ 9.0			
Conductivity	10 ~ 500uS/cm			
TDS (Total Dissolved Solids)	8 ~ 400ppm			
Alkalinity (HCO_3^-)	60 ~ 300 (mg/L)			
Total Hardness	4 ~ 8.5°dH 71.4 ~ 151.7 (mg/L)			
Iron (Fe)	≤ 0.2 (mg/L)			
Sulphate (SO_4^{2-})	≤ 100 (mg/L)			
Nitrite (NO_3^-)	≤ 100 (mg/L)			
Free Chlorine (Cl_2)	≤ 1 (mg/L)			
Chlorides (Cl^-)	ppm		STS316	STS304
	pH7	15°C	3000	180
		40°C	500	50
		60°C	200	30
		80°C	125	20
	pH9	15°C	18000	700
		40°C	2600	250
		60°C	1000	170
		80°C	550	130

[LSI]

Saturation Index	Remarks	Recommendation
-5	Severe Corrosion	Treatment Recommended
-3	Moderate Corrosion	Treatment Recommended
-2	Moderate Corrosion	Treatment may be Needed
-1	Moderate Corrosion	Treatment may be Needed
- 0.5	Mild Corrosion	Probably No Treatment
0	None-Mild Corrosion	No Treatment
0.5	Near Balanced	Probably No Treatment
1	Some Faint Coating	Treatment may be Needed
2	Mild Scale Coating	Treatment may be Needed
3	Moderate Scale Forming	Treatment Recommended
4	Severe Scale Forming	Treatment Recommended

CHECK LIST

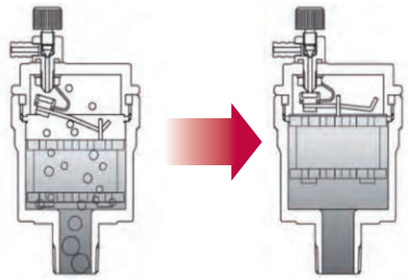
WATER SIDE

Items to Check	Is air vent valve installed and open at the angled part of water pipe?	**Result**
Purpose	**Remove air from water pipe**	
Applicable Product	All	

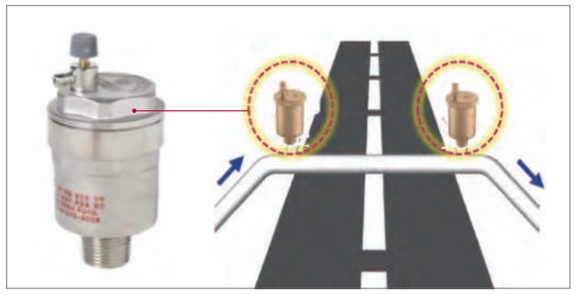
Air vent valve is integrated in the product by default but additional ones may be needed if there are bent parts when pipings are installed.
Air Vent Valve is a device designed to remove air automatically from the hydronic heat pump system such as air remaining in the piping, dissolved air, and air that flowed in during installation.

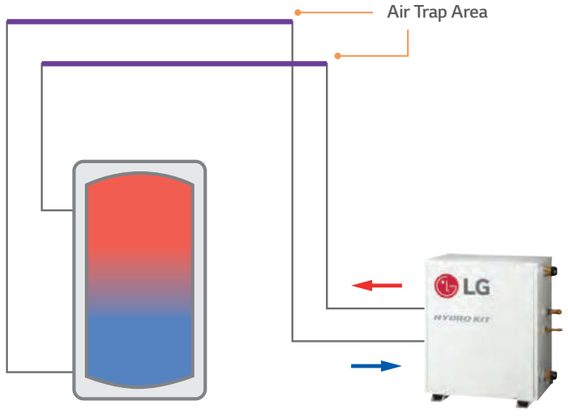
- The air vent valve should be installed at every high point of the system.
- At the beginning and end of the curve.
- At the water inlet / outlet pipe of the heat pump and heat exchanger.
- At each branch piping connected to the main piping, when connecting multiple heat pumps.

Dissolved Gas



[Air releasing] [Air vent closed]



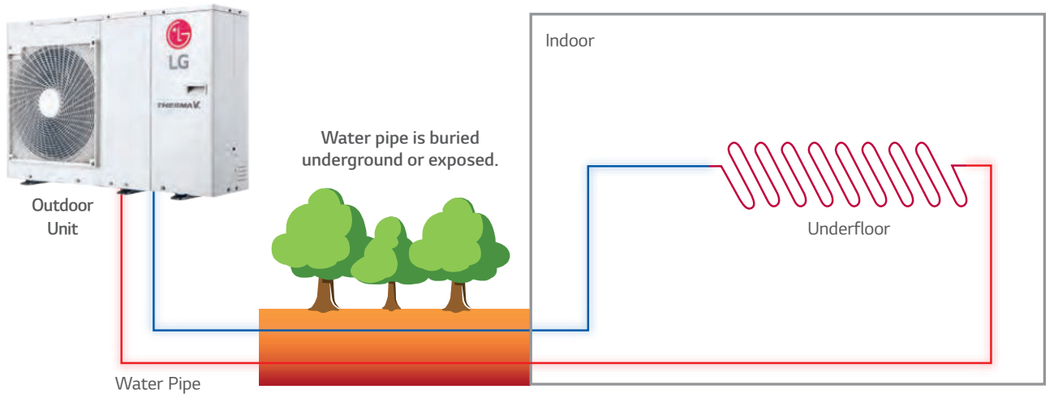


Items to Check	Is there an appropriate measure to prevent freezing and bursting plate heat exchanger in winter? (Use Anti-freeze solution or operate either pumps or auxiliary heater)?	**Result**
Purpose	**Subjects of preventing freezing**	
Applicable Product	Monobloc	

Sometimes Anti-freeze solution is needed to prevent freezing and bursting issue If outdoor temperature is too low or the product is not used for long period. Fundamentally our product is equipped with our own Anti-freeze logic, but the protective logic may not work if operation of the product fails, thus other physical measures need to be considered.
(Using Anti-freeze solution, Operating water pump or auxiliary heater, Installing heat tracing, and so on.)

- Adjust amount of antifreeze solution based on the site's conditions.
- Check concentration of Anti-freeze solution and add more solution if concentration is too weak to maintain proper level of concentration.

Category	Antifreezing Mixing Ratio (by Volume)					
Water Freezing Temp.	**0°C**	**-5°C**	**-10°C**	**-15°C**	**-20°C**	**-25°C**
Ethylene Glycol	0%	12.8%	22%	29%	33.5%	38%
Propylene Glycol	0%	15.5%	26%	33%	39%	44%
Ethanol	0%	14%	24.8%	32%	37.3%	42.2%

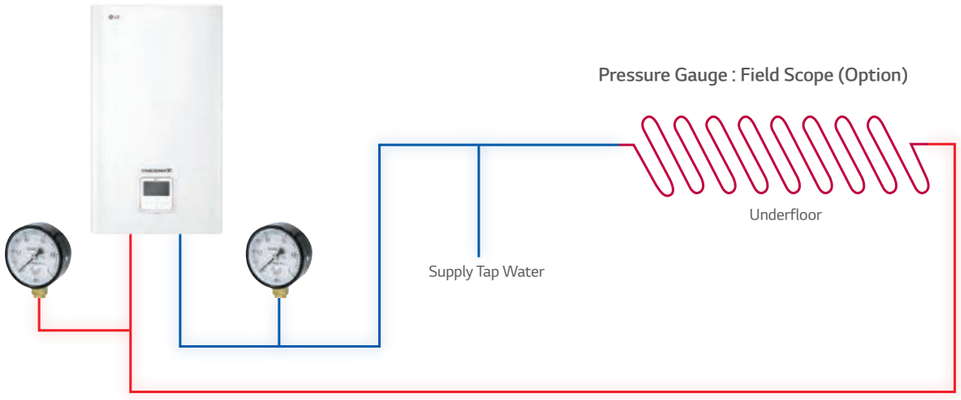


CHECK LIST

WATER SIDE

Items to Check	Is water pipe pressure at appropriate level?	Result
Purpose	**Secure flow, protect system**	
Applicable Product	All	

Check water pipe pressure when supplying tap water after first installation work.
Check pressure on the gauge either on the product or the gauge installed on site inside the piping.
Default pressure is 1bar and maximum is 3bar.
(Release water with relief valve inside the product if pressure is higher than 3bar)
Supply tap water until pressure is stabilized and maintained, and start supplying tap water when pressure reaches minimum of 0.3bar.



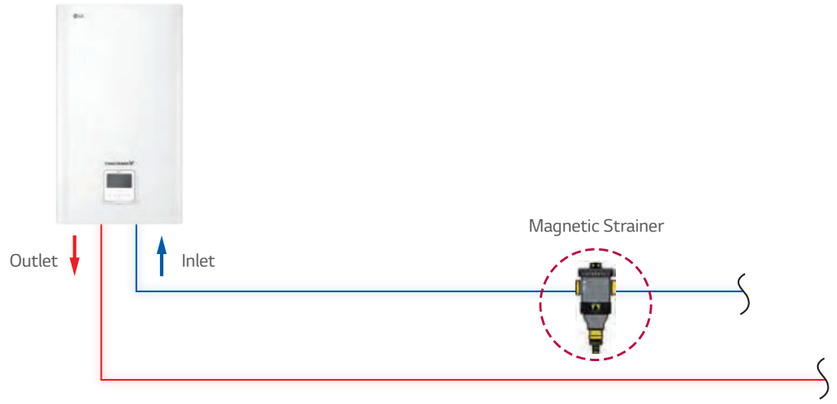
Pressure Gauge inside Product

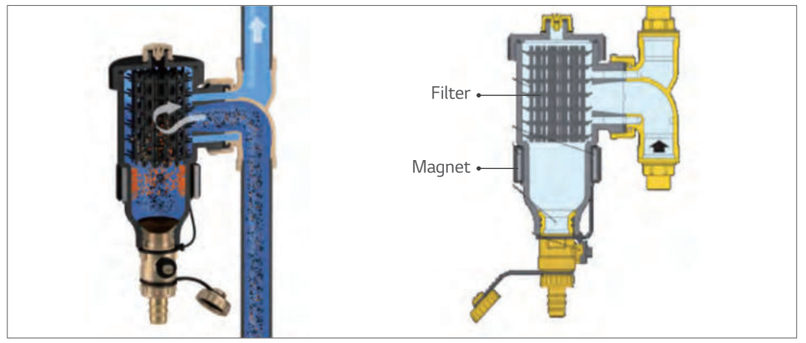
Pressure Gauge inside Piping

Items to Check	Was magnetic type strainer installed?	Result
Purpose	**Secure flow, protect system**	
Applicable Product	All	

Especially to remove metallic particles from foul heating piping, it is recommended to use a magnetic or cyclone filter, which can remove small particles. Small particles may damage the unit and will not be removed by the standard filter of the heat pump system.

Magnetic strainer is separately available.
Install strainer on the water supply / inlet side for indoor unit.
Observe instructions of manufacturer of magnetic strainer.





Magnetic Filter

REFERENCE DRAWINGS FOR APPLICATION

1. Space Heating & Cooling with Dry Contact
2. Space Heating & Cooling with Thermostat
3. Space Heating with Anti-freeze
4. Space Heating with 2nd Circuit
5. Space Heating and Cooling with 2 Remote Controller
6. Space Heating with Meter Interface
7. Space Heating with Parallel Installation
8. Space Heating and DHW
9. Space Heating and DHW with Booster Heater
10. Space Heating, Cooling, and DHW with Thermostat
11. Space Heating and DHW with External Boiler
12. Space Heating and DHW with Back-up Heater
13. Space Heating, Cooling, and DHW with Solar Panel and Thermostat

REFERENCE DRAWINGS FOR APPLICATION

REFERENCE APPLICATIONS

SUMMARY OF REFERENCE APPLICATIONS

Referenced Scene		Scene #1	Scene #2	Scene #3	Scene #4	Scene #5	Scene #6
Application		Space Heating & Cooling with **Dry Contact**	Space Heating & Cooling with **Thermostat**	Space Heating with **Anti-freeze**	Space Heating with **2nd Circuit**	Space Heating & Cooling with **2 Remote Controllers**	Space Heating with **Meter Interface**
Product		R32 Monobloc	R32 Monobloc	R32 Monobloc	R32 Monobloc R32 Hydrosplit	R32 Monobloc	R32 Monobloc
Terminal Device		UFH(H) + FCU(H&C)	UFH(H) + FCU(H&C)	UFH + RAD	UFH + RAD	UFH(H) + FCU(H&C)	RAD
Main Controller		3rd Party Controller	Thermostat	LG RS3 Controller	LG RS3 Controller	LG RS3 Controller	LG RS3 Controller
Control Setting of LG RS3 Controller		Water Temp.	Water Temp.	Air Temp.	Air Temp. or Water Temp.	Air Temp. or Water Temp.	Air Temp. or Water Temp.
Device & Functions	Air Temp Sensor				○		
	Thermostat		○				
	Dry Contact	○					
	External Pump (Controlled by)	○ (3rd Party Controller)	○ (Thermostat)	○ (AWHP)	○ (AWHP)	○ (AWHP)	○ (AWHP)
	2nd Circuit				○		
	Anti-freeze Solution			○			
	DHW Tank						
	3 Way Valve						
	Booster Heater						
	Solar Thermal Panel for DHW						
	2 Way Valve	○	○			○	
	FCU	○	○			○	
	Auxiliary Boiler						
	Back up Heater						
	Wi-Fi Modem			○	○	○	○
	Meter Interface						○
	2-Remote Control					○	
	Group Control (LG BECON & Modbus)						

Scene #7	Scene #8	Scene #9	Scene #10	Scene #11	Scene #12	Scene #13
Space Heating with **Parallel Installation**	Space Heating & **DHW**	Space Heating & **DHW with Booster Heater**	Space Heating, Cooling, and **DHW with Thermostat**	Space Heating & DHW with **External Boiler**	Space Heating & DHW with **Back-up Heater**	Space Heating, Cooling, and DHW with **Solar Panel and Thermostat**
R32 Monobloc	R32 Monobloc	R32 Monobloc	R32 Monobloc	R32 Monobloc	R32 Monobloc	R32 Monobloc
RAD	UFH	UFH	UFH(H) + FCU(H&C)	RAD	UFH	UFH(H) + FCU(H&C)
LG Central Controller & Thermostat	LG RS3 Controller	LG RS3 Controller	Thermostat	LG RS3 Controller	LG RS3 Controller	Thermostat
Water Temp.	Air Temp. or Water Temp.	Air Temp. or Water Temp.	Water Temp.	Air Temp.	Air Temp. or Water Temp.	Water Temp.
○			○			○
○ (Thermostat)	○ (AWHP)	○ (AWHP)	○ (Thermostat)	○ (AWHP)	○ (AWHP)	○ (Thermostat)
	○	○	○	○	○	○
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* UFH : Under Floor Heating, FCU : Fan Coil Unit, RAD : Radiator, H : Heating, H&C : Heating & Cooling

REFERENCE DRAWINGS FOR APPLICATION

REFERENCE APPLICATIONS

LG SUPPLIED ACCESSORIES

Item	Description	Part No.
Rs3 Wired Remote Controller	A wired remote controller with built-in temperature sensor. Split : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1) Monobloc : supplied with 10m length cable, extendable up to max. 50m using extension cable (PZCWRC1)	Default Supply with Product. - Split : Attached with indoor unit - Monobloc : Supplied as a loose item
DHW Sensor	A temperature sensor for DHW tank. Cable length 12m.	PHRSTA0
DHW Tank Kit	A set of electrical devices for controlling of electric booster heater up to 32A Including Circuit Breaker, Magnetic Contactor and DHW Temp. Sensor (PHRSTA0).	PHLTA (for 1Ø Split) PHLTC (for 3Ø Split) PHLTB (for Monobloc)
3 Way Valve (A)	A motorized 3 Way diverting valve determining flow direction to either space heating or DHW tank. Controlled by THERMA V with 230V power. Operating time 3s.	OSHA-3V
DHW Tank	A insulated stainless steel hot water tank with 2.4kW electric heating (230V). OSHW-200F AEU : Single Coil & Storage with 200L OSHW-300F AEU : Single Coil & Storage with 300L OSHW-500F AEU : Single Coil & Storage with 500L OSHW-300FD AEU : Double Coil & Storage with 300L	Single Coil : OSHW-200F/300F/500F AEU Double Coil : OSHW-300FD AEU
DHW Booster Heater	An electric heater for DHW heating integrated with DHW tank (2.4kW, 230V). Controlled by THERMA V with 230V power.	Integrated with DHW Tank
Wi-Fi Modem	A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable 0.5m	PWFMDD200
Mixing Zone Temperature Sensor	A temperature sensor for the mixed circuit. Cable length 10m.	PRSTAT5K10
Solar Temperature Sensor	A temperature sensor for solar thermal system. Included in Solar Thermal Kit (PHLLA). Cable length 12m.	Enclosed in PHLLA
Remote Room Air Sensor	Temperature sensor for the room. Cable length 15m.	PQRSTA0
Back up Heater	An electric heater for supplementing insufficient capacity in case of extremely low ambient temperature or emergency operation. Controlled by THERMA V with 230V power.	Optional for Monobloc HA031M.E1 (3kW, 1Ø) HA061M.E1 (6kW, 1Ø) HA063M.E1 (6kW, 3Ø)
Dry Contact	A control switch that enables turning THERMA V On/Off after receiving the signal from external control system.	PDRYCB000 PDRYCB300 PDRYCB320
2-Remote Cable	A cable that enables connecting two remote controller on the one indoor unit.	PZCWRC2 (2 remo cable is included in PREMTW101)
RS3 wired Remote Controller (SLAVE)	An additional wired remote controller with built-in temperature sensor that enables controlling THERMA V using two remote controller.	PREMTW101
Meter Interface	An interface module between energy meter or heat meter and THERMA V that enables energy metering function. External power supply DC 12V.	PENKTH000
AC EZ Touch	A central controller that controls THERMA V using LG AP protocol. Max. 64 units, PC access supported	PACEZA000
PI485 Gateway	A gateway device that communicates and controls through the central controller . (Converting LG protocol to RS485 protocol)	PMNFP14A1
Thermostatic Mixing Valve	A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.	OSHA-MV (3/4") OSHA-MV1 (1")

3rd PARTY ACCESSORIES

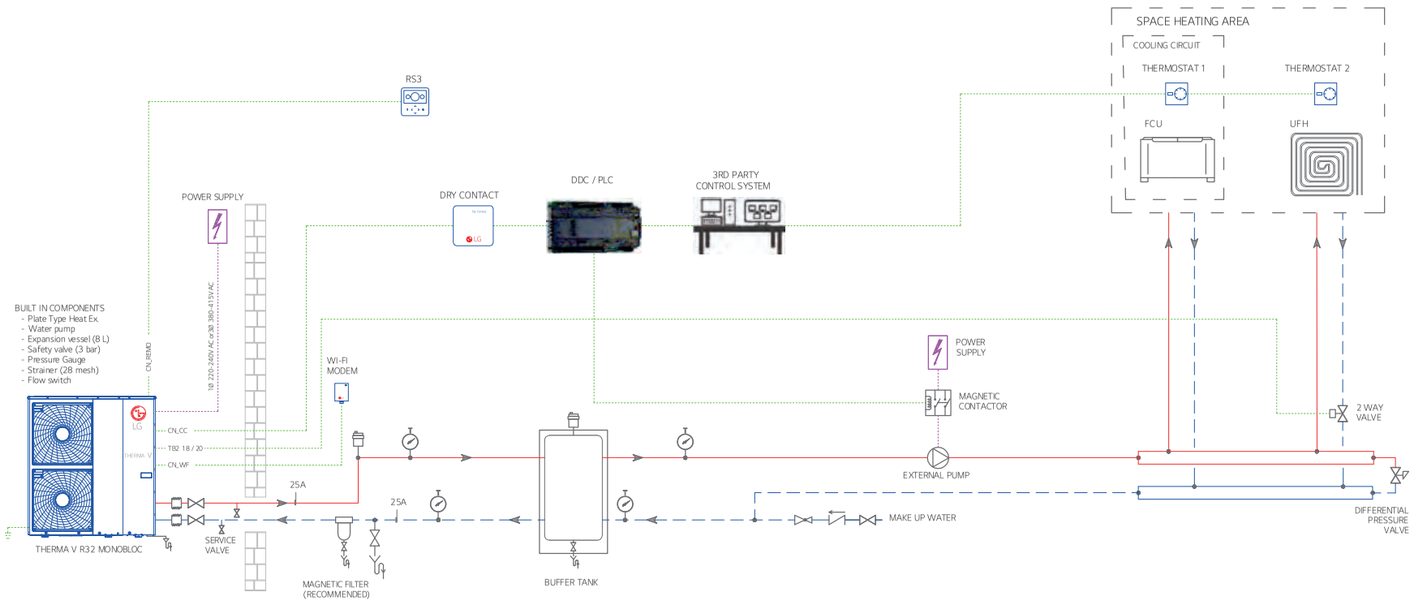
Item	Description
External Pump	An external water pump that circulates the water inside piping when water circuit is segregated or pump discharge head is insufficient to overcome total system friction loss. Controlled by THERMA V with 230V power.
Mixing Pump	An external water pump that circulates the water inside mixed circuit (zone 1). Controlled by THERMA V with 230V power.
Mixing Valve	A motorized 3 Way mixing valve throttling mixing ratio of heated water and return water. Controlled by THERMA V with 230V power supply. Operating times: 60-900 sec.
Solar Pump	An external water pump that circulates the water inside solar thermal system. Controlled by THERMA V with 230V power.
3 Way Valve (B)	A motorized 3 Way diverting valve determining flow direction to either DHW tank or bypass (Recirculation). Controlled by THERMA V with 230V power. Required operating time : less than 90s.
External Boiler	An external boiler supplied by a 3rd party that operates alternatively interlocking with THERMA V. The external boiler should have a integrated or dedicated circulation pump. Controlled by THERMA V with voltage free contact switch.
Magnetic Filter	A magnetic filter that collects metallic particle caused by corrosion or erosion. It is strongly recommended to install the magnetic filter to protect heat pump system.
Buffer Tank	A water tank containing certain amount of water that secures the required minimum water volume for the system or stores heat energy which is needed for defrosting and reducing start up load.
2 Way Valve	A motorized isolation valve that blocks the water flow into underfloor coil in order to prevent water condensation during cooling mode. Controlled by THERMA V with 230V power. Required operating time : less than 90s.
Flow Sensor	A flow measuring device that measures actual water flow rate in the water piping.
Direct Digital Controller	A control device that uses the analogue or digital signals from various devices and then process and control the system based on the program written inside the controllers and has the capability to sends the information to another controller.
Thermostat	A control device that senses the temperature of a room and performs actions so that the room's temperature is maintained near a desired setpoint.
Plate Heat Exchanger	A heat exchanger made by stacking several thin metal plates that transfers heat between two fluids.
Energy Meter	A device that measures the amount of electric energy consumed by THERMA V
Heat Meter	A device that measures produced thermal energy by measuring the flow rate of the water and the change in its temperature (ΔT) between the outlet and inlet.
Water Temperature Sensor	A sensor that measures the temperature of the water.

SYSTEM SUMMARY

Application	Space Heating & Cooling with Dry Contact
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(H&C)
Main Controller	3rd Party Controller
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by 3rd Party Controller

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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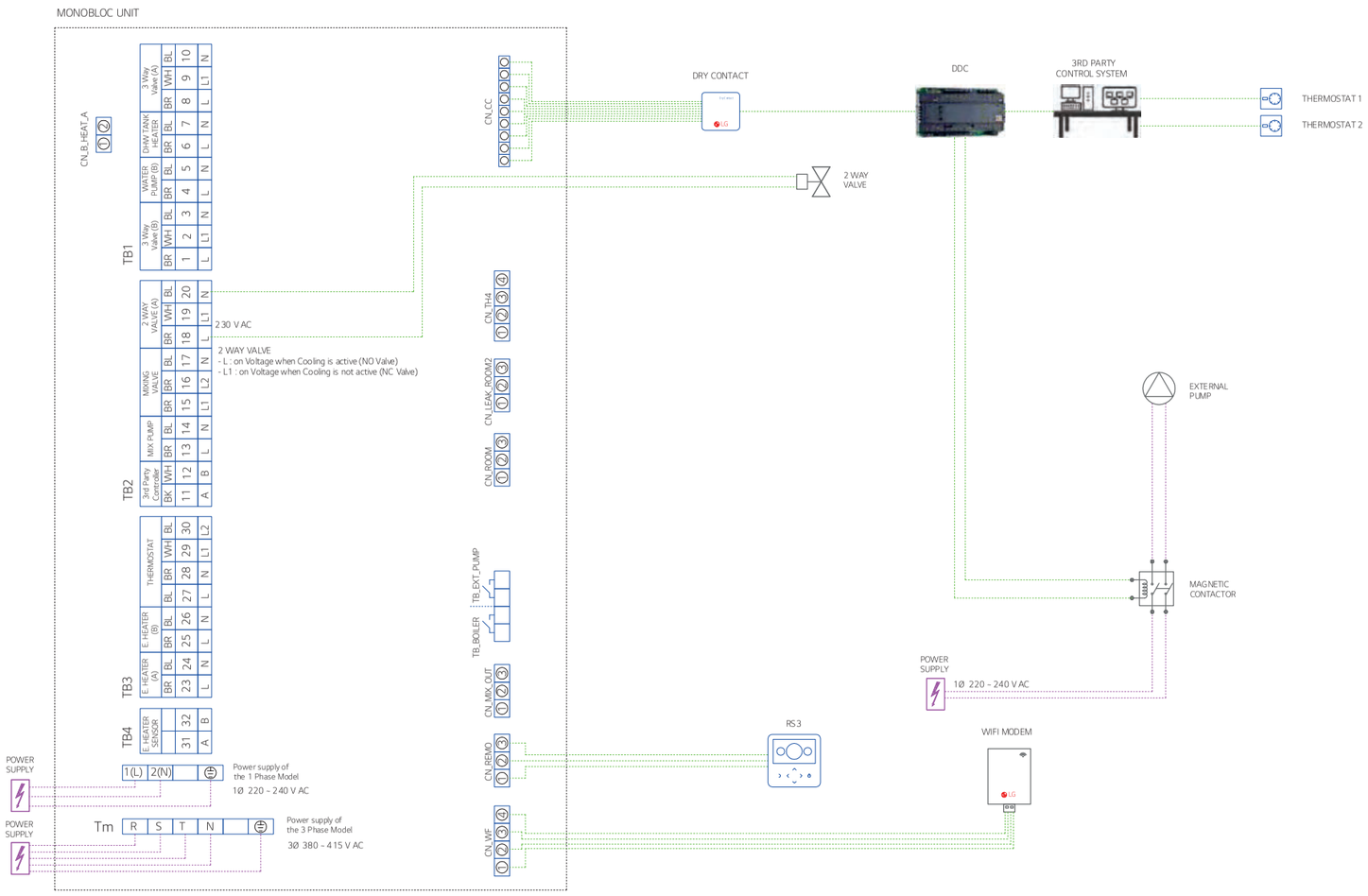
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

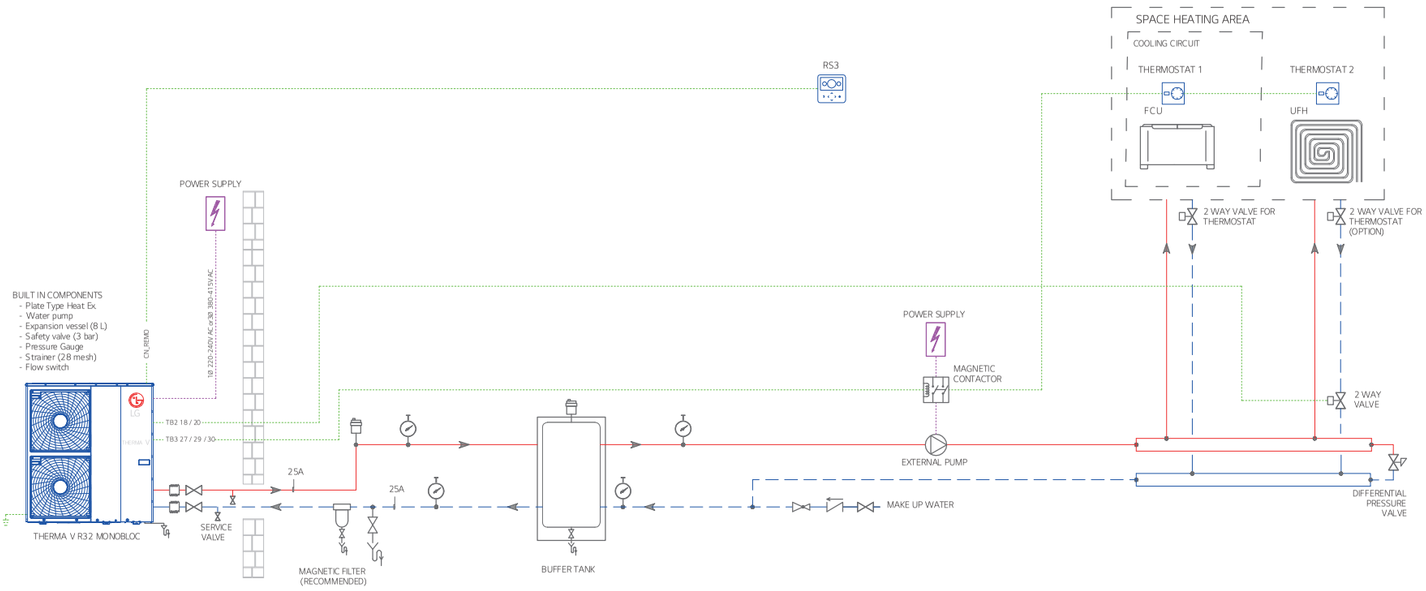


SYSTEM SUMMARY

Application	Space Heating & Cooling with Thermostat
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(H&C)
Main Controller	Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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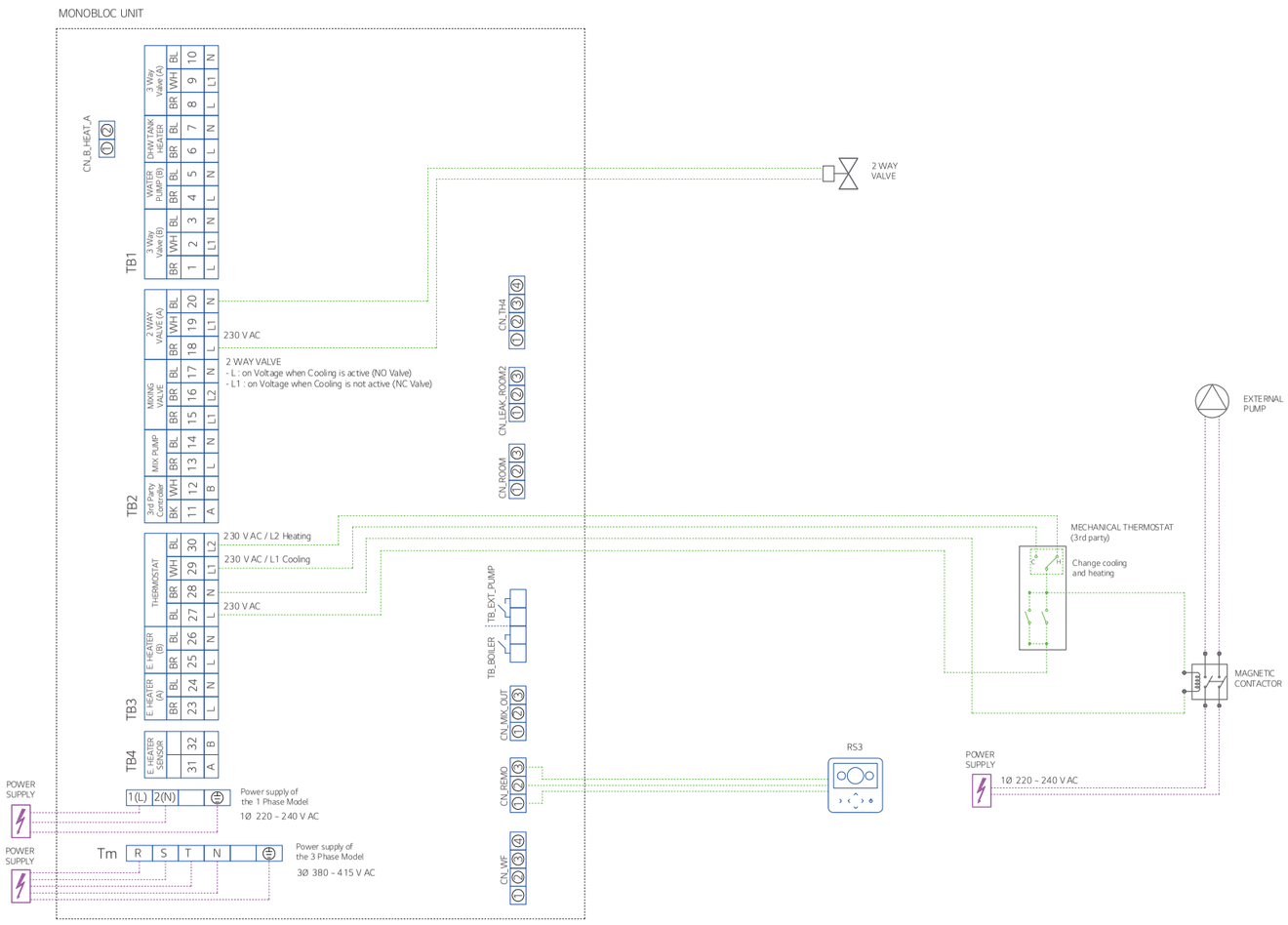
WIRING DIAGRAM

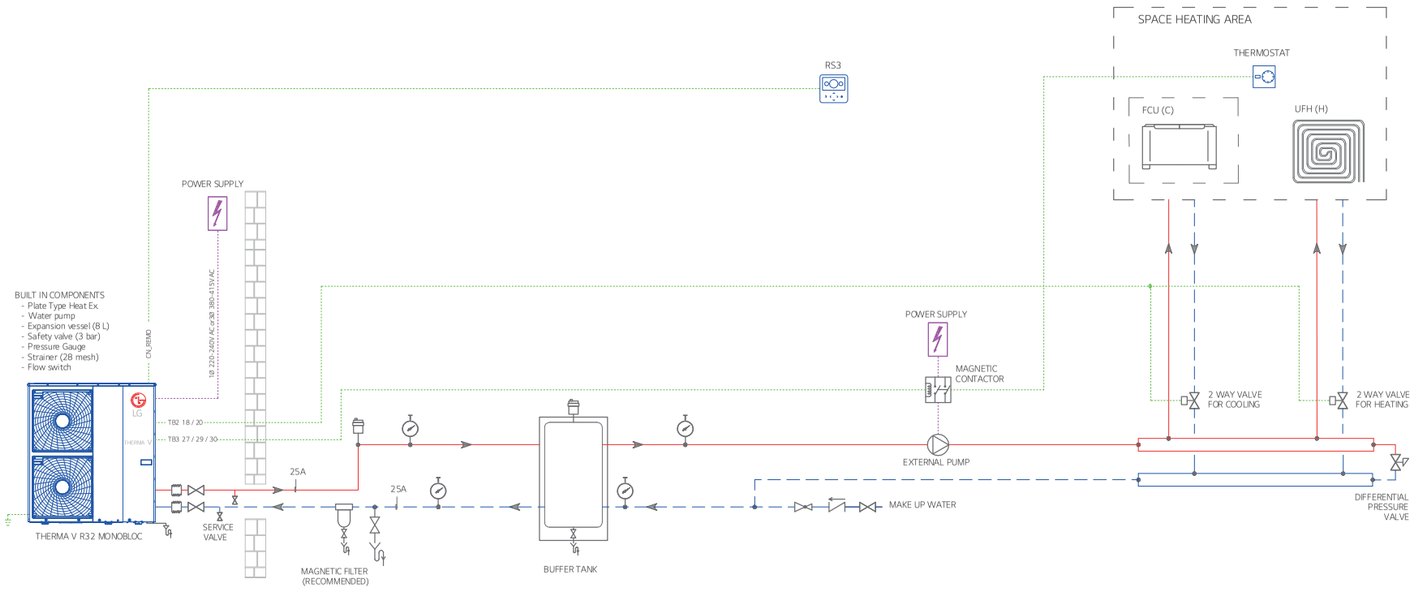


SYSTEM SUMMARY

Application	Space Heating & Cooling with Thermostat
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(C)
Main Controller	Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat
Remark	Two 2 Way Vales Controlled by THERMA V

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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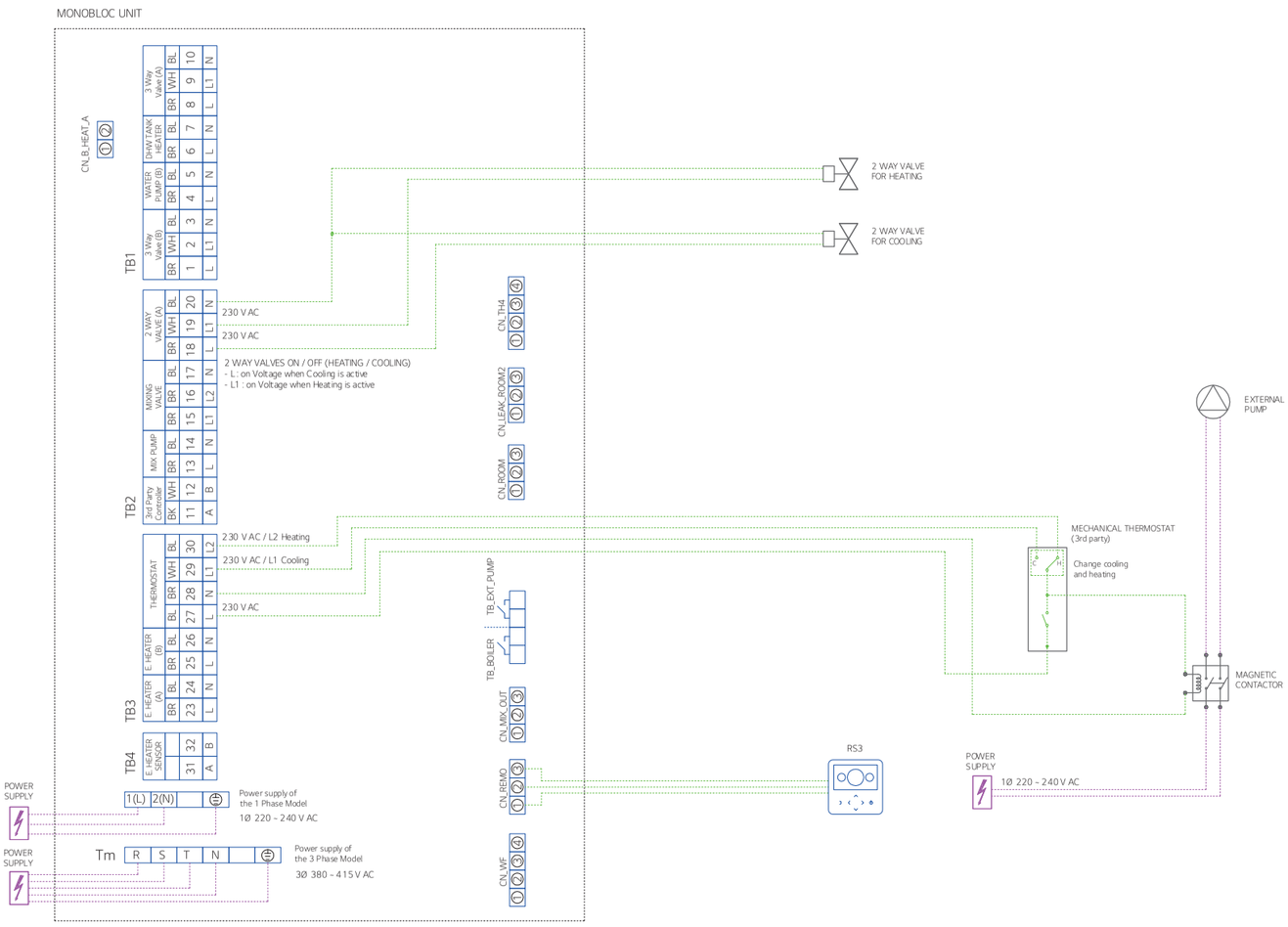
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM



② Space Heating & Cooling with Thermostat

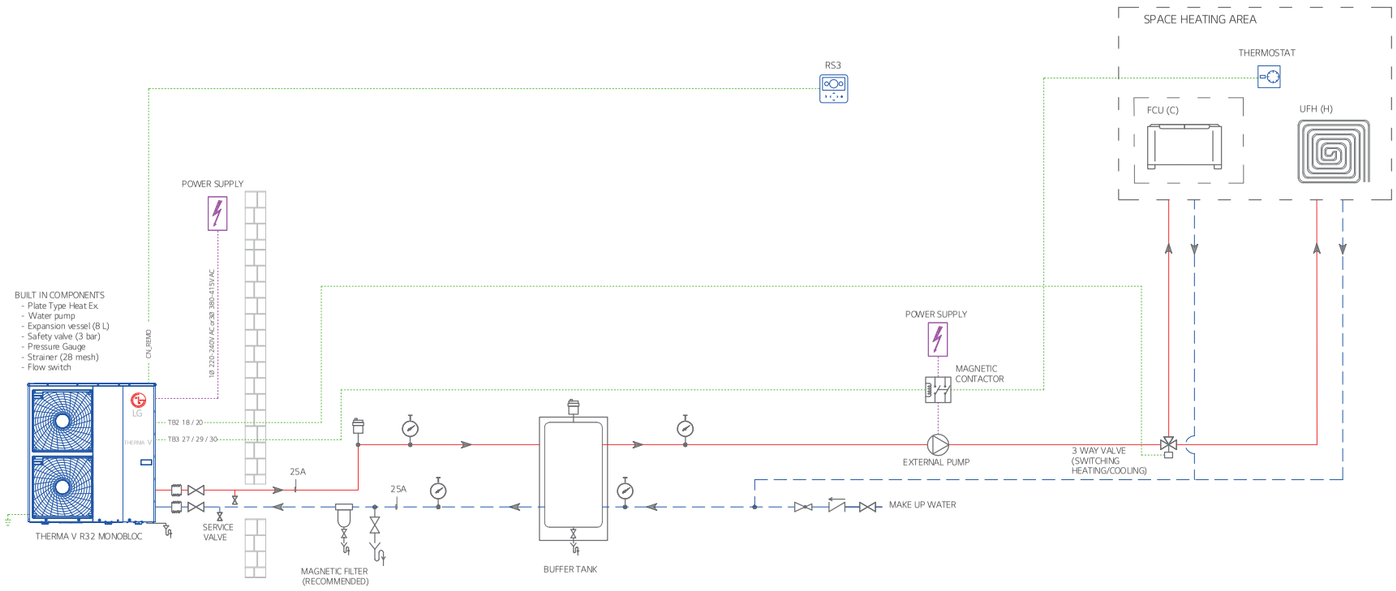
(Alt.1. Two 2 Way Valves Controlled by THERMA V)

SYSTEM SUMMARY

Application	Space Heating & Cooling with Thermostat
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(C)
Main Controller	Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat
Remark	3 Way Valve for H/C Mode Change

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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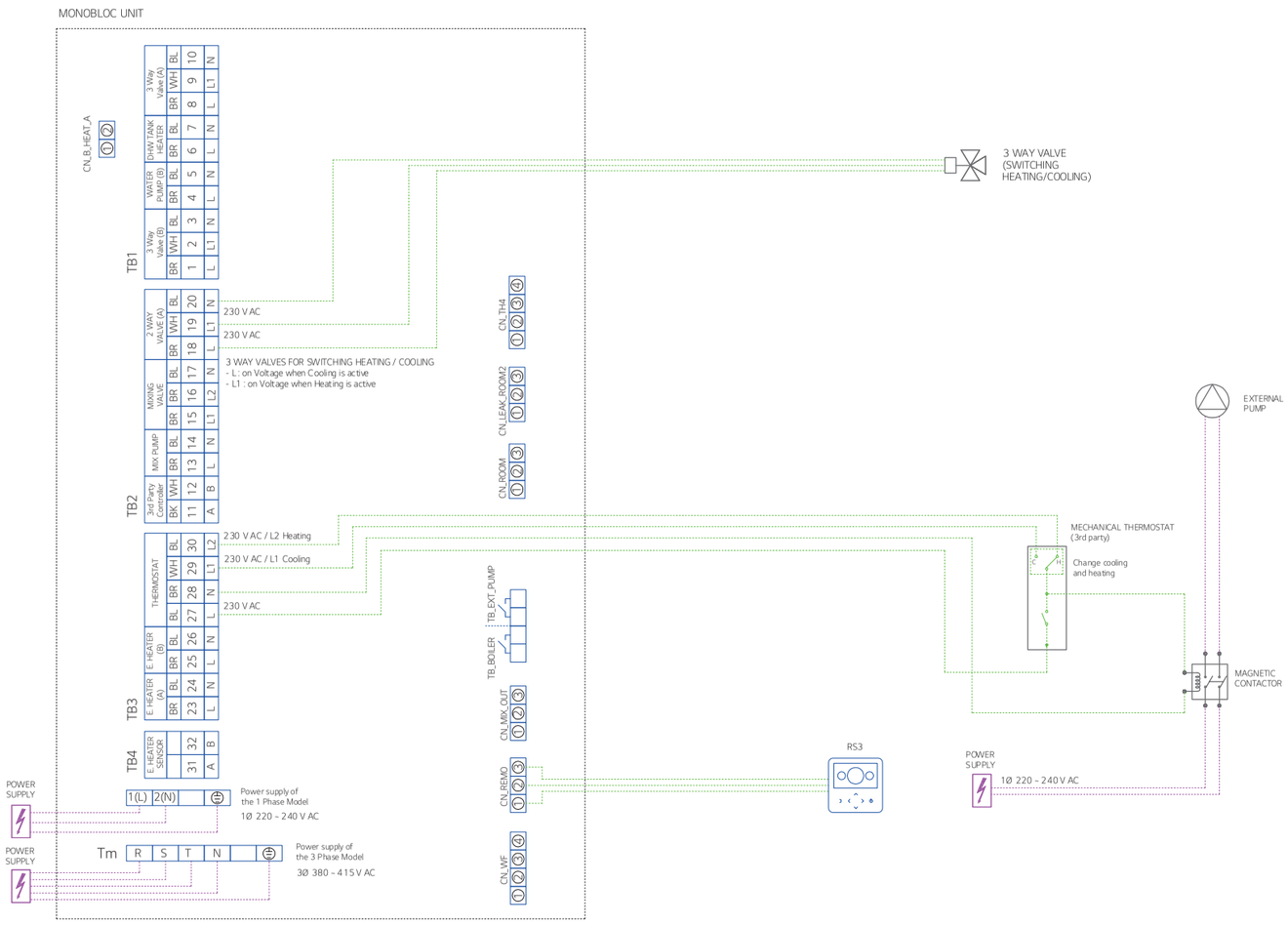
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM



② Space Heating & Cooling with Thermostat

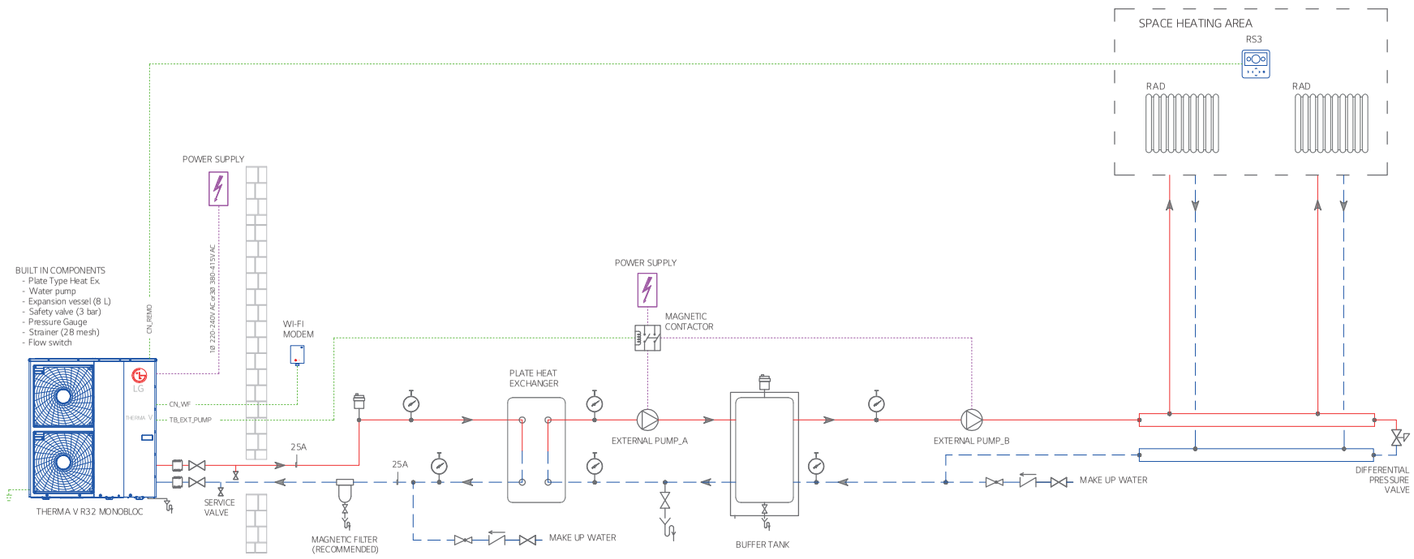
(Alt 2. 3 Way Valve for H/C Mode change)

SYSTEM SUMMARY

Application	Space Heating with Anti-freeze
Product	R32 Monobloc
Terminal Device	UFH + RAD
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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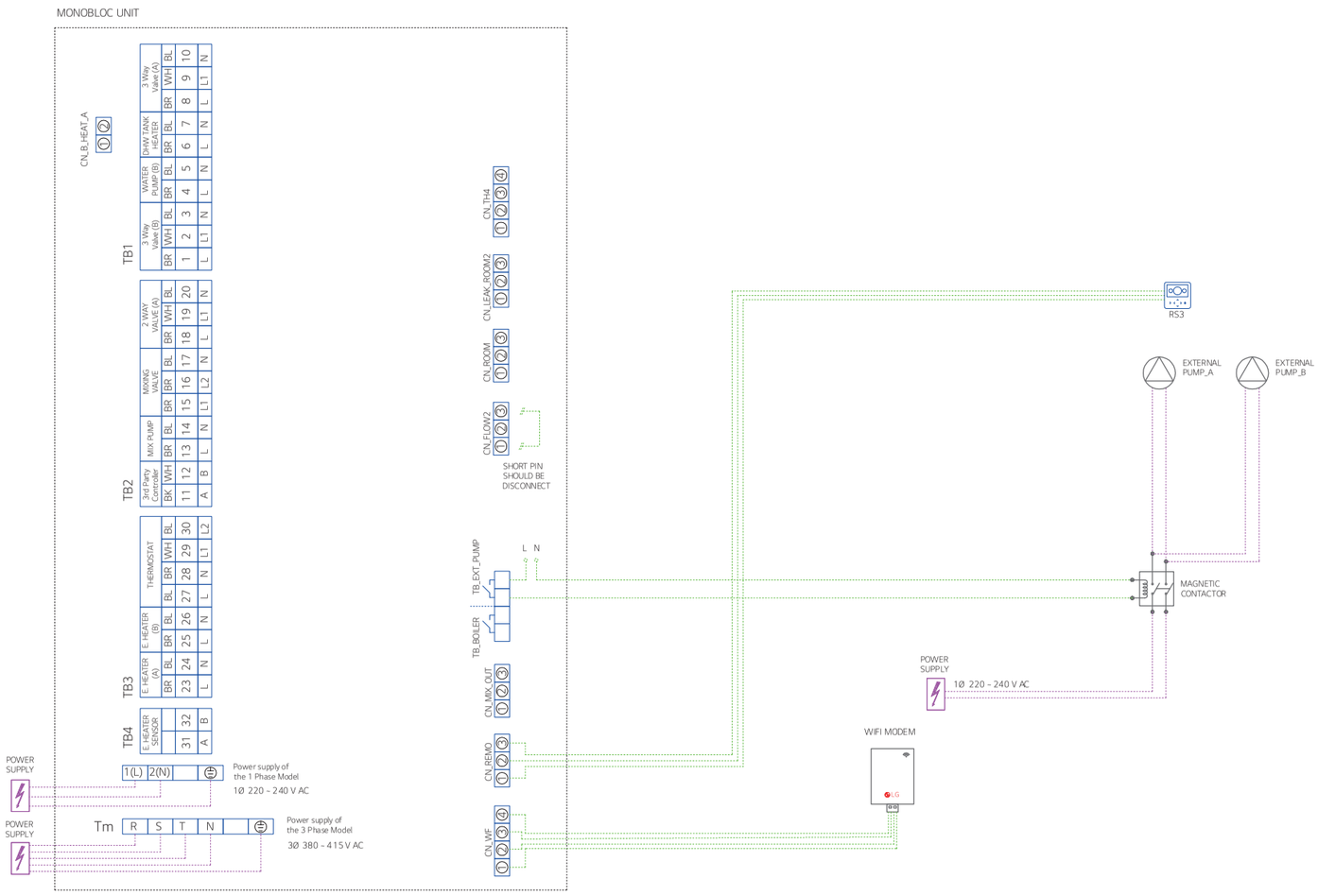
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

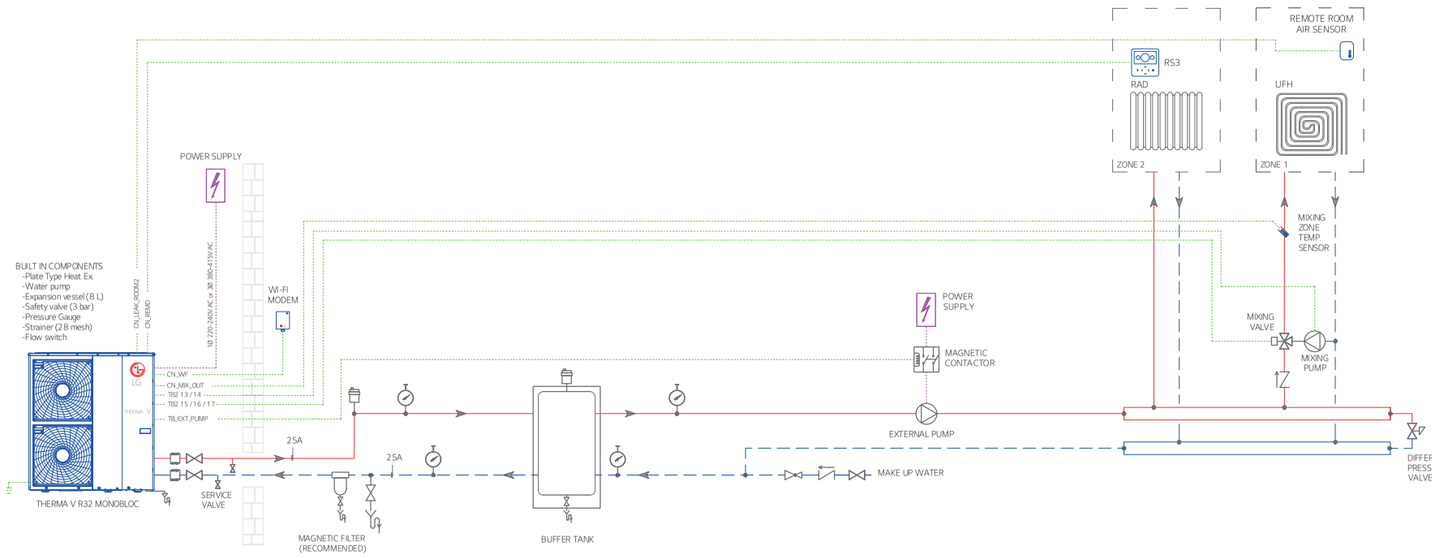


SYSTEM SUMMARY

Application	Space Heating with 2nd Circuit
Product	R32 Monobloc
Terminal Device	UFH + RAD
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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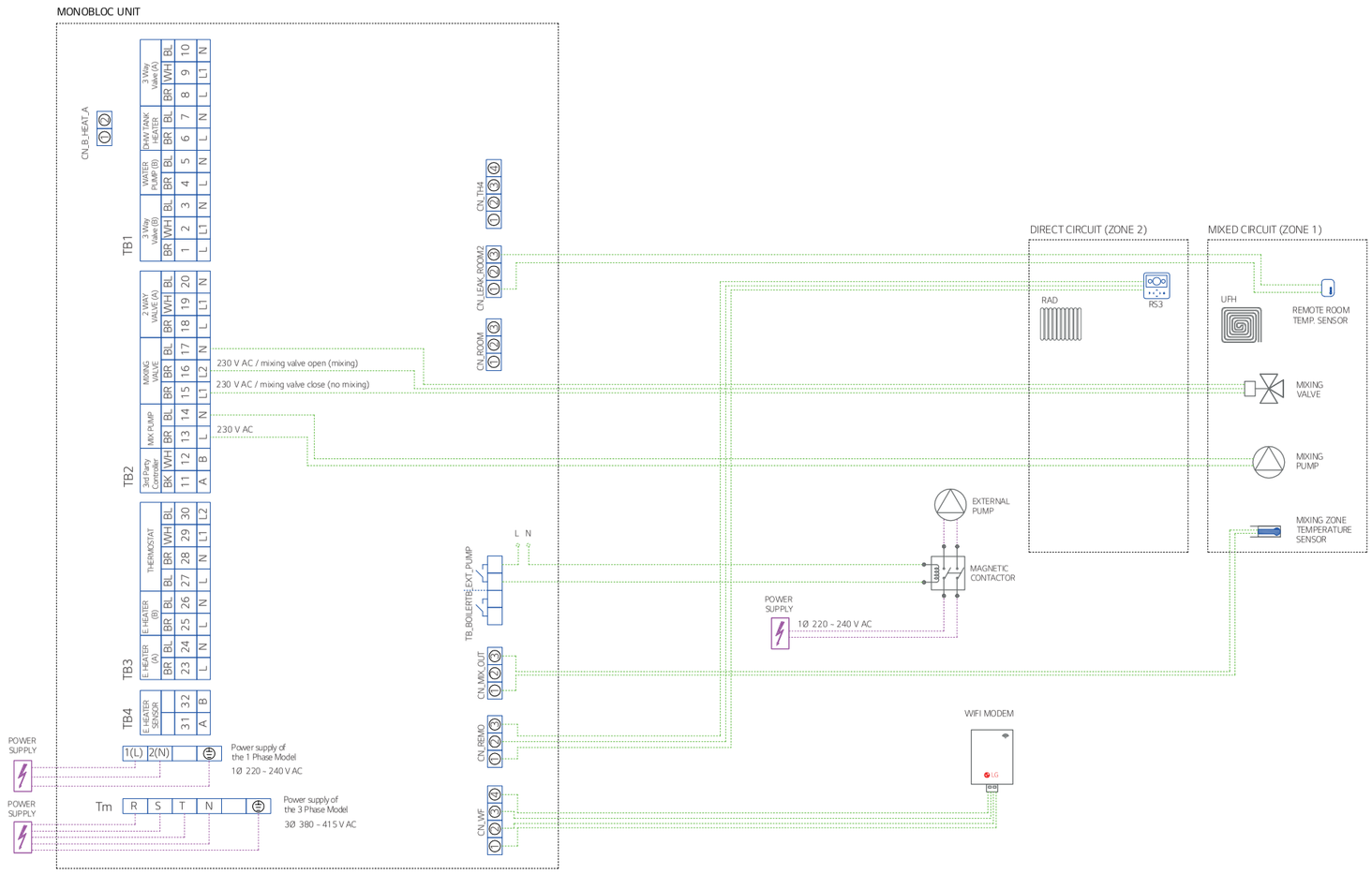
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.
4. For 2nd circuit application, please pay attention to the arrangement of the external pump and mixing pump indicated in this drawing. Furthermore, please make sure to consult with LG regional engineer for 2nd circuit system configuration.

WIRING DIAGRAM



④ Space Heating with 2nd Circuit
(R32 Monobloc)

REFERENCE DRAWINGS FOR APPLICATION

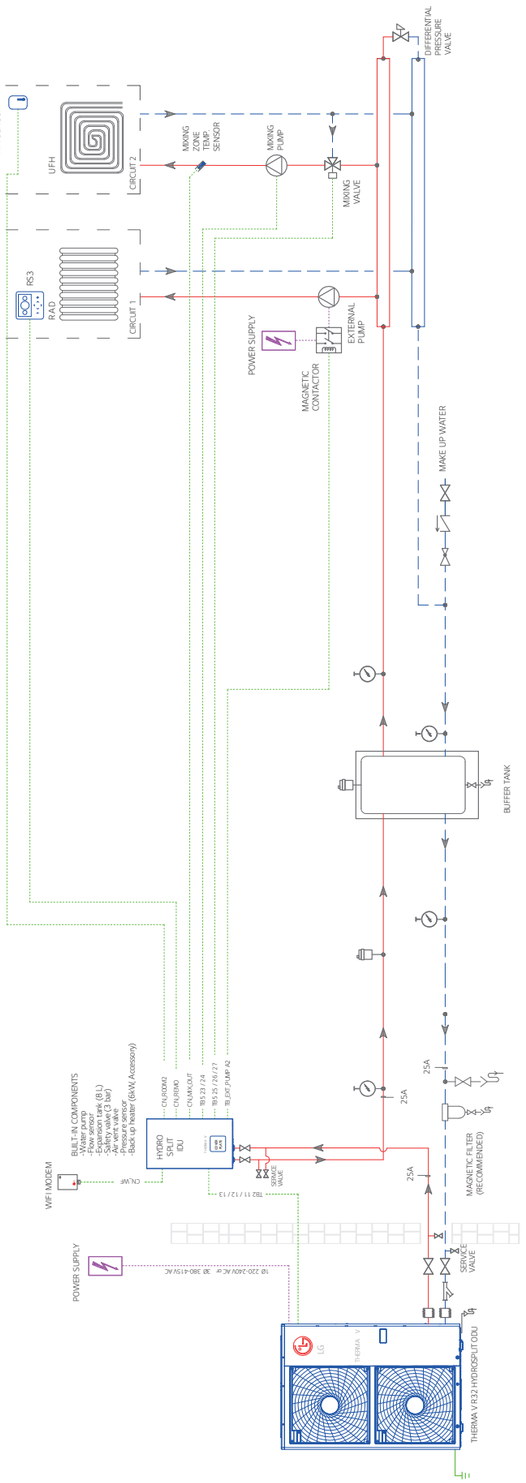
④ Space Heating with 2nd Circuit
(R32 Hydrosplit)

SYMBOL & LEGENDS

Circulation Pump	Motorized 3 Way Valve	check Valve	RS3 Remote Controller		
Expansion Tank	Motorized 2 Way Valve	Safety Relief Valve with drain	Remote Room Air Sensor		
Air Vent	Differential Pressure Valve	Y - type strainer	Dry Contact		
Pressure Gauge	Thermostatic Mixing Valve	Flow Sensor	Wi-Fi Modem		
Flexible Connection	Shut Off Valve	Magnetic Contactor	Thermostat		
Drain	Pressure Reducing Valve				

SYSTEM SUMMARY

Application	Space Heating with 2nd Circuit
Product	R32 Hydrosplit
Terminal Device	UFH + RAD
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP



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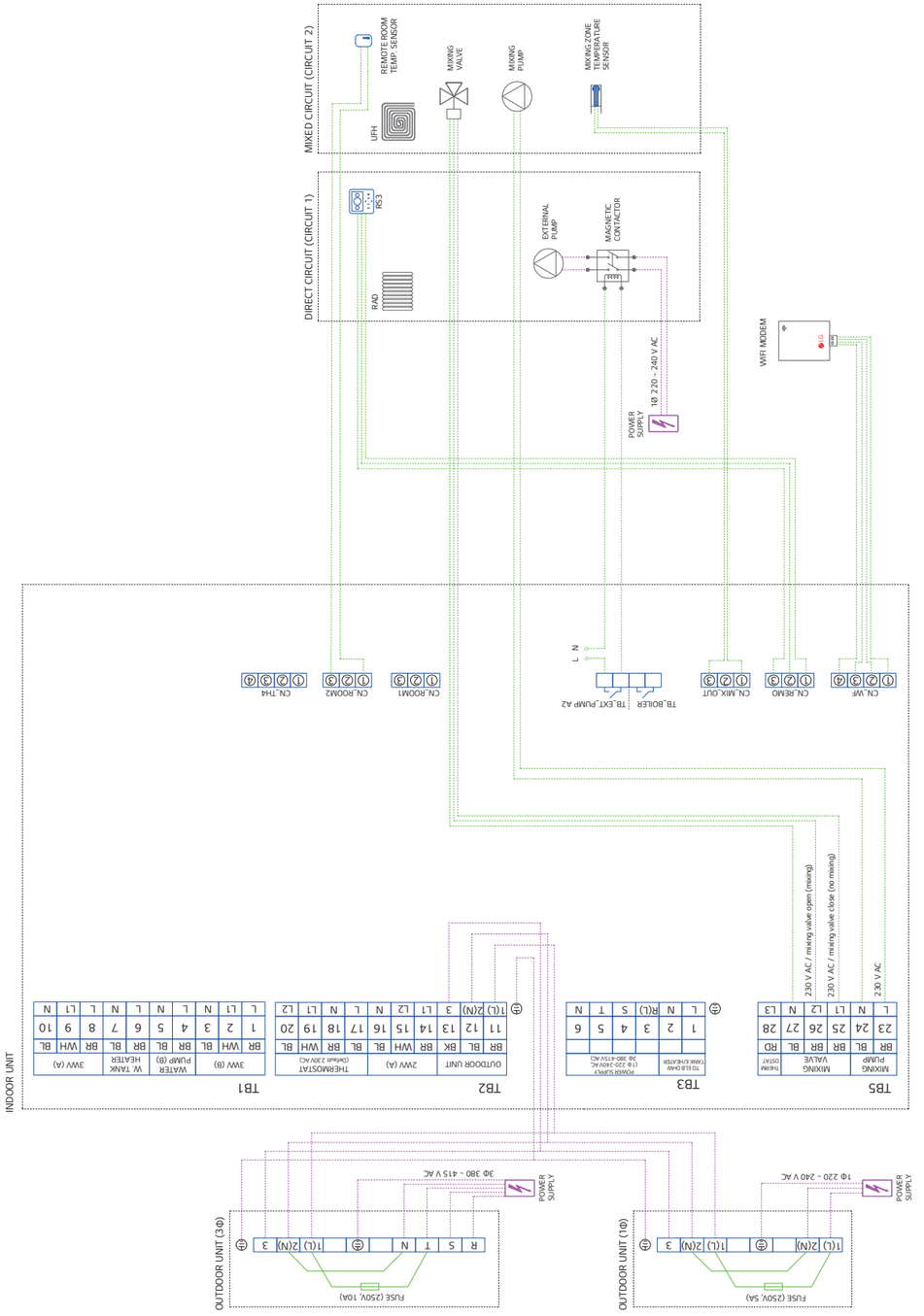
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. The arrangement of external pump and mixing pump indicated in this drawing is applicable only to R32 Hydrosplit model. In case of other models, please make sure to consult with LG regional engineer for 2nd circuit system configuration.

WIRING DIAGRAM

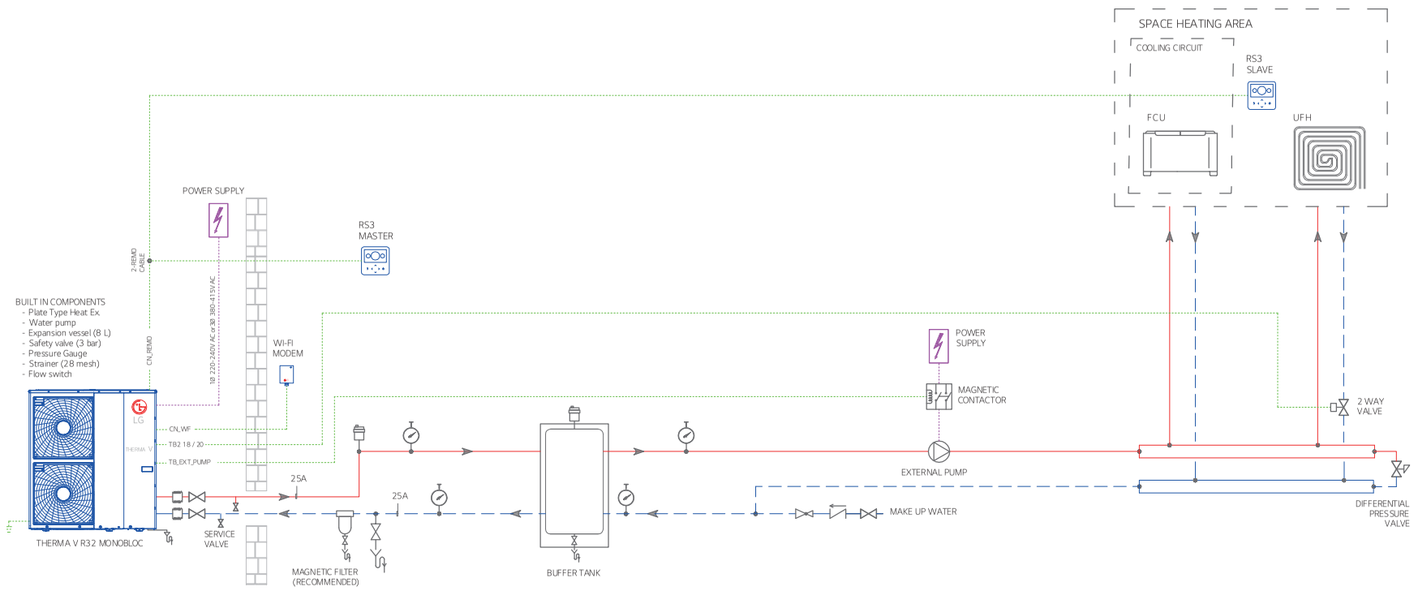


SYSTEM SUMMARY

Application	Space Heating & Cooling with 2 Remote Controllers
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU (H&C)
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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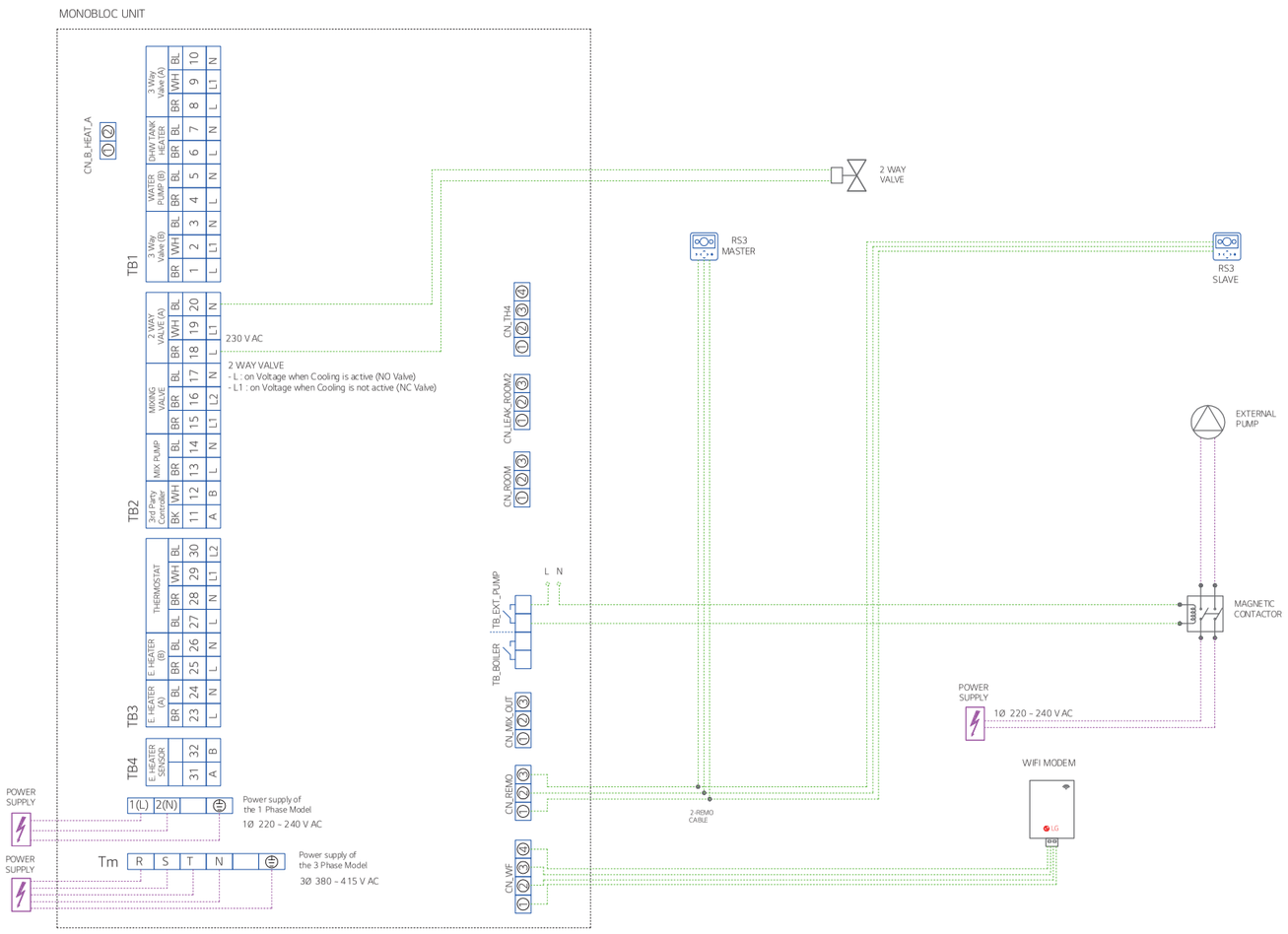
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

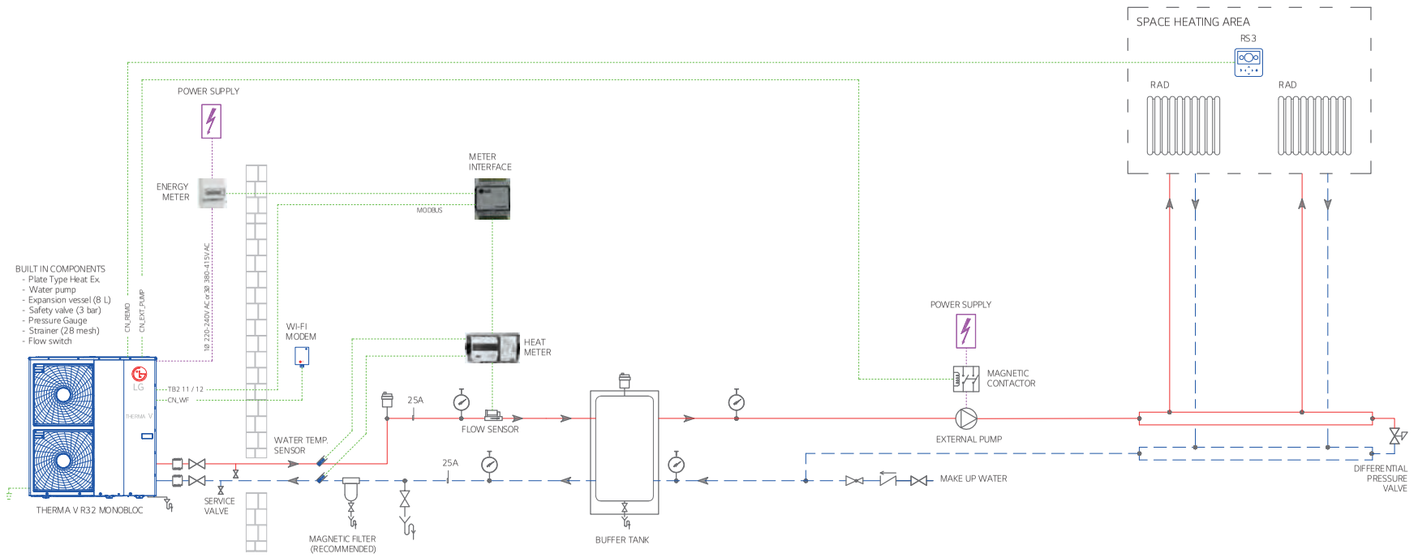


SYSTEM SUMMARY

Application	Space Heating with Meter Interface
Product	R32 Monobloc
Terminal Device	RAD
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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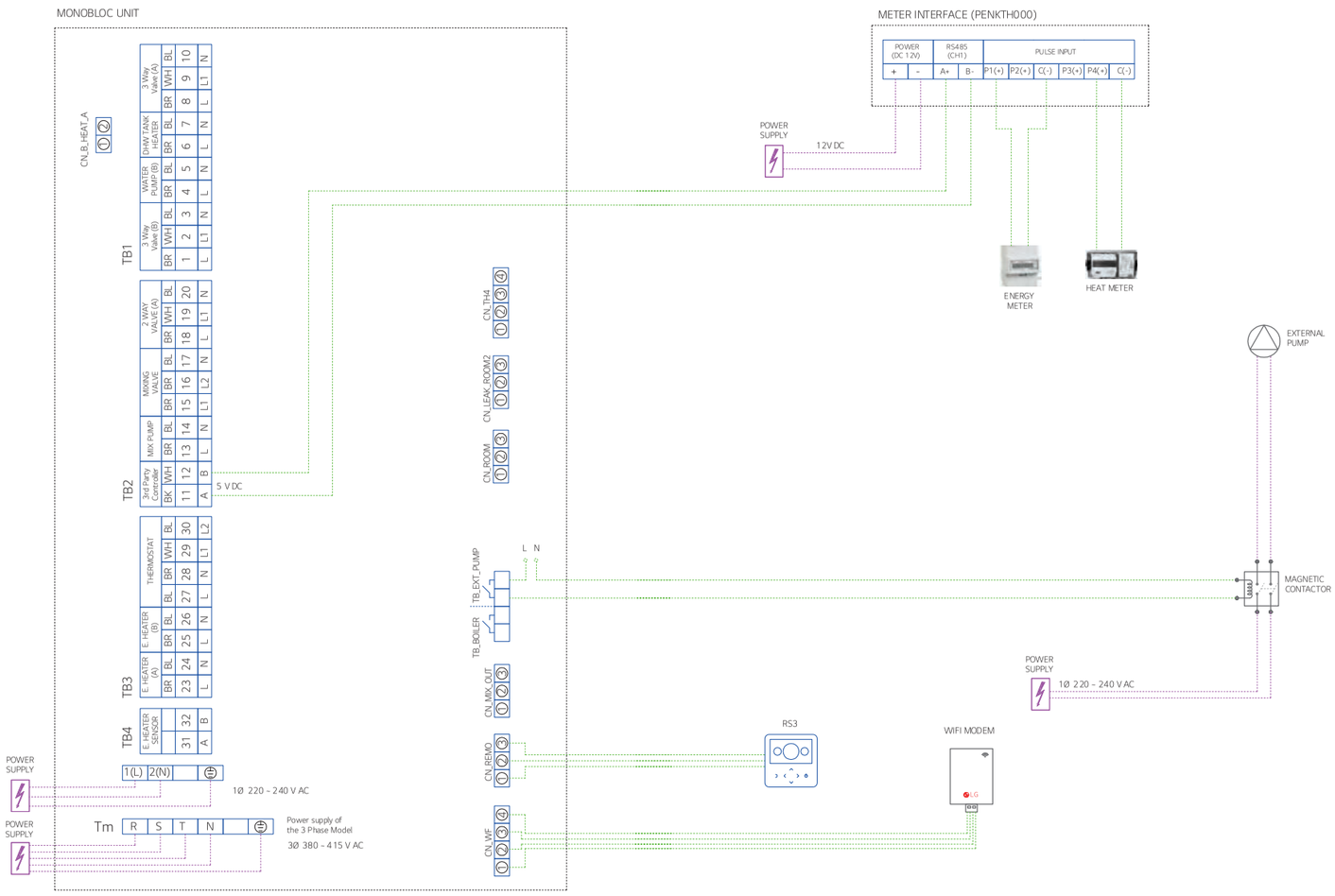
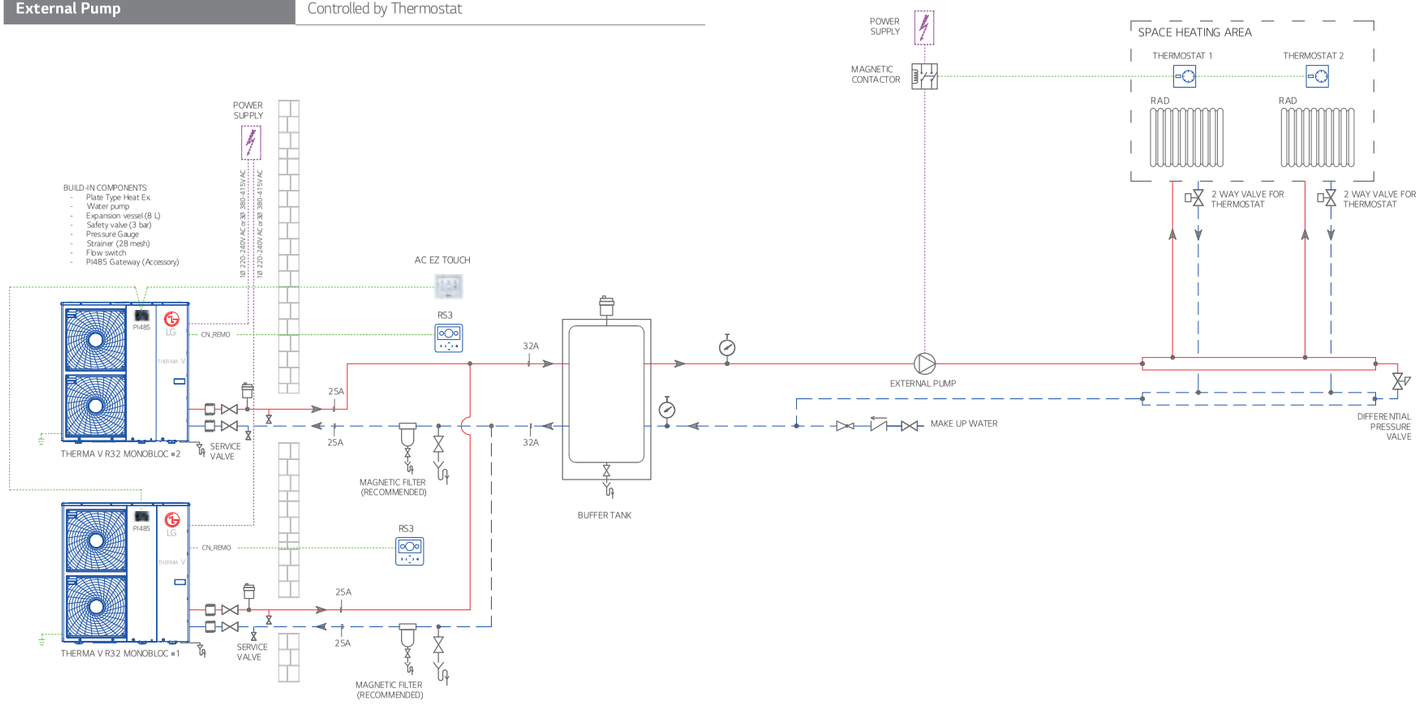
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM



SYSTEM SUMMARY

Application	Space Heating with Parallel Installation
Product	R32 Monobloc
Terminal Device	RAD
Main Controller	LG Central Controller & Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat



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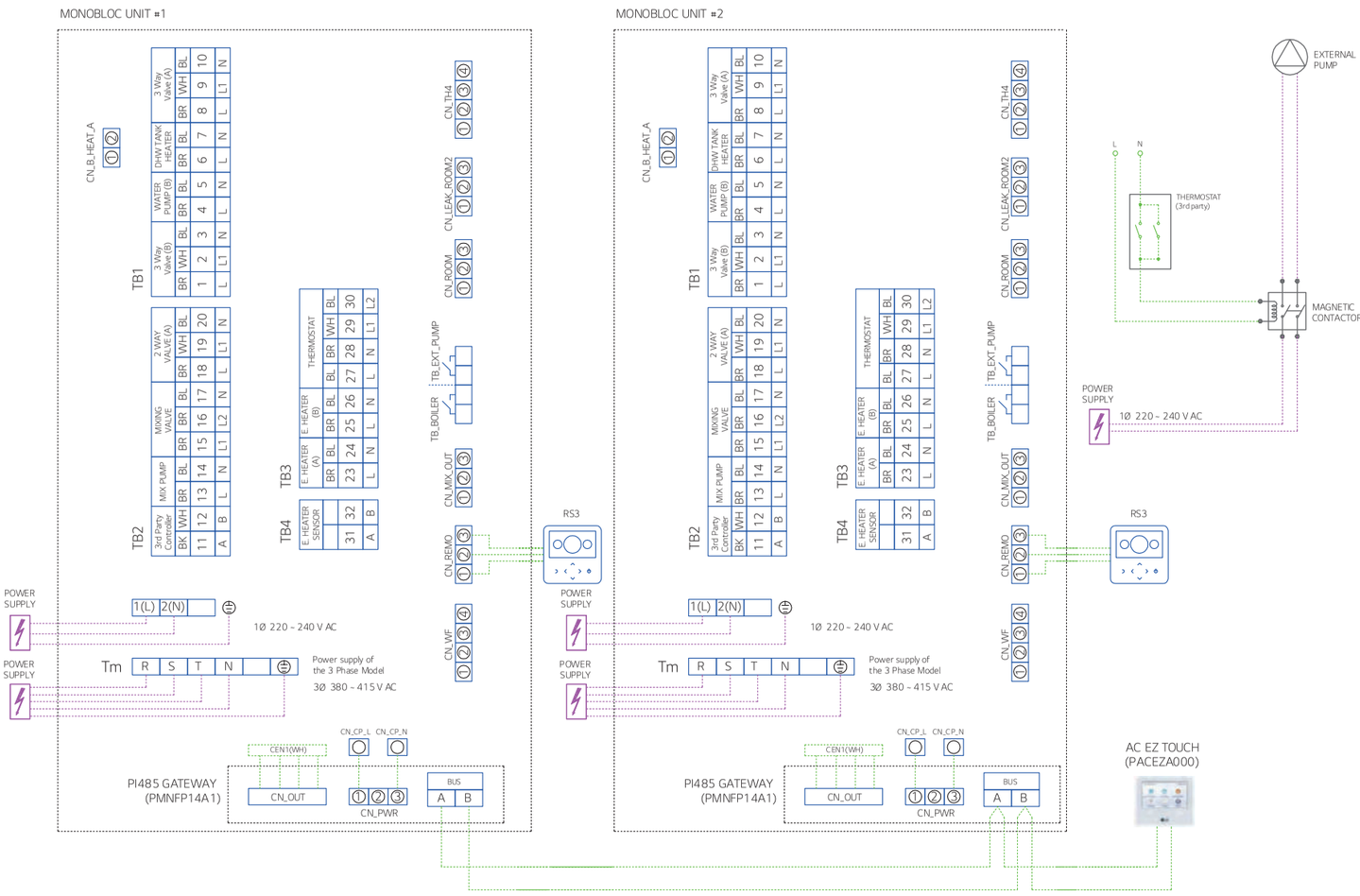
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

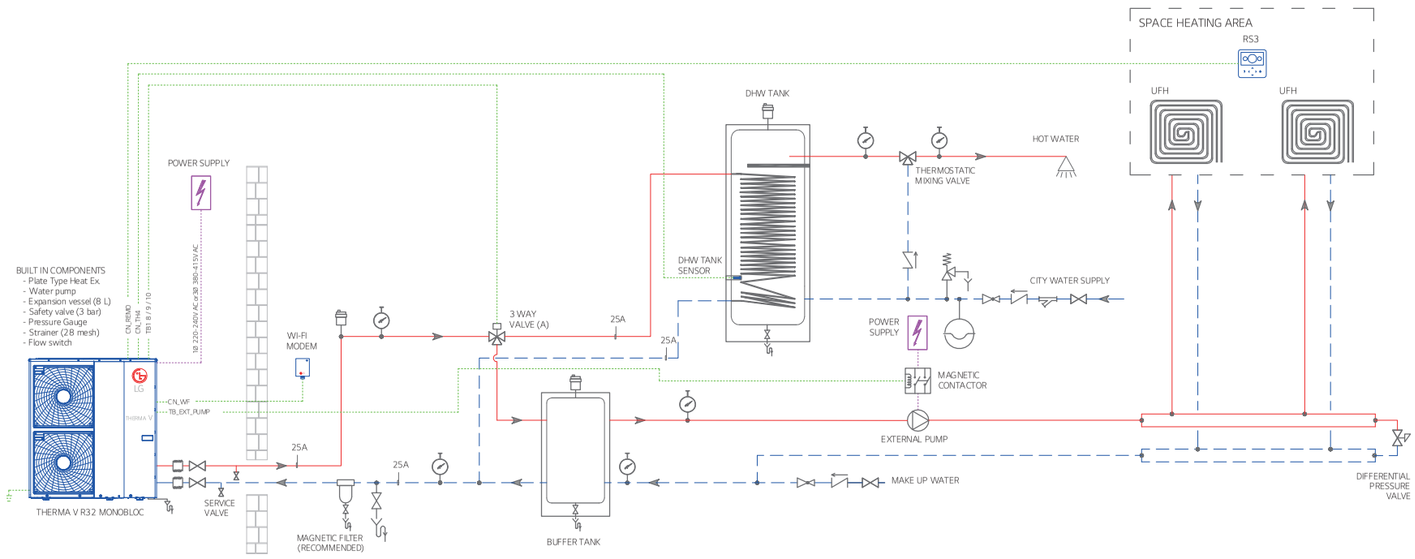


SYSTEM SUMMARY

Application	Space Heating & DHW
Product	R32 Monobloc
Terminal Device	UFH
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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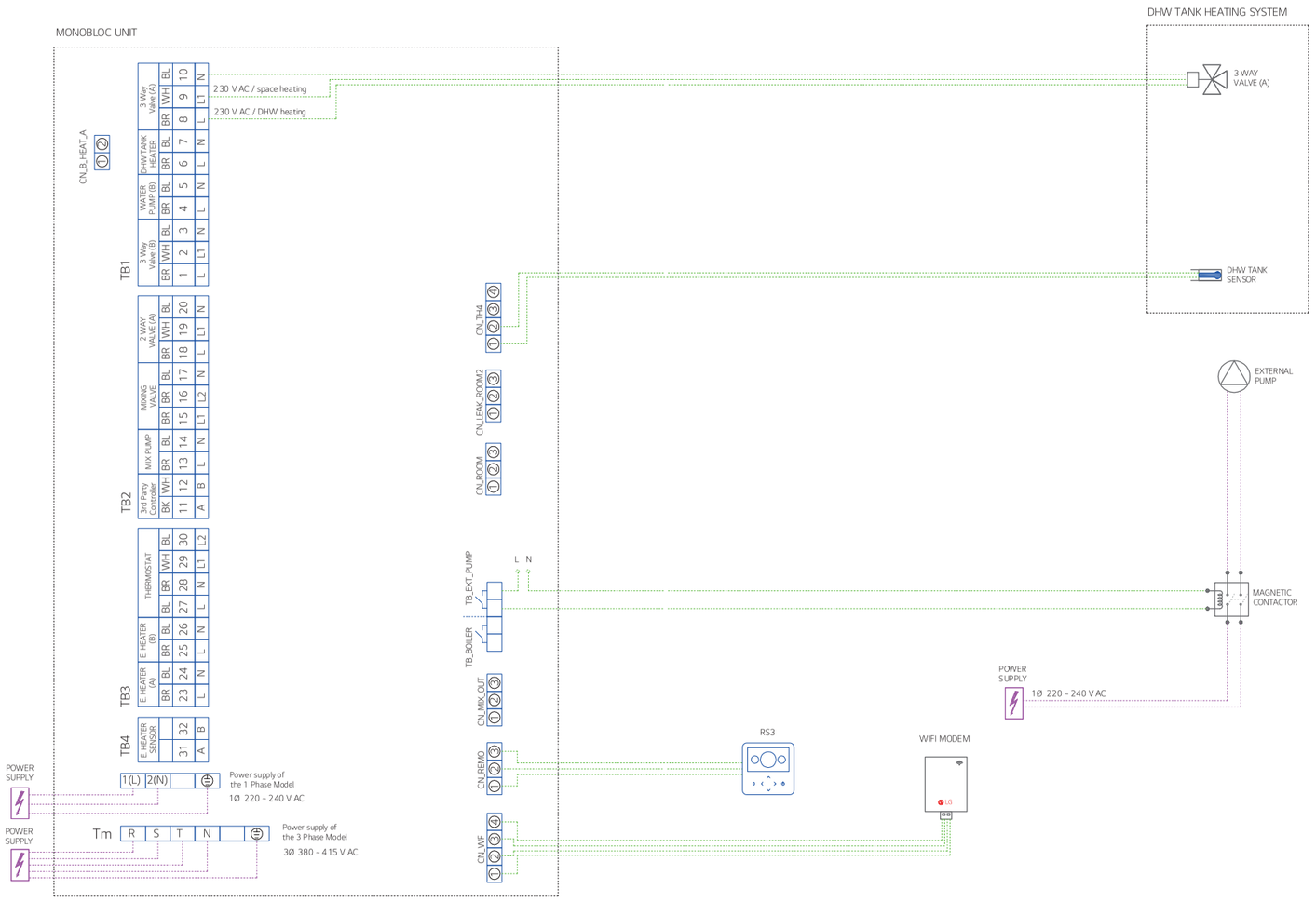
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

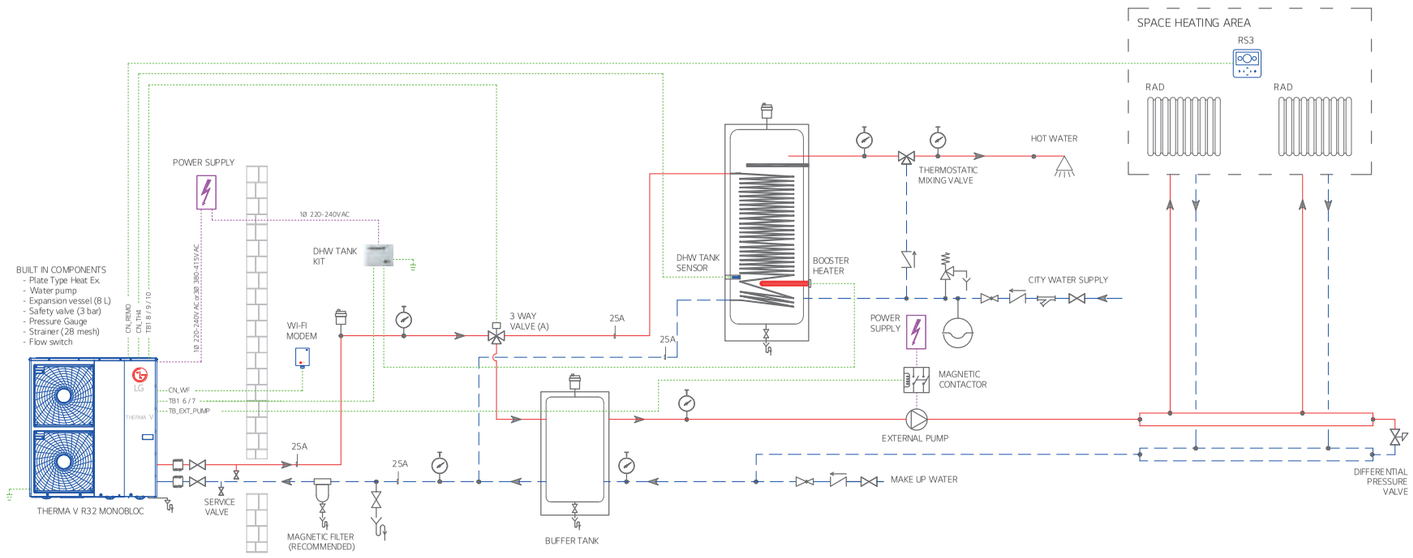


SYSTEM SUMMARY

Application	Space Heating & DHW with Booster Heater
Product	R32 Monobloc
Terminal Device	UFH
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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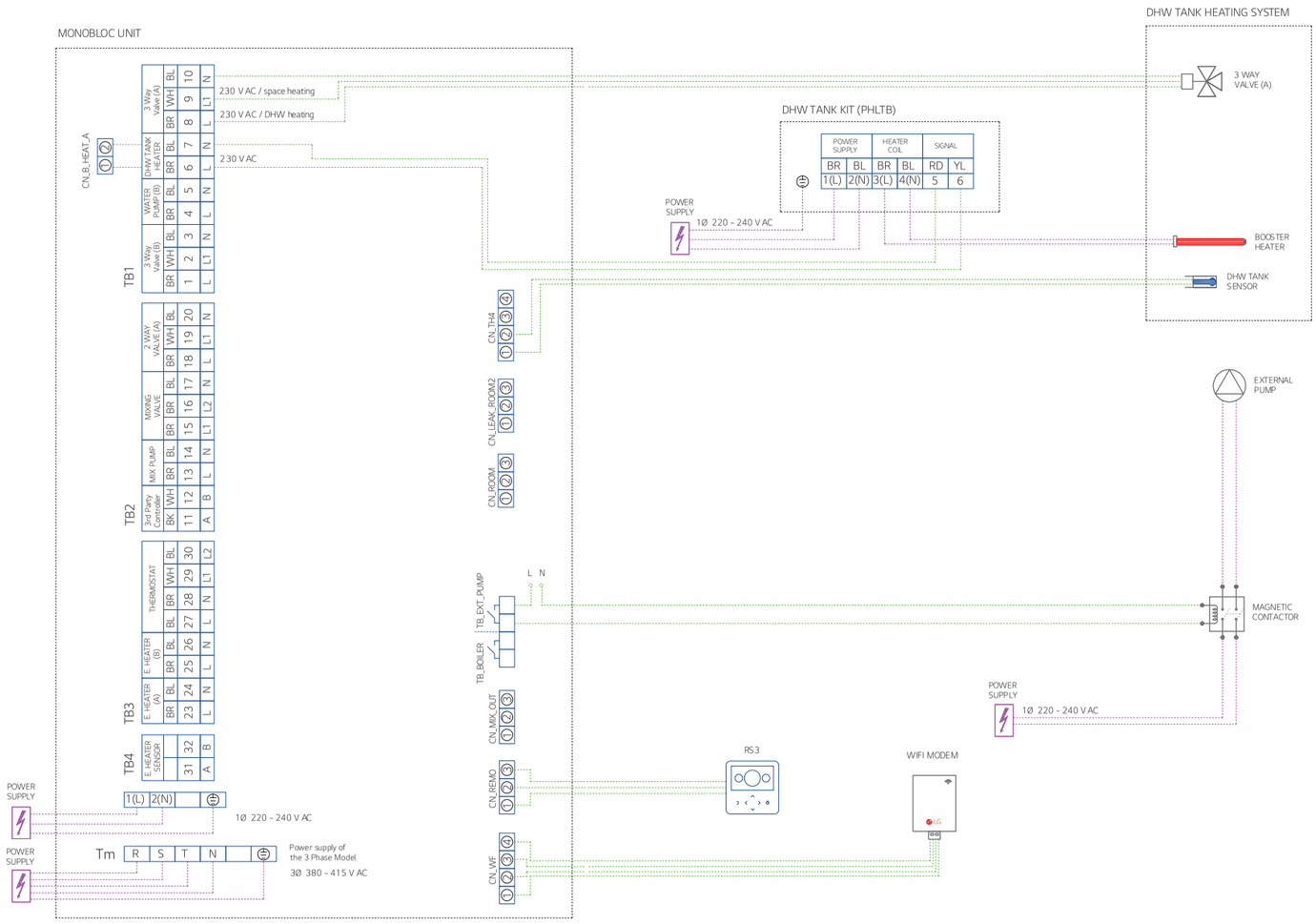
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

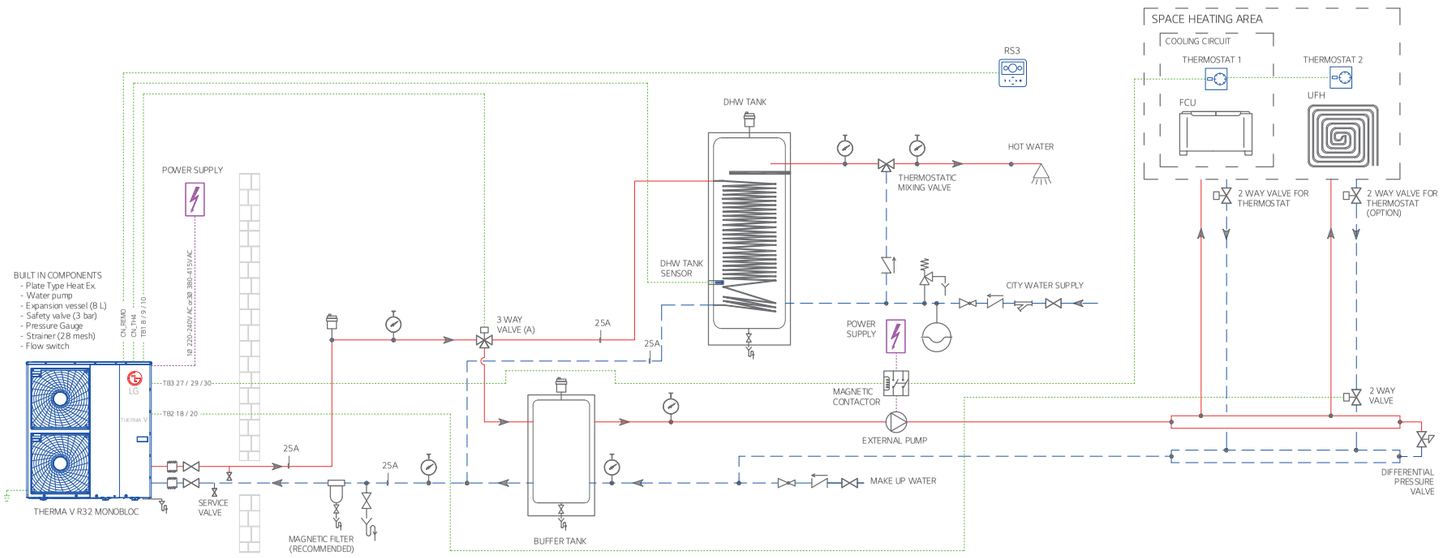


SYSTEM SUMMARY

Application	Space Heating, Cooling, and DHW with Thermostat
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(H&C)
Main Controller	Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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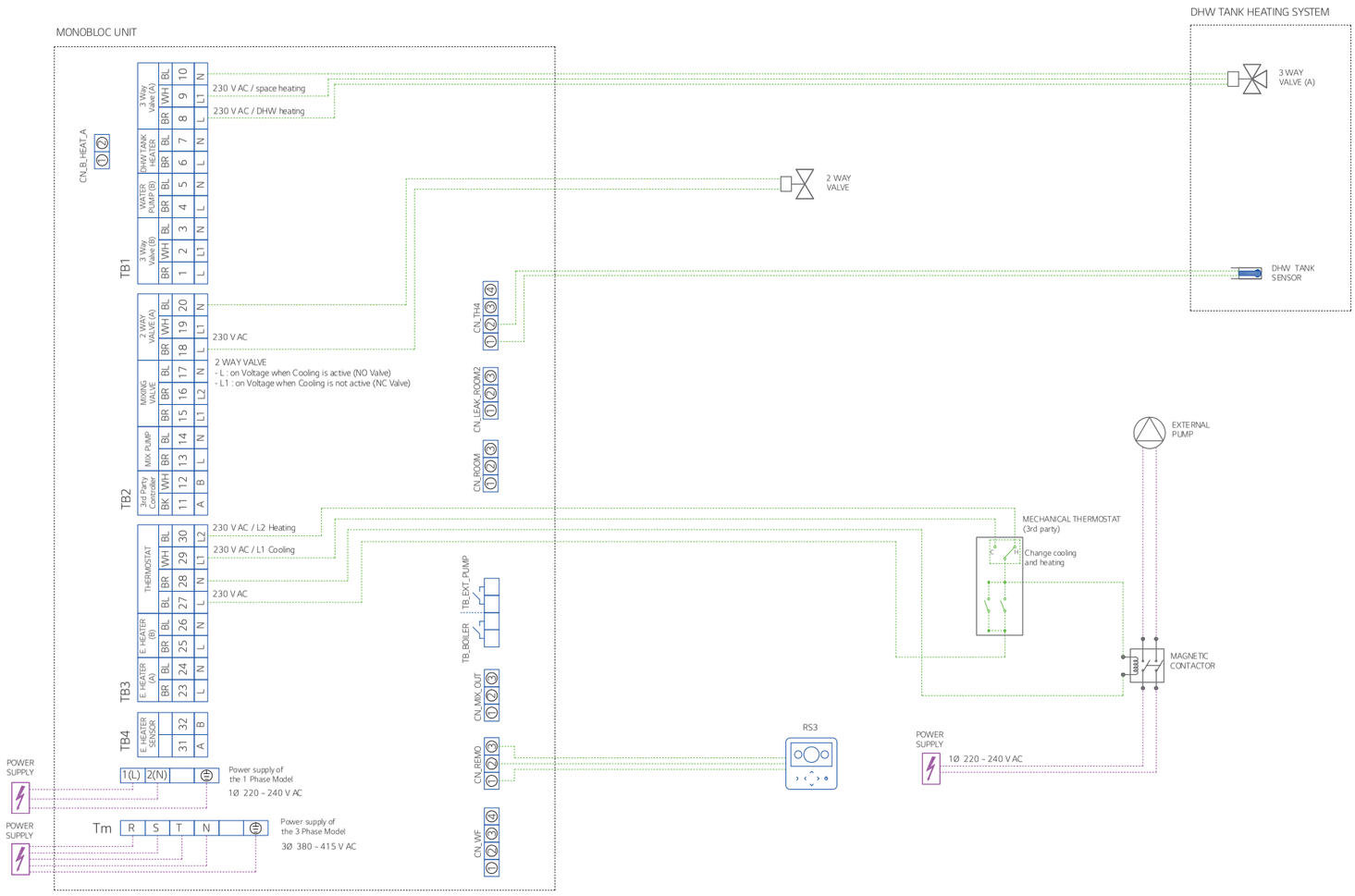
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

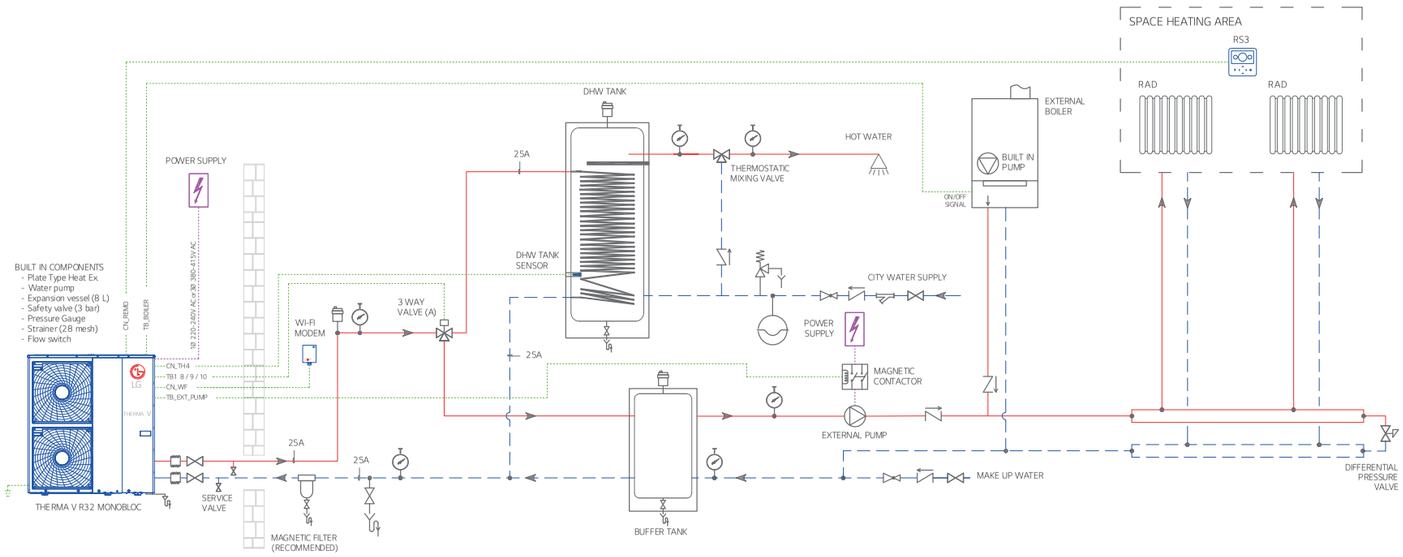


SYSTEM SUMMARY

Application	Space Heating & DHW with External Boiler
Product	R32 Monobloc
Terminal Device	RAD
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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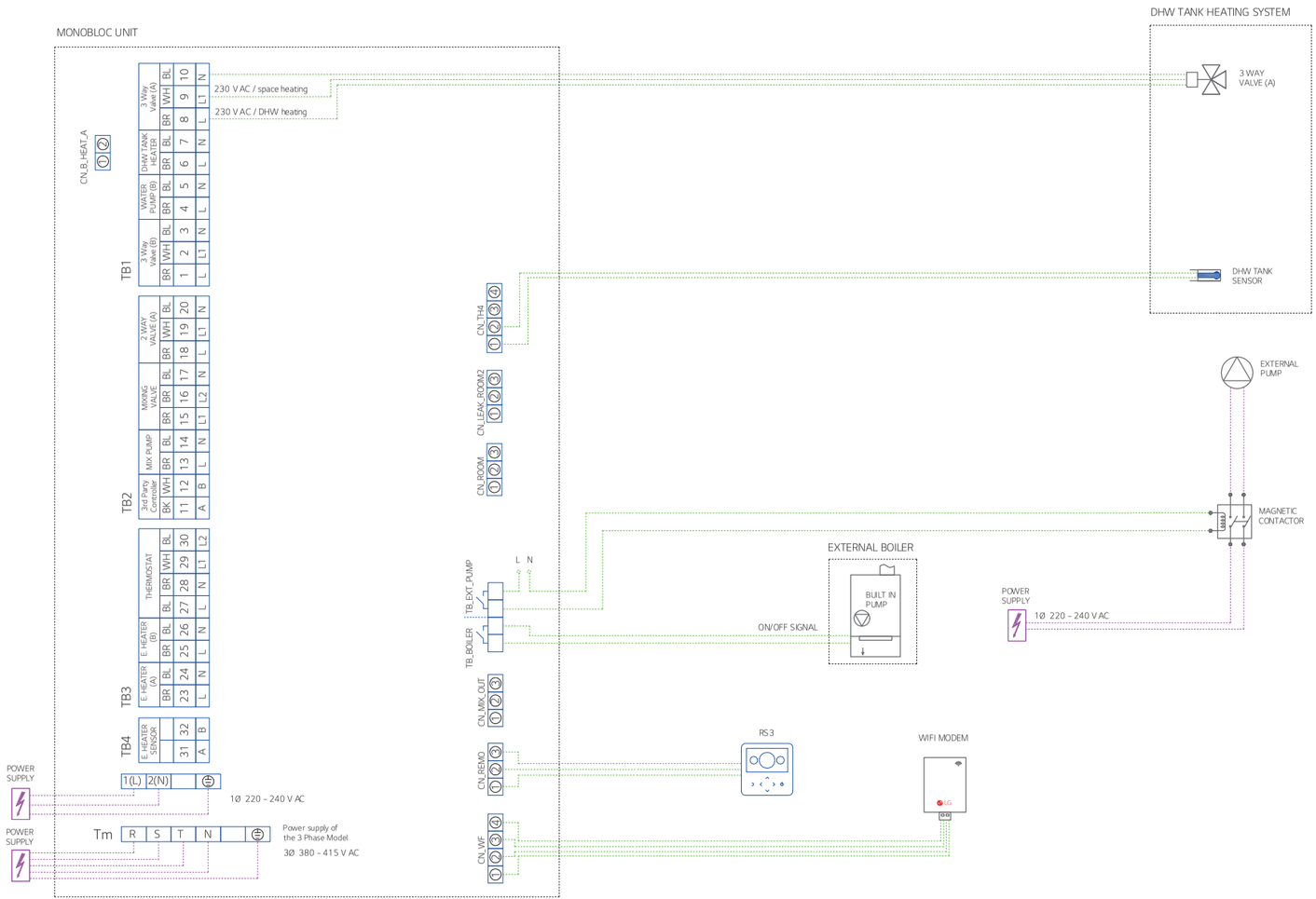
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

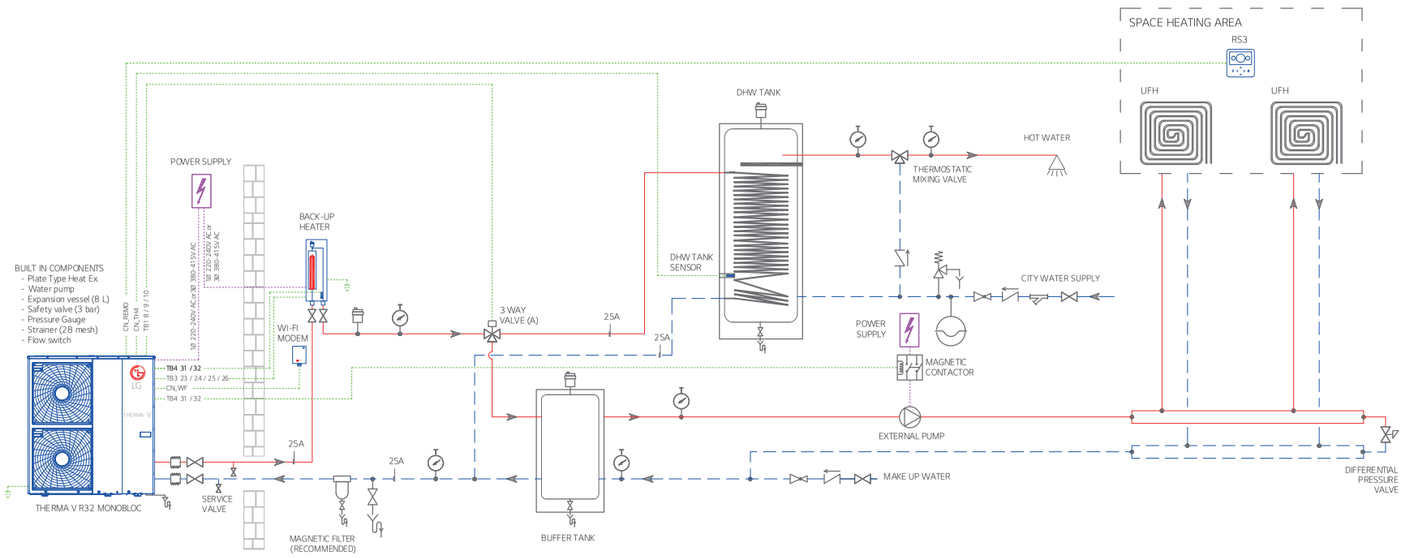


SYSTEM SUMMARY

Application	Space Heating & DHW with Back-up Heater
Product	R32 Monobloc
Terminal Device	UFH
Main Controller	LG RS3 Controller
Control Setting of LG RS3 Controller	Based on Air Temp. or Water Temp.
External Pump	Controlled by AWHP

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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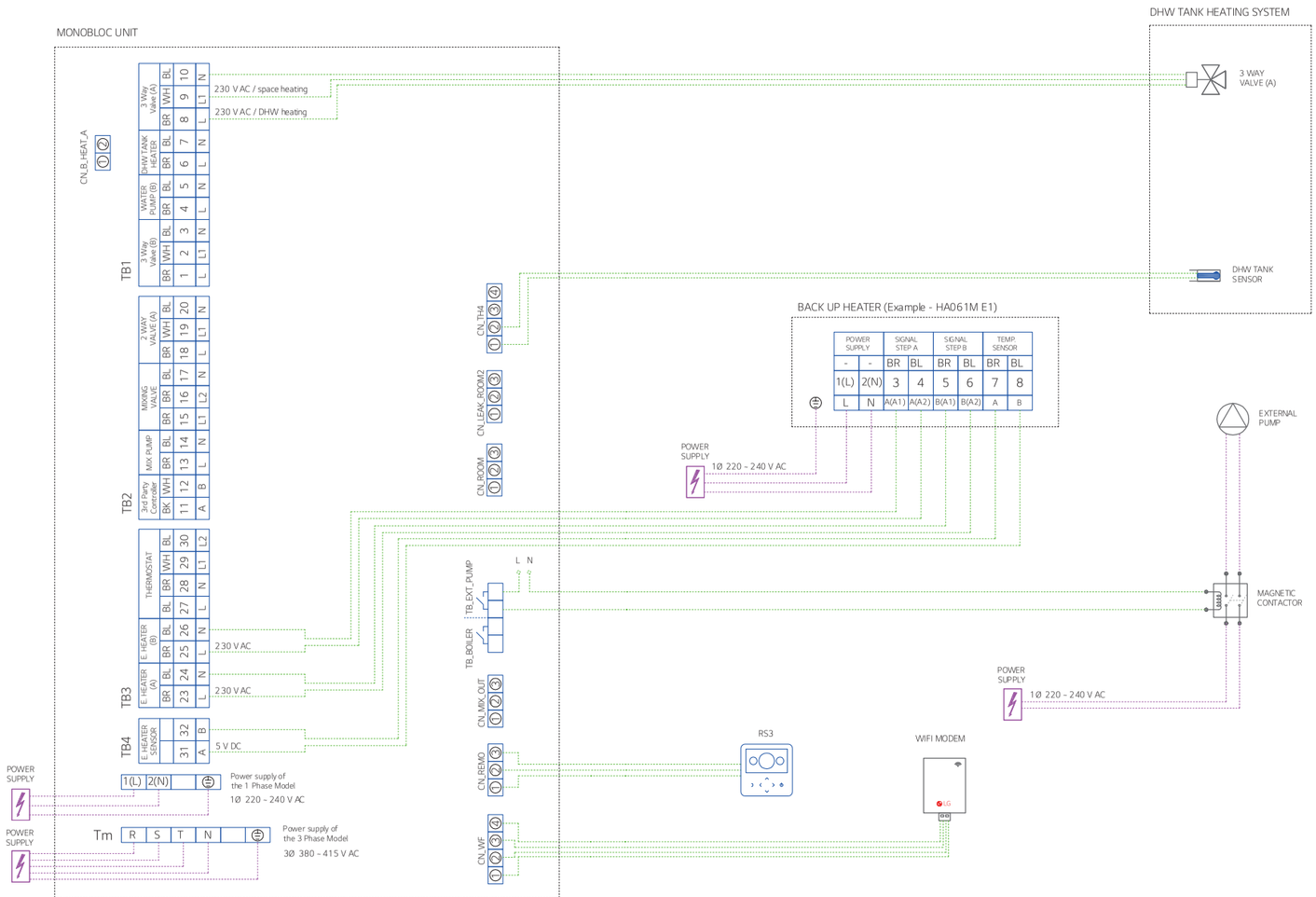
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM

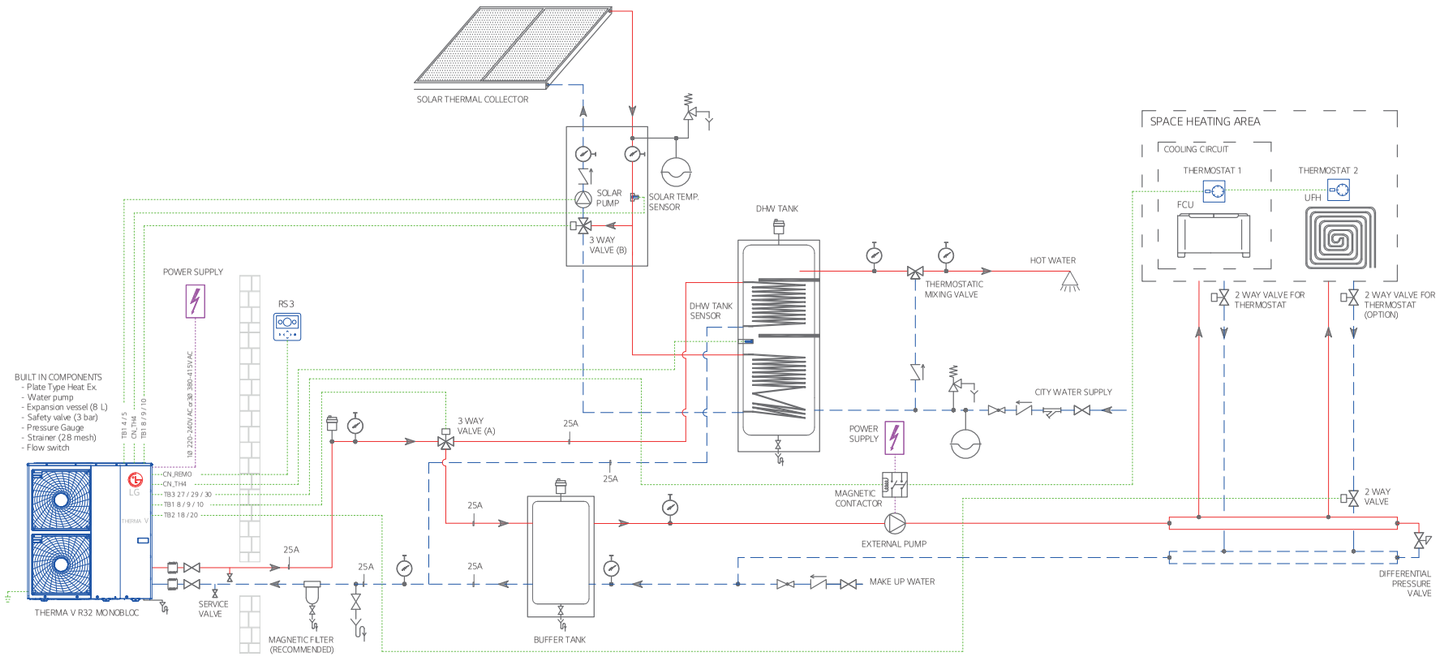


SYSTEM SUMMARY

Application	Space Heating, Cooling, and DHW with Solar Panel and Thermostat
Product	R32 Monobloc
Terminal Device	UFH(H) + FCU(H&C)
Main Controller	Thermostat
Control Setting of LG RS3 Controller	Based on Water Temp.
External Pump	Controlled by Thermostat

SYMBOL & LEGENDS

- Circulation Pump
- Expansion Tank
- Air Vent
- Pressure Gauge
- Flexible Connection
- Drain
- Motorized 3 Way Valve
- Motorized 2 Way Valve
- Differential Pressure Valve
- Thermostatic Mixing Valve
- Shut Off Valve
- Pressure Reducing Valve
- check Valve
- Safety Relief Valve with drain
- Y - type stainer
- Flow Sensor
- Magnetic Contactor
- RS3 Remote Controller
- Remote Room Air Sensor
- Dry Contact
- Wi-Fi Modem
- Thermostat



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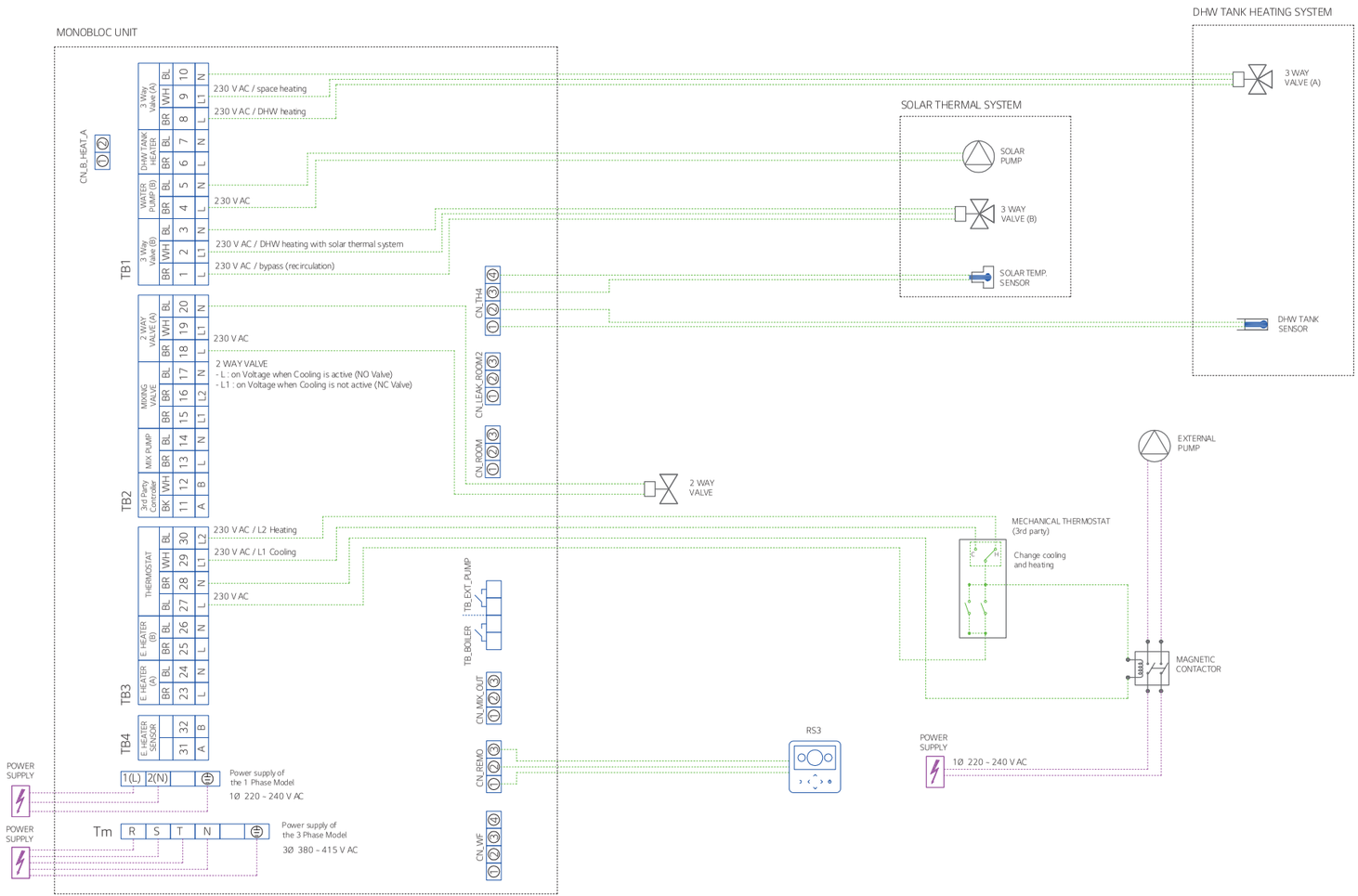
2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
3. For Monobloc unit, the external piping must always be insulated to standard. If necessary, electrical heat tracing system can be installed or the heating system can also be filled with antifreeze (glycol) to prevent any frost damage.

WIRING DIAGRAM



WIRING DIAGRAM