

REFERENCED APPLICATION #1 SPACE HEATING & COOLING WITH THERMOSTAT

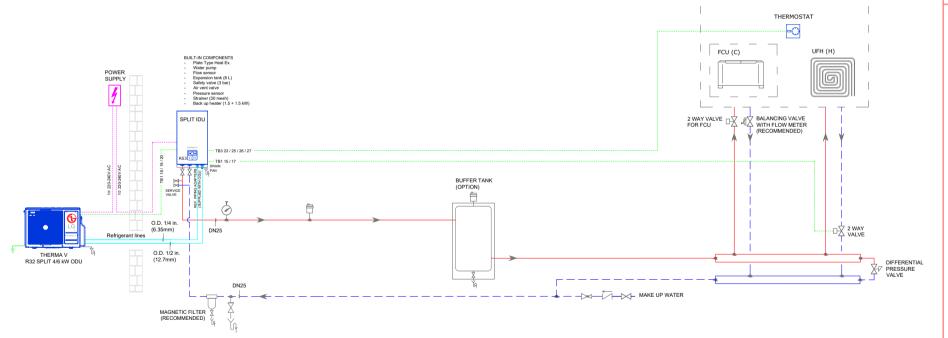
HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating & Cooling with Thermostat |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) + FCU(C) |
| Main Controller | Thermostat |
| Control Setting of LG RS3 Controller | Based on Water Temp. |
| External Pump | No installed |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Thermostatic Radiator Valve Wi-Fi Modem Thermostatic Mixing Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate

SPACE HEATING / COOLING AREA



Balancing Valve with flow mete

NOT

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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

LG ACCESSORIES

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Drain Pan (PHDPC)

A device to collect condensation during cooling operation. Including several insulators.

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

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.

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. Thermostat must be connected with Therma V, Valve. Pump. and FCU where applicable.

2 Way Valve for FCU

A isolation valve paired with FCU to allow whether water flows into the water circuit.

Balancing Valve with flow meter (Recommended)

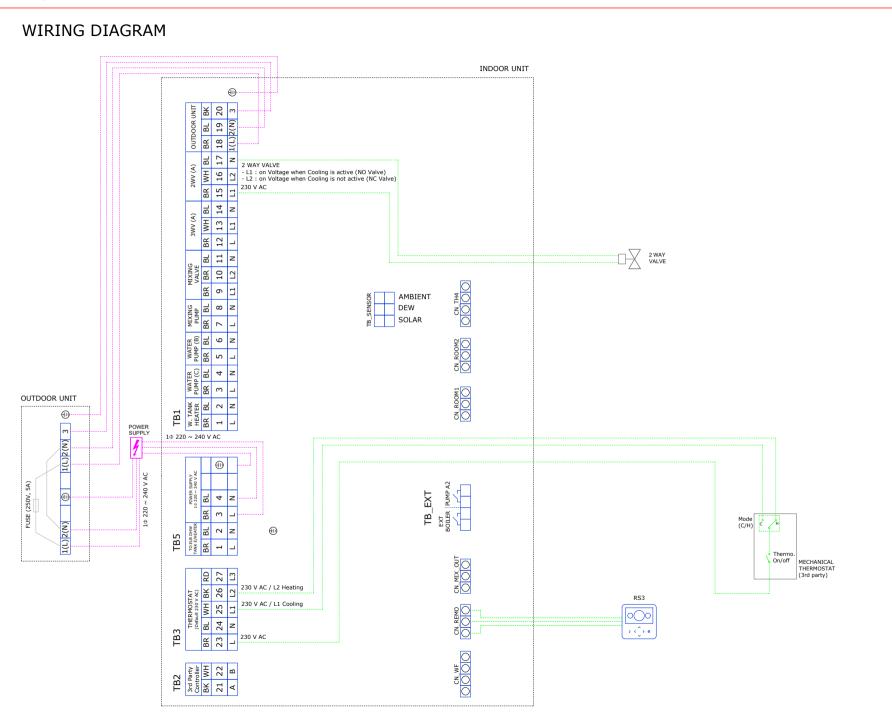
The balancing value is a hydraulic device that accurately regulates the flow rate of heating medium supplied to FCU's. A correct balancing of hydraulic systems is essential to guarantee the system operation according to its design specifications, high thermal comfort and low energy consumption. The values are equipped with a flow meter for a direct reading of the regulated flow rate

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers.



REFERENCED APPLICATION #1 SPACE HEATING & COOLING WITH THERMOSTAT



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB

ON OFF 1 2 3 4 5 6 7 8

SW2



| | | | | | | X:0 | DFF | 10: | 00 |
|---------------------------------------|--|---|---|---|---|-----|-----|-----|----|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| MODBUS Communication | Master (Link to LG controller) | х | П | Г | П | Г | | Г | Г |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | Г |
| MODBUS | REGIN | | х | | Г | г | Г | П | Г |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | г | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | × |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | a |
| | default setting | х | х | | Г | г | Т | П | × |
| | | | | | _ | | _ | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | Г | | Г | Г |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | Г | Γ |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | | Г | Γ |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| riest rump Cycle | Heating and cooling | | Г | | 0 | г | Г | П | Г |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | Г | Г | Γ |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | Г | Г | Г |
| | Backup heater is not used | | Г | | Г | г | х | х | Г |
| Selecting Backup Heater Capacity | Half capacity is used | | | | | Г | 0 | х | Γ |
| - news Capacity | Full capacity is used | | | | | | 0 | 0 | |
| Thermostat | Thermostat is not installed | | | | | Г | | | × |
| Installation | Thermostat is installed | П | | | | Г | Г | П | О |
| | default setting | х | x | х | x | х | 0 | 0 | 3 |

OUTDOOR UNIT MAIN PCB

ON TOTAL

| | | | | X: OFF / O: |
|----------------|---|---|---|-------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | 1 |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | 1 |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|-----------|
| Configuration > Select Temperature Sensor > Control Standard | Water |
| Configuration > Select Temperature Sensor > Sensor Location | |
| Configuration > Use Heating Tank Heater | - |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | - |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | Heat&Cool |

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



REFERENCED APPLICATION #2 SPACE HEATING WITH PARALLEL BUFFER TANK

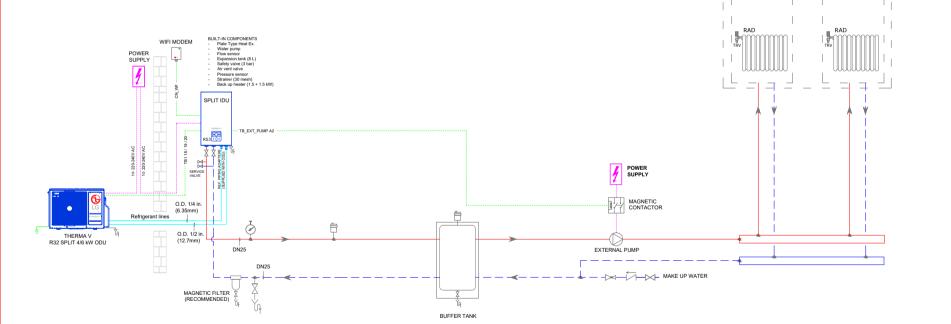
HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating with Parallel Buffer Tank |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | RAD(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. |
| External Pump | Controlled by THERMA V |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Thermostatic Radiator Valve Wi-Fi Modem Thermostatic Mixing Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete

SPACE HEATING AREA



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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

LG ACCESSORIES

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT: attached with indoor unit as a

Hydro Box & IWT: attached with indoor unit as default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable 0.5m

3RD PARTY ACCESSORIES

Buffer Tank

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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.

Magnetic Filter (Recommended)

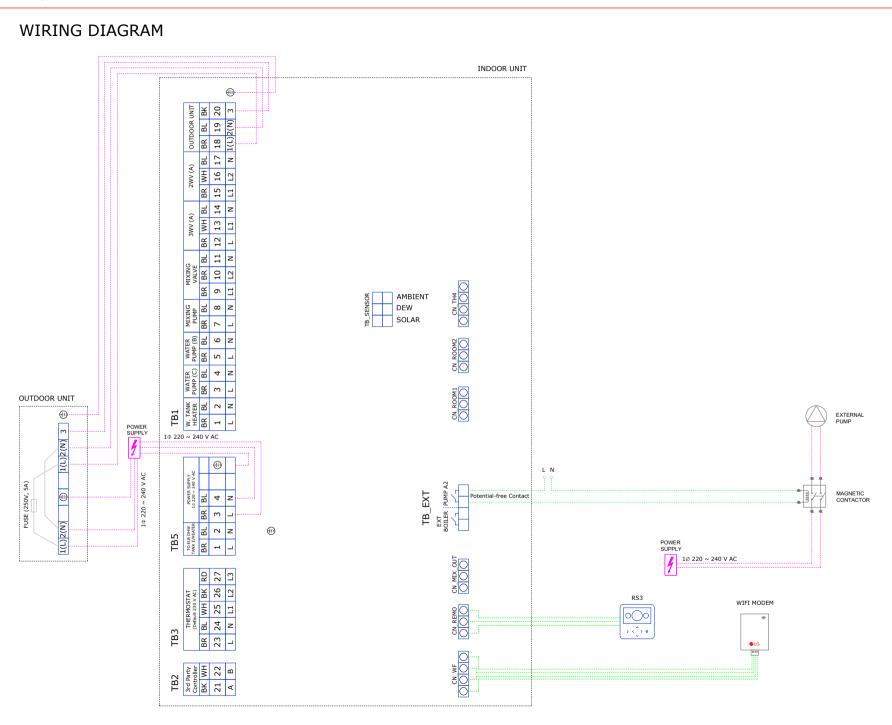
A magnetic filter that collects metallic particle caused by corrosion or erosion. It is strongly recommended to install the magnetic filter to protect heat pump system. In particular, in the case of a replacement, it is mandatory to install.

TRV (Thermostatic Radiator Valve)

A self-regulating valve fitted to radiator, to control the temperature of a room by changing the flow of hot water to the radiator.



REFERENCED APPLICATION #2 SPACE HEATING WITH PARALLEL BUFFER TANK



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB



SW2



| | | | | | | X:0 | OFF | 0: | ON |
|--|---|---|---|---|---|-----|-----|----|----|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| MODBUS Communication | Master (Link to LG controller) | х | Г | | | П | | П | |
| Communication Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | Г |
| MODBUS | REGIN | Т | х | Т | Г | г | Г | г | Т |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | г | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | 0 |
| | default setting | х | х | Т | Г | г | Г | г | х |
| | | | | | _ | | _ | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | Г | | Г | |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | Г | П |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar themak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| near rump Cycle | Heating and cooling | | Г | | 0 | г | Г | П | Г |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | Г | Г | Г |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | | Г | |
| Selecting Backup Heater Capacity | Backup heater is not used | | Г | | Г | г | х | х | Г |
| | Half capacity is used | | П | | Г | Г | 0 | х | Г |
| The same of the sa | Full capacity is used | | П | | П | Г | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | | | | х |
| Installation | Thermostat is installed | | | | | | | | 0 |
| | default setting | х | Х | х | Х | Х | 0 | 0 | х |

OUTDOOR UNIT MAIN PCB

W1

| | | | | X:OFF/O |
|----------------|---|---|---|---------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | 1 |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | × | × | 1 |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|-----------|
| Configuration > Select Temperature Sensor > Control Standard | Water |
| Configuration > Select Temperature Sensor > Sensor Location | - |
| Configuration > Use Heating Tank Heater | - |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Heat&Cool |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | - |
| Connectivity > Central control address > Access Code (Hex) | |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | |

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



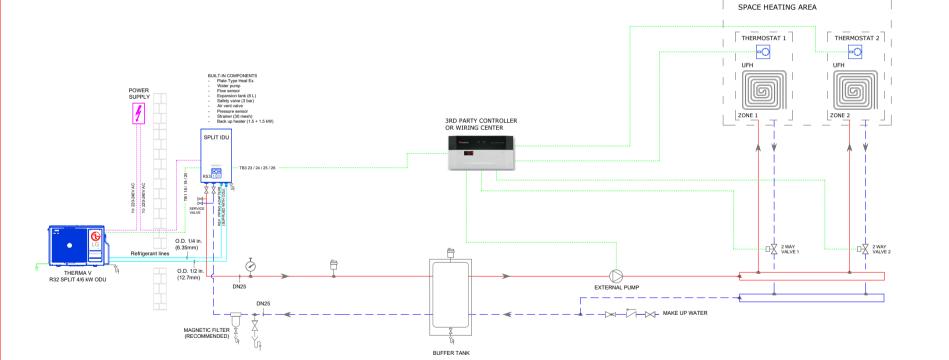
REFERENCED APPLICATION #3 SPACE HEATING WITH MULTI ZONE CONTROL

HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating with Multi Zone Control |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) |
| Main Controller | 3rd Party Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. |
| External Pump | Controlled by 3rd Party Controller |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Thermostatic Radiator Valve Wi-Fi Modem Thermostatic Mixing Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete



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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

LG ACCESSORIES

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max.
50m using extension cable (PZCWRC1)

3RD PARTY ACCESSORIES

uffer Took

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

2 Way Valves (Thermo-electric valves)

A motorized isolation valve that blocks the water flow into terminal unit. Controlled by 3rd party controller.

3rd Party Controller or Wiring Center

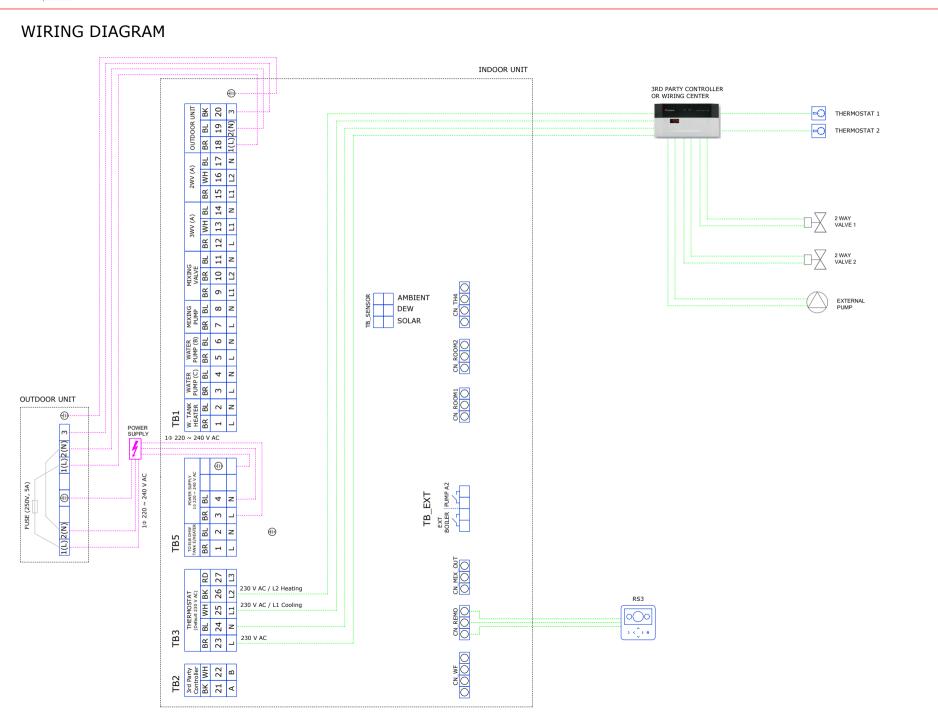
A control device that uses the analogue or digital signals from various devices and then process and control the system based on the program written inside the controllers and has the capability to sends the information to another controller.

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. Thermostat must be connected with Therma V, Valve, Pump, and FCU where applicable.



REFERENCED APPLICATION #3 SPACE HEATING WITH MULTI ZONE CONTROL



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB

ON OFF 1 2 3 4 5 6 7 8

SW2



| | | | | | | X:0 | DFF. | 10: | 0 |
|---------------------------------------|---|---|---|---|---|-----|------|-----|---|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| MODBUS Communication | Master (Link to LG controller) | х | П | Г | П | Г | | Г | Γ |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | Г |
| MODBUS | REGIN | Т | х | Т | Г | г | г | г | Г |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | г | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | > |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | a |
| | default setting | х | х | | Г | г | Г | г | × |
| | | | | | _ | | _ | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | Г | | Г | Г |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | Г | Г |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar themak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| riest rump Cycle | Heating and cooling | | Г | | 0 | г | Г | П | Г |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | Г | Г | Γ |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | | Г | Г |
| | Backup heater is not used | | Т | Т | т | Н | х | х | Г |
| Selecting Backup Heater Capacity | Half capacity is used | | П | | Г | Г | 0 | х | Г |
| - news Capacity | Full capacity is used | | | | | | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | Г | | | × |
| Installation | Thermostat is installed | | П | | Г | | Г | | О |
| | default setting | х | x | х | x | х | 0 | 0 | > |

OUTDOOR UNIT MAIN PCB

ON DEF

| | | | | X: OFF / O: 0 |
|----------------|---|---|---|---------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| LOW Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | | |
| | Max mode | | х | 1 |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | 1 |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|-----------|
| Configuration > Select Temperature Sensor > Control Standard | Water |
| Configuration > Select Temperature Sensor > Sensor Location | - |
| Configuration > Use Heating Tank Heater | - |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | - |
| Connectivity > Central control address > Access Code (Hex) | |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | Heat&Cool |

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



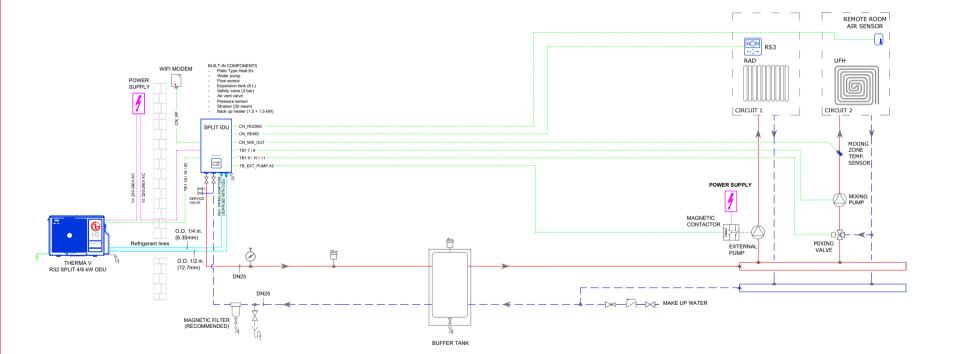
REFERENCED APPLICATION #4 SPACE HEATING WITH 2ND CIRCUIT

HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating with 2nd Circuit |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) + RAD(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. or Air Temp. |
| External Pump | Controlled by THERMA V |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Thermostatic Radiator Valve Wi-Fi Modem Thermostatic Mixing Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete



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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

LG ACCESSORIES

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1)
Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated indoors.

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable

Remote Room Air Temperature Sensor (PQRSTA0)

Temperature sensor for the room. Cable length 15m. Required when controlling the 2nd circuit based on the room air temperature.

Mixing Zone Temperature Sensor (PRSTAT5K10)

A temperature sensor for the mixed circuit. Cable length 10m.

3RD PARTY ACCESSORIES

Buffer Tank

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

Mixing Pump

An external water pump that circulates the water inside mixed circuit (zone 1).

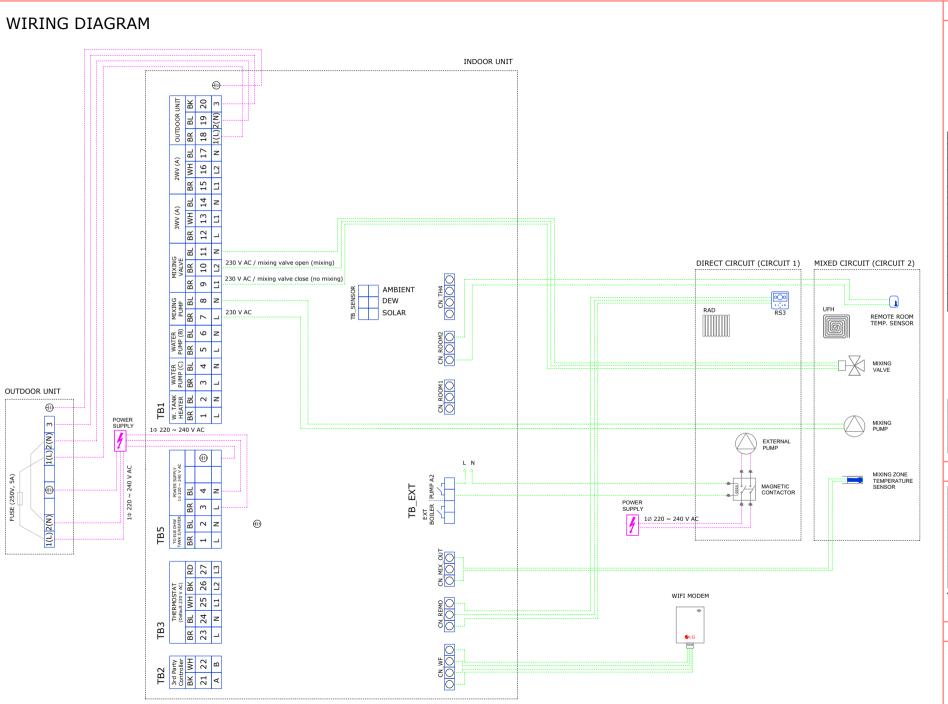
Controlled by THERMA V with 230V power.

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.



REFERENCED APPLICATION #4 SPACE HEATING WITH 2ND CIRCUIT



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB

1 2 3 4 5 6 7 8



| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------------|---|---|---|---|---|---|---|---|---|
| MODBUS Communication | Master (Link to LG controller) | х | П | | П | Г | | | |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | П | Т |
| MODBUS | REGIN | Т | х | П | Г | г | Г | П | Т |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | П | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | П | 0 |
| | default setting | Х | Х | | | | | | Х |
| | | _ | _ | _ | _ | _ | _ | _ | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | | | | | | | |
| Control | As Slave | 0 | Г | | Г | Г | | | |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | П | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | | | | | |
| Information | Heat pump + DHW tank + Solar themak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| near rump Cycle | Heating and cooling | | | | 0 | | | | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | | | | х | | П | |
| (Accessory) | Remote room air sensor is installed | | П | | Г | 0 | П | П | |
| | Backup heater is not used | Т | Г | | Г | г | х | х | Т |
| Selecting Backup Heater Capacity | Half capacity is used | | Г | | Г | г | 0 | х | Г |
| Heater Capacity | Full capacity is used | | П | | П | Г | 0 | 0 | |
| Thermostat | Thermostat is not installed | | | | | | | | х |
| Installation | Thermostat is installed | | | | | | | | 0 |
| | default setting | х | х | х | х | х | 0 | 0 | х |

OUTDOOR UNIT MAIN PCB

| | | | | X: OFF / O: C |
|----------------|---|---|---|---------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mod | Always mode : Maintain low noise mode for target temperature | × | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | П | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | |

INSTALLER SETTINGS ON RS3

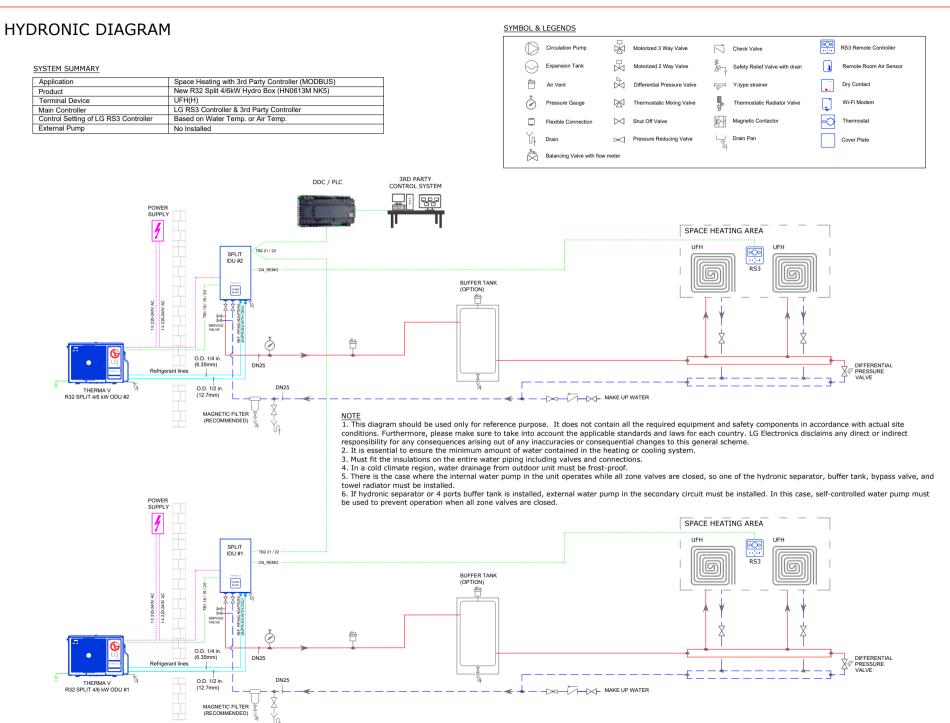
| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | |
| Configuration > Mixing Circuit | Heat |
| Configuration > Use External Pump | Circuit1 |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | - |
| Connectivity > Central control address > Access Code (Hex) | |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | |

It may change depending on the control method.

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- 2. Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- 3. In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



REFERENCED APPLICATION #5 SPACE HEATING WITH 3RD PARTY CONTROLLER (MODBUS)



ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature

Hydro Box & IWT: attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1)
Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated indoor.

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

DDC (Direct Digital Controller)

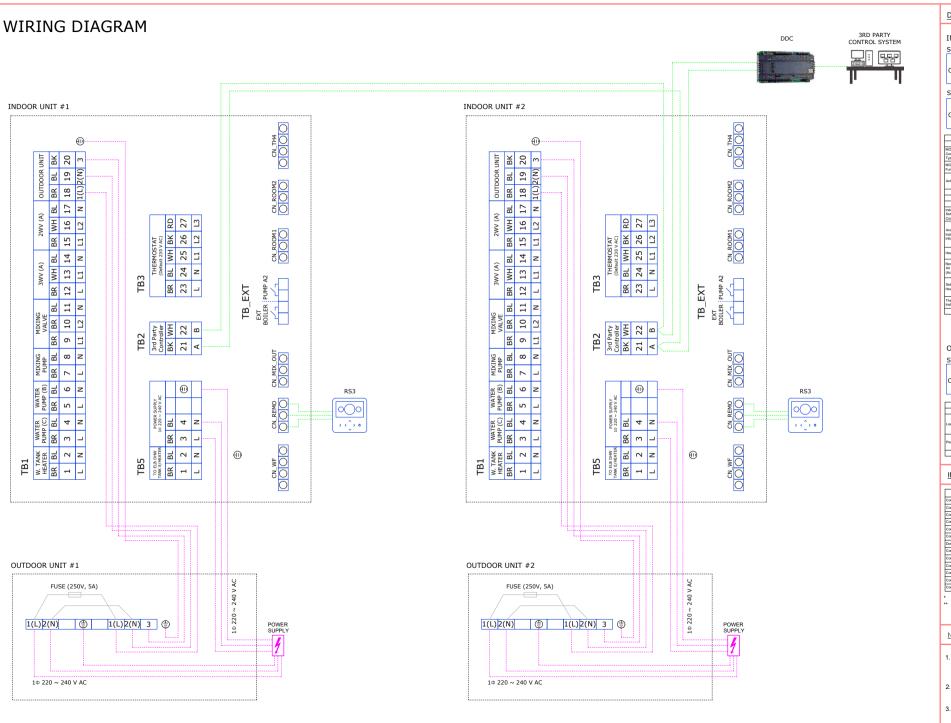
A control device that uses the analogue or digital signals from various devices and then process and control the system based on the program written inside the controllers and has the capability to sends the information to another controller.

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers.



REFERENCED APPLICATION #5 SPACE HEATING WITH 3RD PARTY CONTROLLER (MODBUS)



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB





| | | | | | | X:0 | OFF | 10: | 01 |
|---------------------------------------|--|---|---|---|---|-----|-----|-----|----|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ξ |
| MODBUS Communication | Master (Link to LG controller) | х | П | Г | П | П | | Г | Γ |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | Γ |
| MODBUS | REGIN | | х | | Т | т | Т | П | T |
| Function | Unified Open Protocol | | 0 | | Г | Г | Г | г | Г |
| | Antifreeze is not applied | | Г | | Г | Г | Г | П | > |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | c |
| | default setting | х | х | Т | Г | Г | Г | г | > |
| | | | | | | | | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | П | | Г | Γ |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | Г | Γ |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | Г | Г | Γ |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| riest rump Cycle | Heating and cooling | | Г | | 0 | Г | Г | П | Г |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | Г | Г | Γ |
| (Accessory) | Remote room air sensor is installed | | П | | Г | 0 | | Г | Γ |
| | Backup heater is not used | Т | Г | Т | Г | Г | х | х | Г |
| Selecting Backup Heater Capacity | Half capacity is used | | П | П | Г | П | 0 | х | Γ |
| ramar capacity | Full capacity is used | | | | П | | 0 | 0 | |
| Thermostat | Thermostat is not installed | Т | | Т | | | | П | 3 |

OUTDOOR UNIT MAIN PCB



| | | | | X:OFF/O |
|----------------|---|---|---|---------|
| | DIP SW 1 | 2 | 3 | |
| | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | | |
| | Max mode | | х | 1 |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | 1 |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | - |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) ** | <u>xx **</u> |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | |

It may change depending on the control method. Please do not confuse the path with other similar paths. And Modbus address of each unit should be matched with values set by 3rd party controller system

- 1. The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations
- 2. Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line
- 3. In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for



REFERENCED APPLICATION #6 SPACE HEATING AND DHW WITH RECIRCULATION PUMP

HYDRONIC DIAGRAM

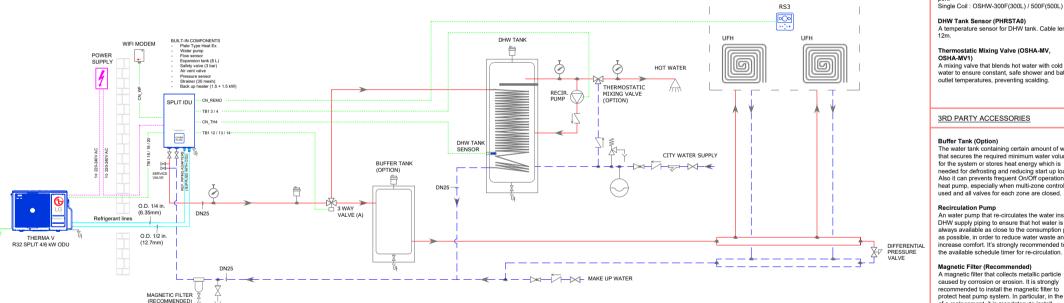
SYSTEM SUMMARY

| Application | Space Heating & DHW with Recirculation Pump |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Air Temp. or Water Temp. |
| External Pump | No Installed |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Wi-Fi Modem Thermostatic Mixing Valve Thermostatic Radiator Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete

SPACE HEATING AREA

RS3



- 1. This diagram should be used only for reference purpose. It does not contain all the required equipment and safety components in accordance with actual site conditions. Furthermore, please make sure to take into account the applicable standards and laws for each country. LG Electronics disclaims any direct or indirect responsibility for any consequences arising out of any inaccuracies or consequential changes to this general scheme.
- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1) Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank (OSHW-300F/500F) A insulated stainless steel hot water tank with 2.4kW electric heating (230V) and recirculation

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank. Cable length

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding,

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

Recirculation Pump

An water pump that re-circulates the water inside DHW supply piping to ensure that hot water is always available as close to the consumption point as possible, in order to reduce water waste and to increase comfort. It's strongly recommended to use the available schedule timer for re-circulation.

Magnetic Filter (Recommended)

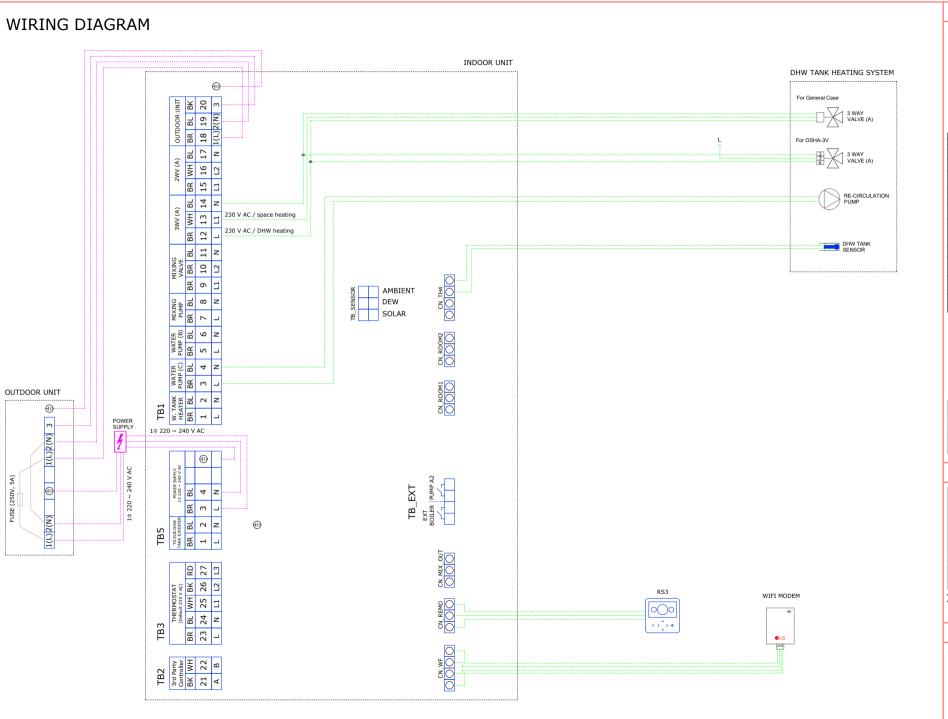
A magnetic filter that collects metallic particle caused by corrosion or erosion. It is strongly recommended to install the magnetic filter to protect heat pump system. In particular, in the case of a replacement, it is mandatory to install.

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers.



REFERENCED APPLICATION #6 SPACE HEATING AND DHW WITH RECIRCULATION PUMP



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB



SW2



| | | | | | | X:0 | OFF | 10: | O |
|--|--|---|---|---|---|-----|-----|-----|---|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | ; |
| MODBUS Communication | Master (Link to LG controller) | х | Г | | П | П | | Г | Γ |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | T |
| MODBUS | REGIN | Т | х | Г | Г | г | Г | г | T |
| Function | Unified Open Protocol | | 0 | Г | Г | Г | Г | г | Г |
| | Antifreeze is not applied | | Г | Г | Г | Г | Г | П | Γ |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | ŀ |
| | default setting | х | х | | | | | | Ι |
| | | | | | | | | | |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Indoor Unit Type Setting for Group Control | As Master | х | | | | | | | ı |
| | As Slave | 0 | Г | Г | Г | Г | Г | Г | Γ |
| Accessory Installation | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | Г | Г | Ī |
| | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | T |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | | Г | Ī |
| Heat Pump Cycle | Heating only | | | | х | | | | I |
| ram rump oyon | Heating and cooling | | | | 0 | | | | Ι |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | | Г | I |
| (Accessory) | Remote room air sensor is installed | | Г | П | Г | 0 | П | Г | Γ |
| | Backup heater is not used | | Г | Т | Г | г | х | х | t |
| Selecting Backup Heater Capacity | Half capacity is used | | Г | П | Г | П | 0 | х | T |
| пания Сириску | Full capacity is used | | П | | П | | 0 | 0 | T |
| Thermostat | Thermostat is not installed | | | | | | | | T |
| Installation | Thermostat is installed | | | | | | | | Ī |
| | default setting | × | × | × | × | × | 0 | 0 | Г |

OUTDOOR UNIT MAIN PCB

ON TOTAL

| | | | | X: OFF / O: C |
|----------------|---|---|---|---------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | | |
| | Max mode | | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | Х | |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | Not Use |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Use ** |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | - |

It may change depending on the control method.

In addition, a schedule setting for DHW Recirculation is also required.

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



REFERENCED APPLICATION #7 SPACE HEATING AND DHW WITH BOOSTER HEATER

HYDRONIC DIAGRAM

SYSTEM SUMMARY

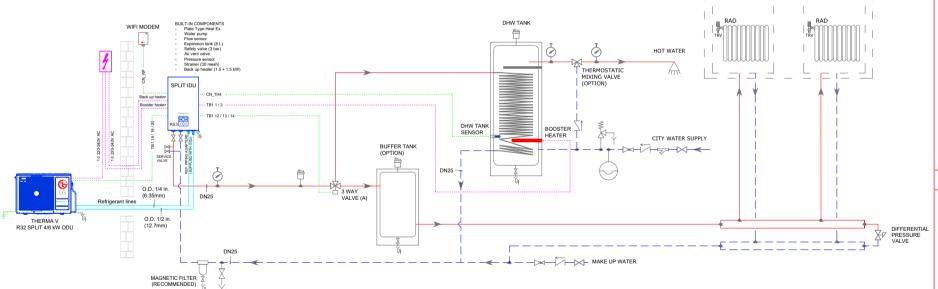
| Application | Space Heating & DHW with Booster Heater |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | RAD(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. |
| External Pump | No Installed |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Wi-Fi Modem Thermostatic Mixing Valve Thermostatic Radiator Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete

SPACE HEATING AREA

ZONE 1

ZONE 2



NOTE

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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable 0.5m

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank

A insulated stainless steel hot water tank with 2.4kW electric heating (230V).

Single Coil : OSHW-200F(200L) / 300F(300L) / 500F(500L)

DHW Booster Heater (Integrated with DHW

An electric heater for DHW heating integrated with DHW tank (2.4kW, 230V)
Controlled by THERMA V with 230V power.

DHW Tank Kit (PHLTA)

A set of electrical devices for controlling of electric booster heater up to 32A Including Circuit Breaker, Magnetic Contactor and DHW Temp. sensor (PHRSTA0)

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank. Cable length 12m. Included in DHW Tank Kit (PHLTA)

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

TRV (Thermostatic Radiator Valve)

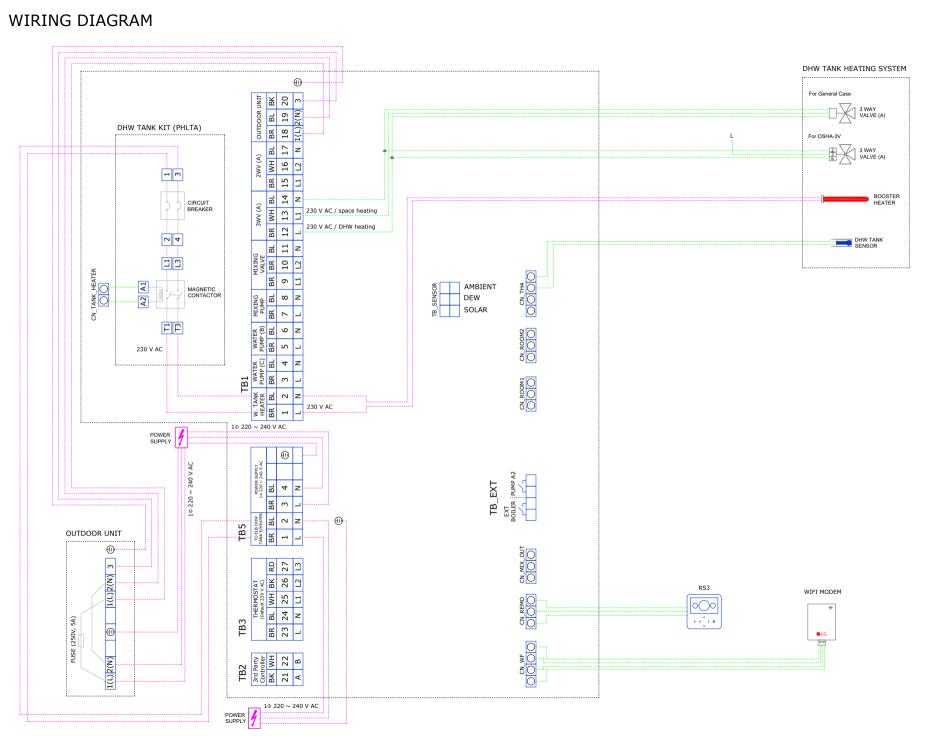
A self-regulating valve fitted to radiator, to control the temperature of a room by changing the flow of hot water to the radiator.

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers.



REFERENCED APPLICATION #7 SPACE HEATING AND DHW WITH BOOSTER HEATER



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB



SW2



| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------------|---|---|---|---|---|---|---|---|---|
| MODBUS Communication | Master (Link to LG controller) | х | | Г | | Г | | Г | Г |
| Туре | Slave (Link to 3rd party controller) | 0 | П | Г | | Г | Г | Г | Г |
| MODBUS | REGIN | П | х | г | | Г | Г | Г | г |
| Function | Unified Open Protocol | П | 0 | г | | Г | Г | Г | г |
| | Antifreeze is not applied | | | П | | Г | Г | Г | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | | Г | | Г | | Г | 0 |
| | default setting | х | х | | | | | | Х |
| | | _ | _ | _ | _ | _ | _ | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | | | | | | | |
| Control | As Slave | 0 | П | П | | Г | Г | Г | Г |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | | Г | Г | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | | Г | П | Г | Г |
| Information | Heat pump + DHW tank + Solar themak system are installed | П | 0 | х | | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | | П | х | Г | П | Г | Г |
| Treat t unip Gyore | Heating and cooling | | | | 0 | | | | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | | Г | | х | | Г | |
| (Accessory) | Remote room air sensor is installed | П | | П | | 0 | | Г | Г |
| | Backup heater is not used | П | | П | | Г | х | х | г |
| Selecting Backup Heater Capacity | Half capacity is used | П | | | | П | 0 | х | Г |
| гиши опристу | Full capacity is used | П | | | | П | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | | | | х |
| Installation | Thermostat is installed | | | | | | | | 0 |
| | default setting | х | х | х | х | х | 0 | 0 | х |

X: OFF / O: ON

OUTDOOR UNIT MAIN PCB

ON OFF

| | | | | X: OFF / O: O |
|----------------|---|---|---|---------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | Г | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | 1 |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | 1 |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|---------|
| Configuration > Select Temperature Sensor > Control Standard | Water |
| Configuration > Select Temperature Sensor > Sensor Location | |
| Configuration > Use Heating Tank Heater | Use * |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) | |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | - |

It may change depending on the purpose of using booster heater.

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



REFERENCED APPLICATION #8 SPACE HEATING AND DHW WITH LG BECON CLOUD

HYDRONIC DIAGRAM

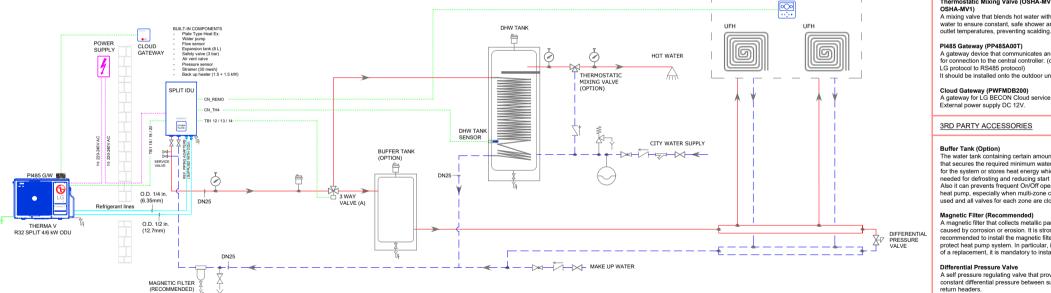
SYSTEM SUMMARY

| Application | Space Heating & DHW with LG BECON cloud |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Air Temp. or Water Temp. |
| External Pump | No Installed |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Air Vent Differential Pressure Valve Y-type strainer Pressure Gauge Thermostatic Radiator Valve Wi-Fi Modem Thermostatic Mixing Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete

SPACE HEATING AREA

RS3



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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1) Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated

3 Way Valve (A) (OSHA-3V)

A motorized 3-way diverting valve determining flow direction to either space heating or DHW tank. Controlled by THERMA V with 230V power.

Domestic Hot Water Tank (OSHW-200F/300F/500F)

A insulated stainless steel hot water tank with 2.4kW electric heating (230V). Single Coil: OSHW-200F(200L) / 300F(300L) / 500F(500L)

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank. Cable length

Thermostatic Mixing Valve (OSHA-MV,

OSHA-MV1) A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath

PI485 Gateway (PP485A00T)

A gateway device that communicates and controls for connection to the central controller, (converting LG protocol to RS485 protocol) It should be installed onto the outdoor unit.

Cloud Gateway (PWFMDB200)

A gateway for LG BECON Cloud service External power supply DC 12V.

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat nump, especially when multi-zone control is used and all valves for each zone are closed.

Magnetic Filter (Recommended)

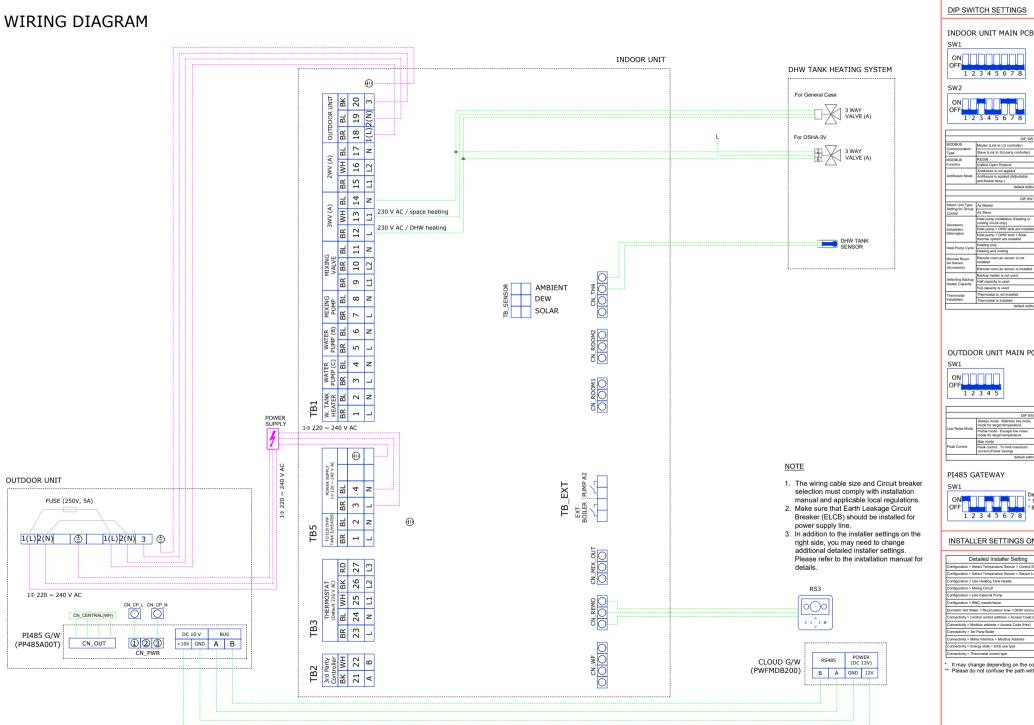
A magnetic filter that collects metallic particle caused by corrosion or erosion. It is strongly recommended to install the magnetic filter to protect heat pump system. In particular, in the case of a replacement, it is mandatory to install.

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers



REFERENCED APPLICATION #8 SPACE HEATING AND DHW WITH LG BECON CLOUD







| MODBUS Communication | Master (Link to LG controller) | х | Г | | | Г | | П | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | П | |
| MODBUS | REGIN | Т | х | Т | Г | г | Г | П | Т |
| Function | Unified Open Protocol | Т | 0 | Т | Г | г | Г | П | Т |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | П | 0 |
| | default setting | х | х | | | | | | х |
| | | | | | | | | | |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | Г | | | |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | П | |
| Accessory Installation | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | Г | Г | |
| | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | |
| Information | Heat pump + DHW tank + Solar themak system are installed | | 0 | х | Г | Г | | Г | |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | |
| neat rump Cycle | Heating and cooling | | Г | | 0 | г | Г | П | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | Г | П | |
| (Accessory) | Remote room air sensor is installed | | П | | Г | 0 | П | П | |
| | Backup heater is not used | | Г | | Г | г | х | х | |
| Selecting Backup Heater Capacity | Half capacity is used | | П | | Г | Г | 0 | х | |
| | Full capacity is used | | | | | Г | 0 | 0 | |
| Thermostat | Thermostat is not installed | | | | | | | | х |
| Installation | Thermostat is installed | | | | | | | | 0 |
| | default setting | х | х | х | х | х | 0 | 0 | х |

X: OFF / O: ON DIP SW 1 1 2 3 4 5 6 7 8

OUTDOOR UNIT MAIN PCB



| | | | | X:OFF/0: |
|----------------|---|---|---|----------|
| | DIP SW 1 | 2 | 3 | |
| | Always mode : Maintain low noise mode for target temperature | х | Г | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | | | | |



INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|---|------------------|
| nfiguration > Select Temperature Sensor > Control Standard | Air + Water * |
| nfiguration > Select Temperature Sensor > Sensor Location | Remote Control * |
| nfiguration > Use Heating Tank Heater | Not Use |
| nfiguration > Mixing Circuit | Not Use |
| nfiguration > Use External Pump | Not Use |
| nfiguration > RMC master/slave | Master |
| mestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| nnectivity > Central control address > Access Code (Hex) ** | 00 |
| nnectivity > Modbus address > Access Code (Hex) | - |
| nnectivity > 3rd Party Boller | Not Use |
| nnectivity > Meter Interface > Modbus Address | Not Use |
| nnectivity > Energy state > ESS use type | Not Use |
| nnectivity > Thermostat control type | |
| | |

It may change depending on the control method. Please do not confuse the path with other similar paths.



REFERENCED APPLICATION #9 SPACE HEATING AND DHW WITH LG ENERGY STORAGE SYSTEM

SYMBOL & LEGENDS

Circulation Pump

Expansion Tank

Pressure Gauge

Flexible Connection

Air Vent

Motorized 3 Way Valve

Motorized 2 Way Valve

Differential Pressure Valve

Thermostatic Mixing Valve

Shut Off Valve

Check Valve

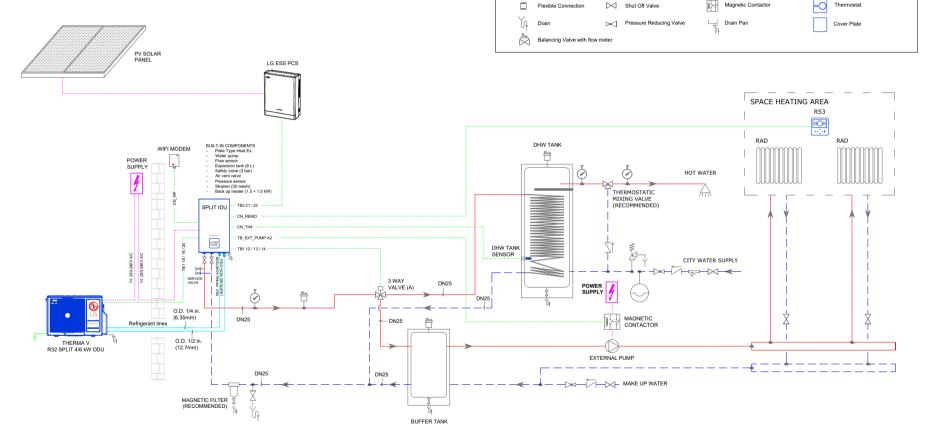
Y-type strainer

Safety Relief Valve with drain

Thermostatic Radiator Valve

HYDRONIC DIAGRAM

SYSTEM SUMMARY Application Space Heating and DHW with LG Energy Storage System New R32 Split 4/6kW Hydro Box (HN0613M NK5) Terminal Device Main Controller LG RS3 Controller Control Setting of LG RS3 Controller Based on Water Temp. or Air Temp. Controlled by THERMA V External Pump



- 1. This diagram should be used only for reference purpose. It does not contain all the required equipment and safety components in accordance with actual site conditions. Furthermore, please make sure to take into account the applicable standards and laws for each country. LG Electronics disclaims any direct or indirect responsibility for any consequences arising out of any inaccuracies or consequential changes to this general scheme.
- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

RS3 Remote Controller

Dry Contact

Wi-Fi Modern

Remote Room Air Sensor

A wired remote controller with built-in temperature

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1) Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank (OSHW-200F/300F/500F)

A insulated stainless steel hot water tank with 2.4kW electric heating (230V). Single Coil : OSHW-200F(200L) / 300F(300L) /

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank, Cable length

Thermostatic Mixing Valve (OSHA-MV,

OSHA-MV1) A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath

outlet temperatures, preventing scalding. LG Energy Storage System (ESS)

A device/system that stores electricity from nower systems(solar panels) in a battery and discharges

3RD PARTY ACCESSORIES

Buffer Tank (Option) The 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 Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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

Magnetic Filter (Recommended)

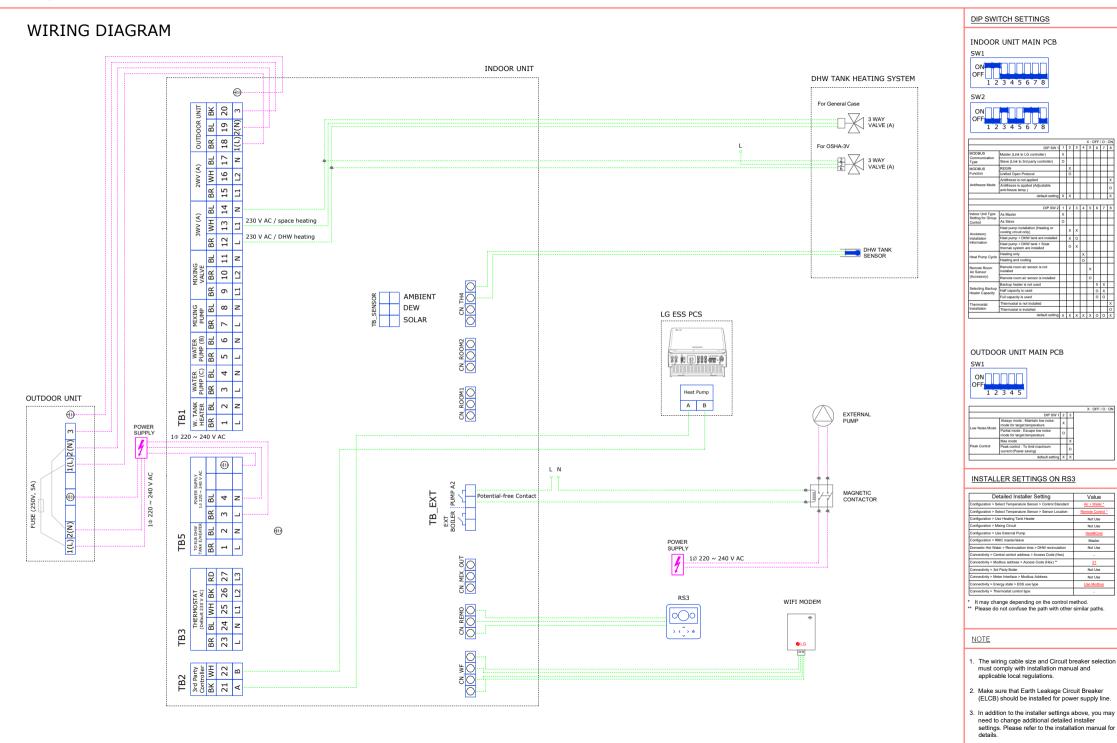
A magnetic filter that collects metallic particle caused by corrosion or erosion. It is strongly recommended to install the magnetic filter to protect heat numn system. In particular, in the case of a replacement, it is mandatory to install.

PV Solar Panel

Solar Panel is an assembly of photovoltaic cells mounted in a framework for generating energy. Solar panels use sunlight as a source of energy to generate direct current electricity.



REFERENCED APPLICATION #9 SPACE HEATING AND DHW WITH LG ENERGY STORAGE SYSTEM





REFERENCED APPLICATION #10 SPACE HEATING, COOLING, AND DHW WITH THERMOSTAT

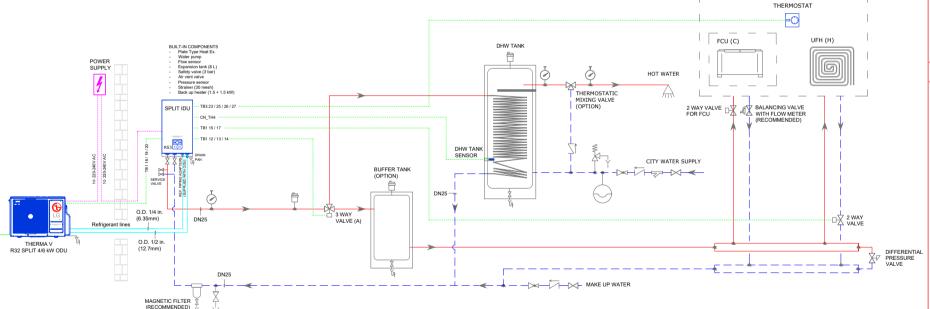
HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating, Cooling, and DHW with Thermostat |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | UFH(H) + FCU(C) |
| Main Controller | Thermostat |
| Control Setting of LG RS3 Controller | Based on Water Temp. |
| External Pump | No Installed |

SYMBOL & LEGENDS RS3 Remote Controller Motorized 3 Way Valve Circulation Pump Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Dry Contact Differential Pressure Valve Pressure Gauge Wi-Fi Modern Thermostatic Radiator Valve Magnetic Contactor Thermostat Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete

SPACE HEATING / COOLING AREA



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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank (OSHW-200F/300F/500F)

A insulated stainless steel hot water tank with 2.4kW electric heating (230V). Single Coil : OSHW-200F(200L) / 300F(300L) / 500F(500L)

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank, Cable length

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.

Drain Pan (PHDPC)

A device to collect condensation during cooling operation. Including several insulators

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat numn, especially when multi-zone control is used and all valves for each zone are closed

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

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.

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 Thermostat must be connected with Therma V, Valve, Pump, and FCU where applicable

2 Way Valve for FCU

A isolation valve paired with FCU to allow whether water flows into the water circuit.

Balancing Valve with flow meter (Recommended)

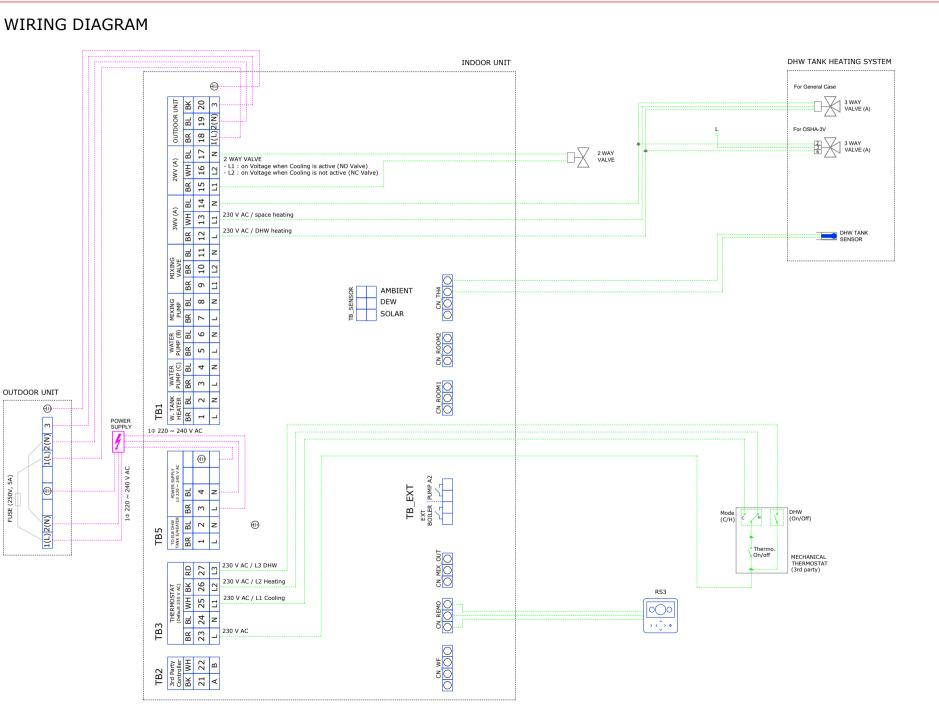
The balancing valve is a hydraulic device that accurately regulates the flow rate of heating medium supplied to FCU's. A correct balancing of hydraulic systems is essential to guarantee the system operation according to its design specifications, high thermal comfort and low energy consumption. The valves are equipped with a flow meter for a direct reading of the regulated flow rate

Differential Pressure Valve

A self pressure regulating valve that provides constant differential pressure between supply and return headers.



REFERENCED APPLICATION #10 SPACE HEATING, COOLING, AND DHW WITH THERMOSTAT



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB



SW2



| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------------|--|---|---|---|---|---|---|---|---|
| MODBUS Communication | Master (Link to LG controller) | х | Г | | | П | | П | |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | П | Т |
| MODBUS | REGIN | Т | х | Т | Г | г | Г | П | Т |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | П | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | П | 0 |
| | default setting | х | х | | | | | | х |
| | | | | | | | | | |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | | | | | | | |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | П | П |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | П | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| neat rump Cycle | Heating and cooling | | | | 0 | | | | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | | Г | |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | Г | П | |
| | Backup heater is not used | Т | Г | Т | Г | г | х | х | Т |
| Selecting Backup Heater Capacity | Half capacity is used | | П | | Г | Г | 0 | х | Г |
| raman capacity | Full capacity is used | | | | П | Г | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | | | | х |

OUTDOOR UNIT MAIN PCB



| | | | | X:OFF/0:0 |
|----------------|---|---|---|-----------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | Х | |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|-------------------|
| Configuration > Select Temperature Sensor > Control Standard | Water |
| Configuration > Select Temperature Sensor > Sensor Location | - |
| Configuration > Use Heating Tank Heater | Not Use |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | Heat&Cool / DHW * |

* It may change depending on the type of thermostat

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.

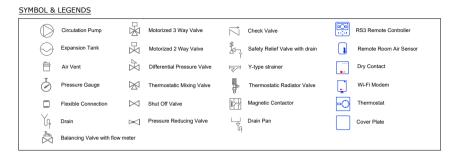


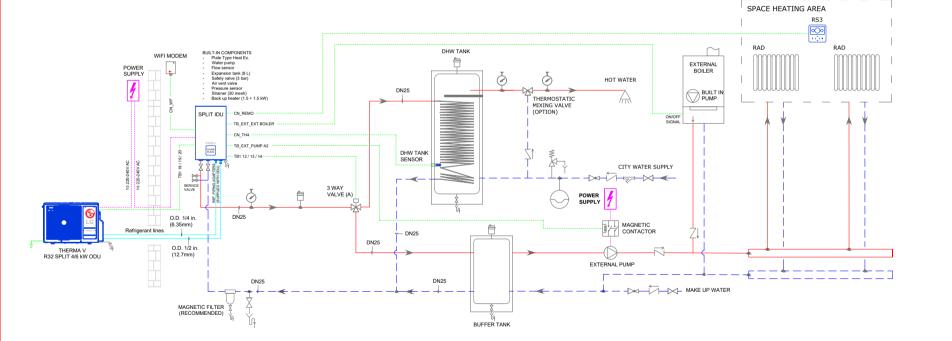
REFERENCED APPLICATION #11 SPACE HEATING AND DHW WITH EXTERNAL BOILER

HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating & DHW with External Boiler |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | RAD(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. or Air Temp. |
| External Pump | Controlled by THERMA V |





NOT

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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT: attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1) Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated indoors.

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable

3 Way Valve (A) (OSHA-3V)

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

Domestic Hot Water Tank (OSHW-200F/300F/500F)

(OSHW-200F/300F/500F)
A insulated stainless steel hot water tank with 2.4kW electric heating (230V).
Single Coil: OSHW-200F(200L) / 300F(300L) /

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank. Cable length

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.

3RD PARTY ACCESSORIES

Buffer Tank

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

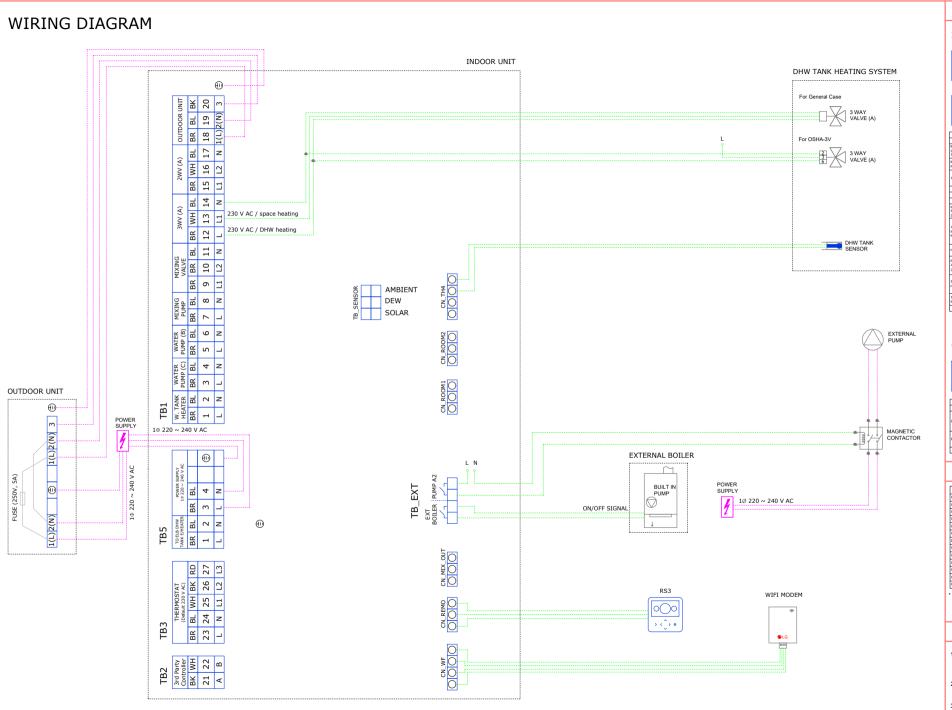
External Boiler

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



REFERENCED APPLICATION #11 SPACE HEATING AND DHW WITH EXTERNAL BOILER



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB

ON OFF 1 2 3 4 5 6 7 8

SW2



| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------------------------|---|---|---|---|---|---|---|---|---|
| MODBUS Communication | Master (Link to LG controller) | х | Г | | | П | | П | Г |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | П | Г | П | Г |
| MODBUS | REGIN | Т | х | Т | Г | П | Г | П | Г |
| Function | Unified Open Protocol | | 0 | | Г | | Г | П | Г |
| | Antifreeze is not applied | | Г | | Г | | Г | П | × |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | | | П | а |
| | default setting | х | Х | | | | | | Х |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type | As Master | × | ŕ | Ť | Ť | Ĭ | Ť | ŕ | _ |
| Setting for Group Control | As Slave | 0 | Г | Т | Г | П | Г | П | Г |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | П | Г | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar themak system are installed | | 0 | х | Г | П | | П | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| near rump Cycle | Heating and cooling | | | | 0 | | | | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | Г | | Г | х | | Г | Г |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | Г | П | Г |
| | Backup heater is not used | Т | Г | Т | Г | П | х | х | Г |
| Selecting Backup Heater Capacity | Half capacity is used | | | | | | 0 | х | Г |
| | Full capacity is used | | | | | | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | | | | × |
| Installation | Thermostat is installed | | | | | | | | О |
| | default setting | х | Х | х | х | Х | 0 | 0 | X |

OUTDOOR UNIT MAIN PCB

ON OFF

| | | | | X:OFF/O: |
|----------------|---|---|---|----------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | | |
| | Max mode | | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | Not Use |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Heat&Cool |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| Connectivity > Central control address > Access Code (Hex) | |
| Connectivity > Modbus address > Access Code (Hex) | |
| Connectivity > 3rd Party Boiler | <u>Use</u> |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | - |
| | |

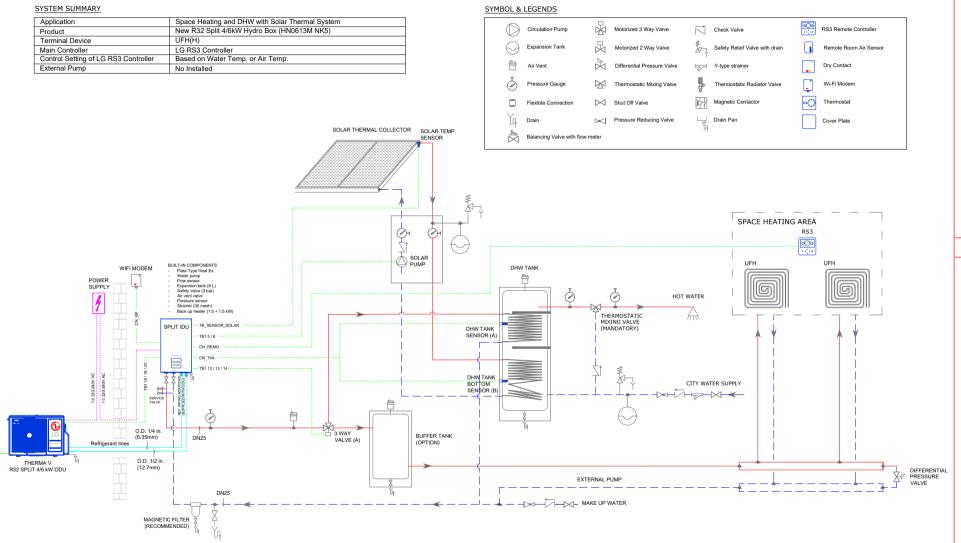
* It may change depending on the control method.

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



REFERENCED APPLICATION #12 SPACE HEATING AND DHW WITH SOLAR THERMAL SYSTEM

HYDRONIC DIAGRAM



NOT

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- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT : attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable 0.5m

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank (OSHW-300FD)

A insulated stainless steel hot water tank with

2.4kW electric heating (230V). Double coil : OSHW-300FD(300L)

SOLAR Thermal Kit (PHLLA)

Dual temperature sensors for DHW tank(One for upper and the other for bottom). Cable length 12m

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.

3RD PARTY ACCESSORIES

Buffer Tank (Option)

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

Solar Pump

An external water pump that circulates the water inside solar thermal system.

Controlled by THERMA V with 230V power.

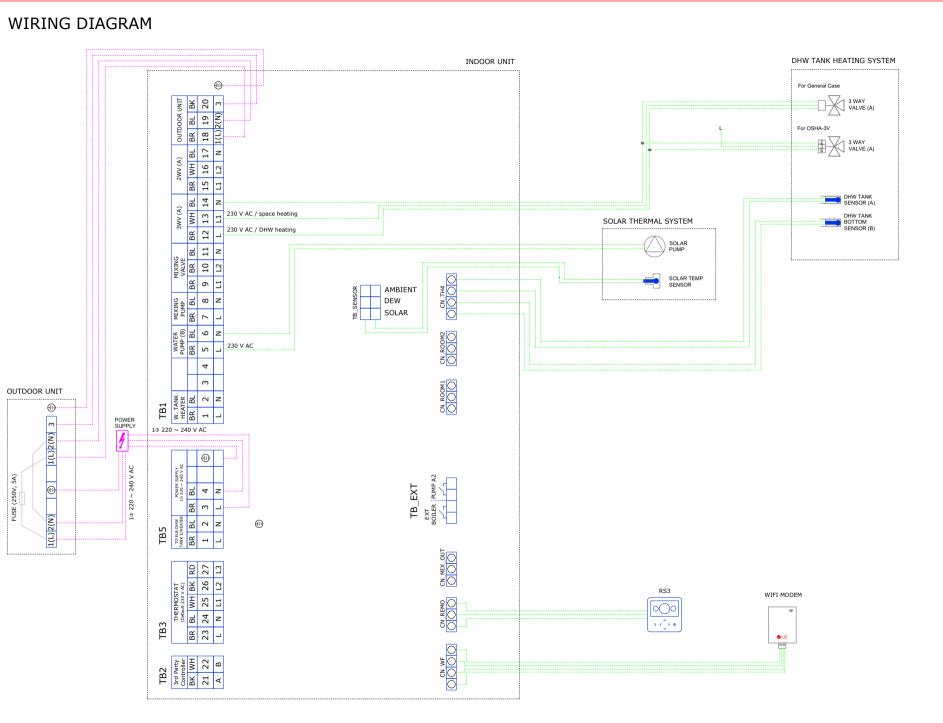
Solar Temperature Sensor (PT-1000)
A temperature sensor for solar thermal system

•

Differential Pressure Valve
A self pressure regulating valve that provides
constant differential pressure between supply and
return headers



REFERENCED APPLICATION #12 SPACE HEATING AND DHW WITH SOLAR THERMAL SYSTEM



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB

ON OFF 1 2 3 4 5 6 7 8

SW2



| | | | | | | X : 0 | OFF. | 0: | ON |
|---------------------------------------|--|---|---|---|---|-------|------|----|----|
| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| MODBUS Communication | Master (Link to LG controller) | х | П | Г | П | Г | | Г | Г |
| Type | Slave (Link to 3rd party controller) | 0 | Г | | Г | Г | Г | Г | Г |
| MODBUS | REGIN | | х | | Г | г | Г | П | Г |
| Function | Unified Open Protocol | | 0 | | Г | г | Г | г | Г |
| | Antifreeze is not applied | | Г | | Г | г | Г | П | х |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | Г | | Г | Г | | Г | 0 |
| | default setting | х | х | | | | | | х |
| | | | | | | | _ | | _ |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | х | Г | | Г | Г | | Г | Г |
| Control | As Slave | 0 | Г | Г | Г | Г | Г | Г | Г |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | | Г | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | Г | П | Г | П | Г |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | | Г | Г |
| Heat Pump Cycle | Heating only | | Г | | х | П | Г | П | Г |
| riest rump Cycle | Heating and cooling | | Г | | 0 | г | Г | П | Г |
| Remote Room Air Sensor | Remote room air sensor is not installed | | | | | х | | Г | |
| (Accessory) | Remote room air sensor is installed | | Г | | Г | 0 | | Г | Г |
| Selecting Backup Heater Capacity | Backup heater is not used | | Т | Т | т | Н | х | х | Г |
| | Half capacity is used | | П | | Г | Г | 0 | х | Г |
| Themas Capacity | Full capacity is used | | П | | П | Г | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | Г | | | х |
| Installation | Thermostat is installed | | | | | | | | 0 |
| | default setting | х | х | х | х | х | 0 | 0 | х |

OUTDOOR UNIT MAIN PCB

ON OFF

| | | | | X:OFF/O:ON |
|----------------|---|---|---|------------|
| | DIP SW 1 | 2 | 3 | |
| Low Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | Г | |
| | Max mode | | х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | х | |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | Not Use |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Not Use |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| Connectivity > Central control address > Access Code (Hex) | |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Not Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | |

^{*} It may change depending on the control method.

- The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line.
- In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for details.



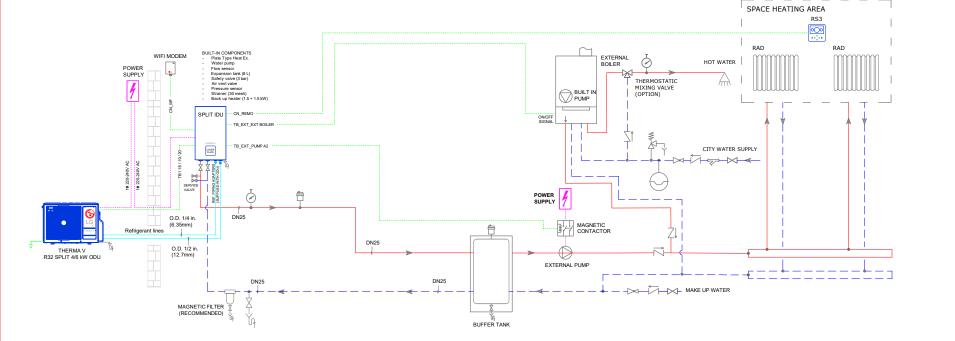
REFERENCED APPLICATION #11 SPACE HEATING WITH EXTERNAL BOILER

HYDRONIC DIAGRAM

SYSTEM SUMMARY

| Application | Space Heating with External Boiler |
|--------------------------------------|---|
| Product | New R32 Split 4/6kW Hydro Box (HN0613M NK5) |
| Terminal Device | RAD(H) |
| Main Controller | LG RS3 Controller |
| Control Setting of LG RS3 Controller | Based on Water Temp. or Air Temp. |
| External Pump | Controlled by THERMA V |

SYMBOL & LEGENDS RS3 Remote Controller Circulation Pump Motorized 3 Way Valve Check Valve Expansion Tank Motorized 2 Way Valve Safety Relief Valve with drain Remote Room Air Sensor Differential Pressure Valve Δir Vent Dry Contact Wi-Fi Modem Pressure Gauge Thermostatic Mixing Valve Thermostatic Radiator Valve Magnetic Contactor Thermosta Flexible Connection Shut Off Valve Cover Plate Balancing Valve with flow mete



NOT

- 1. This diagram should be used only for reference purpose. It does not contain all the required equipment and safety components in accordance with actual site conditions. Furthermore, please make sure to take into account the applicable standards and laws for each country. LG Electronics disclaims any direct or indirect responsibility for any consequences arising out of any inaccuracies or consequential changes to this general scheme.
- 2. It is essential to ensure the minimum amount of water contained in the heating or cooling system.
- 3. Must fit the insulations on the entire water piping including valves and connections.
- 4. In a cold climate region, water drainage from outdoor unit must be frost-proof.
- 5. There is the case where the internal water pump in the unit operates while all zone valves are closed, so one of the hydronic separator, buffer tank, bypass valve, and towel radiator must be installed.
- 6. If hydronic separator or 4 ports buffer tank is installed, external water pump in the secondary circuit must be installed. In this case, self-controlled water pump must be used to prevent operation when all zone valves are closed.
- 7. Please be aware of that an installer need to set the water outlet temperature from a gas boiler as required water temperature for own hydraulic system and also change the capacity of the gas boiler for own hydraulic system accordingly.
- 8. Beware that when the gas boiler is active it's only controlled by the outdoor temperature.

ACCESSORIES LG

RS3 Controller (Default)

A wired remote controller with built-in temperature sensor.

Hydro Box & IWT: attached with indoor unit as a

Hydro Box & IWT: attached with indoor unit as a default, detachable and extendable up to max. 50m using extension cable (PZCWRC1)

Extension Wire for RS3 Controller (PZCWRC1)
Cable length 10m

Cover Plate (PDC-HK10)

A device to fill the blank space of the Indoor Unit front panel when the remote controller is relocated indoors.

Wi-Fi Modem (PWFMDD200)

A control device that enables wireless communication with internet router. Including USB cable 0.6m and extension cable

3 Way Valve (A) (OSHA-3V)

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.

Domestic Hot Water Tank (OSHW-200F/300F/500F)

A insulated stainless steel hot water tank with 2.4kW electric heating (230V).
Single Coil : OSHW-200F(200L) / 300F(300L) / 500F(500L)

DHW Tank Sensor (PHRSTA0)

A temperature sensor for DHW tank. Cable length

Thermostatic Mixing Valve (OSHA-MV, OSHA-MV1)

A mixing valve that blends hot water with cold water to ensure constant, safe shower and bath outlet temperatures, preventing scalding.

3RD PARTY ACCESSORIES

Buffer Tank

The 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. Also it can prevents frequent On/Off operation of heat pump, especially when multi-zone control is used and all valves for each zone are closed.

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.

Magnetic Filter (Recommended)

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. In particular, in the case of a replacement, it is mandatory to install.

External Boiler

switch

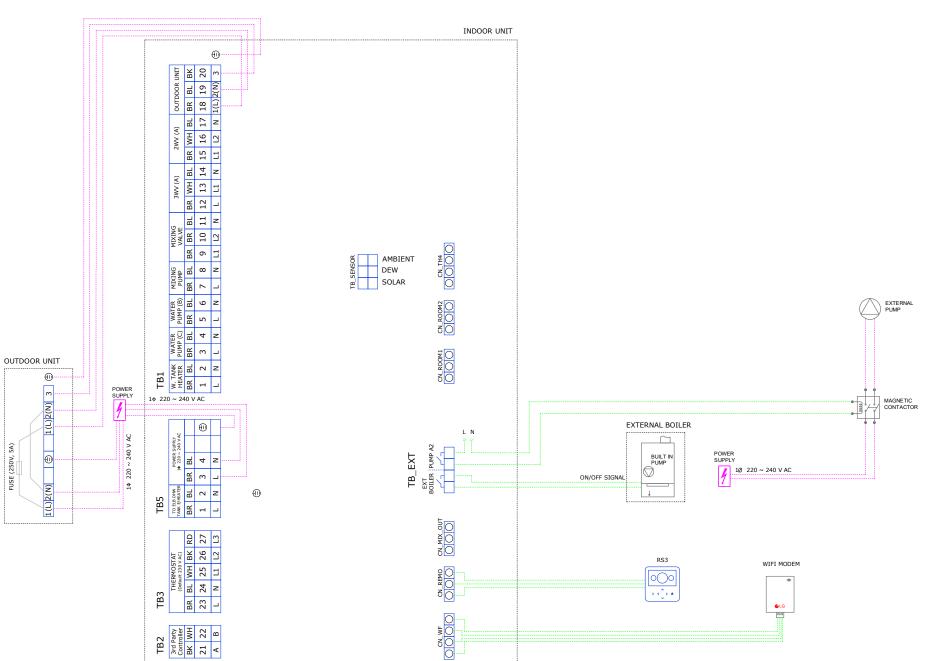
An external boiler supplied by a 3rd party that operates alternatively interlocking with THERMA V. The external boiler should have a integrated or dedicated circulation pump.

Controlled by THERMA V with voltage free contact



REFERENCED APPLICATION #11 SPACE HEATING WITH EXTERNAL BOILER

WIRING DIAGRAM



DIP SWITCH SETTINGS

INDOOR UNIT MAIN PCB





| | DIP SW 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------------------|--|---|----------|---|---|---|---|---|---|
| MODBUS | Master (Link to LG controller) | х | П | Т | П | Г | Г | П | Г |
| Communication Type | Slave (Link to 3rd party controller) | 0 | Г | | г | Г | Г | П | Г |
| MODBUS | REGIN | Т | х | | Т | г | т | П | Н |
| Function | Unified Open Protocol | | 0 | | | г | П | П | Г |
| | Antifreeze is not applied | | | | | П | П | | > |
| Antifreeze Mode | Antifreeze is applied (Adjustable anti-freeze temp.) | | | | | | | | c |
| | default setting | Х | Х | | | | | | > |
| | | _ | _ | _ | _ | _ | _ | _ | 8 |
| | DIP SW 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Indoor Unit Type Setting for Group | As Master | Х | \vdash | | | _ | _ | | L |
| Control | As Slave | 0 | | | | | | ш | |
| Accessory | Heat pump installation (Heating or cooling circuit only) | | х | х | Г | Г | Г | П | Г |
| Installation | Heat pump + DHW tank are installed | | х | 0 | П | Г | Г | П | Г |
| Information | Heat pump + DHW tank + Solar thernak system are installed | | 0 | х | Г | Г | Г | П | Г |
| Heat Pump Ovcle | Heating only | | П | | х | Г | Г | П | Г |
| Heat Fullip Cycle | Heating and cooling | | | | 0 | | | | |
| Remote Room Air Sensor | Remote room air sensor is not installed | | | | Г | х | | | Г |
| (Accessory) | Remote room air sensor is installed | | П | | П | 0 | Г | П | Г |
| Selecting Backup Heater Capacity | Backup heater is not used | Т | П | Т | П | Г | х | х | Т |
| | Half capacity is used | | г | | г | г | 0 | х | Г |
| Jupuciy | Full capacity is used | | Г | | Г | | 0 | 0 | Г |
| Thermostat | Thermostat is not installed | | | | | | | | > |
| Installation | Thermostat is installed | | Г | Г | Г | Г | Г | | C |
| | default setting | х | Х | х | Х | Х | 0 | 0 | > |

OUTDOOR UNIT MAIN PCB



| | | | | X:OFF/O:ON |
|-----------------|---|---|---|------------|
| | DIP SW 1 | 2 | 3 | |
| I ow Noise Mode | Always mode : Maintain low noise mode for target temperature | х | | |
| Low Noise Mode | Partial mode : Escape low noise mode for target temperature | 0 | | |
| | Max mode | | Х | |
| Peak Control | Peak control : To limit maximum current (Power saving) | | 0 | |
| | default setting | х | Х | |

INSTALLER SETTINGS ON RS3

| Detailed Installer Setting | Value |
|--|------------------|
| Configuration > Select Temperature Sensor > Control Standard | Air + Water * |
| Configuration > Select Temperature Sensor > Sensor Location | Remote Control * |
| Configuration > Use Heating Tank Heater | Not Use |
| Configuration > Mixing Circuit | Not Use |
| Configuration > Use External Pump | Heat&Cool |
| Configuration > RMC master/slave | Master |
| Domestic Hot Water > Recirculation time > DHW recirculation | Not Use |
| Connectivity > Central control address > Access Code (Hex) | - |
| Connectivity > Modbus address > Access Code (Hex) | - |
| Connectivity > 3rd Party Boiler | Use |
| Connectivity > Meter Interface > Modbus Address | Not Use |
| Connectivity > Energy state > ESS use type | Not Use |
| Connectivity > Thermostat control type | - |

It may change depending on the control method

- 1. The wiring cable size and Circuit breaker selection must comply with installation manual and applicable local regulations.
- 2. Make sure that Earth Leakage Circuit Breaker (ELCB) should be installed for power supply line
- 3. In addition to the installer settings above, you may need to change additional detailed installer settings. Please refer to the installation manual for