# Air to Water Heat Pump

## Installation manual

Control Kit MIM-E03CN / MIM-E03EN

- Thank you for purchasing this Samsung Product.
- Before operating this unit, please read this installation manual carefully and retain it for future reference.

SAMSUNG

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***Correct Disposal of This Product***
***(Waste Electrical & Electronic Equipment)***

***(Applicable in countries with separate collection systems)***

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

For information on Samsung's environmental commitments and product-specific regulatory obligations, e.g. REACH, visit: https://www.samsung.com/uk/sustainability/environment/environment-data/

# Safety precautions

Carefully follow the precautions listed as below because they are essential to guarantee the safety of SAMSUNG product.

**WARNING**

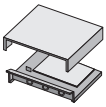
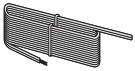
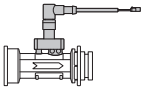
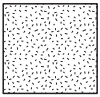
- Always disconnect a power supply of Air-Water Heat Pump before servicing it or accessing components inside the unit.
- Verify that installation and testing operations shall be performed by qualified personnel.
- To prevent serious damage on the system and injuries to users, precautions and other notices shall be observed.



## Warning

- Carefully read the contents of this manual before installing the control kit and store the manual in a safe place in order to be able to use it as reference after installation.
- For maximum safety, installers should always carefully read the following warnings.
- Store the manual in a safe location and remember to hand it over to the new owner if the kit is sold or transferred.
- The kit is compliant with the requirements of the Low Voltage Directive (72/23/EEC), the EMC Directive (89/336/EEC) and the Directive on pressurized equipment (97/23/EEC).
- The manufacturer shall not be responsible for damage originating from unauthorized changes or the improper connection of electric and hydraulic lines. Failure to comply with these instructions or to comply with the requirements set forth in the "Operating limits" table, included in the manual, shall immediately invalidate the warranty.
- Do not use the units if you see some damages on the units and recognize something bad such as loud noisy, smell of burning.
- In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact SAMSUNG's technical support if the unit produces smoke, if the power cable is hot or damaged or if the unit is very noisy.
- Always remember to inspect the unit, electric connections, and protections regularly. These operations shall be performed by qualified personnel only.
- The unit contains various electric parts, which should be kept out of the reach of children.
- Do not attempt to repair, move, alter or reinstall the unit by unauthorized personnel, these operations may cause product damage, electric shocks and fires.
- Do not place containers with liquids or other objects on the unit.
- All the materials used for the manufacture and packaging of the air to water heat pump are recyclable.
- The packing materials must be disposed of in accordance with local regulations.
- Wear protective gloves to unpack, move, install, and service the unit to avoid your hands being injured by the edge of the parts.
- Do not touch the internal parts while running the units.
- Inspect the product shipped and check if damaged during transport. If the product has some damages, DO NOT INSTALL and immediately discuss about the damages with the carrier or retailer (if the installer or the authorized technician has collected the material from the retailer.)
- Our units shall be installed in compliance with the spaces described in the installation manual, to ensure accessibility from both sides and allow repairs or maintenance operations to be carried out. If the units installed without complying with procedures described in manual, additional expenses can be asked because special harnesses, ladders, scaffolding or any other elevation system for repair service will NOT be considered part of the warranty and will be charged to the end customer.
- When service works required, make sure to disconnect the power supply at least 1 minute to prevent electric shocks.
  - Always check the voltage at the terminals of main PCB before trying to touch.
- Use electric wires which manual designated. Connections between wires and terminals shall be assembled without any tension. If the assembly works is not implemented well, it can lead to have product damages and fires.
- After wiring works, terminal block cover shall be fixed firmly. Without cover, it can cause to have product damage and fire.
- Be sure not to perform power cable modification, midway wiring, and multiple wire connection.
  - It may cause electric shock or fire due to poor connection or insulation and current limit override.
  - When midway wiring is required due to power line damage, refer to "How to connect your extended power cables" in the installation manual.

# Product specifications

| Item | Description | |
|---|---|---|
|  | MIM-E03CN<br>MIM-E03EN | |
| | Wired remote controller (MWR-WW10N) | |
| | Temp. Sensor | Temp. Sensor for DHW Tank (15m, YEL) (1EA)<br>Temp. Sensor for Mixing Valve (15m, BLU) (1EA)<br>Temp. Sensor for Heater (15m, BLK) (1EA) |
|  | PV Control / Peak power control cable(Red, 2 m, 1 EA) | |
|  | Flow Sensor (1EA, 1.5m) | |
| | Sensor holder (2EA, OD 7.8mm) | |
| | Sensor clip (2EA) | |
| | Cable tie (4EA) | |
| | Aluminum tape (2EA) | |
| | Rubber tape (2EA) | |
|  | Insulartor (2EA) | |
| | LEAD CONNECTOR | Back-up heater conector (Red)<br>Back-up heater conector (Brown)<br>Back-up heater conector (White) |
| | Installation manual | |
| | User manual | |
| | ASSY TUBE CONNECTOR-RIGHT (OD28.0, 1EA) | |
| | ASSY TUBE CONNECTOR-LEFT (OD28.0, 1EA) | |

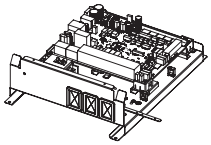
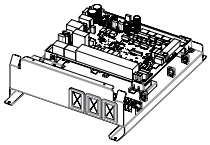
| Item | Description |
|---|---|
| | Fastener (2EA) |
| | O-Ring (2EA) |

✻ Temp. sensor = Temperature sensor



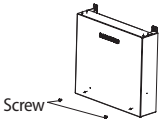
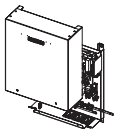
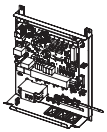
# Main components

(Unit : EA)

| Model name | Parts | MIM-E03CN | MIM-E03EN |
|---|---|---|---|
| Detail components | Shape |  |  |
| | Main PBA | 1 | 1 |
| | ELCB<br>- Rated current : 30A<br>- Leakage current : 30mA | 1 | 1 |
| | Grounding screw | 7 | 7 |
| | Rubber | 3 | 3 |
| | Base plate | 1 | 1 |
| | Top cover plate | 1 | 1 |
| | Case screw | 2 | 2 |
| | Terminal Block (10p) | - | 1 |
| Weight (Net) | 3.5 kg | | |
| Packing size (W x H x D) | 329 mm x 439 mm x 168 mm | | |

✻ Flow sensor set point
AE050RXYD**/AE080RXYD**/AE080BXYD**/AE120BXYD**/AE140BXYD** : 7LPM
AE120RXYD**/AE160RXYD** : 12LPM
AE050CXYD**/AE080CXYD**/AE120CXYD**/AE160CXYD** : 7LPM

## Mounting the unit

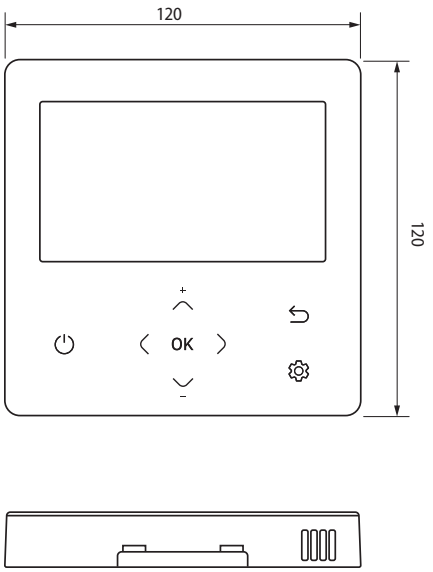
| Procedure | Remark |
|---|---|
| 1. Remove 2 screw from the unit. |  |
| 2. Open the top cover and install 4 screws on the wall. |  |
| 3. Close the top cover and install 2 screw again into the unit. |  |

# Installing the unit

## Installing the remote controller

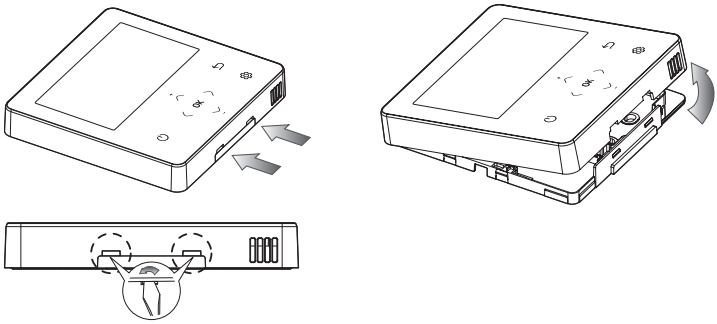
### Dimension

(Unit : mm)

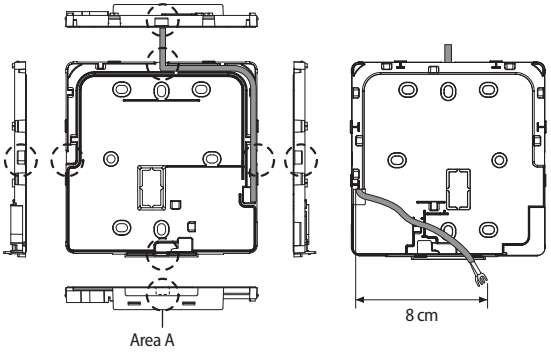


## Wired Remote Controller Installation

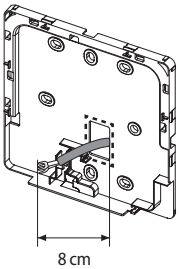
1. Insert the flat-head screwdriver into two square grooves at the bottom of the Wired Remote Controller and rotate it to lift the front cover for removal from the rear cover.



2. Arrange the power cable and the communication cable so that they fit in the housing along the edges of the rear cover.




<When the cable is not concealed>



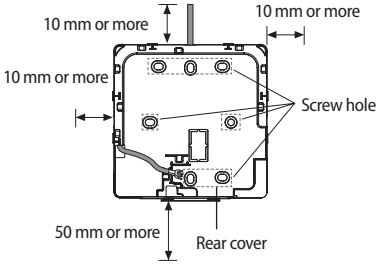

<When the cable is concealed>

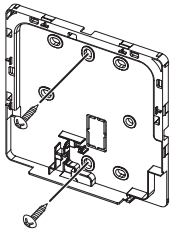
NOTE

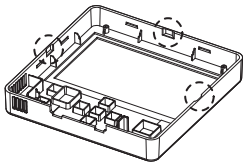
- When connecting the power and communication cables to the bottom of the Wired Remote Controller, first cut off the area A.

# Installing the unit

3. Using two or more screws, firmly affix the rear cover of the remote controller to the wall, and then cut off the grooves of the front covers for communication and power cables, making sure these cables have reasonable length.



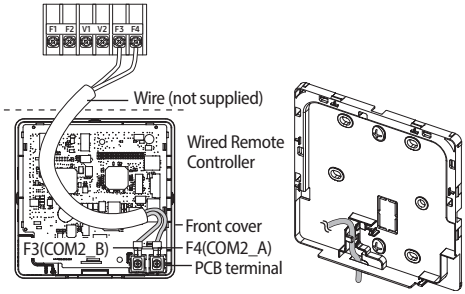





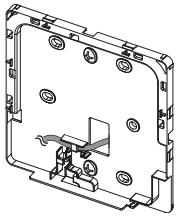
✳ **Before fixing the rear cover, secure at least 10 mm space of upper side, left side, right side, and 50 mm space of bottom side.**

✳ **You must fit the screws into the screw holes.**

4. Connect the communication cables (F3, F4) to the terminals of the back of the front cover, and then fix the wires so that they do not get stuck during connection.





✳ **Do not tighten the screws on the PCB terminal with excessive force.**

CAUTION

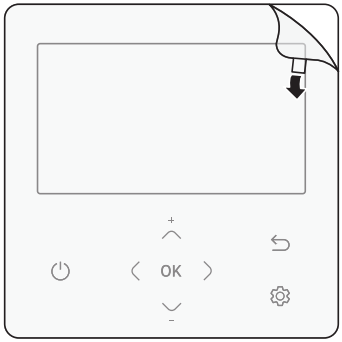
- When using an electric screwdriver, tighten the screws to the standard torque because the top of screws may be worn out if you use a strong torque.

5. Reassemble the Wired Remote Controller.

NOTE

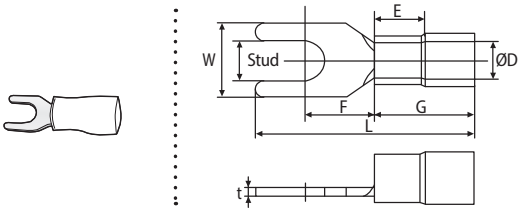
- Align the controller with the upper groove first, and then insert it by turning it downwards as shown in the figure.
  After assembly, check and confirm that no wires are stuck in the gap between the back and front covers.

6. Remove the front protective film.




CAUTION

- When installing a Wired Remote Controller by using a cable longer than 10 m, you must install the communication cable and the power cable separately. (Electrical interference can cause the Wired Remote Controller to malfunction.)
- When installing your Wired Remote Controller on the wall, consider the size of the wire hole, and select a wire with a proper thickness.
- Wire that is connectable to Wired Remote Controller PCB.
  - If you install the Wired Remote Controller by reclaiming, install it according to U-terminal cable specification.
  - If you install the Wired Remote Controller by using two pieces of PVC wire, remove the 30 cm of the sheath of the cable and install it only with the two pieces of wires. (Recommended specification: AWG20)
- The following are the specs of the compression ring terminal connected to your Wired Remote Controller PCB.




| Range of Permitted Wires | | Rated Size | Stud Size | Basic Size (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| AWG | $mm^2$ | $mm^2$ | mm | t | øD | G | E | F | W | L |
| 22 ~ 16 | 0.25 ~ 1.65 | 1.5 | 3 | 0.7 | 3.8 | 10.0 | 4.5 | 6.5 | 6.0 | 21.2 |

✻ Maximum distance for connecting communication and power cable: 100 m

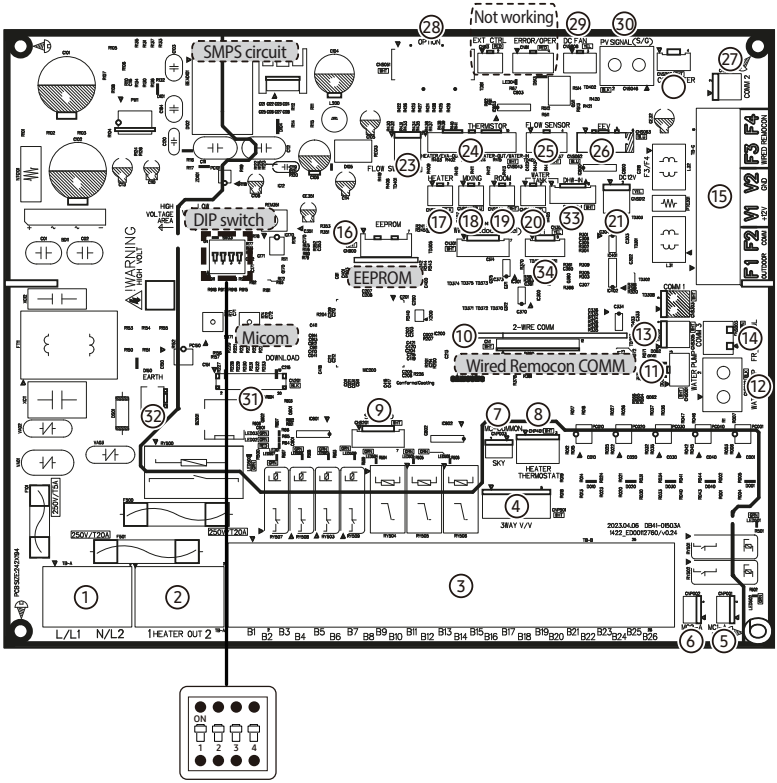
- Screws on the PCB terminal must be tightened with less than 6N-cm tightening torque. If the tightening torque is greater, it may damage the screw thread.

# Wiring works

CAUTION

- Field-supplied electrical components such as power switch, circuit breakers, wires, terminal blocks, etc must be properly chosen with compliance with national legislation or regulation.
- Switch off the power supply before making any connections.
- All field wiring and components must be installed by a licensed electrician.
- Use a dedicated power supply.
- All power connections must be protected from dew condensation by thermal insulation.
- The system shall be earthed. Do not earth the unit to a utility pipe, surge absorber or telephone earth. Incomplete earth may cause electrical problems.

## Layout of PCB




| No. | Part code | Part name | Terminal | Terminal description |
|---|---|---|---|---|
| ① | TB-A | AC POWER-IN | #1: L | AC INPUT |
| | | | #2: N | AC INPUT |
| ② | TB-A1 | HEATER OUT | #1: HEATER(L) | AC OUTPUT |
| | | | #2: N | AC OUTPUT |

| No. | Part code | Part name | Terminal | Terminal description |
|---|---|---|---|---|
| ③ | TB-B | LOAD CONTROL | #1: N | AC OUTPUT |
| | | | #2: MIXING VALVE_CW (L) | AC OUTPUT |
| | | | #3: MIXING VALVE_CCW (L) | AC OUTPUT |
| | | | #4: BOILER (L) | AC OUTPUT |
| | | | #5: N | AC OUTPUT |
| | | | #6: L | AC OUTPUT |
| | | | #7: N | AC OUTPUT |
| | | | #8: WATER PUMP (L) | AC OUTPUT |
| | | | #9: 2WAY VALVE1_NO (L) | AC OUTPUT |
| | | | #10: 2WAY VALVE1_NC (L)<br>Zone1 Water Pump output(FSV 4061=1) | AC OUTPUT |
| | | | #11: N | AC OUTPUT |
| | | | #12: L | AC OUTPUT |
| | | | #13: 2WAY VALVE2_NO (L) | AC OUTPUT |
| | | | #14: 2WAY VALVE2_NC (L)<br>Zone2 Water Pump output(FSV 4061=1) | AC OUTPUT |
| | | | #15: N | AC OUTPUT |
| | | | #16: L | AC OUTPUT |
| | | | #17: 3WAY VALVE_NO (L) | AC OUTPUT |
| | | | #18: 3WAY VALVE_NC (L) | AC OUTPUT |
| | | | #19: N | AC OUTPUT |
| | | | #20: L | AC OUTPUT |
| | | | #21: THERMOSTAT1_C (L) | AC INPUT |
| | | | #22: THERMOSTAT1_H (L) | AC INPUT |
| | | | #23: THERMOSTAT2_C (L) | AC INPUT |
| | | | #24: THERMOSTAT2_H (L) | AC INPUT |
| ④ | CNP501 | 3WAY VALVE | #1: N | AC OUTPUT |
| | | | #2: - | |
| | | | #3: 3WAY VALVE_NO (L) | AC OUTPUT |
| | | | #4: - | |
| | | | #5: 3WAY VALVE_NC (L) | AC OUTPUT |
| ⑤ | CNP001 | MC1-A | #1: BACKUP HEATER_STEP1(L) | AC OUTPUT |
| ⑥ | CNP002 | MC2-A | #1: BACKUP HEATER_STEP2(L) | AC OUTPUT |
| ⑦ | CNP003 | MC-COMMON | #1: Thermostat Output(L) | AC OUTPUT |
| ⑧ | CNP401 | HEATER THERMOSTAT | #1: Thermostat Output(L) | AC OUTPUT |
| | | | #2: - | |
| | | | #3: N | AC OUTPUT |
| ⑨ | CNS201 | DISPLAY | #1: DC 12V | DC OUTPUT |
| | | | #2: - | |
| | | | #3: - | |
| | | | #4: - | |
| | | | #5: GND | DIGITAL GROUND |
| | | | #6: LED CONTROL SIGNAL | DC OUTPUT |
| | | | #7: - | |

# Wiring works

| No. | Part code | Part name | Terminal | Terminal description |
|---|---|---|---|---|
| ⑩ | CNS313 | WIRED REMOCON COMM. | | |
| ⑪ | CNS001 | WATER PUMP | #1: WATER PUMP PWM SIGNAL | DC OUTPUT |
| | | | #2: - | |
| | | | #3: GND | DIGITAL GROUND |
| ⑫ | CNS002 | WATER PUMP | #1: WATER PUMP PWM SIGNAL | DC OUTPUT |
| | | | #2: GND | DIGITAL GROUND |
| ⑬ | CNS305 | COMMUNICATION3 | #1: COM3 | RS485 - COMM. |
| | | | #2: COM3 | |
| ⑭ | CNS003 | FR_CONTROL | #1: FR CONTROL DC INPUT | DC INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ⑮ | TB-C | COMMUNICATION & DC 12V | #1: COM1 (F1) | RS485 - COMM. |
| | | | #2: COM1 (F2) | |
| | | | #3: V1 (DC 12V) | DC OUTPUT |
| | | | #4: V2 (GND) | DIGITAL GROUND |
| | | | #5: COM2 (F3) | WIRED REMOTE CONTROLLER |
| | | | #6: COM2 (F4) | |
| ⑯ | CNS900 | EEPROM | #1: GND | DIGITAL GROUND |
| | | | #2: - | |
| | | | #3: DC 5V | DC OUTPUT |
| | | | #4: EEPROM_SELECT | DC SIGNAL |
| | | | #5: EEPROM_SO | DC SIGNAL |
| | | | #6: EEPROM_SI | DC SIGNAL |
| | | | #7: EEPROM_CLK | DC SIGNAL |
| ⑰ | CNS047 | HEATER SENSOR | #1: HEATER TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ⑱ | CNS045 | MIXING VALVE SENSOR | #1: MIXING VALVE TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ⑲ | CNS044 | ROOM SENSOR | #1: ROOM TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ⑳ | CNS042 | WATER TANK SENSOR | #1: WATER TANK TEMP. (200kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ㉑ | CNS012 | DC 12V | #1: DC 12V | DC OUTPUT |
| | | | #2: GND | DIGITAL GROUND |
| ㉒ | CNS202 | EHS CONVERTER | #1: COM1 (F1) | RS485 - COMM. |
| | | | #2: COM1 (F2) | |
| | | | #2: GND | DIGITAL GROUND |
| | | | #4: DC 12V | DC OUTPUT |
| ㉓ | CNS041 | FLOW SWITCH | #1: FLOW SWITCH | DC INPUT |
| | | | #2: GND | DIGITAL GROUND |

| No. | Part code | Part name | Terminal | Terminal description |
|---|---|---|---|---|
| ㉔ | CNS043 | SENSOR | #1: HEATER TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| | | | #3: EVA-OUT TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #4: GND | DIGITAL GROUND |
| | | | #3: EVA-IN TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #6: GND | DIGITAL GROUND |
| | | | #7: WATER-OUT TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #8: GND | DIGITAL GROUND |
| | | | #9: WATER-IN TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #10: GND | DIGITAL GROUND |
| ㉕ | CNS057 | FLOW SENSOR | #1: DC 5V | DC OUTPUT |
| | | | #2: FLOW SENSOR DC INPUT | DC INPUT |
| | | | #3: GND | DIGITAL GROUND |
| | | | #4: - | |
| ㉖ | CNS062/CNS063 | EEV (SPLIT/MONO : Not use) | #1~#4: EEV CONTROL PWM SIGNAL | DC OUTPUT |
| | | | #5: DC 12V | DC OUTPUT |
| | | | #6: DC 12V (CNS063 ONLY) | DC OUTPUT |
| ㉗ | CNS304 | COMMUNICATION | #1: COM2 (F3) | WIRED REMOTE CONTROLLER |
| | | | #2: COM2 (F4) | |
| ㉘ | CNS051 | OPTION CONNECT (DRY CONTACT, Thermistor, MIM-E03EN model only) | #1: SG READY1 SIGNAL | DC INPUT |
| | | | #2: OPTION TEMP.(10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #5: SG READY2 SIGNAL | DC INPUT |
| | | | #6: ZONE2 TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #9: EMERGENCY_STOP | DC INPUT |
| | | | #10: ZONE1 FLOW TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #13: DRY CONTACT_1 | DC INPUT |
| | | | #14: ZONE2 FLOW TEMP. (10kΩ @ 25 ℃) | DIGITAL INPUT |
| | | | #17: DRY CONTACT_2 | DC INPUT |
| | | | #21: DRY CONTACT_3 | DC INPUT |
| | | | #3,4,7,8,11,12,15,16,19,23: GND | DIGITAL GROUND |
| | | | #18,20,22,24: - | |
| ㉙ | CNS062/CNS063 | EEV | #1~#4: EEV CONTROL PWM SIGNAL | DC OUTPUT |
| | | | #5: DC 12V | DC OUTPUT |
| | | | #6: DC 12V (CNS063 ONLY) | DC OUTPUT |
| ㉚ | CNS046 | PV/Peak power control SIGNAL | #1: PV(Photovoltaic) Control Signal / Peak power control Signal | DC INPUT |
| | | | #2: GND | DIGITAL GROUND |
| ㉛ | CNS301 | DOWNLOAD | | |
| ㉜ | CNP101 | EARTH | #1: EARTH | EARTH |

# Wiring works

| No. | Part code | Part name | Terminal | Terminal description |
|---|---|---|---|---|
| ㉝ | CNS042-1 | WATER TANK / DHW IN SENSOR | #1 : WATER TANK TEMP.(200kΩ @25℃) | DIGITAL INPUT |
| | | | #2: GND | DIGITAL GROUND |
| | | | #3 : DHW IN TEMP.(10kΩ @25℃) | DIGITAL INPUT |
| | | | #4: GND | DIGITAL GROUND |
| | | | #5: - | |
| | | | #6: - | |
| ㉞ | CN302 | WiFi | #1 : WiFi_Micom_Rx | URAT |
| | | | #2 : WiFi_Micom_Tx | URAT |
| | | | #3 : WiFi_Micom_Control | DIGITAL OUTPUT |
| | | | #4 : GND | DIGITAL GROUND |
| | | | #5 : DC12V | DC OUTPUT |

㉟

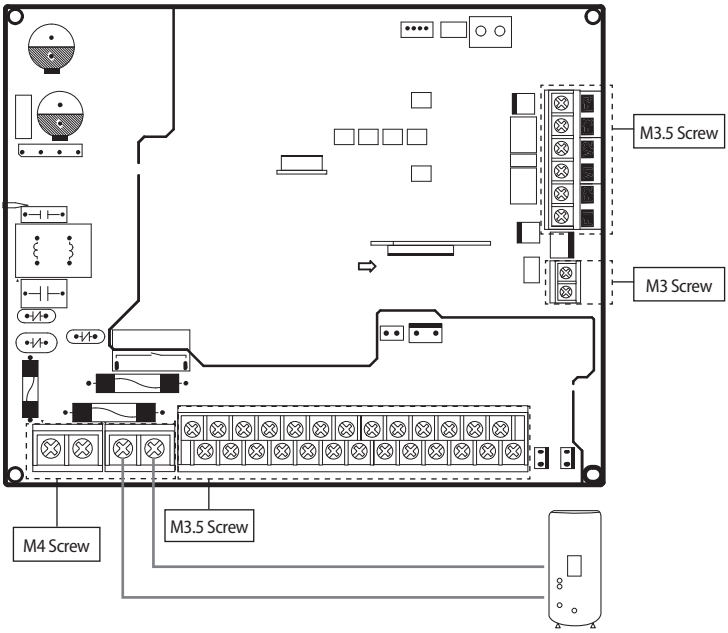
| Terminal No. | Function | Input /output | Min. / Max. current | Description | Remark |
|---|---|---|---|---|---|
| B2/B3/B5 | Mixing valve | AC 230V output | 10 mA / 50 mA | Mixing Valve operation(B2: CW, B3: CCW) | Option |
| B4/B5 | Backup Boiler | AC 230V output | 10 mA / 50 mA | Signal output for Backup Boiler(B5: Neutral) | Option |
| B7/B8 | Additional AC Water Pump | AC 230V output | - / 100 mA | Additional Water pump operation (maximum input power of pump 100W) (B8 : Lived) | Option |
| B9/B10/B11/ B12 | 2Way valve#1 Water pump (Zone1) | AC 230V output | 10 mA / 50 mA | 2 Way Valve operation for Zone#2 (FCU) (B9 : NO, B10 : NC, B11: Neutral, B12: Lived) Zone1 Water Pump output(FSV 4061=1) (B10:NC, B11:Neutral) | Option |
| B13/B14/ B11/B12 | 2Way valve#2 Water pump (Zone2) | AC 230V output | 10 mA / 50 mA | 2 Way Valve operation for Zone#2 (FCU) (B13 : NO, B14 : NC, B11: Neutral, B12: Lived) Zone2 Water Pump output(FSV 4061=1) (B14:NC, B15:Neutral) | Option |
| B15/B16/ B17/B18 | 3Way valve | AC 230V output | 10 mA / 50 mA | 3 Way Valve operation for DHW (B17 : NO, B18 : NC, B15: Neutral, B16: Lived) | Option |
| B19/B20 | Thermostats | AC 230V output | - / 22 mA | Power to external thermostat(s) (B20: Lived) | Option |
| B21/B22 | Thermostat 1 | AC 230V input | - / 22 mA | Thermostat for zone#1 (UFH) Cooling(B21)/ Heating(B22) Signal | Option |
| B23/B24 | Thermostat 2 | AC 230V input | - / 22 mA | Thermostat for zone#2 (FCU) Cooling(B23)/ Heating(B24) Signal | Option |

## Selection for the power and booster heater wire terminal

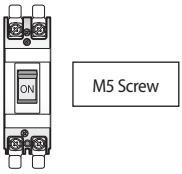
- Connect the cables to the terminal board using the solderless ring terminal.
- Use certified and verified cables.
- Connect using a driver which is able to apply the rated torque to the screws.
- If the terminal is loose, fire may occur caused by arc.
  If the terminal is connected too firmly, the terminal may be damaged.
- External force should not be applied to the terminal block and wires.
- The cable ties to fasten the wire should be an incombustible material, V0 or above.
  (The cable ties should be used to fasten the power wire and they are supplied with the unit.)

| Tightening Torque (kgf • cm) | |
|---|---|
| M3 | 0.5 ~ 0.75 |
| M3.5 | 8 ~ 12 |
| M4 | 12 ~ 18 |
| M5 | 20 ~ 30 |

- Main PCB



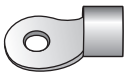

- ELCB

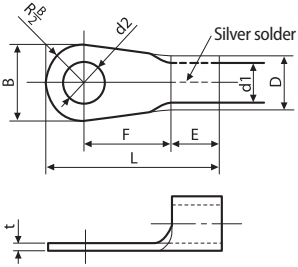


# Wiring works

## Selecting solderless ring terminal

- Select a solderless ring terminal of a connecting power cable based on a nominal dimensions for cable.
- Cover a solderless ring terminal and a connector part of the power cable and then connect it.






| Nominal dimensions for cable (mm²) | | 1.5 | 2.5 | 4/6 | | 10 |
|---|---|---|---|---|---|---|
| Nominal dimensions for screw (mm) | | 4 | 4 | 4 | 8 | 8 |
| B | Standard dimension (mm) | 8 | 9.5 | 9.5 | 12 | 12 |
| | Allowance (mm) | ±0.2 | ±0.2 | ±0.2 | | ±0.2 |
| D | Standard dimension (mm) | 3.4 | 4.2 | 5.6 | | 7.1 |
| | Allowance (mm) | +0.3<br>-0.2 | +0.3<br>-0.2 | +0.3<br>-0.2 | | +0.3<br>-0.2 |
| d1 | Standard dimension (mm) | 1.7 | 2.3 | 3.4 | | 4.5 |
| | Allowance (mm) | ±0.2 | ±0.2 | ±0.2 | | ±0.2 |
| E | Min. | 4.1 | 4.1 | 6 | | 7.9 |
| F | Min. | 6 | 7 | 5 | 9 | 9 |
| L | Max. | 16 | 17.5 | 20 | 28.5 | 30 |
| d2 | Standard dimension (mm) | 4.3 | 5.3 | 4.3 | 8.4 | 8.4 |
| | Allowance (mm) | + 0.2<br>0 | + 0.2<br>0 | + 0.2<br>0 | +0.4<br>0 | +0.4<br>0 |
| t | Min. | 0.7 | 0.8 | 0.9 | | 1.15 |

## How to connect your extended power cables

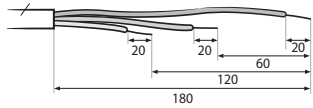
1. Prepare the following tools.

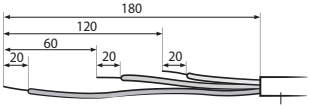
| Tools | Crimping pliers | Connection sleeve (mm) | Insulation tape | Contraction tube (mm) |
|---|---|---|---|---|
| Spec | MH-14 | 20xØ6.5(HxOD) | Width 19mm | 70xØ8.0(LxOD) |
| Shape | | | | |

2. As shown in the figure, peel off the shields from the rubber and wire of the power cable.
   - Peel off 20 mm of cable shields from the pre-installed tube.

CAUTION
- For information about the power cable specifications for indoor and outdoor units, refer to the installation manual.
- After peeling off cable wires from the pre-installed tube, insert a contraction tube.

Power cable (Unit: mm)




Pre-installed tube for the power cable

3. Insert both sides of core wire of the power cable into the connection sleeve.

► **Method 1**

Push the core wire into the sleeve from both sides.

Connection sleeve

► **Method 2**

Twist the wire cores together and push it into the sleeve.

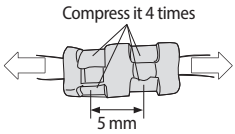
Connection sleeve

CAUTION
- If cable wires are connected without using connecting sleeves, their contact area becomes reduced, or corrosion develops on the outer surfaces of the wires (copper wires) over a long time. This may cause an increase of resistance (reduction of passing current) and consequently may result in a fire.

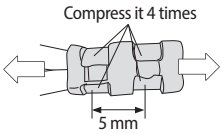
4. Using a crimping tool, compress the two points and flip it over and compress another two points in the same location.
   - The compression dimension should be 8.0 mm².

   - After compressing it, pull both sides of the wire to make sure it is firmly pressed.

► **Method 1**



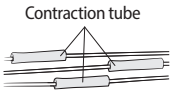

► **Method 2**



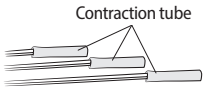
# Wiring works

5. Apply heat to the contraction tube to contract it.

▶ **Method 1**

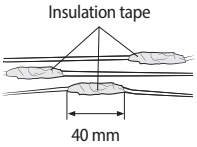



▶ **Method 2**

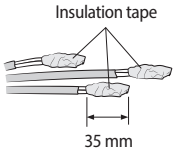



6. Wrap it with the insulation tape twice or more and position your contraction tube in the middle of the insulation tape.

▶ **Method 1**

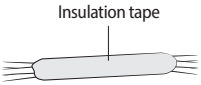



▶ **Method 2**

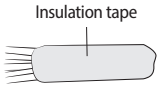



7. After tube contraction work is completed, wrap it with the insulation tape to finish.
   Three or more layers of insulation are required.

▶ **Method 1**




▶ **Method 2**

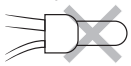



**CAUTION**

- Make sure that the connection parts are not exposed to outside.
- Be sure to use insulation tape and a contraction tube made of approved reinforced insulating materials that have the same level of withstand voltage with the power cable. (Comply with the local regulations on extensions.)

**WARNING**

- In case of extending the electric wire, please DO NOT use a round-shaped Pressing socket.
  - Incomplete wire connections can cause electric shock or a fire.



## Grounding work

► Grounding must be done by a qualified installer for your safety.

### Grounding the power cable

► The standard of grounding may vary according to the rated voltage and installation place of a heating pump.

► Ground the power cable according to the following.



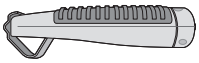
<table>
<tr><th>Installation place / Power condition</th><th>High humidity</th><th>Average humidity</th><th>Low humidity</th></tr>
<tr><td>Electrical potential of lower than 150V</td><td rowspan="2"></td><td>Perform the grounding work 3. Note 1)</td><td>Perform the grounding work 3 if possible for your safety. Note 1)</td></tr>
<tr><td>Electrical potential of higher than 150V</td><td colspan="2">Must perform the grounding work 3. Note 1)<br>(In case of installing circuit breaker)</td></tr>
</table>

✳ **Note 1) Grounding work 3**

- Grounding must be done by your installation specialist.
- Check if the grounding resistance is lower than 100 Ω.

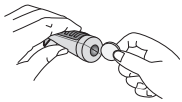
When installing a circuit breaker that can cut the electric circuit in case of a short circuit, the allowable grounding resistance can be 30~500 Ω.

✳ **Examples to use cable striper**



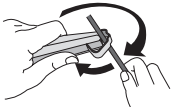
<Cable striper>

1. Adjust the blade position by coin(the controller is at the bottom side of the tool). Fix the blade position according to the outer sheath thickness of the power cable.

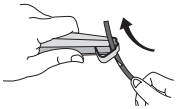


2. Fix the power cable and tool by using the hook at the top side of the tool.

3. Cut out the outer sheath of the power cable by revolving the tool in the direction of the arrow, two or three times.



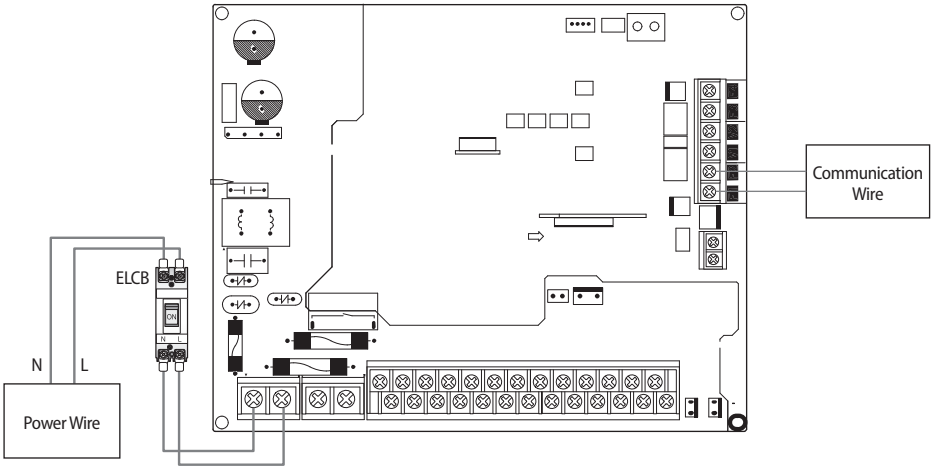
4. At this situation, cut out the outer sheath of the power cable by moving the tool toward the arrow direction expressed.



5. Slightly bend the wire and pull out the cut part of the outer sheath.

# Wiring works

## Power and communication with outdoor unit




CAUTION

- Be careful when connecting L, N.

### Connecting the power wire

1. Connect 'Live' and 'Neutral' power line with 'L, N' of a ELCB.
2. Connect 'L,N' of a ELCB with 'A1 and A2' in TB-A.
3. Connect 'Protective Earth' line with 'Earth screw' In case.

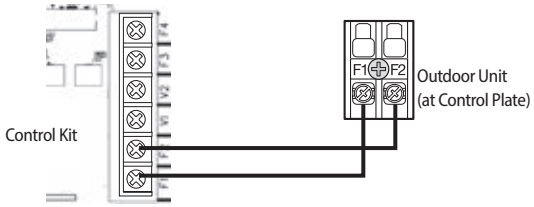
### Recommended wire specification

| Load | Power Supply | Power Cable | Max. Length |
|---|---|---|---|
| | | mm², wires | m |
| Do NOT use Heater (Water Pump, Valve, Wired RMC) | 1Ø, 220-240V, 50Hz | 1.5 / 3 | L < 10m |
| | | 2.5 / 3 | 10m < L |
| Use Booster Heater (Max. 3kW) | | 4.0 / 3 | L < 10m |
| | | 6.0 / 3 | 10m < L |

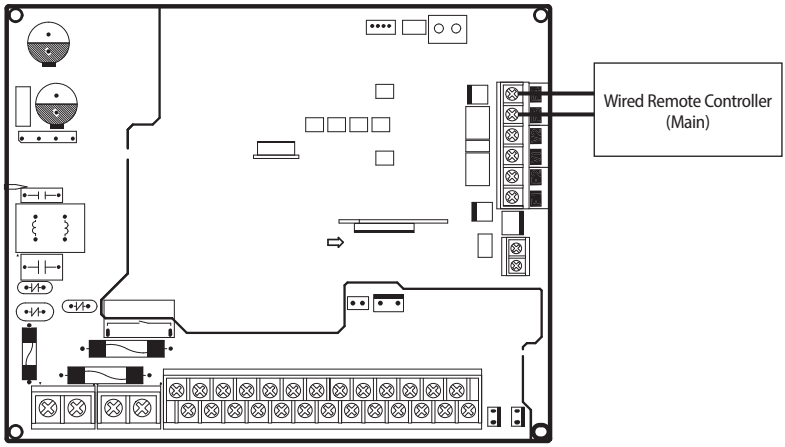
- The power cable is not supplied with Air to water heat pump.
- This equipment with "IEC 61000-3-12".
- Power supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord. (Code designation IEC:60245 IEC 57 / CENELEC: H05RN-F or IEC:60245 IEC 66 / CENELEC: H07RN-F)
- When installing the control kit in a computer room or net work room, server room or in the presence of risk of disturbance to the communication cable, use the double shielded (tape aluminium / polyester braid + copper) cable of FROHH2R type.

## Connecting the communication wire

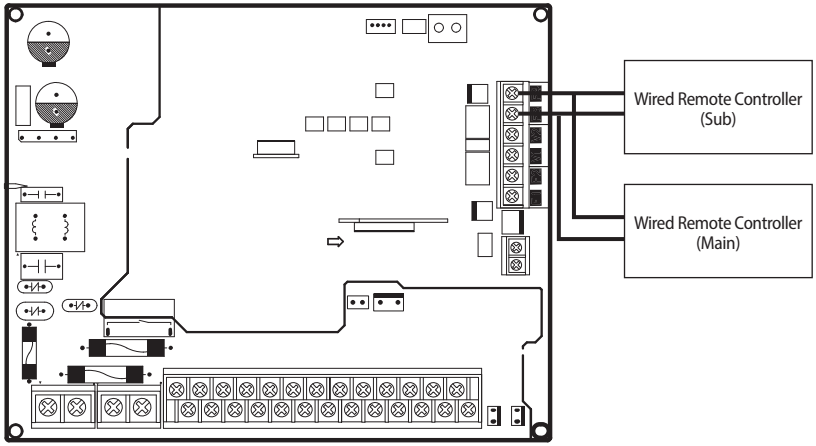
► Connect 'outdoor unit's F1&F2' with 'control kit's F1&F2 in TB-C' by 2 core cable.




## Communication with a wired remote controller (1 unit)




## Communication with a wired remote controller (2 units)



# Wiring works

## Connecting a wired remote controller

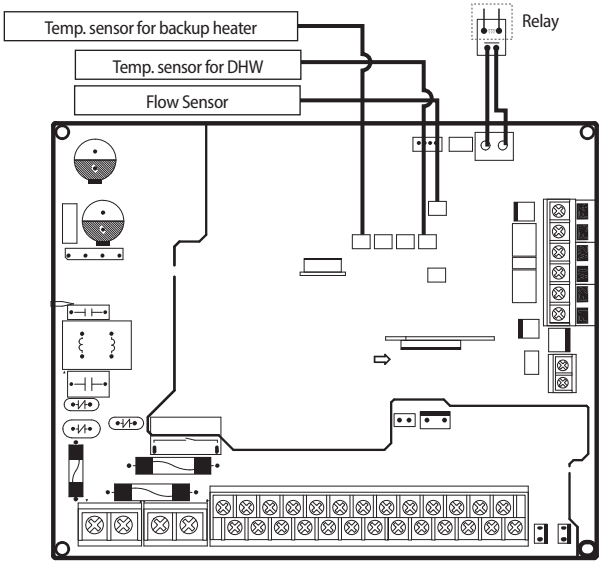
1. Connect 'F3, F4' of TB-C kit with 'F3, F4' of a wired remote controller.

► 2 units (wired remote controllers) are able to be installed on TB-C.

► When 2 units are installed, either one shall has "Main" setting and another one shall have "Sub" settings on a wired remote controller.

## Temp. Sensor for DHW, Backup heater and a Water Flow Sensor

External wiring to control a switch of relay by a installer




## Connecting a temp. sensor wire into DHW

1. Put the sensor side of a temp. sensor wire into the designated location in a DHW.
2. Connect the other side of the line at CNS042.

## Connecting a temp. sensor wire to outlet of backup heater

1. Put the sensor side of a temp. sensor wire into the designated location in a backup heater.
2. Connect the other side of the line at CNS047.

## Connecting a flow sensor

1. Install a flow sensor in water line.
2. Connect a wire a flow sensor into 'CNS057' connector.

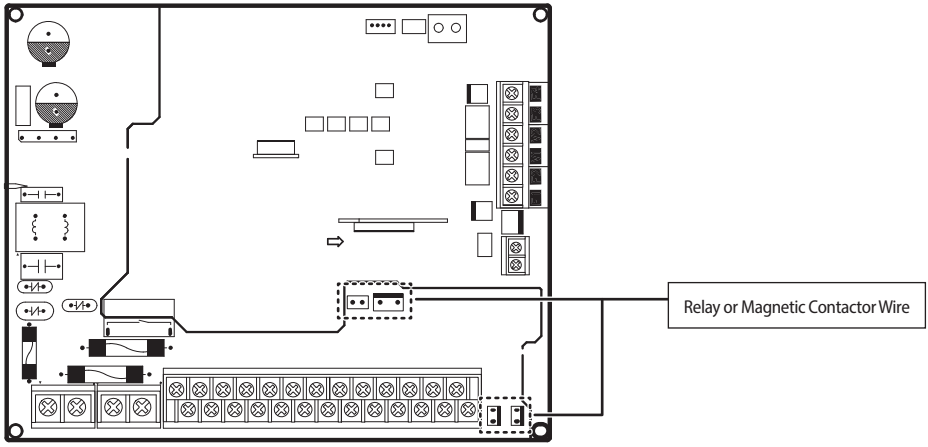
## Connecting a PV(Photovoltaic) Signal / Peak power control Signal

1. Install as above diagram.
2. Connect the PV / Peak power control signal wire to the 'CNS046' connector.

NOTE

- It operates according to the setting of FSV, and both functions can not be used at the same time. (PV Control / Peak power control)

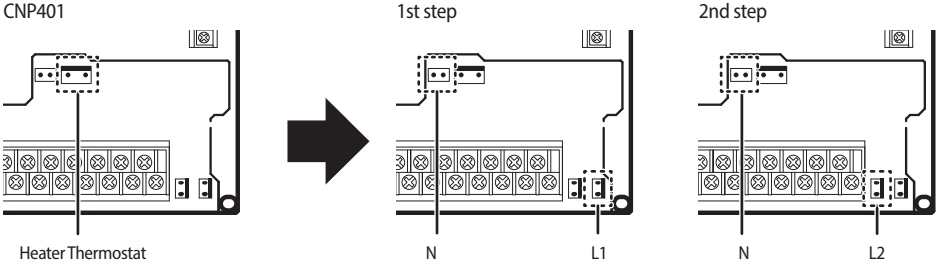
## Backup heater




### Connecting a relay or a magnetic contactor for a backup heater (Not Directly connect a backup heater)

1. Control signals are provided only when CNP401 (Heater Thermostat) is connected.
2. Connect a "relay or a magnetic contactor" with "CNP003,CNP001,CNP002".

- ► When a backup heater mode is "ON" at 1st step, a control signal of AC 230V goes through CNP003 and CNP001.
- ► When a backup heater mode is "ON" at 2nd step, a control signal of AC 230V goes through CNP003 and CNP002.




NOTE

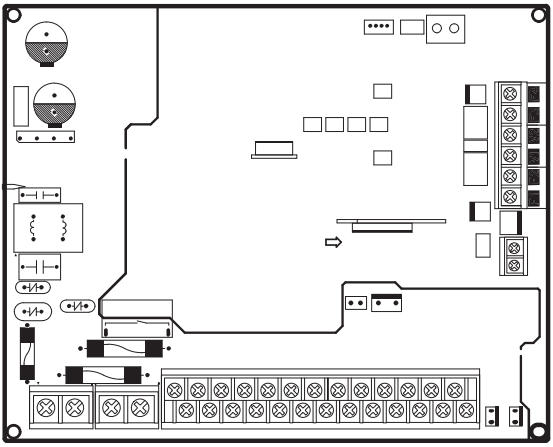
This port can NOT supply enough power for driving a backup heater.
It's just for providing a ON/OFF control signal.
Maximum current is 0.5A.

# Wiring works

## Specification table

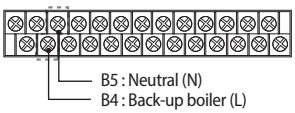
| Part | Specification |
|---|---|
| Tab-Terminal (output) | Step1 : CNP003, CNP001<br>Step2 : CNP003, CNP002 |
| Connection load | Relay or Magnetic contactor for a control signal |
| Output(CNP003,CNP001 or (CNP003,CNP001)+(CNP003,CNP002) | AC 230V (MAX 0.5A) |

## Backup boiler



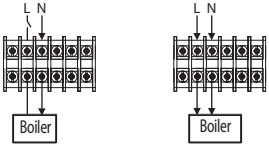
## Connection of the back-up boiler

| Description | No. of wires | Min. / Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Back-up Boiler | 2+ground | 10mA / 50mA | 0.75mm² H05RN-F or H07RN-F | Field supply (220-240V~, Input) |




When it set back up boiler on the control kit (relay off )

When it order to back up boiler operates (relay on)




1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.
3. Make sure EXT-CTRL signal of back up boiler must be 220-240V~.
   - Do not connect supply power of back up boiler directly.

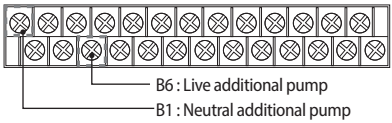
❋ Heat pump does not work when the Back-up boiler operates.

## Connection guide of additional pump

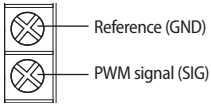
### Case 1) INV. pump

Connect the PWM control external type pump to PWM terminal block and power cable to the external contact terminal.
The maximum number of additional pump installation is one inverter pumps (Input power 100W).

1. Power supply (For additional INV. Pump)



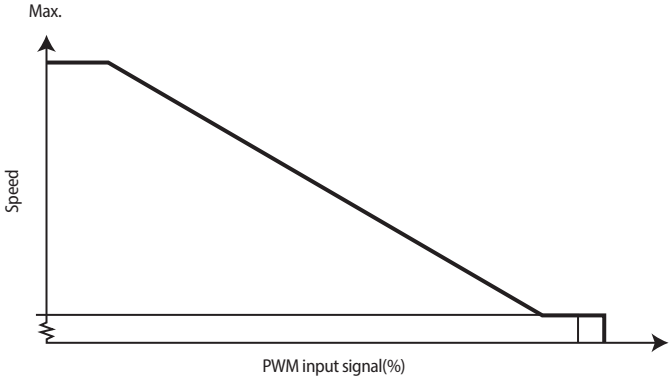

2. PWM control (For additional INV. Pump only), refer to page 32.




CAUTION

- If there is wrong wiring between PWM and reference, INV. Water Pump may not work or wrong operation.

### PWM characteristic curve



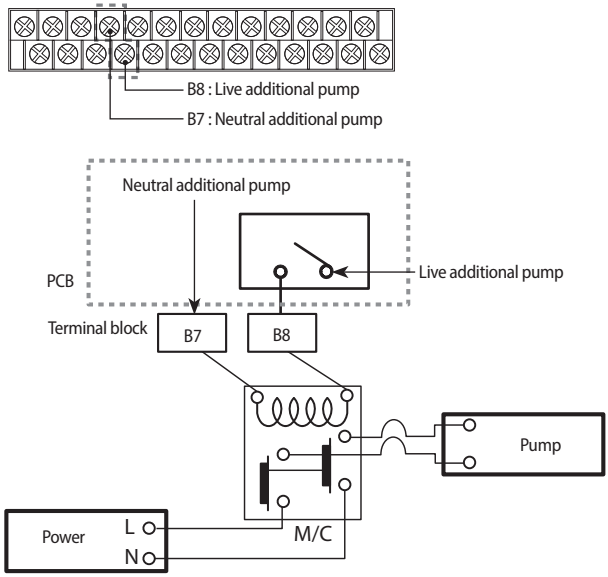

The additional pump should be the same type of product as the above graph.
5~16kW : GRUNDFOS UPMM 25-95 (Heating Type)

# Wiring works

## Case 2) AC pump

The maximum number of additional pump installation is one AC pumps (Input power 100W).

1. Power supply (AC Pump)



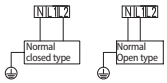

CAUTION

- Terminal of this product is for additional water pump and the maximum allowable current is 0.5 A.

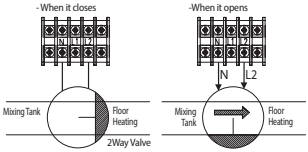
## Connection of the 2-way valve

| Description | No. of wires | Min. / Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Motorized 2-way valve to shut off UFH loops during cooling. | 2+ground | 10mA / 50mA | > 0.75 mm², H05RN-F or H07RH-F | Field supply (220-240V~, Output) |

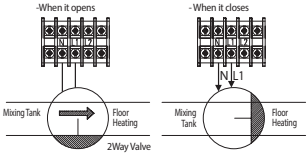
* Connection of 2 wires 2-way valve




In case of normal closed type




In case of normal open type




2-way motorized valve

- ▶ When outlet water temperature reach to lower than 16 °C in cooling mode, UFH loops will be closed.
- ▶ 220-240V~
- ▶ 2 wires(Normal Open or Normal Close)

1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.
3. Make sure what type is you use.
   - Normal OPEN or Normal CLOSED.

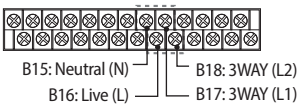
**CAUTION**

- There are 2 types of 2-way valve, normal open type and normal closed type. Make sure to connect terminals to right positions of terminal block. As detailed on the wiring diagram and illustrations above.

# Wiring works

## Connection of the 3-way valve

| Description | No. of wires | Min. / Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Diverting type 3way valve | 4 | 10mA / 50mA | > 0.75 mm², H05RN-F or H07RN-F | Field supply ( 220-240V~, Input) |

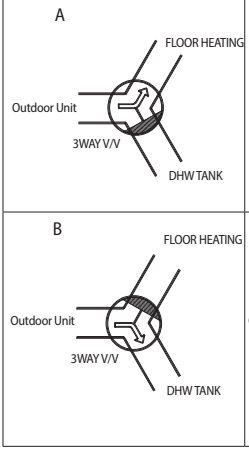
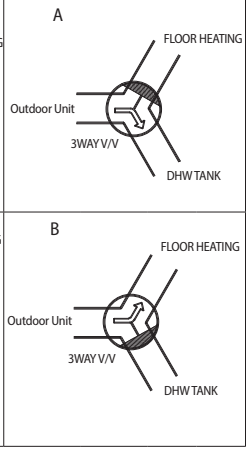



| Status | L1 | L2 |
|---|---|---|
| A (Initial) | OFF | ON |
| B | ON | OFF |

3-way diverting valve for water tank

- ▶ Diverting typecooling mode, UFH loops will be closed.
- ▶ 220-240V~

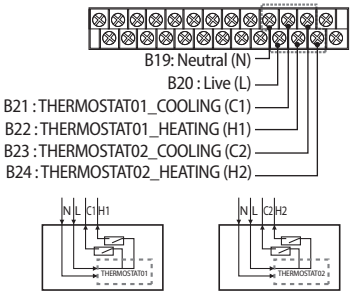
1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.
3. Make sure what type of 3 way V/V you use.

| Field Setting Valve (#3071) "0" Floor heating as default | Field Setting Valve (#3071) "1" DHW tank as default |
|---|---|
|  |  |



## Connection of the thermostat

| escription | No. of wires | Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Room Thermostat | 4 | 22mA | > 0.75 mm², H05RN-F or H07RH-F | Field supply (220-240V~, Input) |



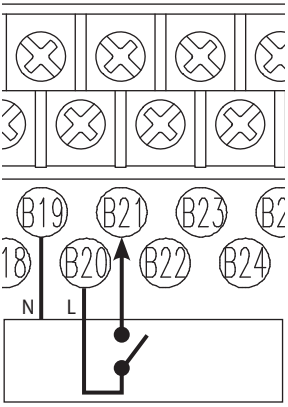

1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.
3. Make sure what type is you use.
   - Contact signal must be " L ". When you install two thermostats, thermostat2 is prior to thermostat1.

CAUTION

- Product will not operate when signal for cooling and heating mode is inputed at the same time.

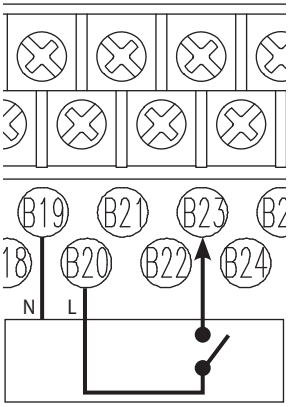
## Example

**zone#1 only : cooling mode**



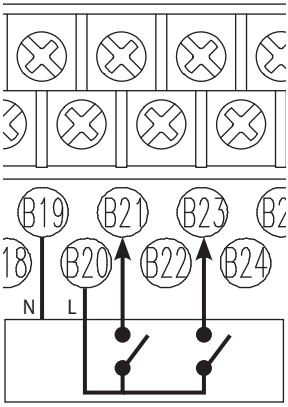

Room thermostat

**zone#2 only : cooling mode**



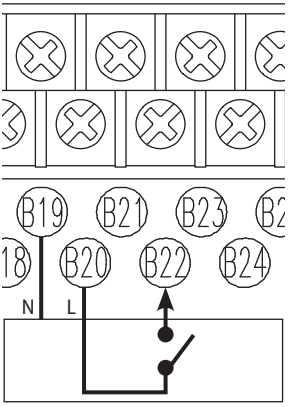

Room thermostat

**zone#1, zone#2 : cooling mode**



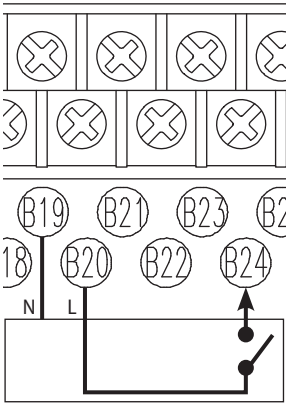

Room thermostat

**zone#1 only : heating mode**



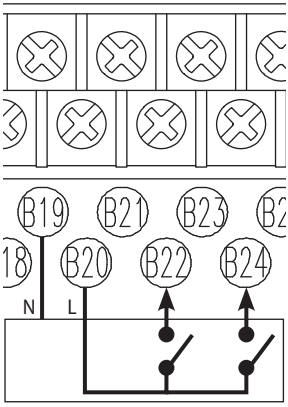

Room thermostat

**zone#2 only : heating mode**




Room thermostat

**zone#1, zone#2 : heating mode**




Room thermostat

**WARNING**

- Before completing installation of Room thermostat, check the wiring method in a manual of Room thermostat to output L line.

| Target zone | Zone 1 |
|---|---|
| **Thermostat on/off controller's output signal** | Only Heat |

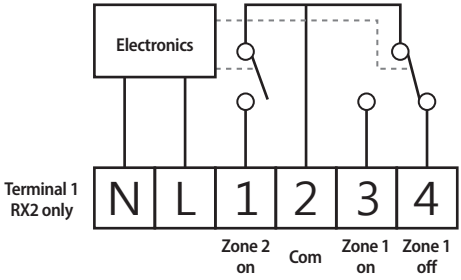
▶ Connect a thermostat on/off controller's power to B19, B20 and connect output of a thermostat on/off controller to B22.

# Wiring works

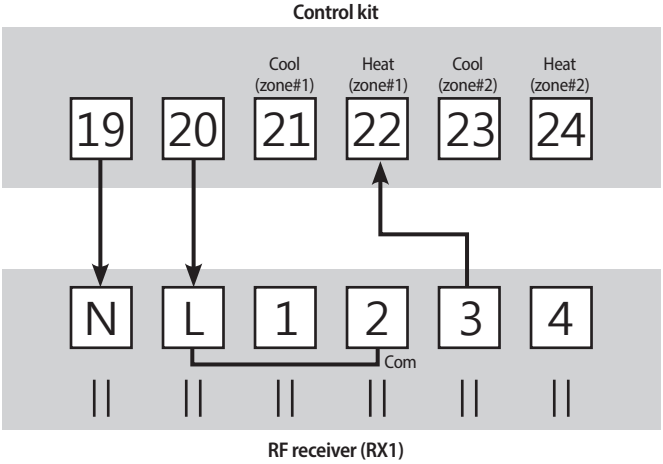
## Example of RX1 (Danfoss)

► In manual of a RF receiver

**RX1 and RX2**



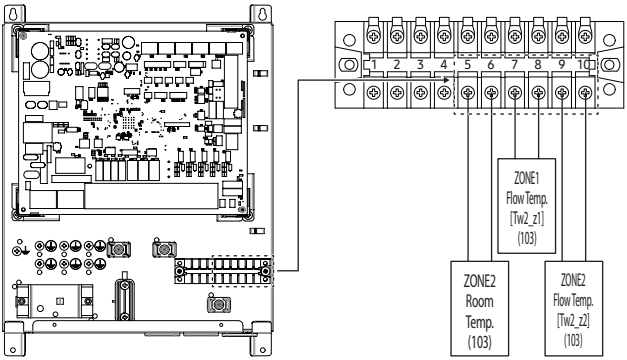

► Example of wiring works



## Connecting for external contact functions (Only MIM-E03EN model)

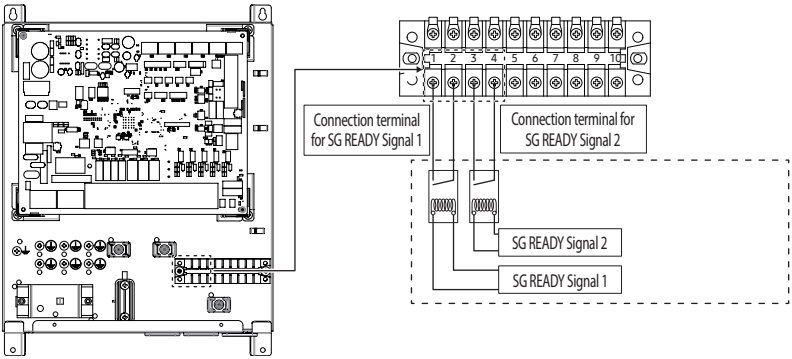
| Screw size | Tightening torque (N·m) | Part | Terminal code |
|---|---|---|---|
| M3 | 0.5~0.75 | 10P Terminal block | 1~10 |

### Connecting external sensors for zone control




CAUTION
- When connecting sensors, use a Thermistor with the specifications of 10 kΩ at 25 °C, B constant = 3435 k.

### Connecting for SG Ready(Smart Grid Ready) control

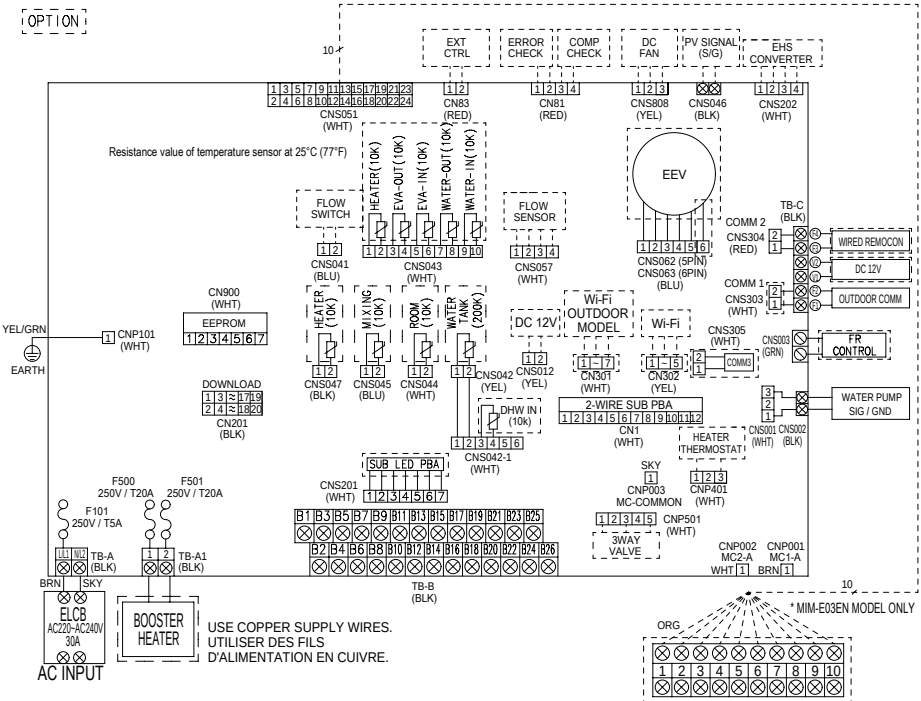



| SG READY Signal 1 | SG READY Signal 2 | Product operation |
|---|---|---|
| Short | Open | Forced thermo off operation |
| Open | Open | Normal operation |
| Open | Short | Heating / DHW setting temperature 1step-up operation |
| Short | Short | Heating / DHW setting temperature 2step-up operation |

CAUTION
- These parts are optional and not included with the product.
- Turn off the ELCB first before connecting the SG Ready.

# Wiring schematics

## Wiring diagram



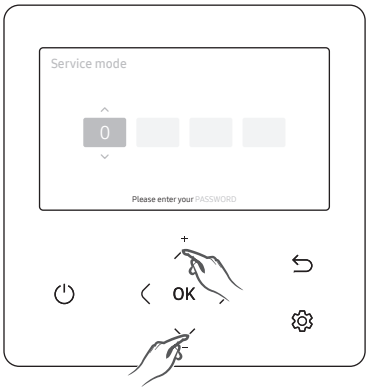

| CNS051(WHT) | TERMINAL BLOCK | DESCRIPTION |
|---|---|---|
| 1 | 1 | SG_READY 1 |
| 3 | 2 | GND |
| 5 | 3 | SG_READY 2 |
| 7 | 4 | GND |
| 6 | 5 | ZONE2_ROOM_TEMP |
| 8 | 6 | GND |
| 10 | 7 | ZONE1_FLOW_TEMP |
| 12 | 8 | GND |
| 14 | 9 | ZONE2_FLOW_TEMP |
| 16 | 10 | GND |

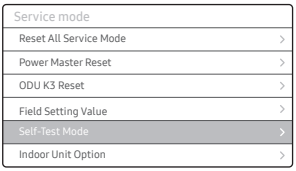
**NOTE**

- It does not support external input(CNS083)/output(CNS081) signal function.
- MIM-E03CN model does not support CNS051 function.

# Self-test mode of wired remote controller

## Use of self-test mode



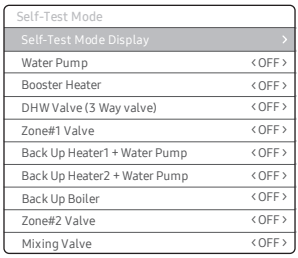

1. If you want to use the various additional functions for your Wired Remote Controller, press the ∧ and ∨ buttons at the same time for more than 3 seconds.

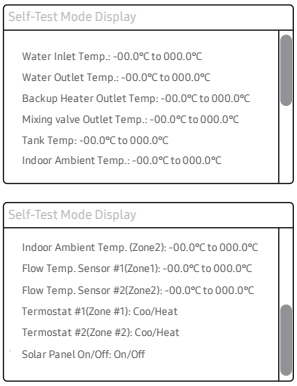
► The password entry screen appears.

2. Enter the password, "0202," and then press the OK button.

► The settings screen for installation/service mode appears.

3. Select Self-Test Mode in Service Mode.
4. Self-Test Mode consists of Self-Test Mode Display that shows operation value satus and menus that can turn each component on or off.



# DHW tank

## Electrical connections

### Procedure

WARNING
- Switch off the power supply before making any connections.
- Use a thermal grease in thermistor pocket after installing electric connections.

**Connections to be made in the electrical box of DHW tank**

1. Connect the booster heater power supply and thermal protection cable.
2. Make sure to ensure strain relief of the cable.

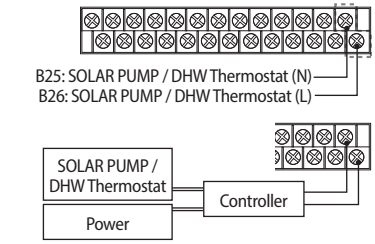
**Connections to be made in the electrical box of indoor units**

3. Plug the thermistor cable connector in the connector CNS042 on the pcb.
4. Connect the booster heater power supply and thermal protection cable(field supply) to terminal TB-A1 and earth on the terminal block.
5. Connector the loose ends of the TB-A1 on the terminal block and the connector CNS042 on the PCB.
6. Plug the thermistor cable connector in the socket X9A on the PCB.
7. Connect the booster heater power supply and thermal protection cable (field supply) to terminal 7, 8, 21, 22 and earth on the terminal block.
8. Connect the booster heater power supply cable to the circuit breaker and earthing screw.
9. Fix the cables to the cable tie mountings with cable ties to ensure strain relief.

CAUTION
- It is of great importance that the heater is filled with water before the electricity is hooked up, or else- the warranty is not valid. If the heater is installed and not used, it must be flushed with water once a week.

## Connection of the solar circulation pump / DHW Thermostat for DHW tank

| Description | No. of wires | Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Solar pump / DHW Thermostat | 2+ground | 10 mA | 0.75mm² H05RN-F or H07RN-F | Field supply (230 V~, Input) |

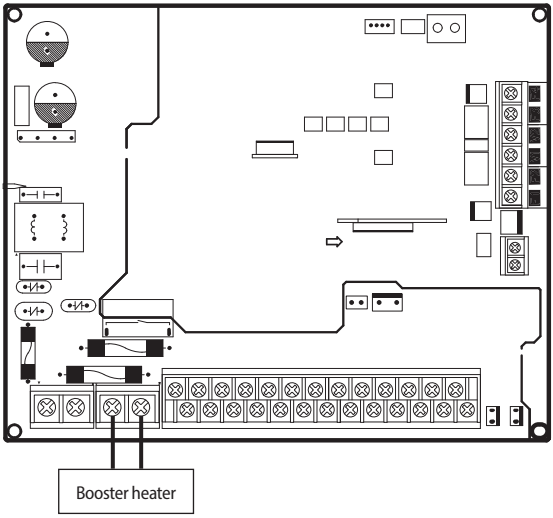



Solar pump operates when FSV 3061=1 is set, and DHW Thermostat operates when FSV 3061=2 is set.

1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.
3. It is for control kit to inform that the Solar pump / DHW Thermostat is operating.
4. Solar pump / DHW Thermostat is controlled by installer's handling. And it send the signal to control kit depending on Solar pump / DHW Thermostat conditions. In operating mode, signal shall be around 230Vac B/W N&L. In non-operating mode, signal shall be around 230Vac B/W N&L. When solar pump signal is On, Control kit DHW mode will be turned off.

CAUTION
- Maximun allwable current of each terminal is below 10 mA.
- Ports number B25, B26 are for input port for detection and they do not supply power to a Solar pump / DHW Thermostat.

## Booster heater






### Recommended wire specification

| Load | Power Supply | Power Cable | Max. Length |
|---|---|---|---|
| | | mm², wires | m |
| Use Booster Heater (Max. 3kW) | 1Ø, 220-240V, 50Hz | 4.0 / 3 | L < 10m |
| | | 6.0 / 3 | 10m < L |

✻ Code designation IEC: 60245 IEC 57/ CENELEC: H05RN-F

### Connecting a booster heater (PTC heater – allowed limit : Max. 3kW)

1. Directly connect a 'Booster heater' with 'A3 and A4 ' in TB-A.

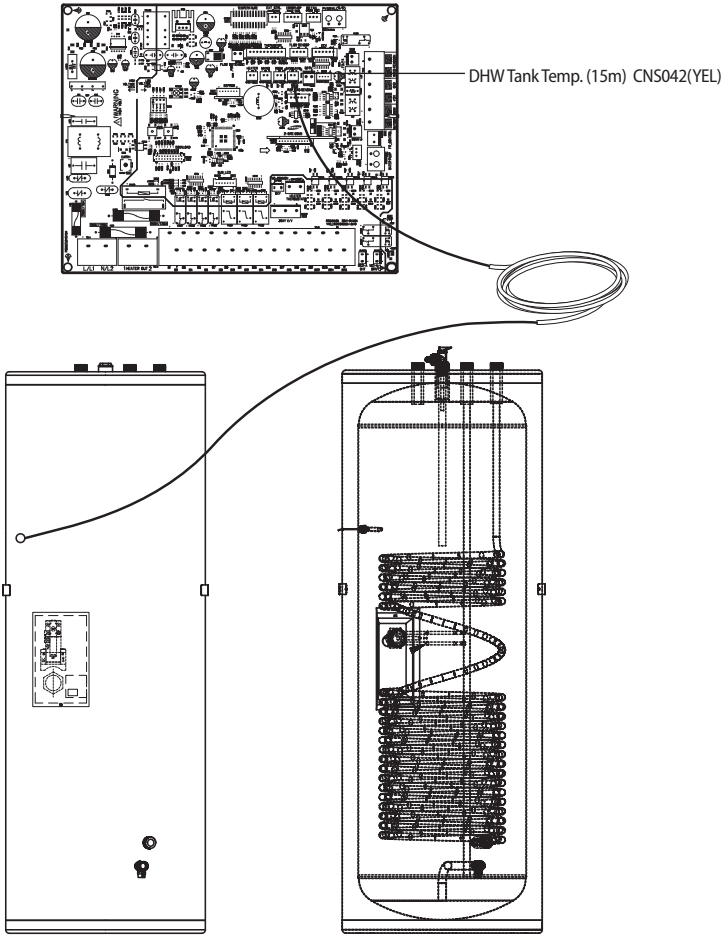
NOTE
- Wire spec : 6.0 mm² (regardless of distance)
- Code designation IEC : 60245 IEC 57 / CENELEC : H05RN-F

### Specification table

| Part | Specification |
|---|---|
| Terminal Block (output) | N, L of TB-A1 |
| Connection load | Direct connection a booster heater |
| Output (N, L) | AC 230V (MAX 20A) |

# DHW tank

## DHW tank Switch box layout




✻ Use a correct sensor pocket which is fit for the DHW tank sensor(OD Ø6).
If the gap between the supplied sensor and DHW tank sensor pocket is big, use thermal grease.

NOTE

- When you set the hot water supply temperature to 55/63°C or less, do not use the booster heater.
  - The heatpump and the booster heater operate until the initial set temperature is reached. After that, only the booster heater may operate depending on the settings.

## Troubleshooting

**IMPORTANT:** All maintenance or repair work must be executed by an approved installer.

| Problem | Possible cause | Solution |
|---|---|---|
| Hot water is not coming out. | No power supply to the water heater | Check if there is any power on the power supply terminal on the thermostat. |
| | The thermostat may be set too high and cause the fuse or safety cut-off to operate. | Reduce thermostat setting by 5 °C and press the reset button. |
| Heating is not working | Heating element or internal electrical wiring is out of order. | Check if there is any power on the power supply on the connector of the heating element between black and yellow/green wires. If this is OK, press the reset button on the fuse/safety cut-off. |
| Water is not warm enough | Thermostat is set too low. | Adjust the thermostat up using a standard screwdriver. |
| | Heating element or the internal electrical wiring is partially out of order. | Check the resistance of the heating element on the connector of the heater bundle, and the condition of the internal wiring. |
| | UX mixing valve(fitted on top) is incorrectly adjusted. | Adjust the UX mixing valve correctly to the preferred temperature. |
| Safety valve(SV) is dripping. | Water expands when heated. If there is no consumption of hot water over a period of time pressure builds up, causing the safety valve to open. | If drip from the SV is severe, it might need to be replaced. Some dripping is normal. Alternatively an expansion vessel can be fitted. |
| Leak warning outlet is dripping. | The heating element may not be properly tightened. | Check the heating element o-ring seal and all connections. |
| | There may be a leak. | |
| Other problems, or if none of the above solves the problem. | - | Contact the installer/supplier regarding any other failure. |

**WARNING** Incorrect handling of thermostat, safety valve or other valves may lead to tank rupture. When servicing the unit follow instructions carefully:

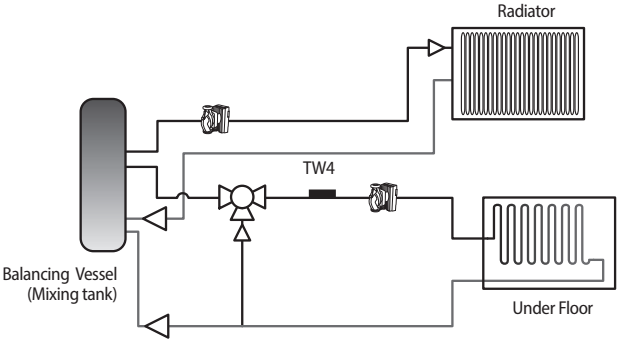
- Always turn off main power supply when water supply is being shut off.
- Test the free operation of the safety valve regularly by opening the valve ensuring the water flows freely.
- Electrical connection and all servicing of the electrical components should only be carried out by an authorized electrician.
- Fitting and all servicing of plumbing fixtures should only be carried out by an authorized installer.
- When replacing the thermostat, safety valve or any other valve or part supplied with this unit, use only approved parts of the same specification.

**CAUTION**

- Before resetting the safety cut-off or altering the thermostat setting, always remember to isolate the electrical supply to the unit. This must be done prior to removing the electrical box lid.
- If the electric element or thermostat is defective, contact authorized electrician.
- After adjustments are completed, ensure the lid to the electrical box is refitted correctly and that the retaining screw is properly fitted.

# Mixing Valve

## Installation of mixing valve




When two different zones are used with different temperature, adjust the temperature of discharge water to high temperature water and control the amount of bypass to provide low temperature water by applying the mixing valve and temperature sensor of the mixing valve (TW4).

1. Select a mixing valve from the manufacturers as below (recommended) and install it at the enterance of the zone.
2. Install the supplied temperature sensor (TW4) on the rear part of the mixing valve. Install TW4 Sensor within 1m of Mixing Valve.
3. Since running time varies depending on the manufacturer, set the FSV (default 90 sec.) by referring to the FSV value below.

| Maker | | BELIMO | SIEMENS | HONEYWELL |
|---|---|---|---|---|
| Model code | 3 Way Valve | R3020-6P3-S2 | VXP45.20-4 (kvs 4) | V5011E1213 |
| | Actuator | LR230A(-S) | SSB31 | ML6420A3015 |
| Running time | | 90 sec. | 150 sec. | 60 sec. |
| FSV(#4046) setting | | 9 | 15 | 6 |

✻ The table above is for your reference. It can be changed without advanced notice.

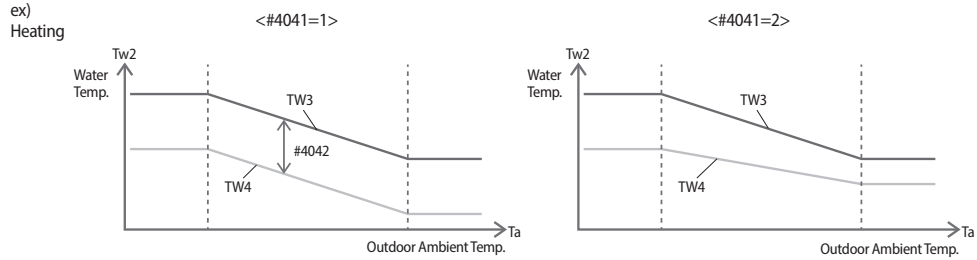
4. Set the FSV value by referring to the table below depending on installation environment.

| Function | Details | Code | Unit | Default | Min. | Max. |
|---|---|---|---|---|---|---|
| Mixing valve | Use or not | 4041 | - | 0(No) | 0 | 2 |
| | Target temperature difference (Heating) (TW2-TW4) | 4042 | ℃ | 10 | 5 | 15 |
| | Target temperature difference (Cooling) (TW4-TW2) | 4043 | ℃ | 10 | 5 | 15 |
| | Control factor | 4044 | - | 2 | 1 | 5 |
| | Interval of valve control | 4045 | Min. | 2 | 1 | 30 |
| | Running time (10 second unit) | 4046 | (x10) sec | 9 | 6 | 24 |

✻ 4041 =1 : Controlled based on the temperature difference (4042, 4043)

✻ 4041 =2 : Controlled based on the temperature difference of the WL value

ex)
Heating

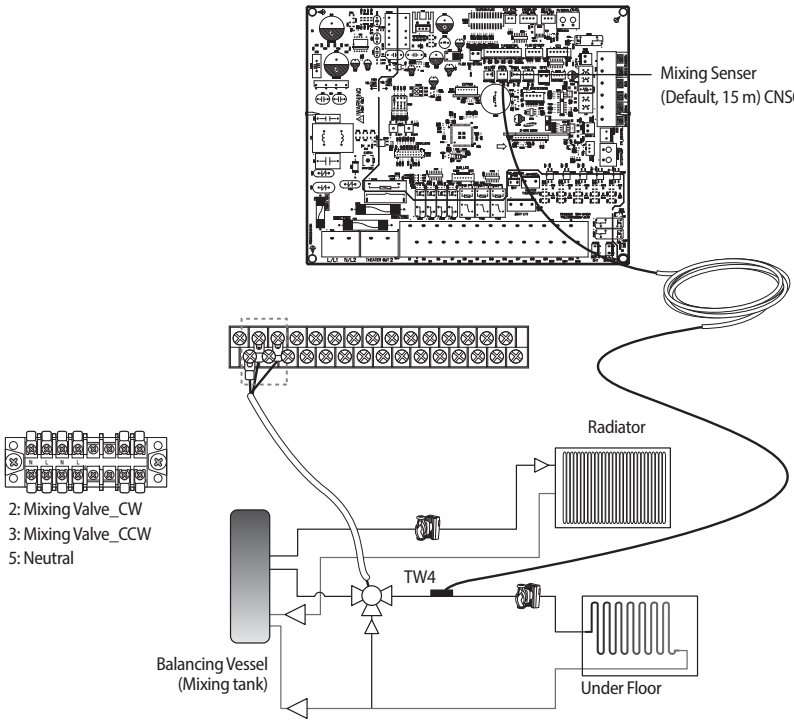



- ✻ The mixing valve is controlled based on the FCU WL value.
- ✻ As the #4044 value increases and the #4045 value decreases, the control speed increases. (Temperature hunting may occur if the control speed increases depending on the load.)
- ✻ The additional pump and mixing valve should be purchased separately. TW4 sensor is included in the product accessories.
- ✻ TW2 : Water temp. sensor 2

CAUTION

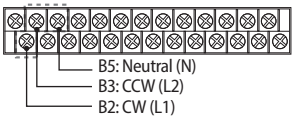
- When the thermostat control is set as 'Use', the mixing valve can be used for Zone 1 and Zone 2. (When both FSV #2091 and #2092 are set as 1)

## Connection of the mixing valve



# Mixing Valve

| Description | No. of wires | Max. current | Thickness | Supply Scope |
|---|---|---|---|---|
| Mixing valve | 4 | 22 mA | > 0.75 mm², H05RN-F or H07RH-F | Field supply (230 V~, Input) |

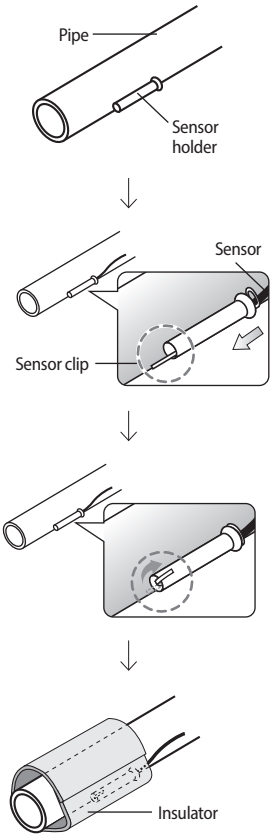



1. Before the installation, control kit should be turned off.
2. Using the appropriate equipment to correct position of terminal block as shown on the diagram.

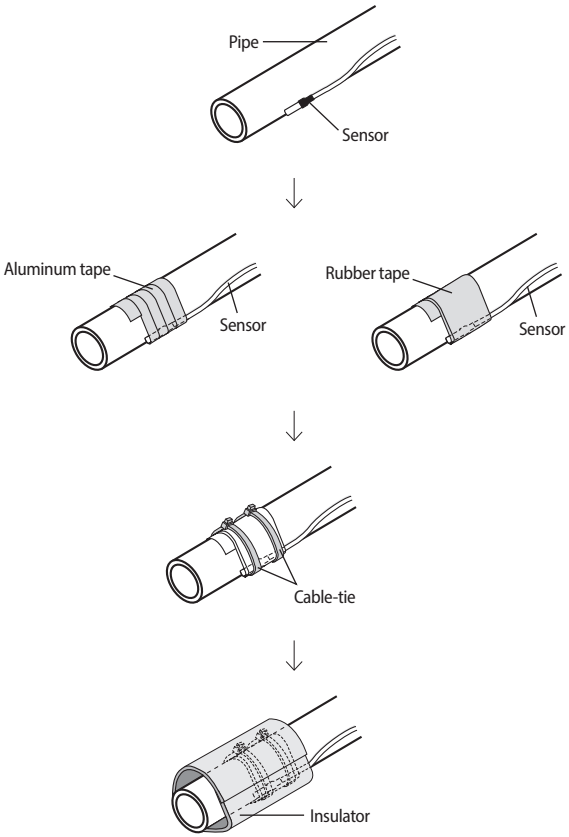
## Example of sensor installation (TW3 / TW4)

Weld the sensor holder on the selected location of the pipe and then insulate it.

**When the pipe is a copper pipe**




**When the pipe is not a copper pipe**




NOTE

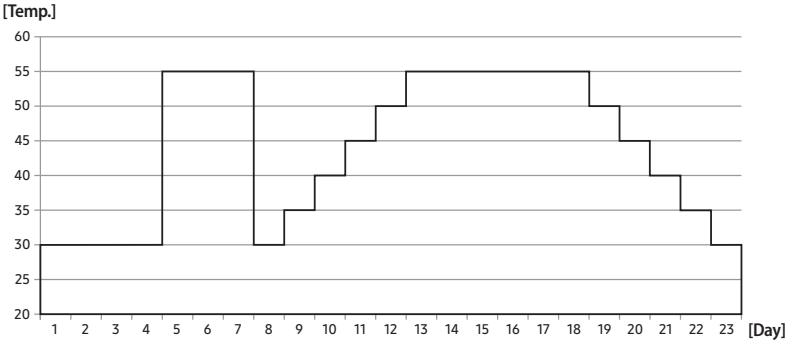
- When the holder sensor cannot be welded on the pipe, fix the senor with aluminum tape and insulate it.

# Concrete curing function

When pipes of floor heating are installed, operation for reinforcing concrete curing is applied. (Period of operation: 23 days)

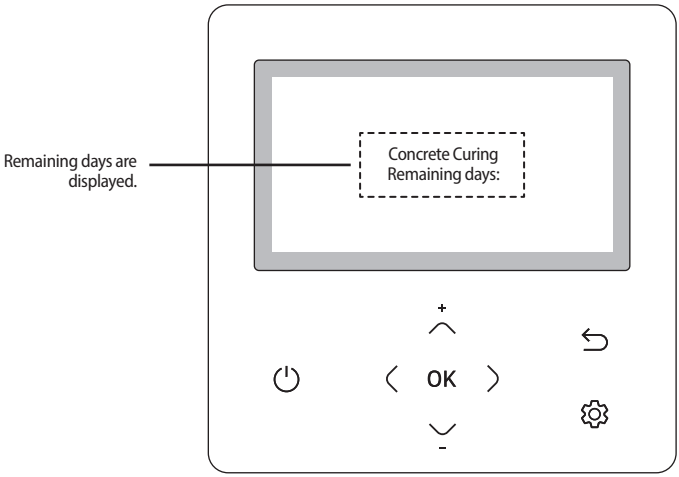
**Entering procedure**

1. After turning off the DIP switch K3 (3rd switch of SW03) of control kit (Default ON), turn off and turn on the control kit. The operation for concrete curing starts automatically. (If blackout occurs and communictation restarts later, operation will continue.)
2. Temperature of discharge water is controlled as time goes on like below.




| Classification | Initial Heating | | Step raise | | | | | Heating | Step down | | | | | Total (Hour) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | 96 | 72 | 24 | 24 | 24 | 24 | 24 | 144 | 24 | 24 | 24 | 24 | 24 | 552 |
| Temperature | 30 | 55 | 30 | 35 | 40 | 45 | 50 | 55 | 50 | 45 | 40 | 35 | 30 | - |

3. Remaining days are displayed on the wired remote controller during operation but key operation is unavailable.



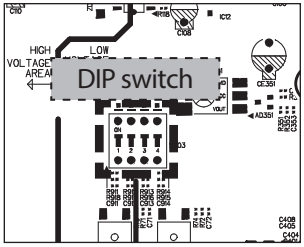

✻ If an error is displayed, concrete curing function does not work.

# Concrete curing function

NOTE

- Definition of Dip switch function

| Dip S/W | S/W #1 | S/W #2 | S/W #3 | S/W #4 |
|---|---|---|---|---|
| **ON (default)** | • None | • None | • None | • Turn off when an E101 error occurs |
| **OFF** | • Emergency heating | • Emergency hot water supply | • Concrete curing | • E101 error does not turn off |
| **reference item** | • Please refer to the user manual | | • Please refer to the previous page | • Please refer to below |




- When outdoor unit only power supply change by local condition, it is an option to auto restart system.

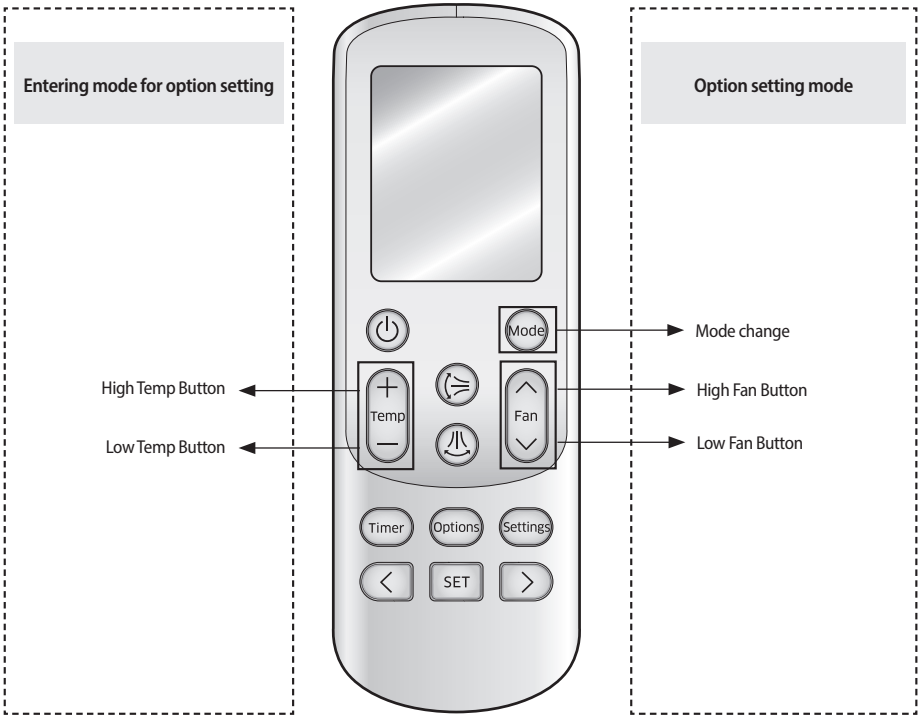
| Classification | | When the outdoor unit is power off | When the outdoor unit is power on |
|---|---|---|---|
| **Hydro Unit operation according to the DIP S/W #4 setting** | **ON (default)** | • Hydro Unit E101 error occurs. | • Hydro Unit E101 error disappears.<br>• Hydro Unit operation turns off. |
| | **OFF** | • Hydro Unit E101 error occurs. | • Hydro Unit E101 error disappears.<br>• Hydro Unit keeps its previous operation. |

- The outdoor unit on/off control is not available with the A2A indoor unit.
- Although the outdoor unit is turned on after the E101 error occurred, the A2A indoor unit operation keeps turned off.

# Installation option setting

► Set the control kit installation option with remote controller option.

## The procedure of option setting




**Entering mode to set option**

1. Remove batteries from the remote controller.
2. Insert batteries and enter the option setting mode while pressing High Temp button and Low Temp button.

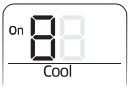
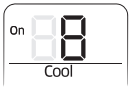
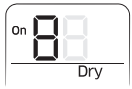
3.

Check if you have entered the option setting status.

# Installation option setting

## Changing a particular option

You can change each digit of set option.

| Option | SEG1 | | SEG2 | | SEG3 | | SEG4 | | SEG5 | | SEG6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Explanation | PAGE | | MODE | | The option mode you want to change | | The tens' digit of an option SEG you will change | | The unit digit of an option SEG you will change | | The changed value | |
| Remote Controller Display | | | | | | |  | |  | |  | |
| Indication and Details | Indication | Details | Indication | Details | Indication | Details | Indication | Details | Indication | Details | Indication | Details |
| | 0 | | D | | Option mode | 1~6 | Tens' digit of SEG | 0~9 | Unit digit of SEG | 0~9 | The changed value | 0~F |

NOTE

- When changing a digit of an control kit address setting option, set the SEG3 as 'A'.
- When changing a digit of control kit installation option, set the SEG3 as '2'.

Ex) When setting the 'central controller' into disuse status.

| Option | SEG1 | SEG2 | SEG3 | SEG4 | SEG5 | SEG6 |
|---|---|---|---|---|---|---|
| Explanation | PAGE | MODE | The option mode you want to change | The tens' digit of an option SEG you will change | The unit digit of an option SEG you will change | The changed value |
| Indication | 0 | D | 2 | 0 | 5 | 0 |

✻ 02 Series installation option

| Classification | SEG1~24 |
|---|---|
| Use central controller (Default) | 020010 100000 200000 300000 |
| Disuse central controller | 020000 100000 200000 300000 |

✻ 01 Series Production Option (Factory default)

| Mode 1 | SEG1~24 |
|---|---|
| MIM-E03CN | 012300 100000 200000 300000 |

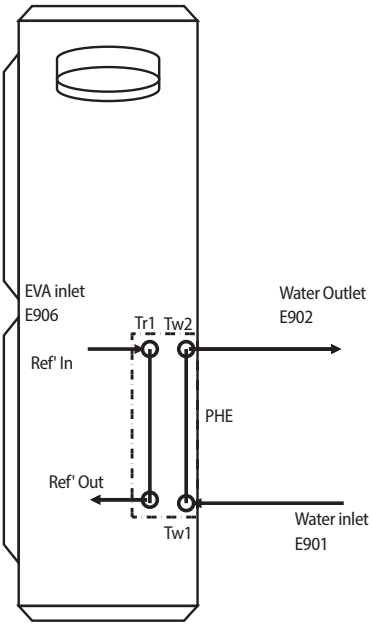
# Troubleshooting

If the unit has some problem to work properly, some error codes will be displayed on the controller.
The following table described the explanation of error codes on the LCD display.

## Thermistor

- Check its resistance. 10kohm@25 ℃ (Control kit), 200kohm@25 ℃ (DHW Tank, Solar)
- Check its location as shown at the diagram.
- Check its contact status with pipe.
- Final solution is to change parts

| Display | Explanation |
|---|---|
| 120 | Short- or open-circuit error of the room temperature sensor of the Zone 2 indoor unit (detected only when the room thermostat is used) |
| 121 | Short- or open-circuit error of the room temperature sensor of the Zone 1 indoor unit (detected only when the room thermostat is used) |
| 653 | Wired remote controller thermistor SHORT or OPEN |
| 901 | Water Inlet thermistor SHORT or OPEN |
| 902 | PHE Outlet thermistor SHORT or OPEN |
| 903 | Water outlet (Back up Heater) temp sensor SHORT or OPEN (The Backup heater for using) |
| 904 | Water TANK thermistor SHORT or OPEN |
| 906 | Outdoor Eva Inlet Temp Sensor SHORT or OPEN |
| 916 | Mixing Valve thermistor SHORT or OPEN |



Wired remote controller temp sensor
E653

Water tank temp sensor
E904

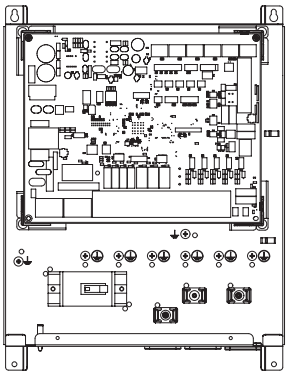
# Troubleshooting

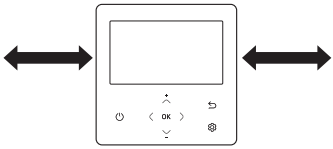
## Communication

| Display | Explanation |
|---|---|
| 601 | Communication error between remote controller and the Control kit |
| 604 | Tracking error between remote controller and the Control kit |
| 654 | Memory(EEPROM) Read/Write Error(Wired remote Controller data error) |

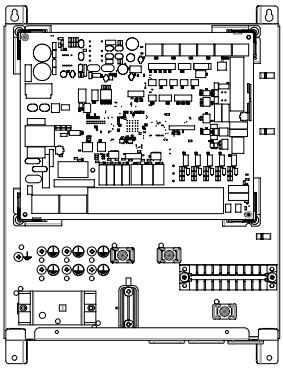
### E601, E604

■ MIM-E03CN



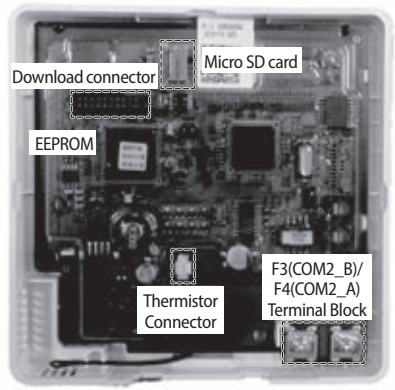



■ MIM-E03EN



### E654

MEMORY(EEPROM) Read/Write Error (Wired controller data error)



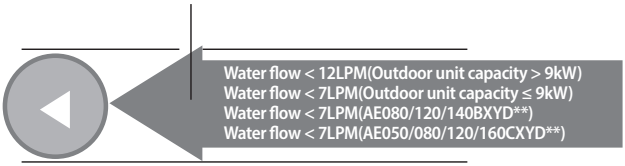
## Water pump & Flow Sensor

| Display | Explanation |
|---|---|
| 911 | Low flow rate error<br>• in case of low flow rate in 30 sec during water pump signals is ON(Starting)<br>• in case of low flow rate in 15 sec during water pump signals is ON(After starting) |
| 912 | Normal flow rate error<br>• in case of normal flow rate in 10min during water pump signal is OFF |



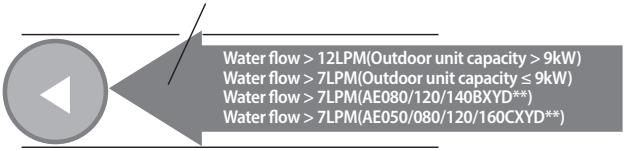
### E911

► Water pump ON ( Low flow rate ) : NOT enough water flow




### E912

► Water pump OFF ( Normal flow rate )



# Error codes

If the unit has some problems and does not work normally, error code is shown on the OUTDOOR UNIT main PBA or LCD of the wired remote controller.

| Display | Explanation | Error Source |
|---|---|---|
| 101 | CONTROL KIT / OUTDOOR UNIT wire connection error | CONTROL KIT, OUTDOOR UNIT |
| 120 | Short- or open-circuit error of the room temperature sensor of the Zone 2 indoor unit (detected only when the room thermostat is used) | CONTROL KIT |
| 121 | Short- or open-circuit error of the room temperature sensor of the Zone 1 indoor unit (detected only when the room thermostat is used) | CONTROL KIT |
| 162 | EEPROM Error | CONTROL KIT |
| 198 | Error of Terminal Block's Thermal Fuse(Open) | CONTROL KIT |
| 201 | CONTROL KIT/OUTDOOR UNIT communication error (Matching error) | CONTROL KIT, OUTDOOR UNIT |
| 202 | CONTROL KIT/OUTDOOR UNIT communication error (3 min) | CONTROL KIT, OUTDOOR UNIT |
| 203 | Communication error between INVERTER and MAIN MICOM (6 min) | OUTDOOR UNIT |
| 221 | OUTDOOR UNIT temperature sensor error | OUTDOOR UNIT |
| 231 | Condenser temperature sensor error | OUTDOOR UNIT |
| 251 | Discharge temperature sensor error | OUTDOOR UNIT |
| 320 | OLP sensor error | OUTDOOR UNIT |
| 403 | Plate heat exchanger freeze detection (During cooling operation) | OUTDOOR UNIT |
| 404 | Protection of OUTDOOR UNIT when it is overload (during Safety Start, Normal operation state) | OUTDOOR UNIT |
| 407 | Comp down due to high pressure sensor | OUTDOOR UNIT |
| 416 | Discharge of a compressor is overheated | OUTDOOR UNIT |
| 425 | Power source line missing error (only for 3-phase model) | OUTDOOR UNIT |
| 436 | Plate heat exchanger freeze detection (During heating operation) | OUTDOOR UNIT |
| 440 | Heating operation blocked (outdoor temperature over 35°C) | OUTDOOR UNIT |
| 441 | Cooling operation blocked (outdoor temperature under 9°C) | OUTDOOR UNIT |
| 458 | OUTDOOR UNIT fan1 error | OUTDOOR UNIT |
| 461 | [Inverter] Compressor startup error | OUTDOOR UNIT |
| 462 | [Inverter] Total current error/PFC over current error | OUTDOOR UNIT |
| 463 | OLP is overheated | OUTDOOR UNIT |
| 464 | [Inverter] IPM over current error | OUTDOOR UNIT |
| 465 | Compressor V limit error | OUTDOOR UNIT |
| 466 | DC LINK over/low voltage error | OUTDOOR UNIT |
| 467 | [Inverter] Compressor rotation error | OUTDOOR UNIT |
| 468 | [Inverter] Current sensor error | OUTDOOR UNIT |

| Display | Explanation | Error Source |
|---|---|---|
| 469 | [Inverter] DC LINK voltage sensor error | OUTDOOR UNIT |
| 470 | Outdoor unit EEPROM Read/Write Error | OUTDOOR UNIT |
| 471 | Outdoor unit EEPROM Read/Write Error(OTP error) | OUTDOOR UNIT |
| 474 | IPM(IGBT Module) or PFCM temperature sensor Error | OUTDOOR UNIT |
| 475 | OUTDOOR UNIT fan2 error | OUTDOOR UNIT |
| 484 | PFC Overload Error | OUTDOOR UNIT |
| 485 | Input current sensor error | OUTDOOR UNIT |
| 500 | IPM is overheated | OUTDOOR UNIT |
| 507 | Comp down due to high pressure switch | OUTDOOR UNIT |
| 536 | PHE refrigerant leak error | OUTDOOR UNIT |
| 554 | Gas leak error | OUTDOOR UNIT |
| 601 | Communication error between the CONTROL KIT and wired remote controller | Wired Remote Controller |
| 602 | Wired remote controller Main/Sub setting error | Wired Remote Controller |
| 604 | Communication tracking error between the CONTROL KIT and wired remote controller | CONTROL KIT, Wired Remote Controller |
| 607 | Communication error between the Main and Sub wired remote controllers | Wired Remote Controller |
| 899 | Short- or open-circuit error of the Zone 1 water-out temperature sensor | CONTROL KIT |
| 900 | Short- or open-circuit error of the Zone 2 water-out temperature sensor | CONTROL KIT |
| 901 | Water inlet (PHE) temperature sensor error(open/short) | OUTDOOR UNIT |
| 902 | Water outlet (PHE) temperature sensor error(open/short) | OUTDOOR UNIT |
| 903 | Water outlet (backup heater) temperature sensor error. | CONTROL KIT |
| 904 | DHW tank temperature sensor error | CONTROL KIT |
| 906 | Outdoor evaporator inlet temperature sensor (open/short) | OUTDOOR UNIT |
| 911 | Low flow rate error<br>• in case of low flow rate in 30 sec during water pump signals is ON(Starting)<br>• in case of low flow rate in 15 sec during water pump signals is ON(After starting) | CONTROL KIT |
| 912 | Normal flow rate error<br>• in case of normal flow rate in 10min during water pump signal is OFF | CONTROL KIT |
| 916 | Mixing valve temperature sensor (open/short) | CONTROL KIT |
| 919 | Error that the set temperature for disinfection operation is not reached, or, after reaching, the temperature fails to continue for the requested time | CONTROL KIT |
| 973 | Water pressure error (Short/Open) | OUTDOOR UNIT |

# Reference (KEYMARK Certification)

| Model code Outdoor | Model code Indoor | Registration number | Accessory*<br>Mono Control Kit |
|---|---|---|---|
| AE050RXYDEG/EU | AE200RNWMEG/EU | 011-1W0448 | |
| AE050RXYDEG/EU | (space heating only) | | MIM-E03CN |
| AE080RXYDEG/EU | AE200RNWMEG/EU | 011-1W0449 | |
| AE080RXYDEG/EU | (space heating only) | | MIM-E03CN |
| AE080RXYDEG/EU | AE260RNWMEG/EU | 011-1W0450 | |
| AE080RXYDGG/EU | AE260RNWMGG/EU | | |
| AE080RXYDGG/EU | (space heating only) | | MIM-E03CN |
| AE120RXYDEG/EU | AE200RNWMEG/EU | 011-1W0446 | |
| AE120RXYDEG/EU | (space heating only) | | MIM-E03CN |
| AE160RXYDEG/EU | AE200RNWMEG/EU | | |
| AE160RXYDEG/EU | (space heating only) | | MIM-E03CN |
| AE120RXYDEG/EU | AE260RNWMEG/EU | 011-1W0447 | |
| AE120RXYDGG/EU | AE260RNWMGG/EU | | |
| AE120RXYDGG/EU | (space heating only) | | MIM-E03CN |
| AE160RXYDEG/EU | AE260RNWMEG/EU | | |
| AE160RXYDGG/EU | AE260RNWMGG/EU | | |
| AE160RXYDGG/EU | (space heating only) | | MIM-E03CN |

# Memo

SAMSUNG

Samsung, PO Box 12987, Blackrock, Co. Dublin. IE
or Euro QA Lab. Saxony Way, Yateley, Hampshire GU46 6GG, UK

This appliance is filled with R-32.