

## MULTISplit

### HYDRO-M 80M



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# Table of Contents

Page

<b>1. General Information .....</b>	<b>4</b>
1. System Schematic	
2. Unit Parts	
3. Model Reference	
4. External Appearance	
5. Indoor unit combination	
6. Nomenclature	
<b>2. Engineering Data .....</b>	<b>22</b>
1. General Specifications	
2. Dimensional Drawings	
3. Part Names	
4. Schematic Diagram	
5. Electrical Wiring Diagrams	
6. Indoor Printed Circuit Board Diagram	
7. Electrical Characteristics	
<b>3. Product Features .....</b>	<b>24</b>
1. Operation Modes and Functions	
2. Wired Controller Functions	
3. SMART KIT Configuration Guidelines	
<b>4. Installation .....</b>	<b>59</b>
1. Installation Overview	
2. Location Selection	
3. Indoor Unit Installation	
4. Outdoor Unit Installation	

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## Table of Contents

Page

---

5. Refrigerant Pipe Installation
6. Vacuum Drying and Leakage Checking
7. Water Pipework
8. Additional Refrigerant Charge
9. Engineering of Insulation
10. Engineering of Electrical Wiring
11. Selection of Water Tank
12. Test Operation
13. Error Code

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# General Information

## Contents

1.	System Schematic .....	5
2.	Unit Parts.....	16
3.	Model Reference.....	18
4.	External Appearance .....	18
5.	Indoor unit combination .....	19
6.	Nomenclature.....	20

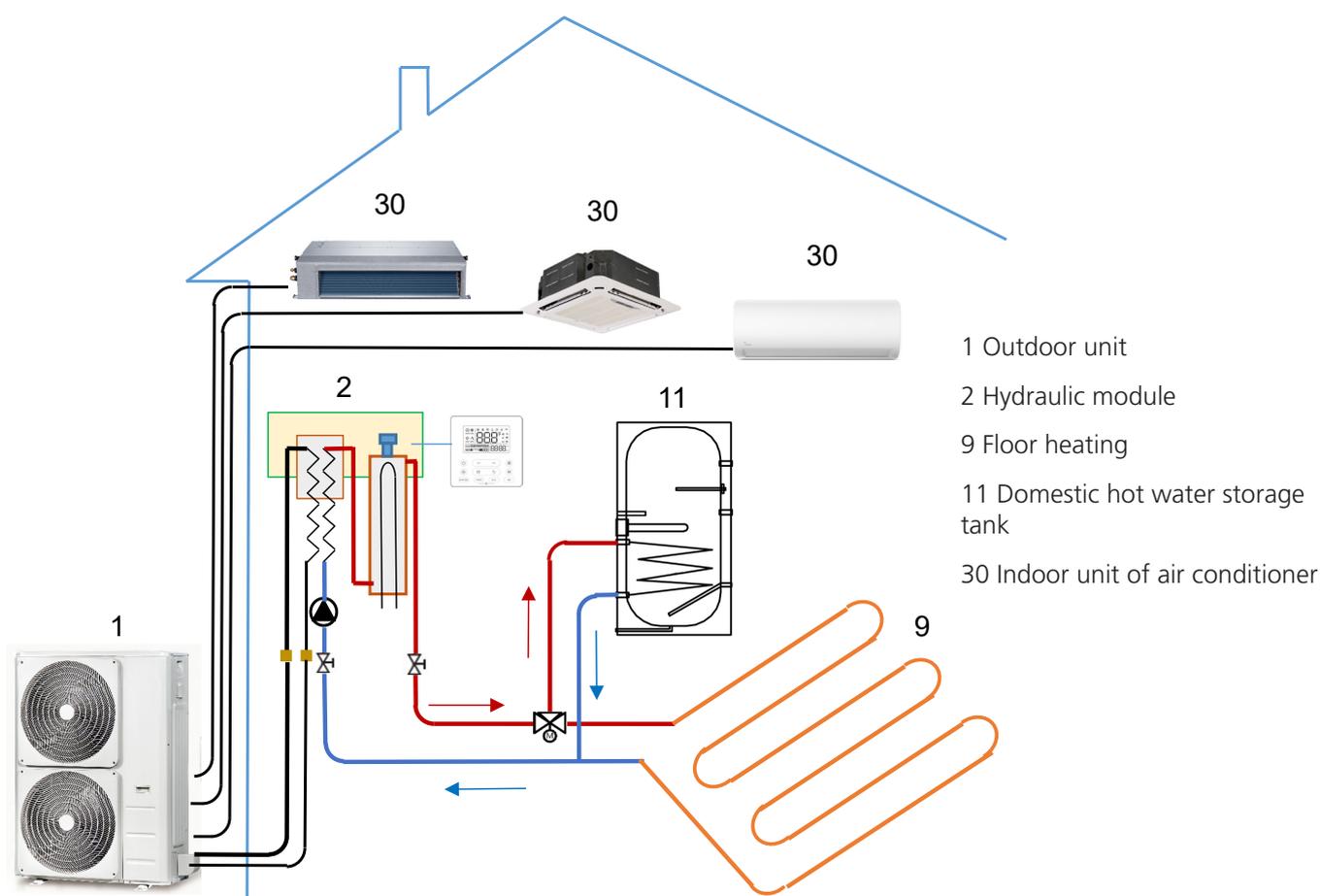
## 1. System Schematic

With innovation technology, Midea combine Air to Air and Air to Water in the same multi system, providing an all-in-one solution for demands of space cooling, space heating and domestic hot water.

### 1.1 Scenario 1: Use of multi-split air conditioners

Indoor unit: cooling (dehumidifying), heating, fresh air, hydraulic module: domestic hot water, space heating

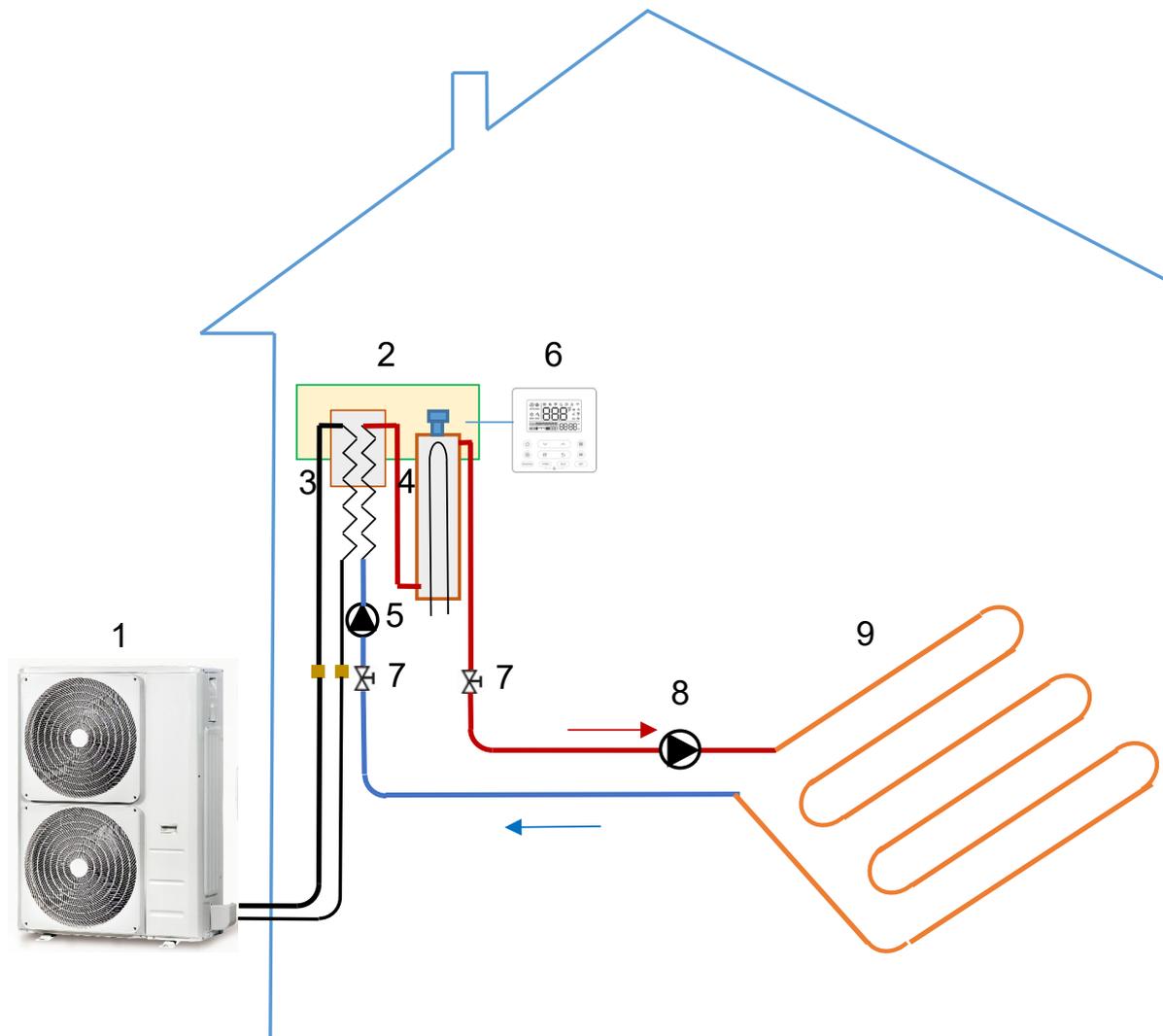
There is a mode conflict among cooling (dehumidifying), heating and the space heating. The domestic hot water mode doesn't have conflicts with other modes, they can be switched on simultaneously but cannot be operated simultaneously. Domestic hot water mode is preferred by default (and can be canceled by operating the wired controller). After the hot water reaches the set temperature, other modes can be operated, and it can also be avoided by hot water timing. If the hot water mode is not preferred, it will be operated intermittently with other modes until one mode reaches the set temperature or the unit is shut down.



Reserved functions: Simultaneous operation of hydraulic module and heating can be set with the wired controller, but the user shall be reminded of it in the instructions. This setting may lead to poorer heating effect of indoor unit of the air conditioner or poorer space heating effect or longer duration or higher power consumption for the domestic hot water to reach the set temperature. If the domestic hot water cannot reach the set temperature for a long time, the hydraulic module and the EA heater of the water tank will be started to ensure the domestic hot water temperature;

## 1.2 Scenario 2: Only used for space heating

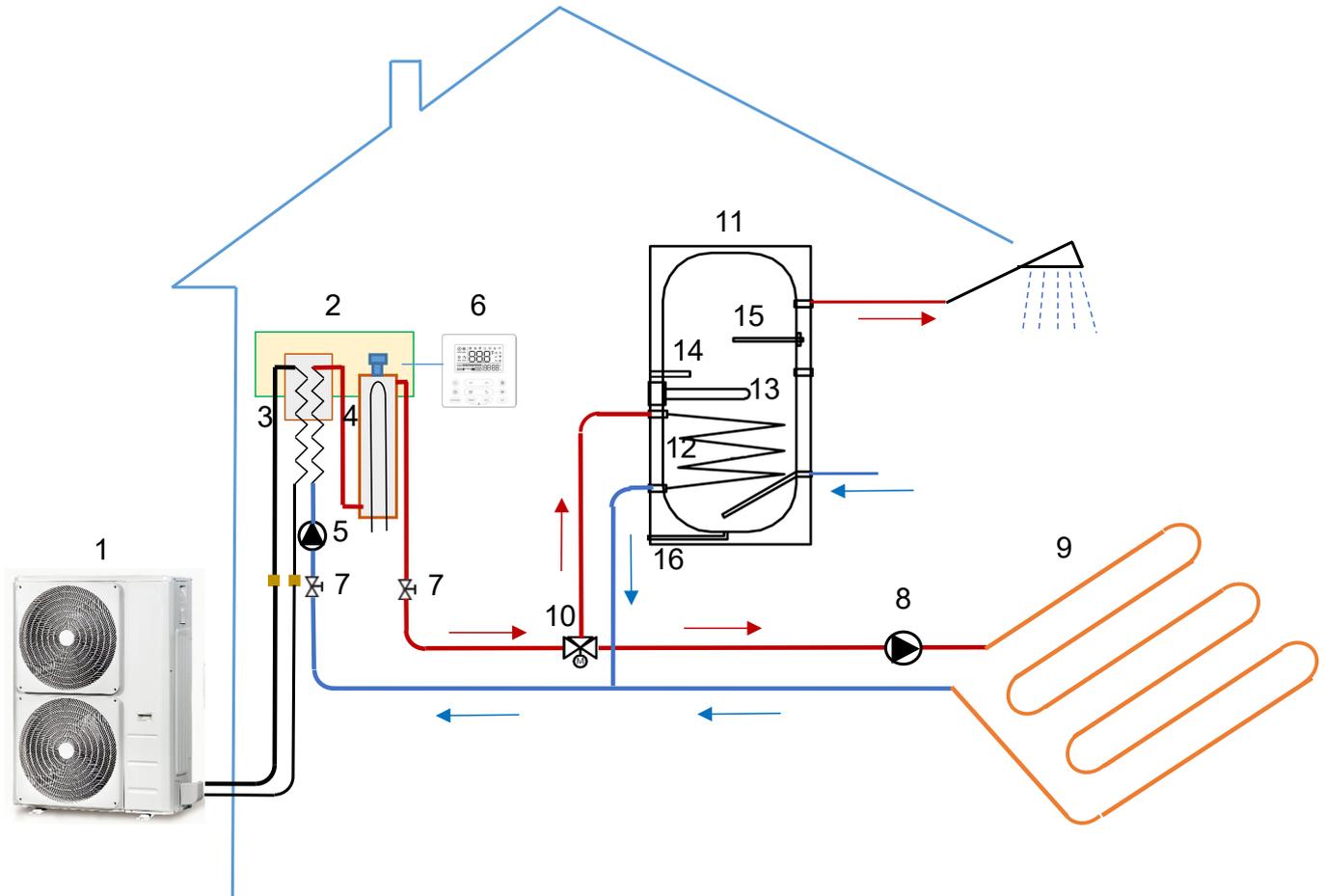
The outlet water temperature of the hydraulic module is set by using the user controller, and the outlet water temperature is set in accordance with different loads (floor heating or heating radiator) or room temperature. When the outlet water temperature reaches the set temperature, the hot water generator will shut down. External circulating water pumps may be connected to the pipelines to increase the pumping head, and water pump interfaces are reserved on the main board.



- 1 Outdoor unit
- 2 Hydraulic module
- 3 Heat exchanger
- 4 Electric heating tank
- 5 Built-in circulating water pump
- 6 User controller
- 7 Shut-off valve (field supplied)
- 8 External circulating water pump (field supplied)
- 9 Floor heating

### 1.3 Scenario 3: Space heating and domestic hot water

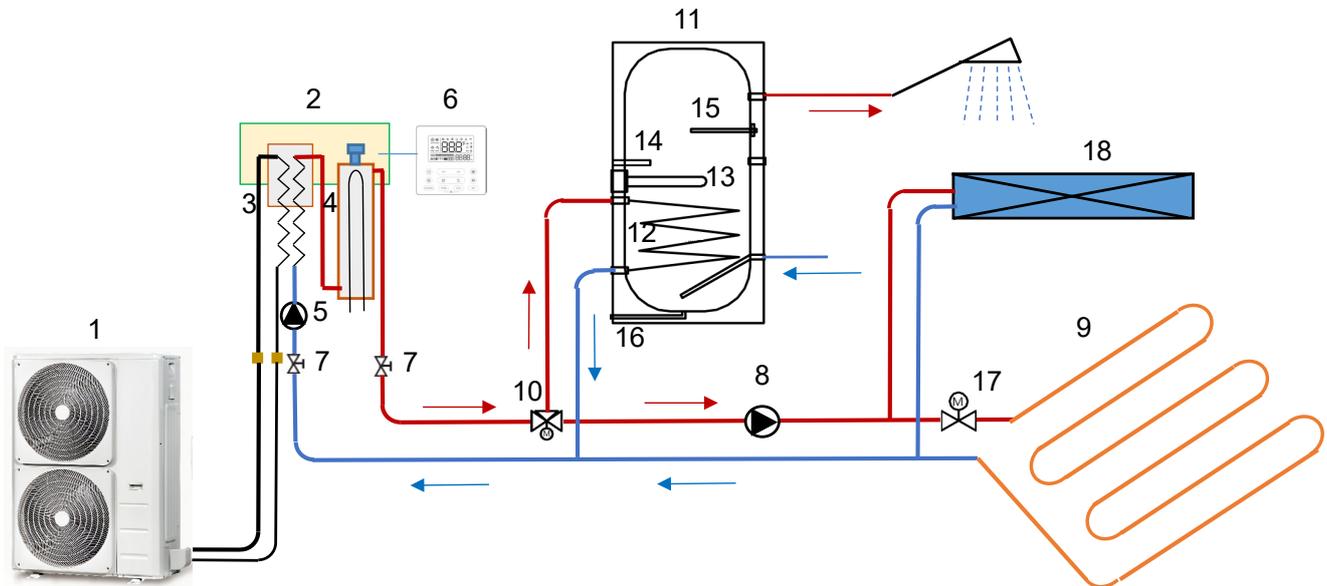
The domestic hot water is supplied by the domestic hot water storage tank connected to the hot water generator, the hot water tank is connected by electric 3-way valve and feedwater line, the main control feed tank has reserved temperature sensor and immersion electric heater interfaces (achieving disinfection and EA heating functions), there is no water tank by default in the system, and they needs to be started by dialing on the main board.



- |  |  |
|--|--|
| 1 Outdoor unit                                     | 9 Floor heating  |
| 2 Hydraulic module                                 | 10 Electric 3-way valve (field supplied)                     |
| 3 Heat exchanger                                   | 11 Domestic hot water storage tank                           |
| 4 Electric heating tank                            | 12 Heating coil  |
| 5 Built-in circulating water pump                  | 13 Immersion electric heater                                 |
| 6 User controller                                  | 14 Temperature detection tube (for water temperature sensor) |
| 7 Shut-off valve (field supplied)                  | 15 Magnesium anode (for electrochemical corrosion)           |
| 8 External circulating water pump (field supplied) | 16 Drain outlet  |

### 1.4 Scenario 4: Space heating, space cooling (reserved) and domestic hot water

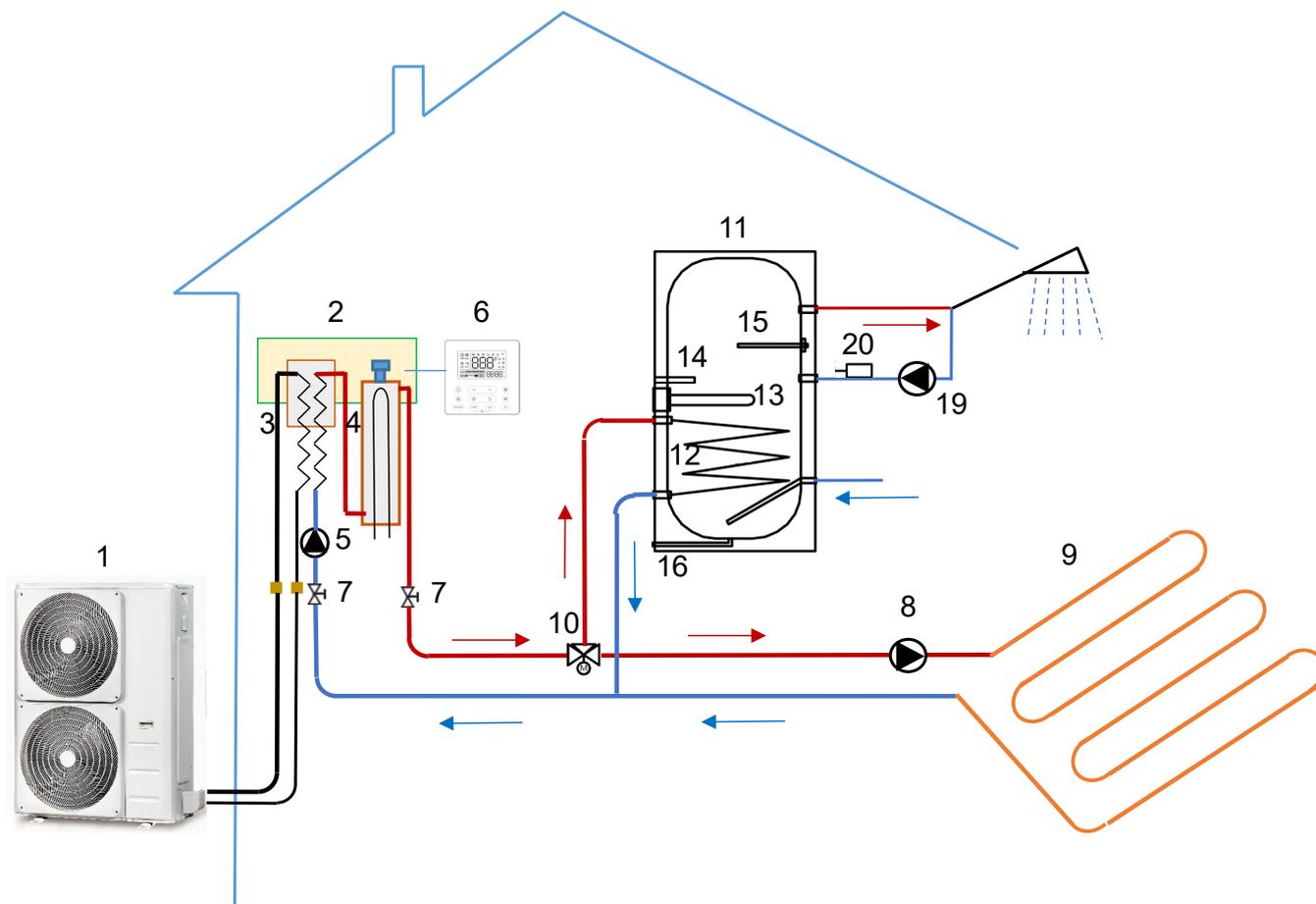
A floor heating loop and a fan coil unit are used for space heating, and a fan coil unit is used for space cooling. The domestic hot water is supplied by the water tank connected to the hydraulic module. The start and stop of air conditioning and heating and domestic hot water are controlled by the outlet water temperature of the hydraulic module and the water tank temperature respectively. In space cooling mode, close the 2-way valve to prevent the cold water from entering the floor heating loop.



- |  |  |
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| 1 Outdoor unit                                     | 10 Electric 3-way valve (field supplied)                     |
| 2 Hydraulic module                                 | 11 Domestic hot water storage tank                           |
| 3 Heat exchanger                                   | 12 Heating coil  |
| 4 Electric heating tank                            | 13 Immersion electric heater                                 |
| 5 Built-in circulating water pump                  | 14 Temperature detection tube (for water temperature sensor) |
| 6 wired controller                                 | 15 Magnesium anode (for electrochemical corrosion)           |
| 7 Shut-off valve (field supplied)                  | 16 Drain outlet  |
| 8 External circulating water pump (field supplied) | 17 Electric 2-way valve                                      |
| 9 Floor heating                                    | 18 Fan coil  |

## 1.5 Scenario 5: Space heating and domestic hot water + return water function

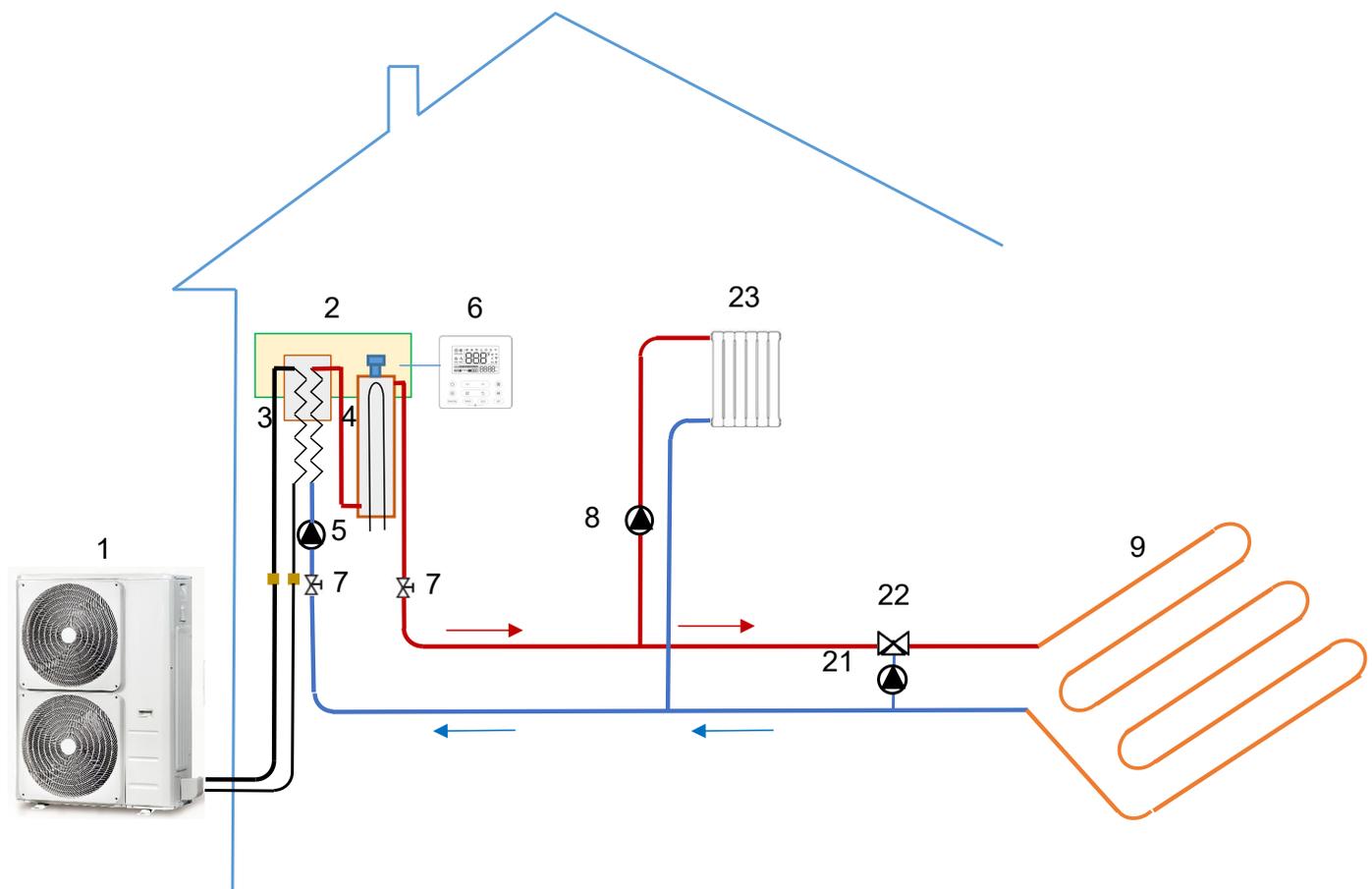
A return water function is provided for the domestic hot water. The start and stop of the return water pump are controlled by the return water temperature, so there is no waiting for the use of hot water. The main board has return water pump and return water temperature sensor interfaces, which are started by dialing on the main board (the return water pump and the mixing water pump share an interface, the mixing water pump is defaulted in the system).



- |  |  |
|--|--|
| 1 Outdoor unit                                     | 11 Domestic hot water storage tank                           |
| 2 Hydraulic module                                 | 12 Heating coil  |
| 3 Heat exchanger                                   | 13 Immersion electric heater                                 |
| 4 Electric heating tank                            | 14 Temperature detection tube (for water temperature sensor) |
| 5 Built-in circulating water pump                  | 15 Magnesium anode (for electrochemical corrosion)           |
| 6 wired controller                                 | 16 Drain outlet  |
| 7 Shut-off valve (field supplied)                  | 19 Return water pump   |
| 8 External circulating water pump (field supplied) | 20 Return water temperature sensor                           |
| 9 Floor heating                                    |  |
| 10 Electric 3-way valve (field supplied)           |  |

### 1.6 Scenario 6: Only used for space heating (suitable for multiple terminals, water temperature adjustment)

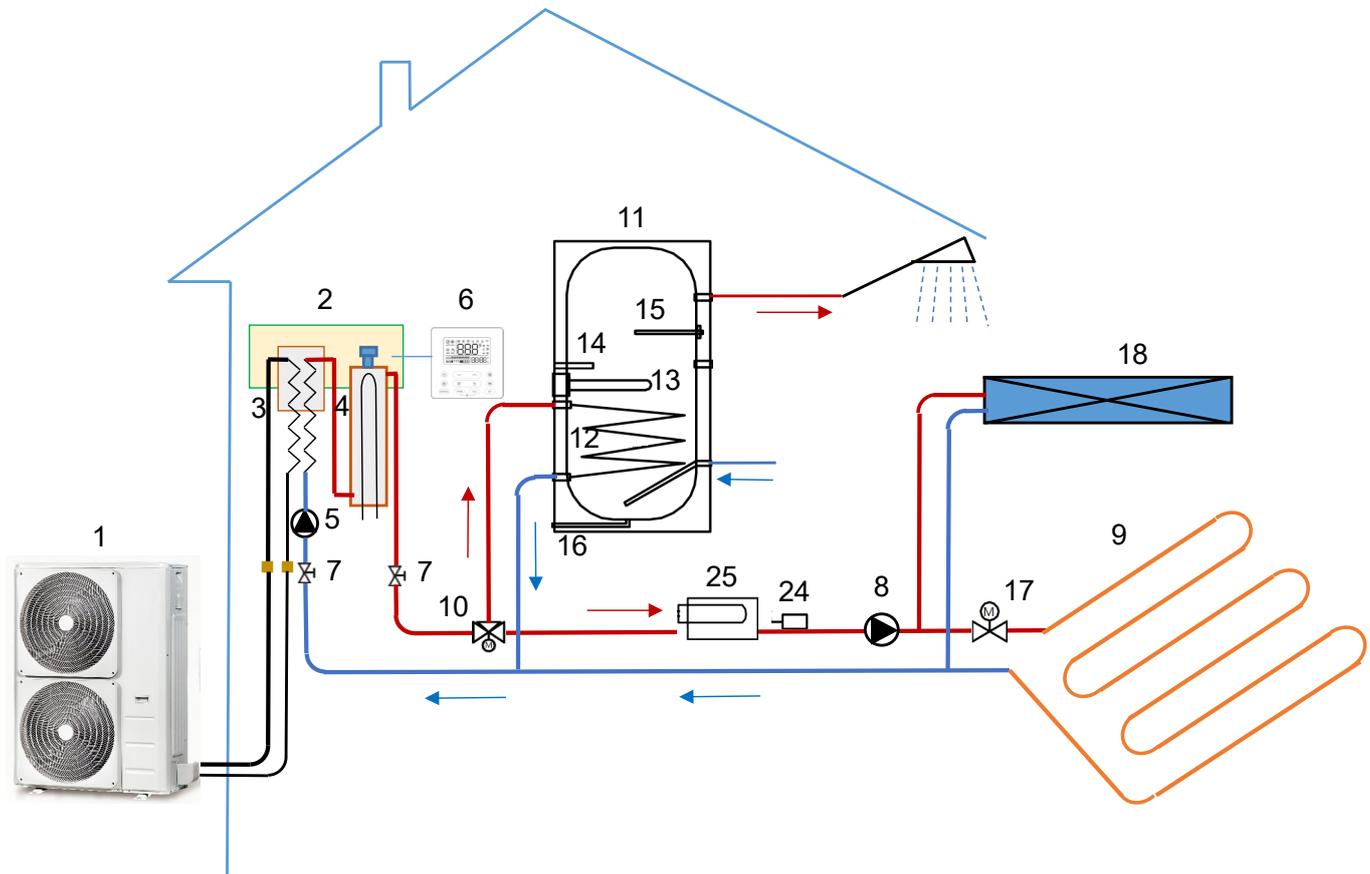
During heating, the user can connect multiple terminals simultaneously, e.g. floor heating system and heating radiators (or fan coils). However, as the water temperature required for the heating radiator is higher than that required for the floor heating, a mixing water valve and a mixing water pump are provided for the floor heating to adjust the water temperature of the floor heating. For example, if the set outlet water temperature of the hydraulic module is 55°, the floor heating temperature can be controlled at 35° by the mixing water valve to prevent damages to the floor due to high temperature. The mixing water valve is controlled by itself. The main board has a reserved mixing water pump interface (the return water pump and the mixing water pump share an interface, the mixing water pump defaulted in the system, and the mixing water pump can also be connected to the 2-way valve interface when the return water pump and the mixing water pump are needed simultaneously).



- |                                   |  |
|-----------------------------------|--|
| 1 Outdoor unit                    | 7 Shut-off valve (field supplied)                  |
| 2 Hydraulic module                | 8 External circulating water pump (field supplied) |
| 3 Heat exchanger                  | 9 Floor heating                                    |
| 4 Electric heating tank           | 21 Mixing water pump                               |
| 5 Built-in circulating water pump | 22 Mixing water valve                              |
| 6 User controller                 | 23 Heating radiator                                |

## 1.7 Scenario 7: Space heating (with auxiliary heating source) and domestic hot water

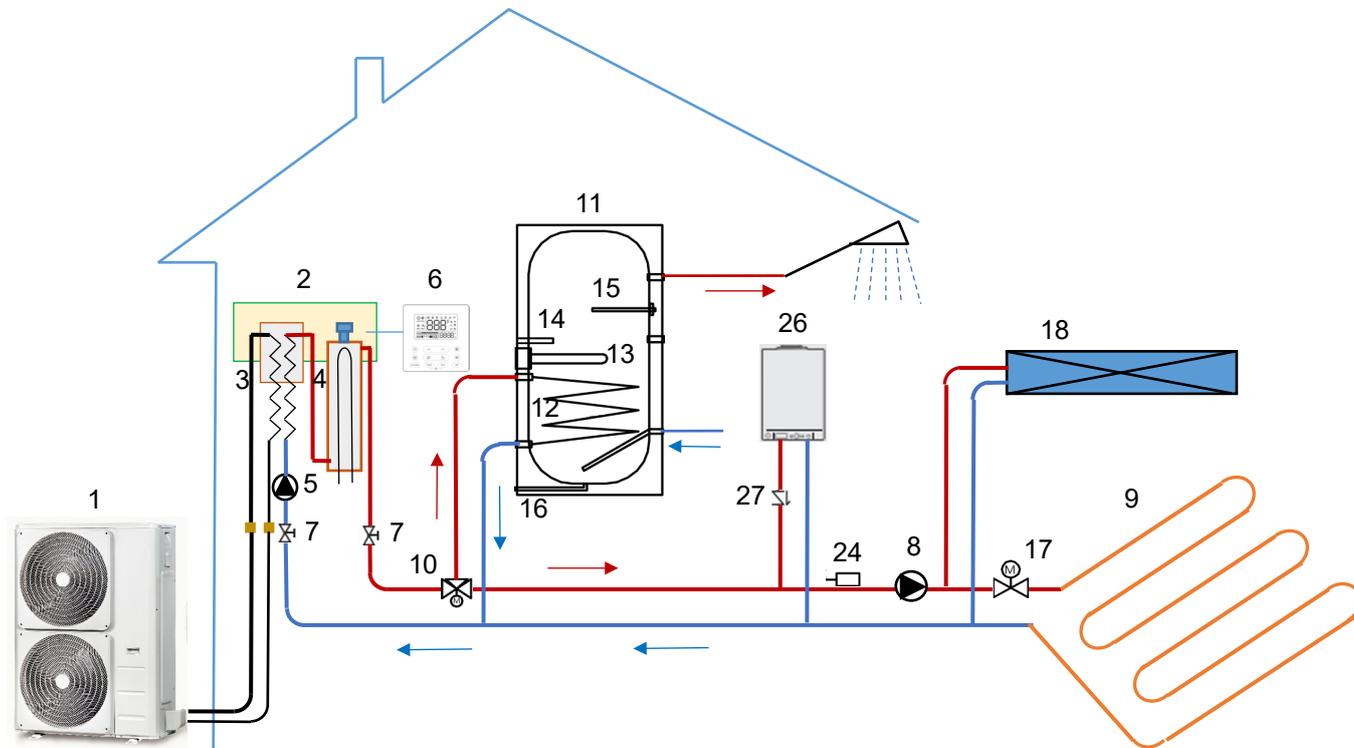
1. EA heater for pipeline: A pipeline electric heater is installed on the space heating mains, with its start and stop controlled by the main temperature sensor, and the main board has reserved auxiliary heating source and heating water main temperature sensor interfaces.



- |  |  |
|--|--|
| 1 Outdoor unit                                     | 11 Domestic hot water storage tank                           |
| 2 Hydraulic module                                 | 12 Heating coil  |
| 3 Heat exchanger                                   | 13 Immersion electric heater                                 |
| 4 Electric heating tank                            | 14 Temperature detection tube (for water temperature sensor) |
| 5 Built-in circulating water pump                  | 15 Magnesium anode (for electrochemical corrosion)           |
| 6 wired controller                                 | 16 Drain outlet  |
| 7 Shut-off valve (field supplied)                  | 17 Electric 2-way valve                                      |
| 8 External circulating water pump (field supplied) | 18 Fan coil  |
| 9 Floor heating                                    | 24 Heating water main temperature sensor                     |
| 10 Electric 3-way valve (field supplied)           | 25 EA heater for pipeline                                    |

## 1.8 Scenario 8: Space heating (with auxiliary heating source) and domestic hot water

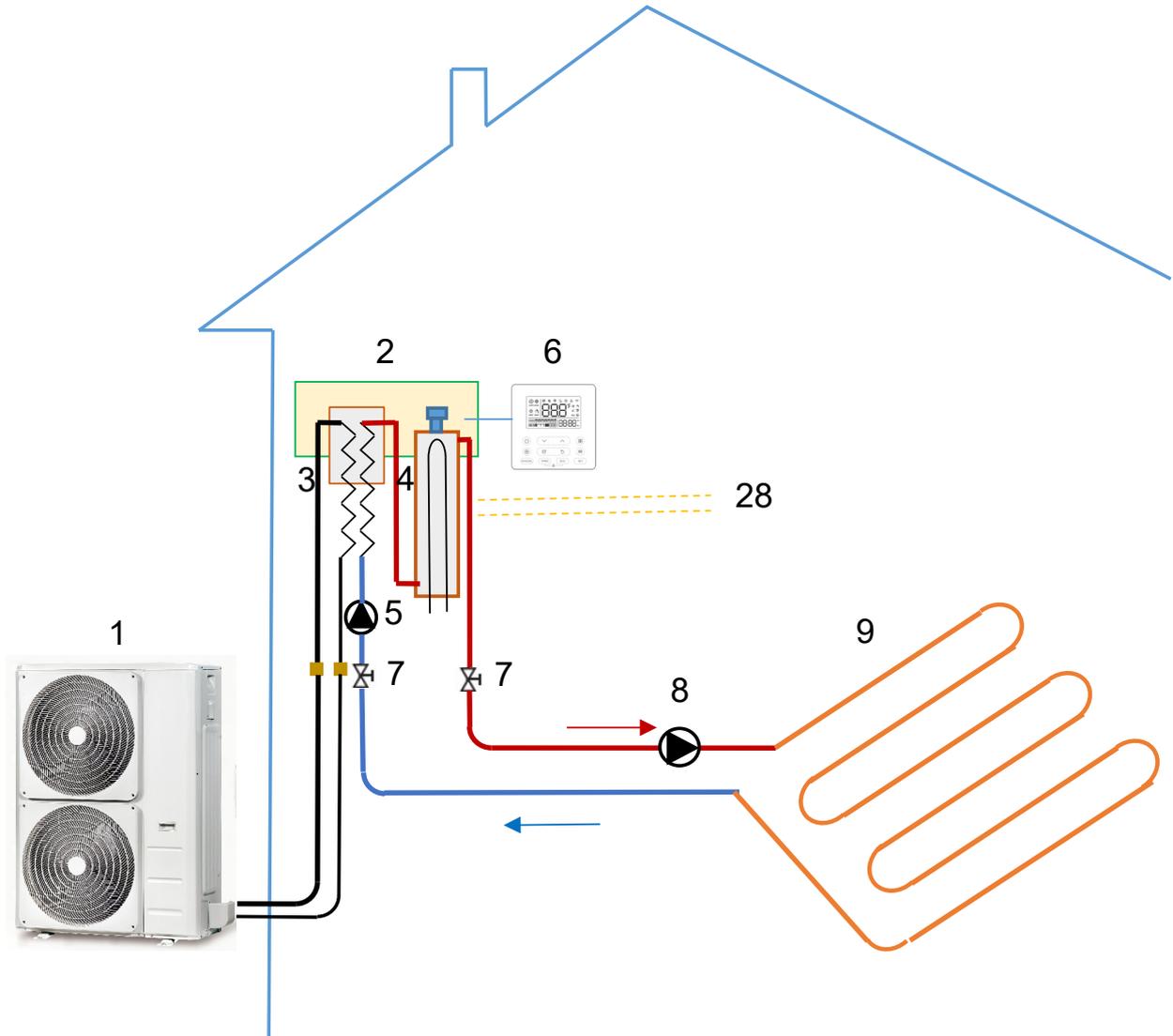
2. Other auxiliary heating sources: An auxiliary heating source is installed on the space heating mains, with its start and stop controlled by the main temperature sensor, and the main board has reserved auxiliary heating source and heating water main temperature sensor interfaces.



- |  |  |
|--|--|
| 1 Outdoor unit                                     | 11 Domestic hot water storage tank                           |
| 2 Hydraulic module                                 | 12 Heating coil  |
| 3 Heat exchanger                                   | 13 Immersion electric heater                                 |
| 4 Electric heating tank                            | 14 Temperature detection tube (for water temperature sensor) |
| 5 Built-in circulating water pump                  | 15 Magnesium anode (for electrochemical corrosion)           |
| 6 wired controller                                 | 16 Drain outlet  |
| 7 Shut-off valve (field supplied)                  | 17 Electric 2-way valve                                      |
| 8 External circulating water pump (field supplied) | 18 Fan coil  |
| 9 Floor heating                                    | 24 Heating water main temperature sensor                     |
| 10 Electric 3-way valve (field supplied)           | 26 auxiliary heating source                                  |
|  | 27 One-way valve   |

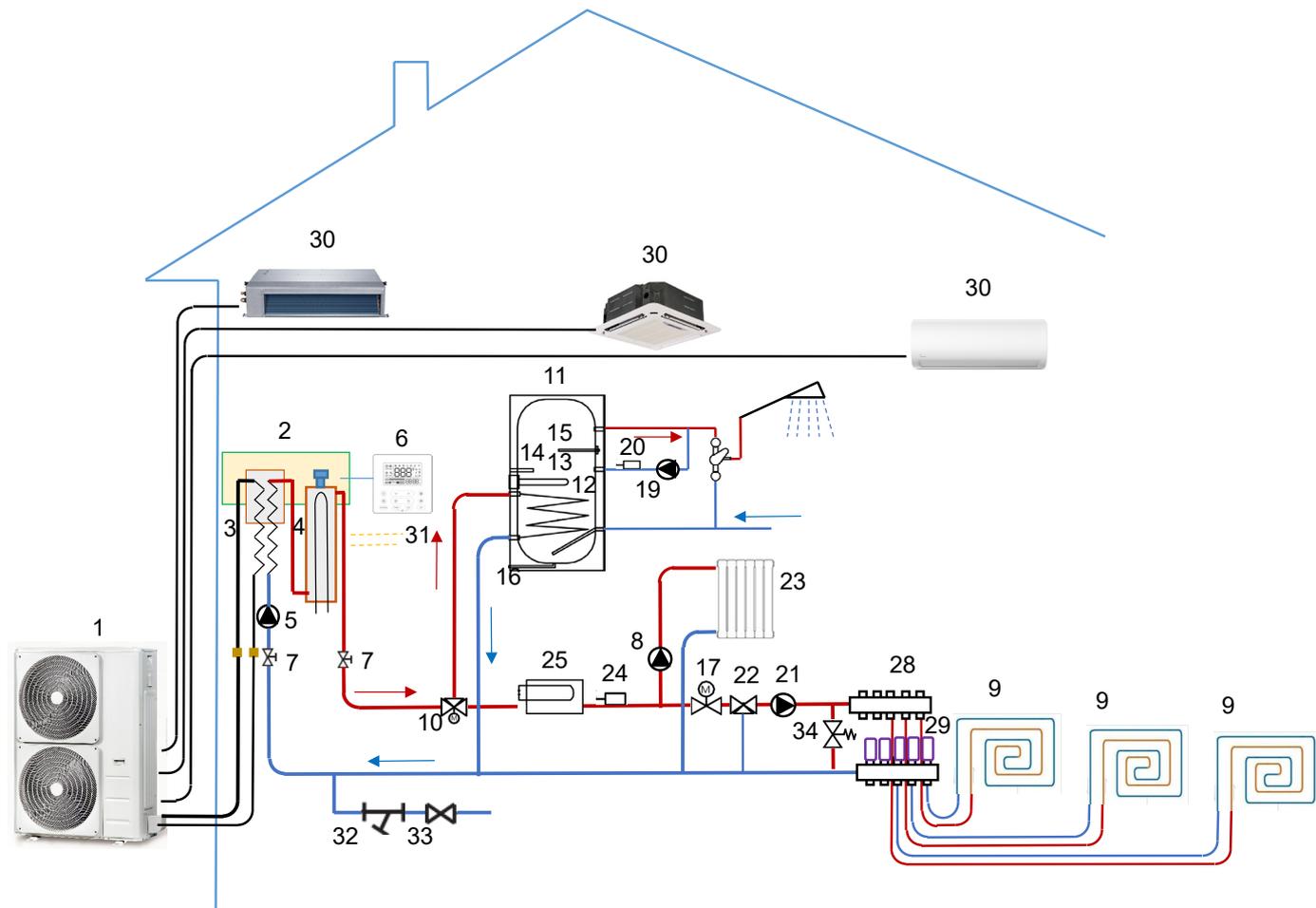
## 1.9 Scenario 9: External signal interface

The hydraulic module has a reserved external on/off signal interface. When it is on, the hydraulic module will operate according to the wired controller setting; when it is off, the hydraulic module will shut down.



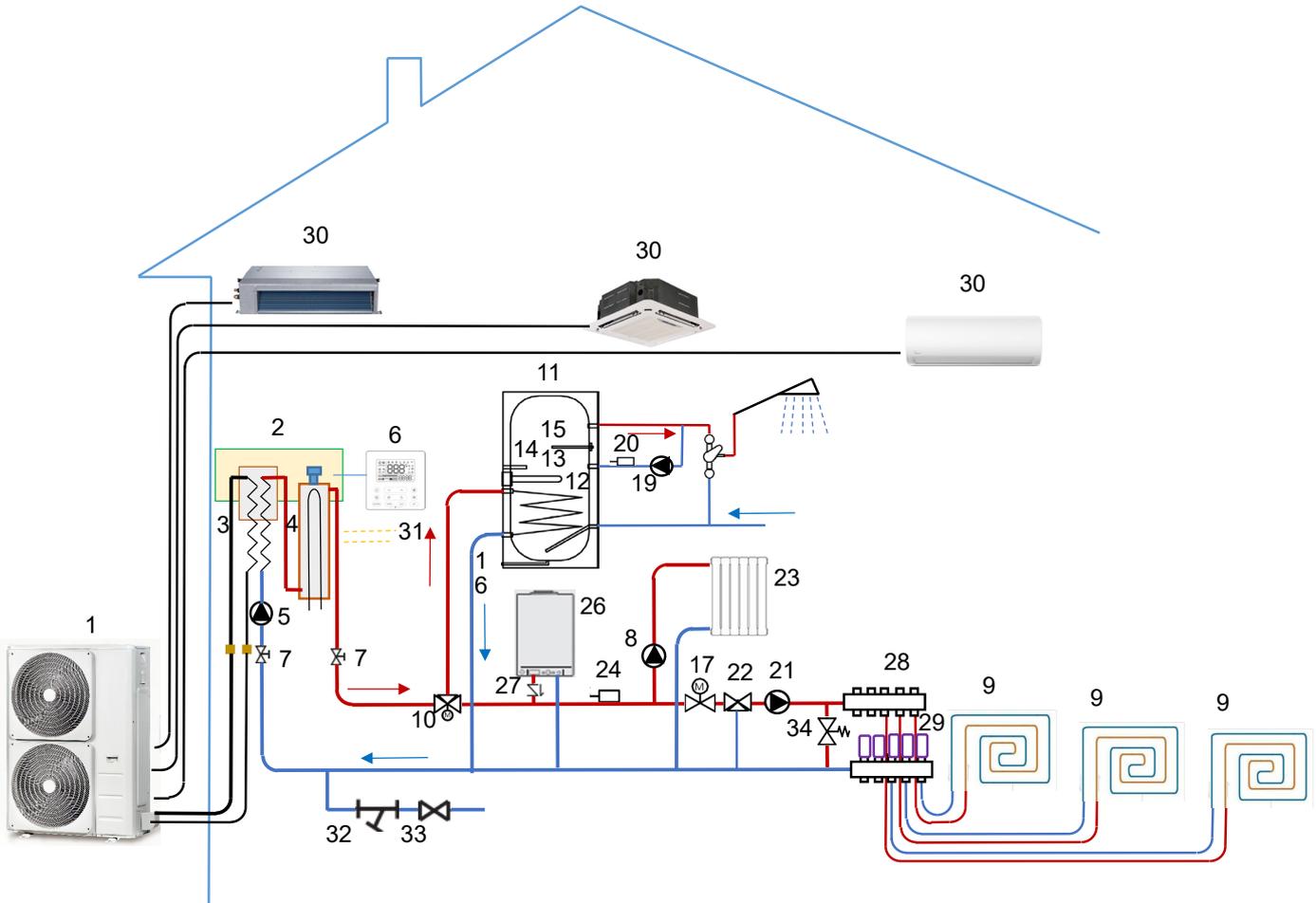
- |                                   |  |
|-----------------------------------|--|
| 1 Outdoor unit                    | 6 wired controller                                 |
| 2 Hydraulic module                | 7 Shut-off valve (field supplied)                  |
| 3 Heat exchanger                  | 8 External circulating water pump (field supplied) |
| 4 Electric heating tank           | 9 Floor heating                                    |
| 5 Built-in circulating water pump | 28 External signal interface                       |

### 1.10 Scenario 10: Schematic Diagram 1 of multi-split air conditioning system



- |  |  |
|--|--|
| 1 Outdoor unit   | 16 Drain outlet                          |
| 2 Hydraulic module   | 17 Electric 2-way valve                  |
| 3 Heat exchanger   | 19 Return water pump                     |
| 4 Electric heating tank                                      | 20 Return water temperature sensor       |
| 5 Built-in circulating water pump                            | 21 Mixing water pump                     |
| 6 wired controller   | 22 Mixing water valve                    |
| 7 Shut-off valve (field supplied)                            | 23 Heating radiator                      |
| 8 External circulating water pump (field supplied)           | 24 Heating water main temperature sensor |
| 9 Floor heating  | 25 EA heater for pipeline                |
| 10 Electric 3-way valve (field supplied)                     | 28 Sub-catchment                         |
| 11 Domestic hot water storage tank                           | 29 Electric actuator                     |
| 12 Heating coil  | 30 Indoor unit of air conditioner        |
| 13 Immersion electric heater                                 | 31 External signal interface             |
| 14 Temperature detection tube (for water temperature sensor) | 32 Filter                                |
| 15 Magnesium anode (for electrochemical corrosion)           | 33 Differential pressure make-up valve   |
|  | 34 Differential pressure bypass valve    |

### 1.11 Scenario 10: Schematic diagram 2 of multi-split air conditioning system

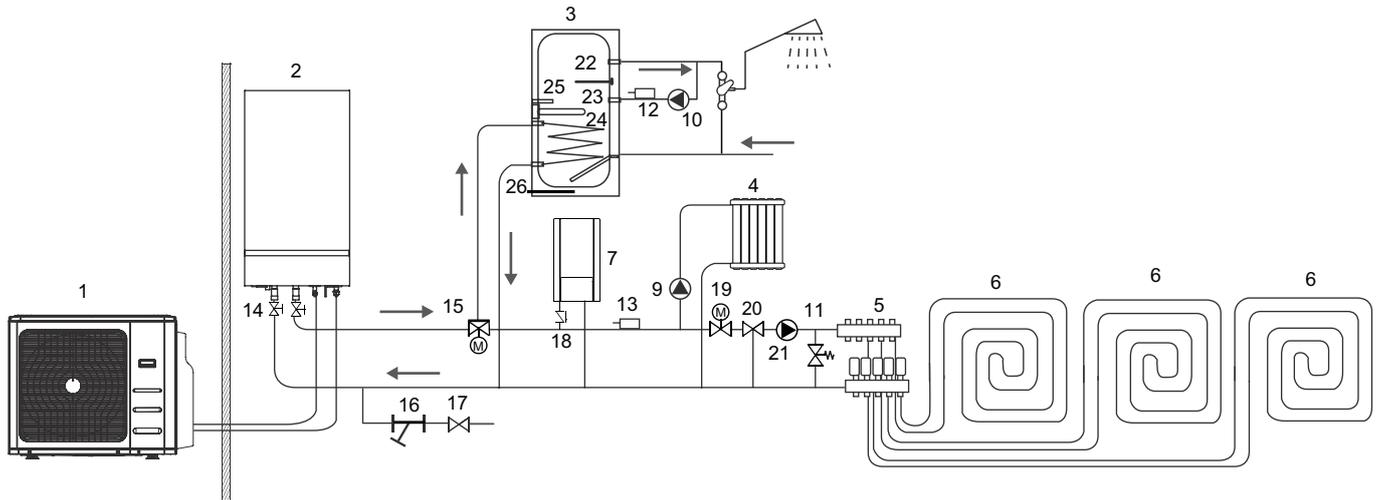


- |  |  |
|--|--|
| 1 Outdoor unit   | 17 Electric 2-way valve                  |
| 2 Hydraulic module   | 19 Return water pump                     |
| 3 Heat exchanger   | 20 Return water temperature sensor       |
| 4 Electric heating tank                                      | 21 Mixing water pump                     |
| 5 Built-in circulating water pump                            | 22 Mixing water valve                    |
| 6 wired controller   | 23 Heating radiator                      |
| 7 Shut-off valve (field supplied)                            | 24 Heating water main temperature sensor |
| 8 External circulating water pump (field supplied)           | 26 auxiliary heating source              |
| 9 Floor heating  | 27 One-way valve                         |
| 10 Electric 3-way valve (field supplied)                     | 28 Sub-catchment                         |
| 11 Domestic hot water storage tank                           | 29 Electric actuator                     |
| 12 Heating coil  | 30 Indoor unit of air conditioner        |
| 13 Immersion electric heater                                 | 31 External signal interface             |
| 14 Temperature detection tube (for water temperature sensor) | 32 Filter                                |
| 15 Magnesium anode (for electrochemical corrosion)           | 33 Differential pressure make-up valve   |
| 16 Drain outlet  | 34 Differential pressure bypass valve    |

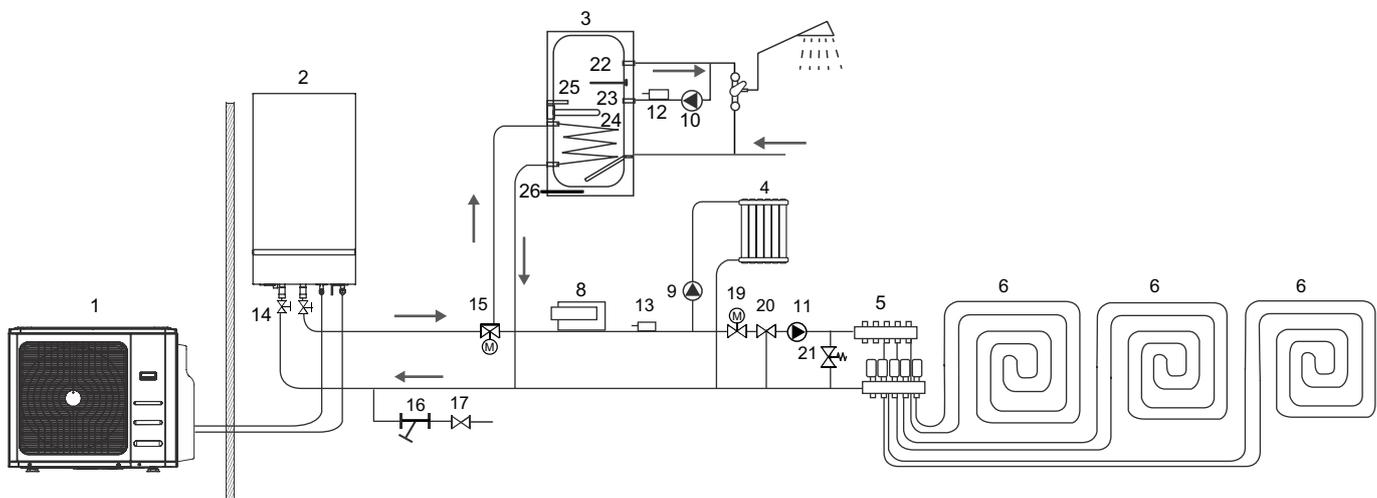
## 2. Unit Parts

NOTE: The installation must be performed in accordance with the requirement of local and national standards. The installation may be slightly different in different areas. The application examples given below are for illustration purposes only.

### 2.1 Auxiliary heat source



### 2.2 Pipeline auxiliary electric heating



1. Outdoor unit
2. Hydraulic module
3. Domestic hot water storage tank
4. Radiator
5. Water separator
6. Floor heating
7. Auxiliary heat source

If the unit selection is too small, additional heat is provided.

8. Pipeline auxiliary electric heating

If the unit selection is too small, additional heat is provided.

9. External circulating water pump

When the water resistance is greater than the head provided by the internal machine, the pump shall be added to the branch with excessive water resistance.

10. Backwater pump

Control the pump switch through the back-water temperature-sensing package to keep hot water at any time.

11. Mixing water pump

With the water mixing valve, lower the temperature of the floor heating, and do not install it when there is no radiator.

12. Return water temperature sensing bag

Control the operation of return water pump and keep hot water available at any time.

13. Heating water supply main pipe temperature sensing package

Work with external heat source 7 or 8.

14. Globe valve

Close water flow for maintenance.

15. Electric three-way valve

Used for switching between heating and domestic hot water mode, working with domestic hot water tank.

16. Filter

Water supply system, filter impurities.

17. Differential pressure make-up valve

Adjust the system water pressure to ensure that it is in the normal working range.

18. Check valve

To prevent the internal machine water supply from flowing back into the external heat source 7, this valve is not needed for electric pipeline heating.

19. Electric two-way valve

It is used when there is cooling mode.

20. Mixing valve

Used with mixed water pump.

21. Differential pressure bypass valve

In the case of multiple branch water closure, bypass water flow to ensure sufficient water flow to prevent water flow failure.

22. Anode magnesium rod

Improve corrosion resistance, need to be replaced regularly.

23. Electric immersion heater

Used for auxiliary heating and sterilization.

24. Heating coil

Heat the water in the water tank to isolate the heating water.

25. Temperature probe tube

Place a water tank temperature sensing package to control the temperature of domestic hot water.

26. Sewage outlet

used for water tank cleaning.

NOTE: In addition to the outdoor unit and hydraulic module, other materials are prepared by users.

22-26 is an indispensable part of domestic hot water tank.

### 3. Model Reference

Refer to the following table to determine the specific indoor unit model number of your purchased equipment.

Indoor Unit Model	Capacity (Btu/h)	Power Supply
IHM1-Y 80M	36k~42K	1Φ, 220-240V~, 50Hz
Outdoor Unit Model	Capacity (Btu/h)	Power Supply
MU2-Y 105M	36k	1Φ, 220-240V~, 50Hz

### 4. External Appearance

IHM1-Y 80M



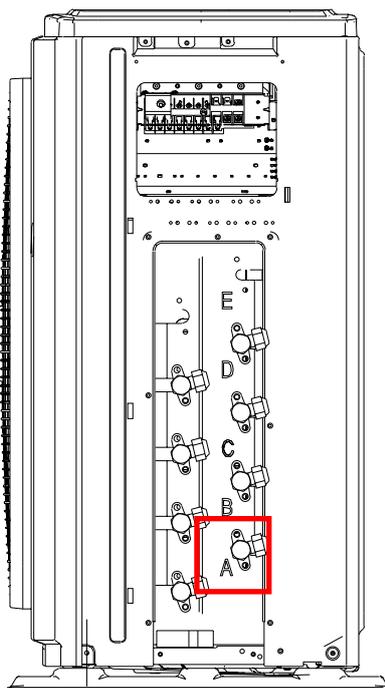
Outdoor Unit



## 5. Indoor unit combination

One unit	Two unit	Three unit		Four unit		
7	7+ATW	7+7+ATW	9+12+ATW	7+7+7+ATW	7+9+12+ATW	9+12+12+ATW
9	9+ATW	7+9+ATW	9+18+ATW	7+7+9+ATW	7+9+18+ATW	9+12+18+ATW
12	12+ATW	7+12+ATW	12+12+ATW	7+7+12+ATW	9+9+9+ATW	12+12+12+ATW
18	18+ATW	7+18+ATW	12+18+ATW	7+7+18+ATW	9+9+12+ATW	12+12+18+ATW
ATW		9+9+ATW	18+18+ATW	7+9+9+ATW	9+9+18+ATW	

Note: ATW can only be connected with an A system.

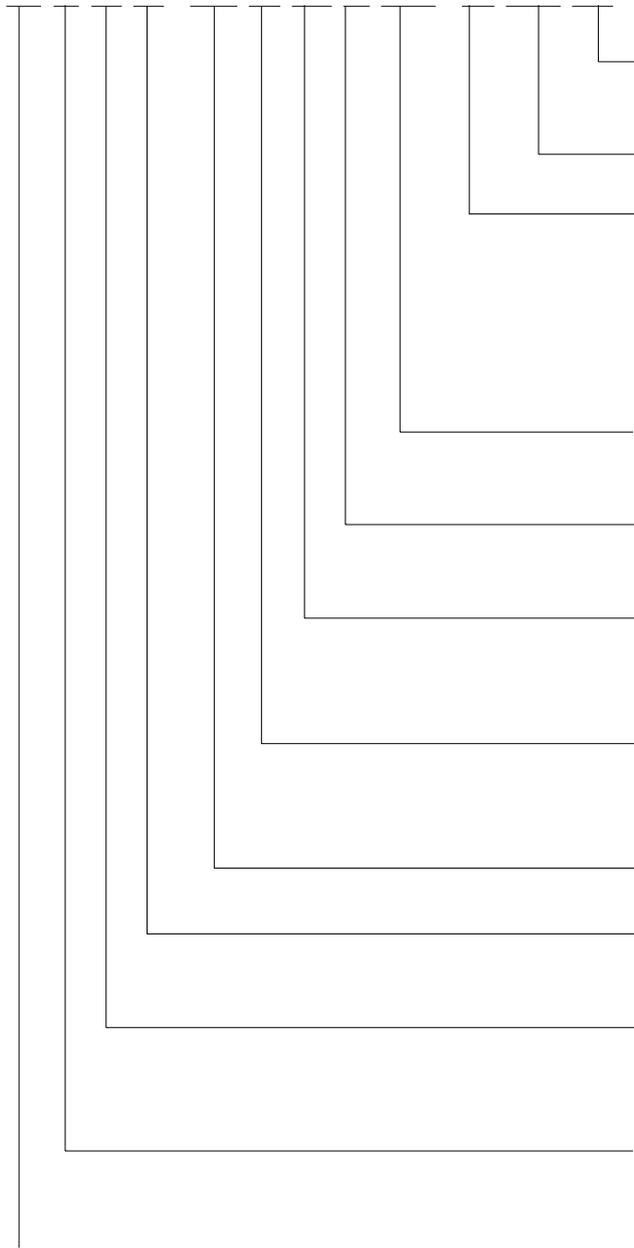


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## 6. Nomenclature

Indoor unit:

**M Z A U- 42 H W F N8- Q D2 W**



**Special Function**  
**W Outdoor power supply**

**Energy Efficiency Code**

**Power Supply**  
**Q** 220~240V, 1N, 50Hz  
**R** 380~420V, 3N, 50Hz  
**N** 220~230V, 1N, 60Hz  
**D** 220V~, 3N, 60Hz  
**C** 380~420V, 3N, 60Hz

**Refrigerant**  
**N8** R32 **N1** R410A -- R22

**D** DC Inverter -- On-Off  
**F** Full DC

**Control Mode**  
**W** Wired Control      **E** Electric Control  
**M** Mechanical Control    **R** Remote Control

**Function Code**  
**C** Cooling Only    **H** Cooling & Heating  
**A** Cooling & Heating+PTC

**Compatible Max Capacity of Outdoor unit (×1000Bt)**

**Distinguish code**  
**U** Mono & multi universal indoor unit  
 – Mono indoor unit

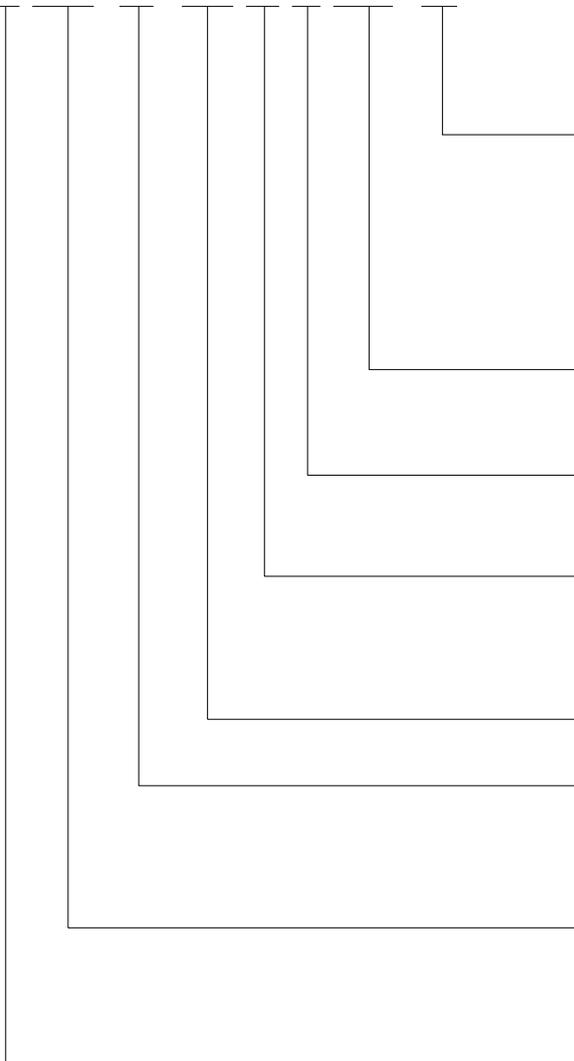
**Designed Time**  
**A** Time A Designed    **B** Time B Designed  
**C** Time C Designed    **D** Time D Designed

**Product Category**  
**Z** Hot water Type

**Midea**

Outdoor unit:

**M 40 B- 36 H F N8- Q**



**Power Supply**

- Q** 220~240V, 1N, 50HZ
- R** 380~420V, 3N, 50Hz
- N** 220~230V, 1N, 60Hz
- D** 220V~, 3N, 60Hz
- C** 380~420v, 3N, 60HZ

**Refrigerant**

- N1** R410A   **N8** R32

**D** DC Inverter   -- On-Off

**F** Full DC

**Function Code**

- C** Cooling Only   **H** Cooling & Heating
- A** Cooling & Heating+PTC

**Capacity (×1000Btu/h)**

**Designed Time**

- A** Time A Designed   **B** Time B Designed
- C** Time C Designed   **D** Time D Designed

- 30 Universal** Outdoor unit with 1 drive 3
- 40 Universal** Outdoor unit with 1 drive 4
- 50 Universal** Outdoor unit with 1 drive 5

**Midea**

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# Engineering Data

## Contents

1.	General Specifications.....	23
2.	Dimensional Drawings.....	26
3.	Part Names.....	28
4.	Schematic Diagram.....	29
5.	Electrical Wiring Diagrams.....	30
6.	Printed Circuit Board Diagram.....	31
7.	Electrical Characteristics.....	37

## 1. General Specifications

Indoor model			IHM1-Y 80M	
Function			Heating and DHW	
Power supply		V- Ph-Hz	220~240-1-50	
Rated input		kW	0.30	
Rated current		A	1.95	
Indoor Temperature Range(ATW)	Heating	Room Temperature	°C	0~43
		Flow Temperature	°C	25~60
	Domestic Hot Water	Flow Temperature	°C	35~55
Operating Temperature Range	Air-to-Air	Cooling	°C	-15~50
		Heating	°C	-15~24
	Air-to-Water	Heating	°C	-20~24
		Domestic Hot Water	°C	-20~43
Sound pressure level		dB(A)	32	
Sound Power Level		dB(A)	44	
Dimension(W*H*D)		mm	490x918x325	
Packing (W*H*D)		mm	570x1055x415	
Net/Gross weight		Kg	56/64	
Water circuit	Piping connections		mm	Φ28
	Safety valve set pressure		MPa	0.3
	Drainage pipe connection		mm	Φ16
	Expansion tank	Volume	L	5
		Max. water pressure	MPa	0.8
		Pre-pressure	MPa	0.15
	Water side ex-changer	Type		Plate
Water pump head		m	8	
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ12.7(1/4"/1/2")	
Auxiliary electric heater	Power source		V- Ph-Hz	220~240-1-50
	Rated input		kW	3.0
	Rated current		A	13.5

Notes:

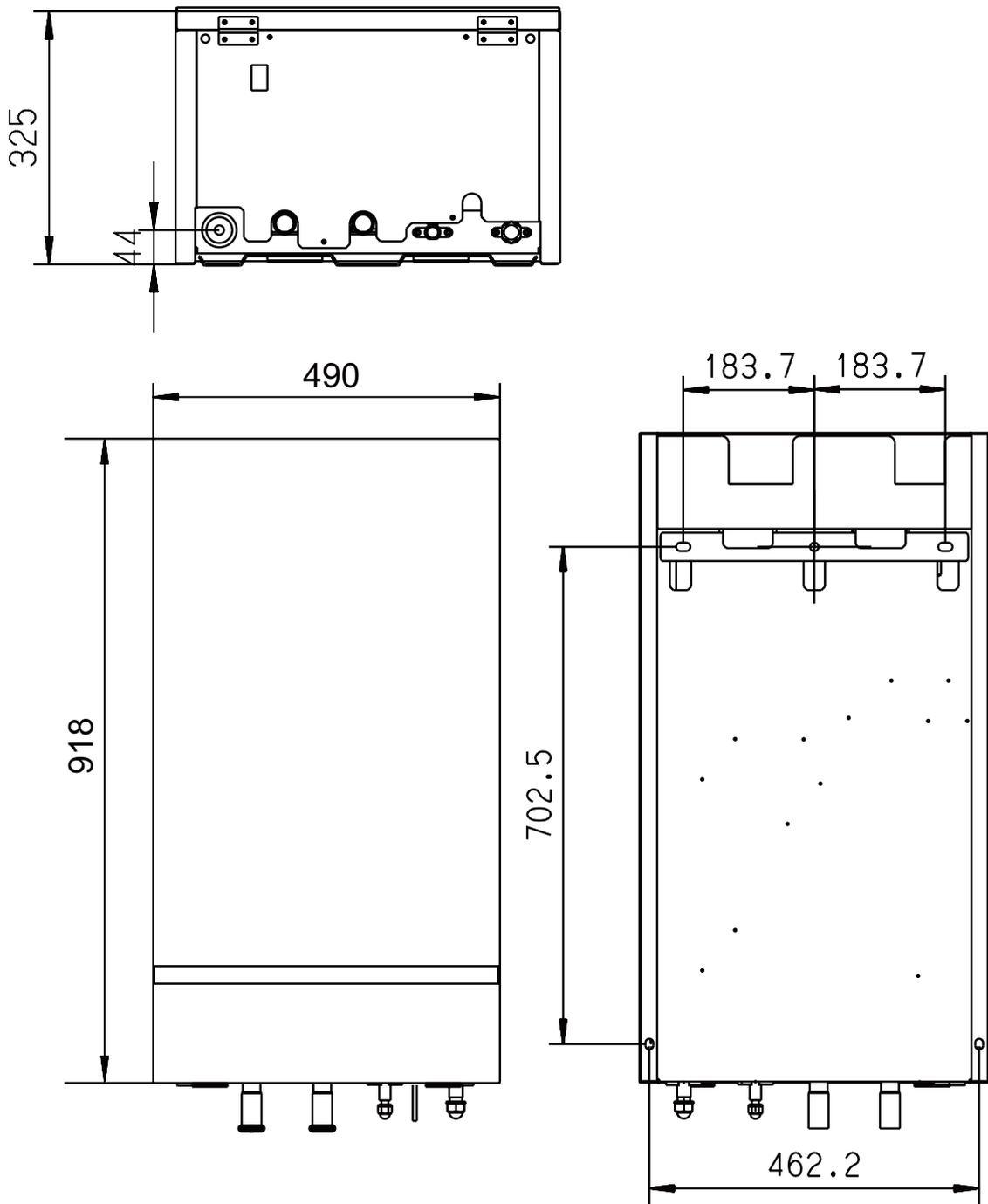
1. Sound pressure level is tested at outdoor air temperature 7°C DB, 85% R.H ; inlet water temperature 30°C, outlet water temperature 35°C.

Outdoor model			MU2-Y 105M	
Power supply		V- Ph-Hz	220~240-1-50	
Air-to-Air	Cooling	Capacity	BTU/H	36000
		Capacity	kW	10.6
		Power Input	kW	3.5
		EER	W/W	3.01
	Heating	Capacity	BTU/H	38000
		Capacity	kW	11.1
		Power Input	kW	3
		COP	W/W	3.71
	Seasonal Cooling	Pdesign C	kW	10.6
		SEER		6.1
		Energy Efficiency Class		A++
		Annual Consumption	kWh	613
	Seasonal Heating	Pdesign H		8.8
		SCOP		3.8
		Energy Efficiency Class		A
		Annual Consumption	kWh	3246

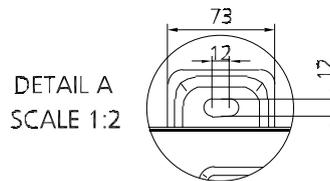
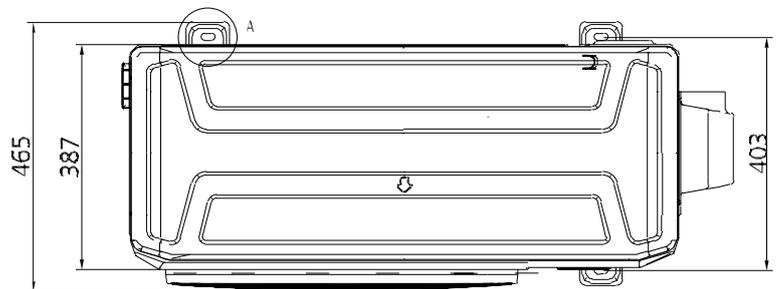
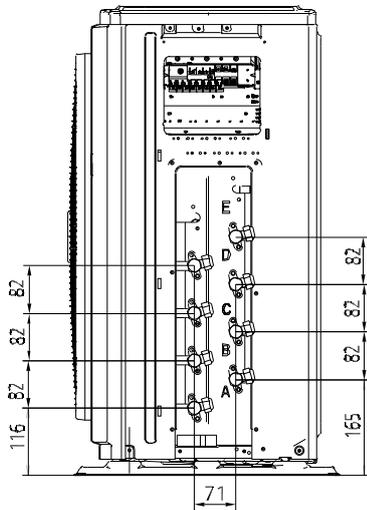
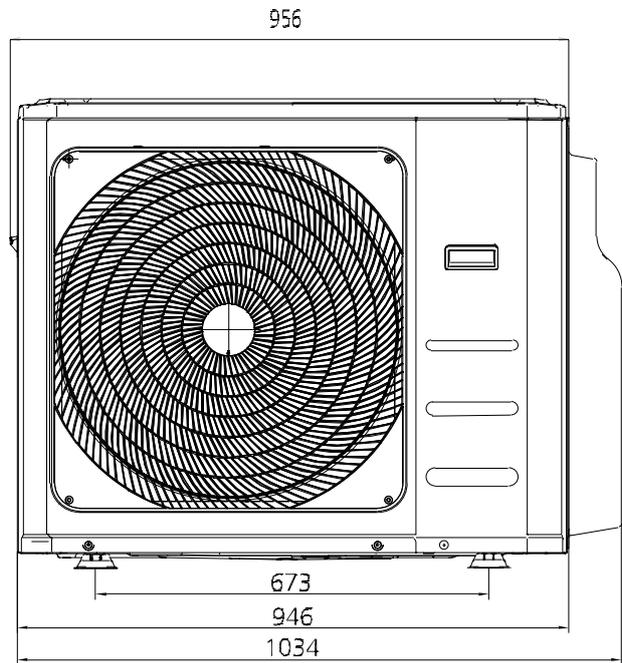
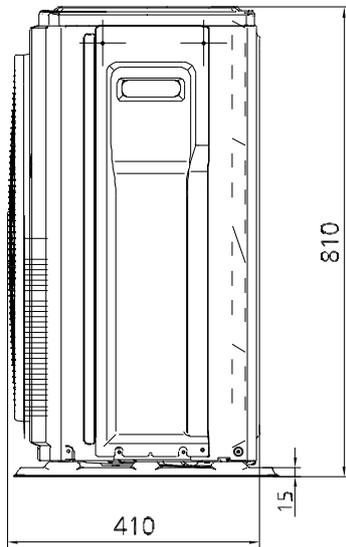
Air-to-Water	Heating(A+7°C, LW35°C)	Capacity	BTU/H	27296	
		Capacity	kW	8	
		Power Input	kW	1.8	
		COP	W/W	4.4	
	Heating(A+7°C, LW45°C)	Capacity	BTU/H	27296	
		Capacity	kW	8	
		Power Input	kW	2.5	
		COP	W/W	3.2	
	Heating(A+7°C, LW55°C)	Capacity	BTU/H	27296	
		Capacity	kW	8	
		Power Input	kW	3.3	
		COP	W/W	2.4	
	Heating(A+2°C, LW35°C)	Capacity	BTU/H	27296	
		Capacity	kW	8	
		Power Input	kW	2.6	
		COP	W/W	3.1	
	Heating(A+2°C, LW55°C)	Capacity	BTU/H	27296	
		Capacity	kW	8	
		Power Input	kW	3.8	
		COP	W/W	2.1	
	Heating(A-7°C, LW35°C)	Capacity	BTU/H	27000	
		Capacity	kW	7.9	
		Power Input	kW	3.2	
		COP	W/W	2.5	
	Heating(A-7°C, LW55°C)	Capacity	BTU/H	24000	
		Capacity	kW	7.0	
		Power Input	kW	4.4	
		COP	W/W	1.6	
	Heating(A+7°C, LW35°C)	RANK		A++	
		SCOP		4.26	
		η s	%	167	
	Heating(A+7°C, LW55°C)	RANK		A+	
		SCOP		2.93	
		η s	%	114	
	Outdoor Unit	Dimension(W*D*H)		mm	946x410x810
		Packing (W*D*H)		mm	1090x500x875
Net/Gross weight		Kg	68.8/75.6		
Refrigerant		Type		R32	
		GWP		675	
		Charged quantity	Kg	2.1	
Sound Pressure Level		dB(A)	63		
Sound Power Level		dB(A)	67		
Refrigerant piping	Liquid side/ Gas side		mm(inch)	4 x $\Phi$ 6.35/3x $\Phi$ 9.52+1x $\Phi$ 12.7(4x1/4 "/3x3/8"+1x1/2")	
	Max. length for all rooms		m	80	
	Max. length for one indoor unit		m	35	
	Max. height difference between indoor and outdoor unit		m	15	
	Max. height difference between indoor units		m	10	

## 2. Dimensional Drawings

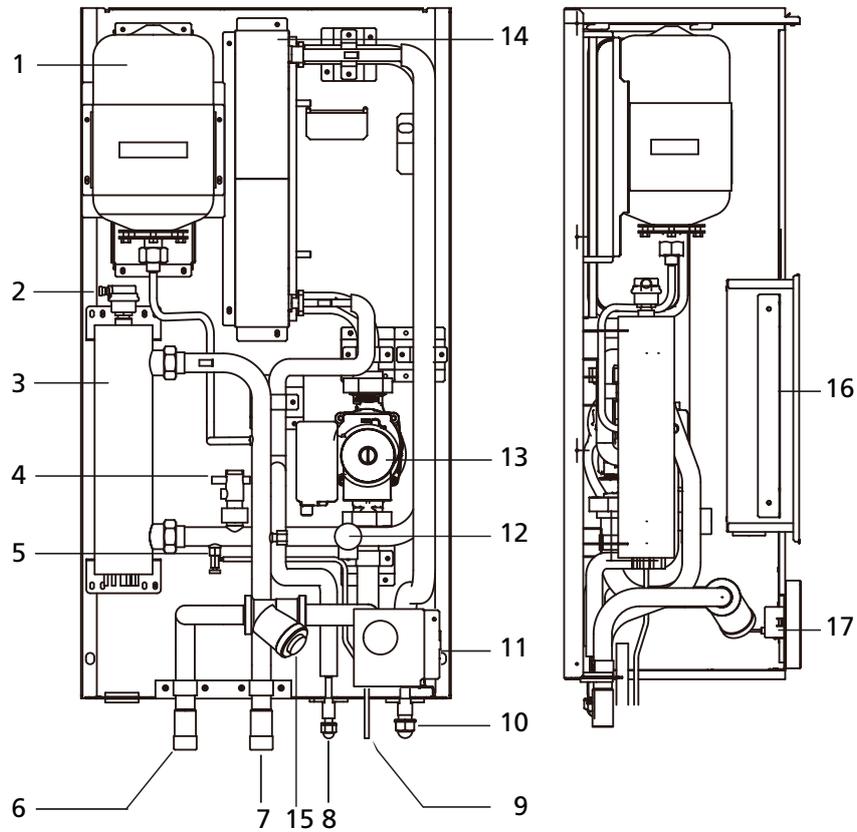
Indoor unit:



Outdoor unit:  
MU2-Y 105M

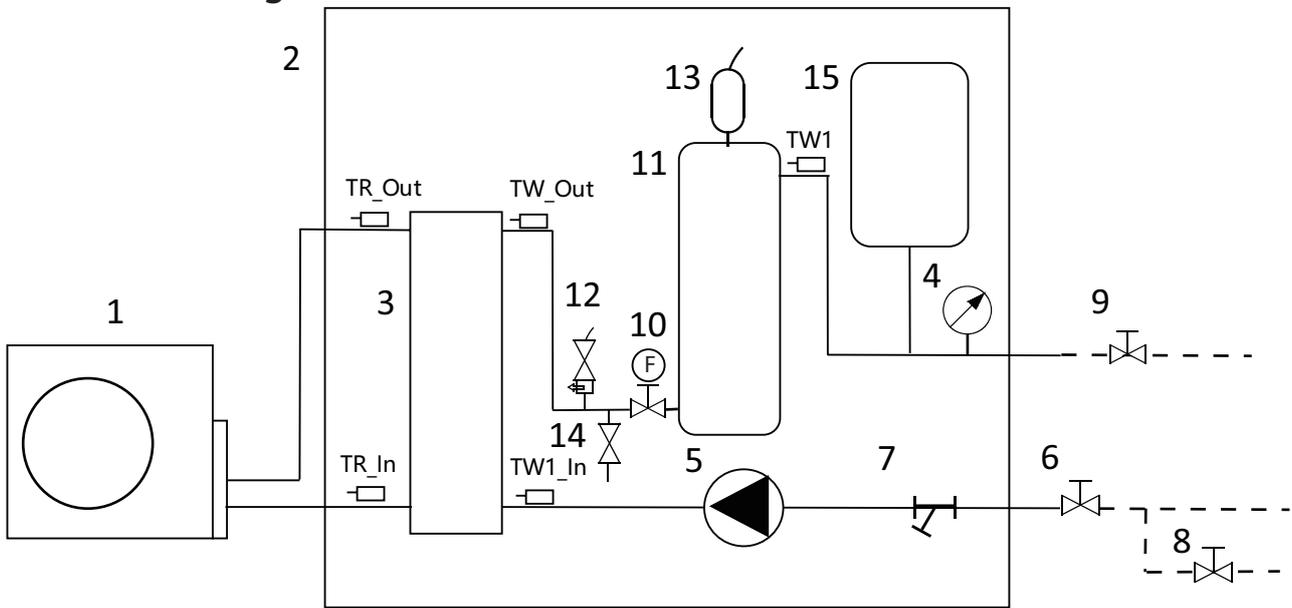


### 3. Part Names



- |  |   |
|--|---|
| 1. Expansion Vessel                      | 10. Refrigerant gas connection                    |
| 2. Automatic air purge valve             | 11. Manometer                                     |
| 3. Auxiliary heater vessel               | 12. Relief valve                                  |
| 4. Flow switch                           | 13. Pump  |
| 5. Drain valve                           | 14. Refrigerant to water heat exchanger           |
| 6. Water inlet Ø1" (welded connections)  | 15. Y-style filter ( There is an filter inside. ) |
| 7. Water outlet Ø1" (welded connections) | 16. Electric control box                          |
| 8. Refrigerant liquid connection         | 17. Wired controller                              |
| 9. Drainage                              |   |

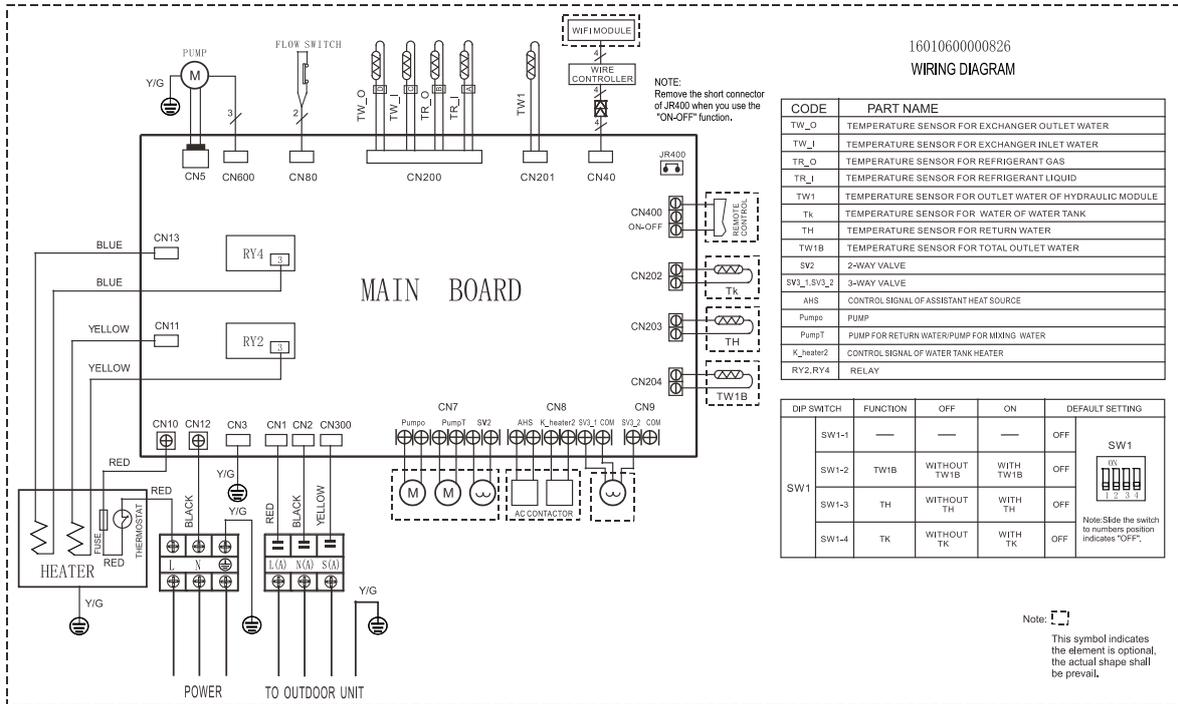
#### 4. Schematic Diagram



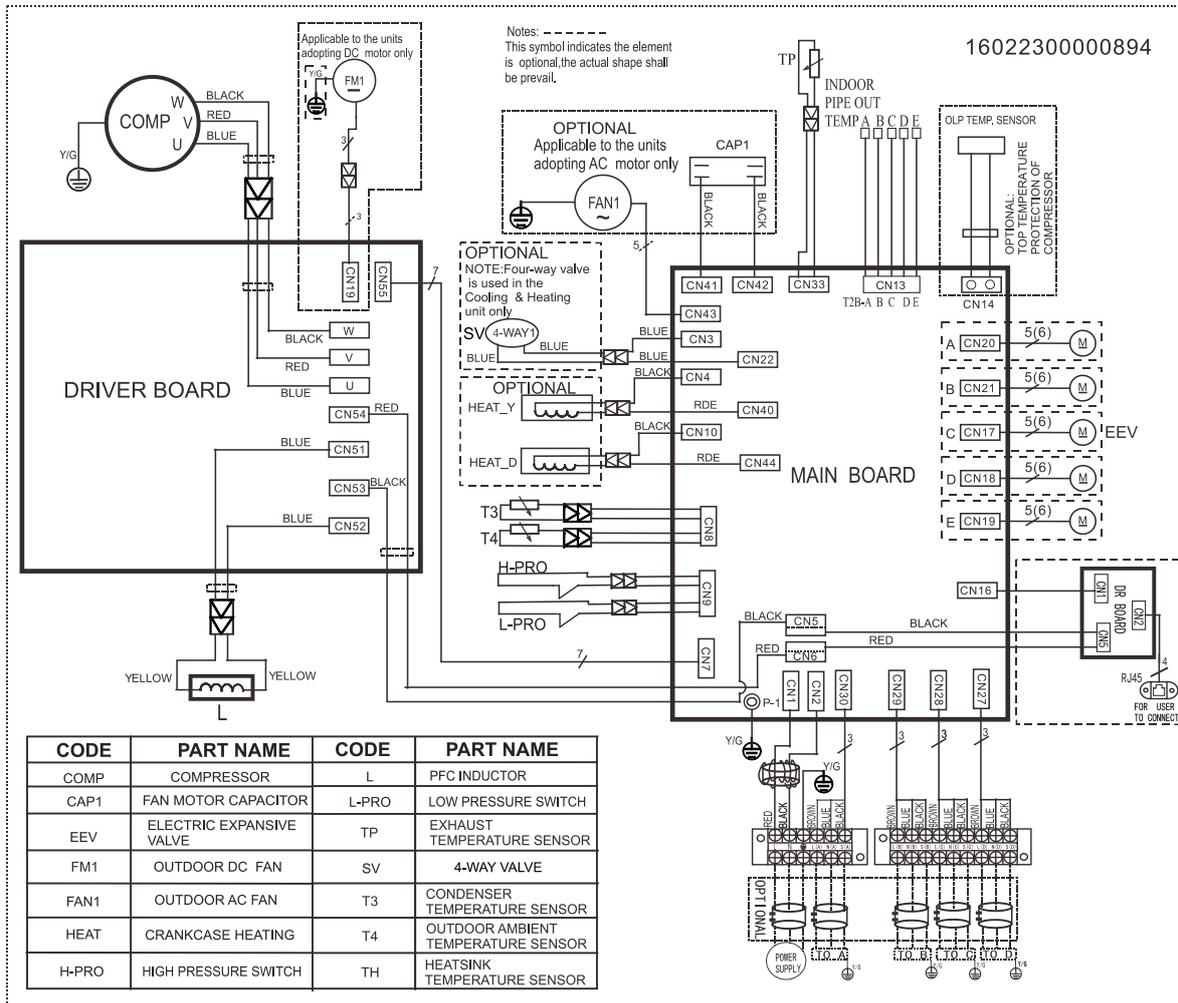
- |  |  |
|--|--|
| 1. Outdoor unit                        | 9. Shut-off valve                                      |
| 2. Indoor unit                         | 10. Flow switch  |
| 3. Refrigerant to water heat exchanger | 11. Auxiliary heater vessel<br>(Separate power supply) |
| 4. Manometer                           | 12. Pressure relieve valve                             |
| 5. Pump                                | 13. Automatic air purge valve                          |
| 6. Shut-off valve                      | 14. Drain valve  |
| 7. Filter                              | 15. Expansion vessel                                   |
| 8. Auto-water replenishing             |  |

# 5. Electrical Wiring Diagrams

Indoor unit: IHM1-Y 80M

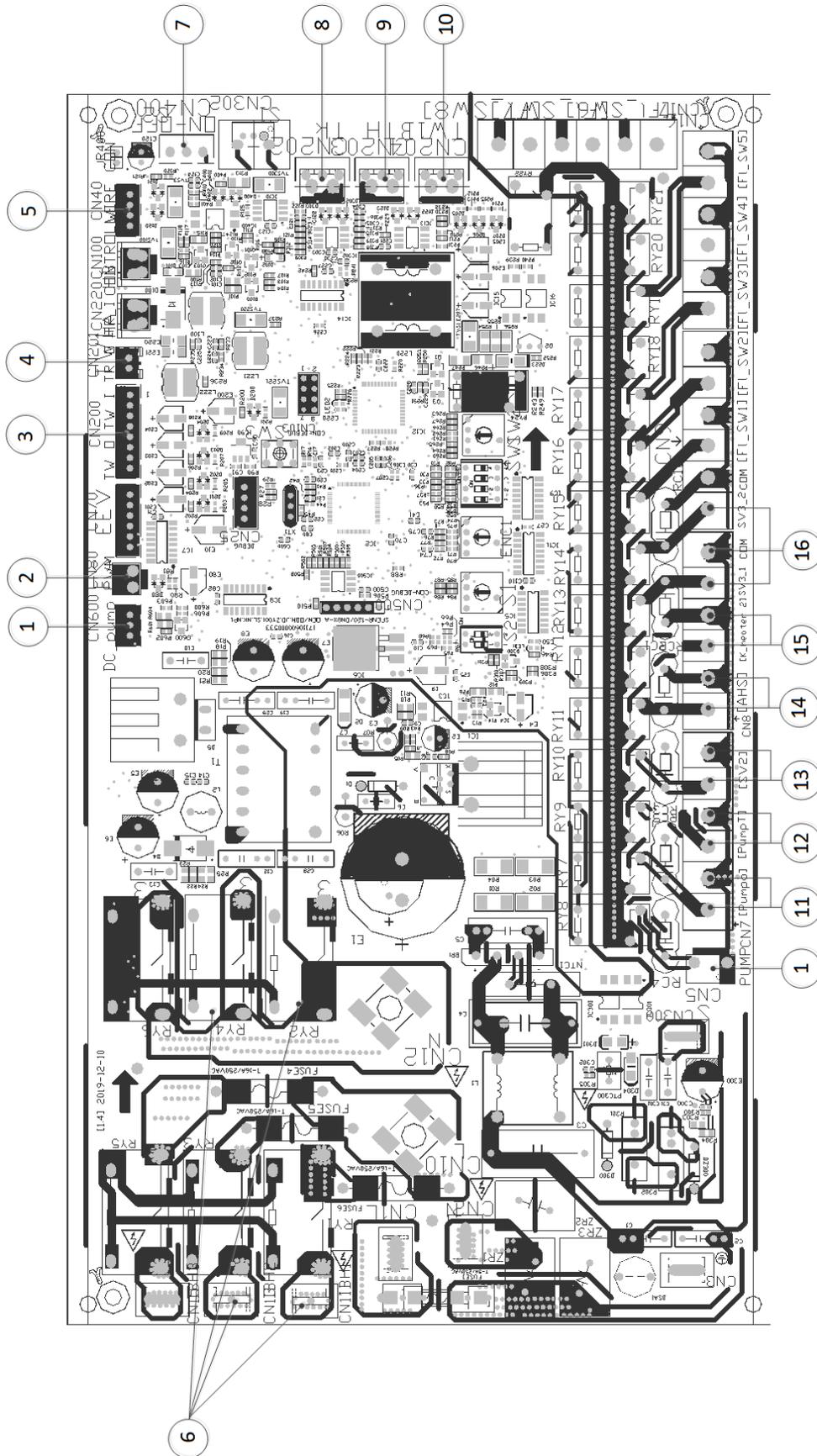


Outdoor unit: MU2-Y 105M



## 6. Printed Circuit Board Diagram

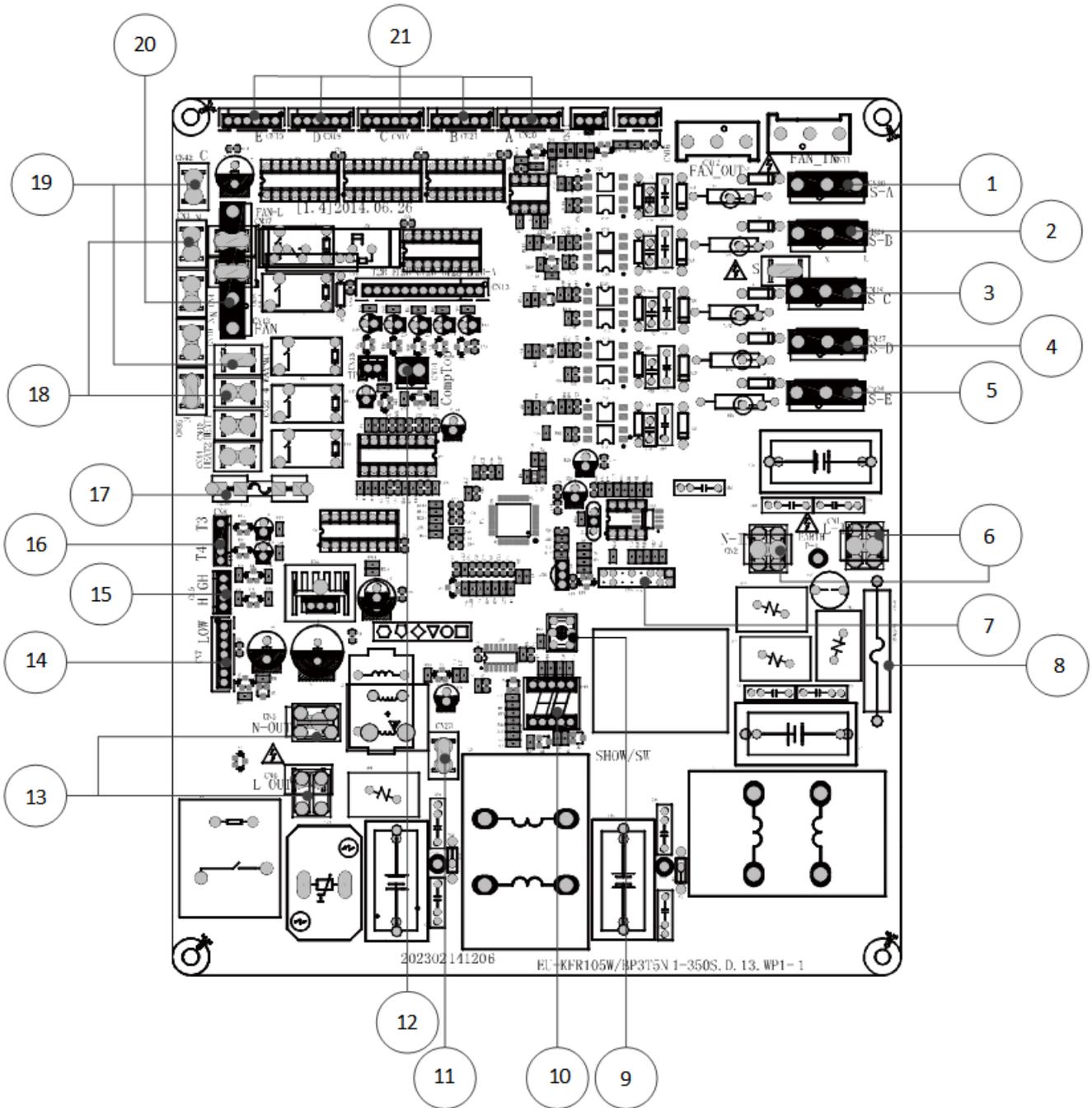
Indoor unit printed circuit board diagram IHM1-Y 80M



No.	Name	CN#	Meaning
1	Pump	CN600	connect to pump
		CN5	
2	PWM	CN80	connect to flow switch
3	TW_O	CN200	connect to temperature sensor of exchanger outlet
	TW_I		connect to temperature sensor of exchanger inlet
	TR_O		connect to temperature sensor of refrigerant gas
	TR_I		connect to temperature sensor of refrigerant liquid
4	TW1	CN201	connect to temperature sensor of outlet water of hydraulic module
5	WIRE	CN40	connect to wire controller
6	HEATER	CN13 CN11 RY4 RY2	connect to heater
7	ONOFF	CN400	Remote control (ON-OFF) terminal port The voltage of the port is 12V DC
8	TK	CN202	connect to temperature sensor of water of water tank
9	TH	CN203	connect to temperature sensor of return water
10	TW1B	CN204	connect to temperature sensor of total outlet water
11	Pumpo	CN7	connect to pump
12	PumpT		connect to pump for return water/pump for mixing water
13	SV2		connect to 2-way valve
14	AHS	CN8 CN9	connect to assistant heat source
15	K_heater2		connect to water tank heater
16	SV3_1, SV3_2		connect to 3-way valve

**Note: This section is for reference only. Please take practicality as standard.**

Outdoor unit printed circuit board diagram MU2-Y 105M

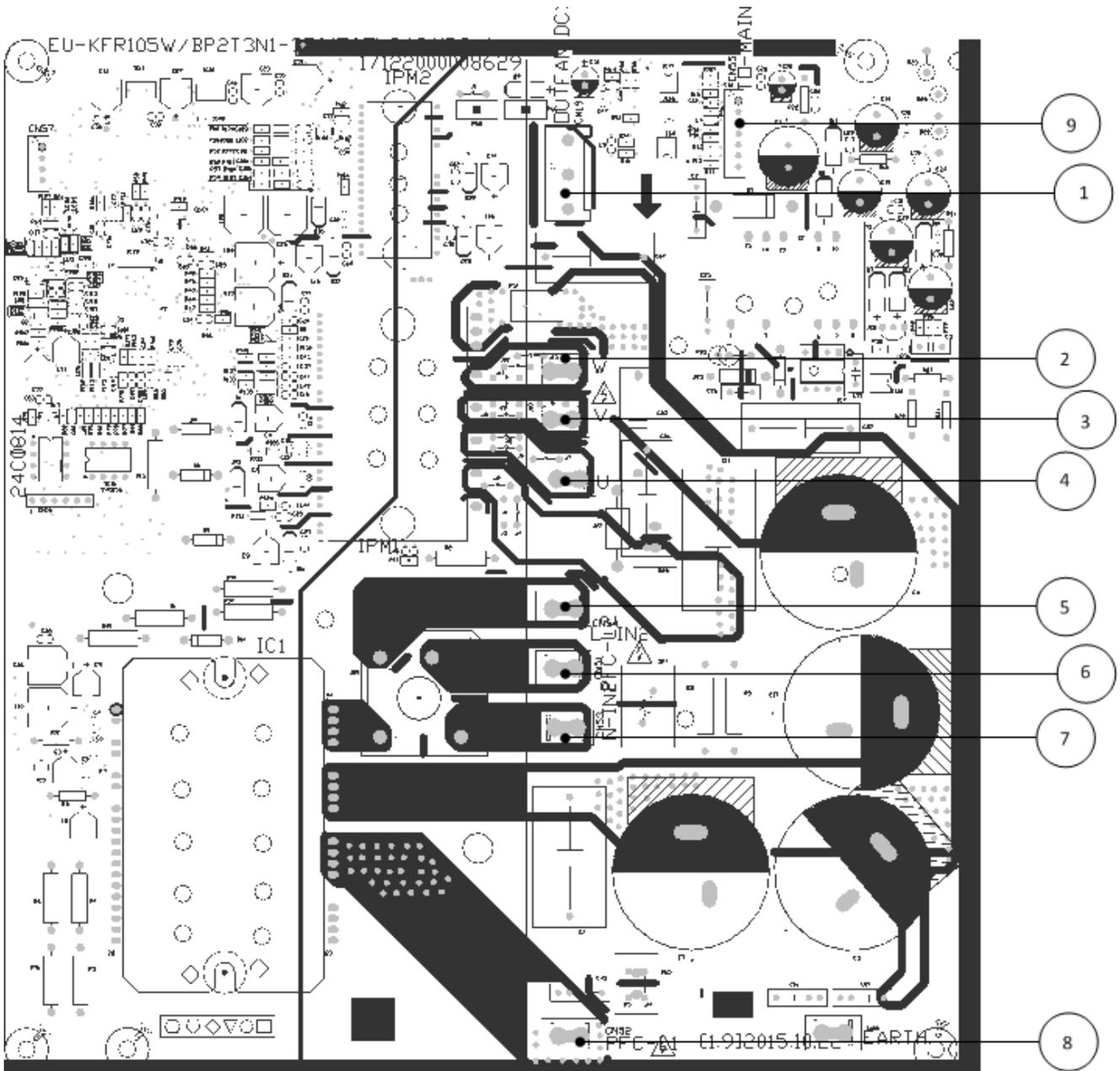


No.	Name	CN#	Meaning
1	S-A	CN30	Current loop communication A, signal wire, connect to the terminal (24V DC Pulse wave)
2	S-B	CN29	Current loop communication B, signal wire, connect to the terminal (24V DC Pulse wave)
3	S-C	CN28	Current loop communication C, signal wire, connect to the terminal (24V DC Pulse wave)
4	S-D	CN27	Current loop communication D, signal wire, connect to the terminal (24V DC Pulse wave)
5	S-E	CN26	Current loop communication E, signal wire, connect to the terminal (24V DC Pulse wave)
6	L-IN	CN1	Power supply, connect to the terminal (208-230V AC)
	N-IN	CN2	
7	Test report	CONdebug	Connect to detector
8	Fuse	Fuse 1	Fuse T30A/250V
9	SW1	SW1	Digital display button
10	DSP1	DSP1	Digital display
11	CN23	CN23	CN23 reserve
12	CN14	CN14	Connect to exhaust temperature sensor
13	N-OUT	CN5	Connect to the terminal (208-230V AC)
	L-OUT	CN6	
14	CN7	CN7	Connect to inverter driver
15	LOW / HIGH	CN9	Connect to high and low pressure sensor
16	T3 / T4	CN8	Connect to T3 / T4 temperature sensor
17	Fuse	Fuse 2	Fuse 5A/250V
18	L	CN22	Connect to the 4-way valve. When the 4-way is ON, output 208-230V AC.
	N	CN3	
19	CN42	CN42	Connect to motor capacitor
	CN41	CN41	

No.	Name	CN#	Meaning
20	AC Fan	CN43	Connect to AC fan motor
21	Electronic Expansion valve	CN20	connect to Electric Expansion Valve A
		CN21	connect to Electric Expansion Valve B
		CN17	connect to Electric Expansion Valve C
		CN18	connect to Electric Expansion Valve D
		CN19	connect to Electric Expansion Valve E

**Note: This section is for reference only. Please take practicality as standard.**

Outdoor unit IPM board diagram: MU2-Y 105M



No.	Name	CN#	Meaning
1	OUT FAN (DC)	CN19	Connect to DC motor
2	W	J13	Connect to compressor W
3	V	J10	Connect to compressor V
4	U	J7	Connect to compressor U
5	CN54	CN54	Connect to main PCB CN6
6	CN51	CN51	Connect to PFC inductor
7	CN53	CN53	Connect to main PCB CN5
8	CN52	CN52	Connect to PFC inductor
9	CN55	CN55	Connect to main PCB CN7

## 7. Electrical Characteristics

Model	IHM1-Y 80M	
INDOOR UNIT POWER	Phase	1-phase
	Frequency and Voltage	220-240V, 50Hz
	Power Wiring (mm <sup>2</sup> )	3×2.5
	Circuit Breaker/ Fuse (A)	32/16
Indoor/Outdoor Connecting Wiring	Strong Electric Signal(mm <sup>2</sup> )	4x1.0
	Weak Electric Signal(mm <sup>2</sup> )	

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# Product Features

## Contents

<b>1.</b>	<b>Operation Modes and Functions .....</b>	<b>39</b>
1.1	Abbreviation.....	39
1.2	Safety Features .....	39
1.3	Engineer mode .....	39
1.4	Mode conflicts and priorities.....	41
1.5	Space Heating Mode .....	42
1.6	DHW Mode .....	44
1.7	Heat&DHW Mode .....	45
1.8	Return Water Function .....	45
1.9	Water Tank Disinfection Function.....	46
1.10	ECO Function .....	46
1.11	Auto-Restart Function.....	46
1.12	Commissioning and other related functions.....	46
<b>2.</b>	<b>Wired Controller Functions .....</b>	<b>48</b>
<b>3.</b>	<b>SMART KIT Configuration Guidelines .....</b>	<b>53</b>

# 1. Operation Modes and Functions

## 1.1 Abbreviation

Unit element abbreviations

Abbreviation	Element
TW_in	Water inlet temperature of hydraulic module
TW_out	Water outlet temperature of heat exchanger
TW1	Water outlet temperature of hydraulic module
TW1B	Total outlet temperature of hydraulic module system (after expansion tank)
TR_in	Liquid pipe temperature
TR_out	Gas pipe temperature
Tk	Water temperature of the water tank
TH	Backwater temperature of the water tank
TW1S	Setting temperature of exchanger outlet water
TkS	Setting temperature of the water tank
ThS	Setting temperature of water of water tank
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
TP	Compressor discharge temperature

## 1.2 Safety Features

### 1.2.1 Water pump anti-stuck control

72 hours of no pump operation, the unit is forced operation for 30 seconds.

### 1.2.2 Temperature sensor of heat exchanger inlet and outlet water shedding protection

If  $TW_{out}-TW_{in} \leq -3^{\circ}C$  for 60S, the unit ceases operation.

## 1.3 Engineer mode

### 1.3.1 Enter the engineer mode

In shutdown state, press DHW and SET keys simultaneously for 5s to enter the engineer mode, and choose the parameters to be adjusted by pressing UP and DOWN keys. To set the parameters chose, press SET key to enter

the adjustment interface, the parameters will be subject to blinking display, and then adjust them by UP and DOWN keys. After completion of adjustment, press OK key to confirm the parameters.

- 1) Choose F:01, indicating the volume of the water tank. The value of the water tank of the indoor unit is displayed in the temperature setting area. Water tank volume=displayed value\* 10.
- 2) Choose F:02, indicating the maximum ambient temperature for heating operation, ranging from 35°C to 60°C.
- 3) Choose F:03, indicating the minimum ambient temperature for heating operation, ranging from -22°C to 0°C.
- 4) Choose F:04, indicating the setting value of start-stop return difference control for heating mode, ranging from 2°C to 10°C.
- 5) Choose F:05, indicating the running interval of the water pump in standby mode, ranging from 1min to 60min.
- 6) Choose F:06, indicating the continuous running time of the water pump in standby mode, ranging from 3min to 60min.
- 7) Choose F:07, indicating the ambient temperature for startup of the built-in EA heater of the hydraulic module, ranging from -15°C to 10°C.
- 8) Choose F:08, indicating the temperature return difference for startup of the built-in EA heater of the hydraulic module, ranging from 2°C to 10°C.
- 9) Choose F:09, indicating the delayed startup time of the built-in EA heater of the hydraulic module, ranging from 15min to 120min.
- 10) Choose F:10, indicating the delayed startup time between the first group and the second group of the built-in EA heater, ranging from 5min to 30min.
- 11) Choose F:11, indicating the delayed startup time between the second group and the third group of the built-in EA heater, ranging from 5min to 30min.
- 12) Choose F:12, indicating the temperature return difference for startup of the external heat source, ranging from 2°C to 10°C.
- 13) Choose F:13, indicating the startup time lag of the external heat source, ranging from 15min to 120min.
- 14) Choose F:14, indicating the ambient temperature for startup of the external heat source, ranging from -15°C to 10°C.

- 15) Choose F:15, indicating the temperature return difference of the heating water, ranging from 2°C to 10°C.
- 16) Choose F:16, indicating the water temperature of water tank for startup of the EA heater, ranging from 40°C to 54°C.
- 17) Choose F:17, indicating the continuous running time of heating in heating + heating water mode, ranging from 60min to 240min.
- 18) Choose F:18, indicating the continuous running time of heating water in heating + heating water mode, ranging from 60min to 180min.
- 19) Choose F:19, indicating the set temperature of the return water, ranging from 15°C to 60°C.
- 20) Choose F:20, indicating the temperature return difference of the return water, ranging from 0°C to 8°C.
- 21) Choose F:21, indicate the continuous running time of the return water, ranging from 5min to 60min.
- 22) Choose F:22, indicating the interval time of the return water, ranging from 10min to 120min.
- 23) Choose F:23, indicating the disinfection temperature of the water tank, ranging from 65°C to 70°C.
- 24) Choose F:24, indicating the continuous disinfection time of the water tank, ranging from 30min to 120min.
- 25) Choose F:25, indicating the antifreezing trigger temperature for shutdown, ranging from 1°C to 4°C.
- 26) Choose F:26, indicating the heating water priority of the hydraulic module: 0: no priority; 1: priority.
- 27) Choose F:27, indicating whether the automatic return water is valid: 0: invalid; 1: valid.
- 28) Choose F:28, indicating the operation method of the water pump in the shutdown mode at the specified temperature: 0: intermittent; 1: continuous.
- 29) Choose F:29, indicating whether the built-in EA heater is allowed to be on: 0: forbidden; 1: allowed.
- 30) Choose F:30, indicating whether the service EA heater is allowed to be on: 0: forbidden; 1: allowed. (Reserved function, cannot be used)
- 31) Choose F:31, indicating whether the EA heater of the water tank is allowed to be on: 0: forbidden; 1: allowed. (Reserved function, cannot be used)
- 32) Choose F: 32, indicating whether the water heating mode is prior to the indoor unit of the air conditioner: 0: No; 1: Yes.
- 33) Choose F: 33, indicating whether the hydraulic module and the indoor unit of the air conditioner are allowed to operate at the same time: 0: No; 1: Yes.
- 34) Choose F:34, indicating the forced refrigeration function: OF: off; On: on. In case of forced refrigeration, press ON/OFF and RETURN to exit the forced refrigeration. Other keys are invalid.

### 1.3.2 Query Mode

- 1) In On or Off state, press SET for 2 seconds and enter the query mode.
- 2) Enter the engineer mode, if CL is displayed in the time zone at the lower right corner, it indicates the cleaning function. Now press SET and enter the setting interface. Press UP and DOWN and choose ON or OFF, and then press OK for confirmation. Choose ON to turn on the cleaning function. Meanwhile, CL is displayed on the screen. Press ON or BACK to exit, or exit after the indoor unit completes the cleaning function.
- 3) Press UP and DOWNF and choose other parameters for query. If Fb is chosen, turn on the forced water return function. Press SET and enter the setting interface to choose whether such function is started. Choose ON to turn on such function.
- 4) Press UP and DOWNF and choose other parameters for query. If Cb is chosen, turn on the disinfection timing function. Press SET and enter the setting interface to choose whether the forced water return function is started. Choose ON to turn on the forced water return function. Set the day of the week, press OK and enter the time setting, and then press OK to confirm.
- 5) Press UP and choose T: 01, indicating the temperature of inlet water (TW\_in).
- 6) Choose T: 02, indicating the temperature of exchanger outlet water temperature sensor (TW\_out).
- 7) Choose T: 03, indicating the temperature of outlet water of hydraulic module (TW1).
- 8) Choose T: 04, indicating the temperature of outlet water of temperature sensor for refrigerant gas (TR\_out).
- 9) Choose T: 05, indicating the temperature of inlet water of temperature sensor for refrigerant liquid (TR\_in).
- 10) Choose T: 06, indicating the temperature of water tank (Tk).
- 11) Choose T: 07, indicating the temperature of temperature sensor for return water (TH).
- 12) Choose T: 08, indicating the temperature of total outlet water of TW1B system.

- 13) Choose T: 09, indicating the temperature of outdoor T3.
- 14) Choose T: 10, indicating the temperature of outdoor T4.
- 15) Choose PU: 11, indicating the status of pump.
- 16) Choose Er: 12, indicating the fault code.
- 17) Press the key for 30 seconds from the last operation, or press Back and ON/OFF to exit directly.

## 1.4 Mode conflicts and priorities

Enter the engineer mode to set the parameters chose:

Choose F: 32, indicating whether the water heating mode is prior to the indoor unit of the air conditioner: 0: No; 1: Yes. default:1

Choose F: 33, indicating whether the hydraulic module and the indoor unit of the air conditioner are allowed to operate at the same time: 0: No; 1: Yes. default:0

### 1.4.1 While the water heating mode is prior to the indoor unit of the air conditioner and the hydraulic module and the indoor unit of the air conditioner are not allowed to operate at the same time(default)

Indoor / Hydro-M	Heating	Cooling or drying	Fan only
DHW	Intermittent operation1	Intermittent operation1	Intermittent operation1
Heating	Mutually exclusive operation	Mutually exclusive operation	Mutually exclusive operation

Intermittent operation1:

No matter who starts first, as long as the outdoor unit receives the operation demand of the hot water mode sent by the hydraulic module, it will turn to the hot water mode. When the hot water reaches the temperature and stops, it will turn to the indoor mode. When the hot water mode reaches the operation demand in the process of air conditioning mode operation, it needs to turn to the hot water mode operation. When the hot water mode is running, the indoor unit is in standby, and the mode conflict is displayed. When the air conditioner operates, the hydraulic module only stops when it reaches the temperature, and there is no need to display the mode conflict. When more than one air conditioner is turned on at the same time, the indoor units are handled according to the principle of mode conflict.

Mutually exclusive operation:

According to the principle of "who starts first, who runs first", it is necessary to wait for the mode that runs first to shut down before switching to another mode. The mode that starts but does not run is in standby mode. When more than one indoor air conditioner is started at the same time, the mode conflict principle is used to deal with the indoor unit. When the indoor unit is running first, as long as one indoor unit is on, the hydraulic module can not run. The indoor unit (hydraulic module or air conditioner indoor unit) in standby mode reports mode conflict.

### 1.4.2 While the water heating mode is prior to the indoor unit of the air conditioner and the hydraulic module and the indoor unit of the air conditioner are allowed to operate at the same time(optional)

Indoor / Hydro-M	Heating	Cooling or drying	Fan only
DHW	Intermittent operation1	Intermittent operation1	Intermittent operation1
Heating	Running at the same time	Mode conflict	Mode conflict

### 1.4.3 While the water heating mode is not prior to the indoor unit of the air conditioner and the hydraulic module and the indoor unit of the air conditioner are not allowed to operate at the same time(optional)

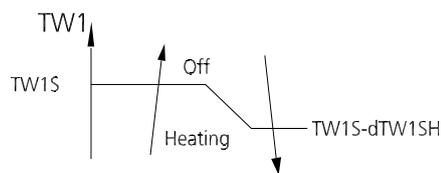
Indoor / Hydro-M	Heating	Cooling or drying	Fan only
DHW	Intermittent operation2	Intermittent operation2	Intermittent operation2
Heating	Mutually exclusive operation	Mutually exclusive operation	Mutually exclusive operation

Intermittent operation2:

According to the principle of hot water priority. Standby mode shows mode conflict. If the hot water mode runs first, it needs to wait for the hot water to reach the temperature and stop or the hot water to run continuously for 90 minutes before turning to the indoor unit mode. After the indoor unit runs to the temperature and stops or runs for 120 minutes, if the hot water mode has operation demand at this time, it will turn to the hot water mode. If the indoor mode runs first, and the outdoor unit receives the operation demand signal of the hot water mode and turns to the hot water mode, it needs to wait until the hot water reaches the temperature and stops or the hot water continuously runs for 90 minutes before turning to the indoor mode.

**1.4.4 While the water heating mode is not prior to the indoor unit of the air conditioner and the hydraulic module and the indoor unit of the air conditioner are allowed to operate at the same time(optional)**

Indoor Hydro-M	Heating	Cooling or drying	Fan only
DHW	Running at the same time	Intermittent operation2	Intermittent operation2
Heating	Running at the same time	Mode conflict	Mode conflict

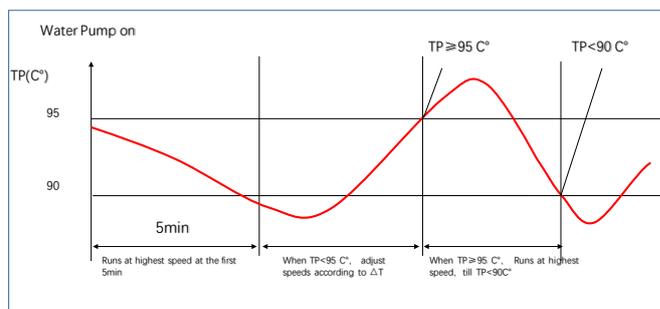


Open the two-way valve and three-way valve connected to heating pipelines for heating. Start the water pump, detect water flow, and start the compressor after water flow is normal.

The built-in water pump and service water pump are started to operate at the same time.

**1.5.2 Water Pump Control**

- The water pump runs at the highest speed for 5 minutes from off to on. After running for 5 minutes, according to TP and ΔT to adjust every 40s(ΔT=TW1-TW\_in)



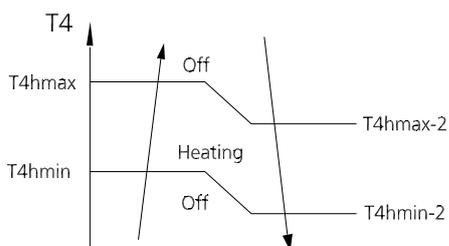
- If TP < 95°C

ΔT > 7°C	Decrease by 2% per cycle
3°C ≤ ΔT ≤ 7°C	hold
ΔT < 3°C	Increase by 2% per cycle

- If TP ≥ 95°C, the water pump runs at the highest speed until TP < 90°C, it will be transferred to normal control.
- After the pump reaches the set temperature and shuts down, it's in intermittent operation by default. By starting the pump for 3 minutes and close it for 10 minutes, it can be changed to continuous operation via engineering setting, which consumes more electricity.
  - Choose F:28, indicating the water pump in the shutdown mode at the set temperature: 0: intermittent; 1: continuous. Default: 0
  - Choose F:05, indicating the running interval of the water pump in standby mode: 1~60min. Default: 3min.
  - Choose F:06, indicating the continuous running time of the water pump in standby mode: 3~60min. Default: 10min.

**1.5 Space Heating Mode**

**1.5.1 Unit Control**



For outdoor ambient temperature limits for heating, the maximum temperature is set at F: 02(default 43°C), the minimum temperature is set at F: 03, and the parameter minus 2 is the actual minimum temperature (default -20°C).

If the upper and lower limits are exceeded, the air conditioner will shut down.

- Choose F:02, indicating the maximum ambient temperature for heating operation, ranging from 35°C to 60°C. The default value is 43°C .
- Choose F:03, indicating the minimum ambient temperature for heating operation, ranging from -22°C to 0°C. The default value is -18°C .

If the outlet water temperature reaches the set value, the air conditioner will shut down. If such temperature reduces to the difference value, the air conditioner will start.

- Choose F:04, indicating the set value of return difference between start and stop of control heating, with the range of 2 ~ 10°C. The default value is 5°C.

### 1.5.3 Built-in Electrical Heater Control

Three built-in electric heaters (IBH1, IBH2, IBH3) are installed in the hydraulic module, each of which is 1550W (now two groups totaling 3100w are installed). The built-in EA heater can be turned off through engineering settings.

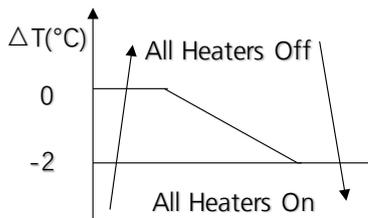
Choose F:29, indicating whether the built-in EA heater is started: 0: forbidden; 1: allowed. Default: 1

The priority level is in accordance with forced operation > defrosting operation > normal operation.

#### 1) Forced Operation

Enter Condition:

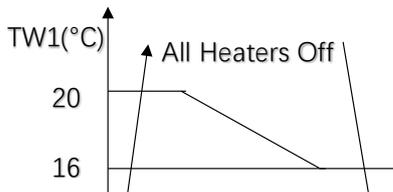
- Electric heater is forced to run with wired controller
  - If  $TW1 < TW1S - 2C$ , IBH1, IBH2 and IBH3 are turned on at same time.
  - If  $TW1 \geq TW1S$ , IBH1, IBH2 and IBH3 are turned off at same time.



#### 2) Defrosting Operation

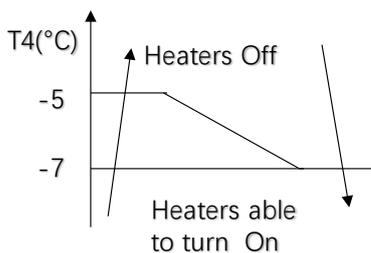
In defrosting state, the electric heater is controlled according to water outlet temperature TW1.

- If  $TW1 < 16°C$ , IBH1, IBH2 and IBH3 are turned on at same time..
- If  $TW1 > 20°C$ , IBH1, IBH2 and IBH3 are turned off at same time.



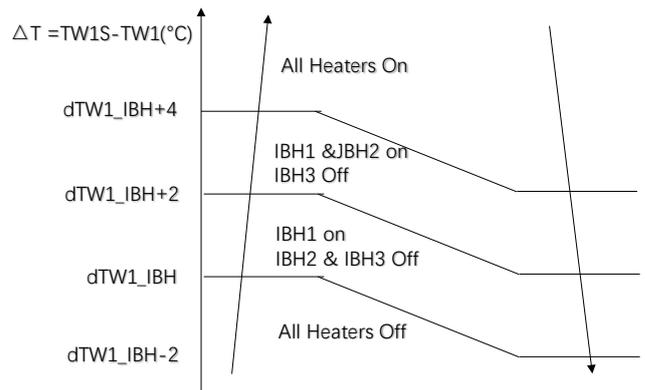
#### 3) Normal Operation

When  $T4 < -7°C$ , auxiliary electrical heaters are able to turned on.



Control the electric heaters according to  $dTW1\_IBH$  (Default: 5°C)(temperature difference between electric heater's inlet and outlet water)

- If  $TW1 \leq TW1S - dTW1\_IBH°C$ , IBH1 is turned on.  $TW1 > TW1S - dTW1\_IBH + 2°C$ , IBH1 is turned off.
- If  $TW1 \leq TW1S - dTW1\_IBH - 2°C$ , IBH2 is turned on.  $TW1 > TW1S - dTW1\_IBH°C$ , IBH2 is turned off.
- If  $TW1 \leq TW1S - dTW1\_IBH - 4°C$ , IBH3 is turned on.  $TW1 > TW1S - dTW1\_IBH - 2°C$ , IBH3 is turned off.

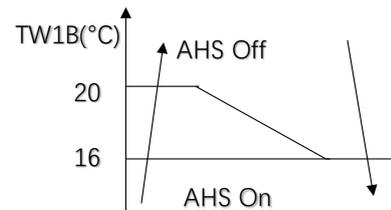


### 1.5.4 Service EA Heating (auxiliary heat source or external heat source)

#### 1) Defrosting Operation

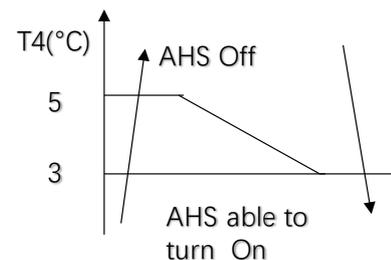
In defrosting state, the electric heater is controlled according to water outlet temperature TW1.

- If  $TW1 < 16°C$ , AHS is turned on.
- If  $TW1 > 20°C$ , AHS is turned off.



#### 2) Normal Operation

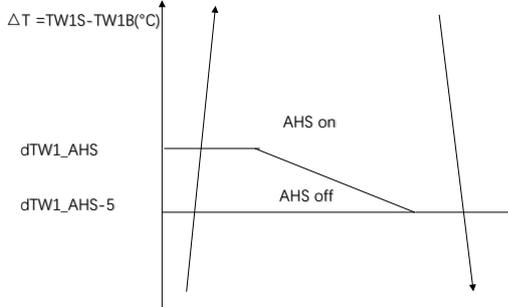
When  $T4 < 3°C$ , AHS is able to turned on.



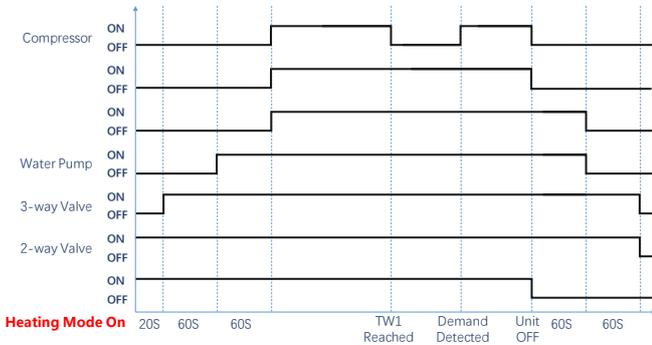
Control the electric heaters according to  $dTW1\_$

AHS(Default: 5°C)(temperature difference between water set and real temp)

- If  $TW1B \leq TW1S - dTW1\_AHS$ , AHS is turned on.
- $TW1B > TW1S - dTW1\_AHS + 5^\circ C$ , AHS is turned off.



### 1.5.5 Outline of Parts Control



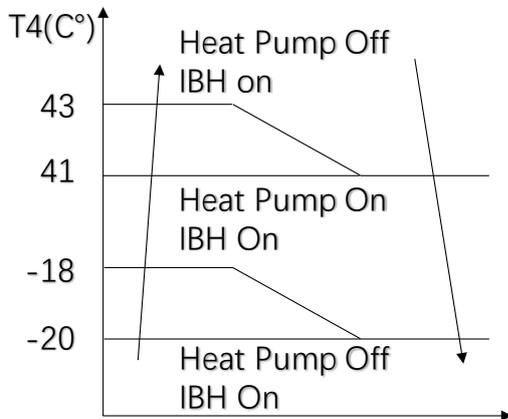
Note:

1.3-way valve functions to switch the circulating water between floor-heating/radiator and water tank.

2.2-way valve functions to close or open the circulating water.

## 1.6 DHW Mode

### 1.6.1 Unit Control



- Connect the water temperature sensor of the water tank (TK). If SW1-4 is OFF by default, the water tank

won't be connected. If SW1-4 is ON, the temperature sensor and EA heater of the water tank are active, and at the moment, the return water can be opened.

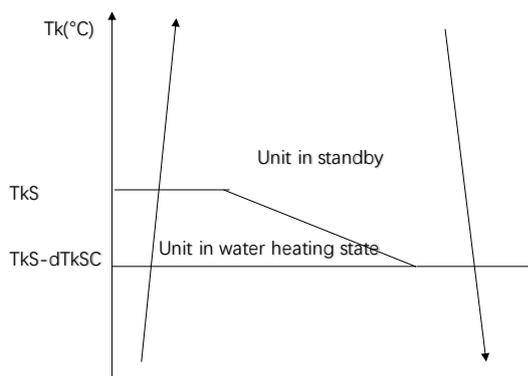
- If the ambient temperature( $T_4$ ) is between  $-20^\circ C$  and  $43^\circ C$ , the heat pump heating and the EA heater are used for heating. Otherwise, only EA heater can be used.
- 1) Choose F:02, indicating the maximum ambient temperature for heating operation, ranging from  $35^\circ C$  to  $60^\circ C$ . The default value is  $43^\circ C$ .
  - 2) Choose F:03, indicating the minimum ambient temperature for heating operation, ranging from  $-22^\circ C$  to  $0^\circ C$ . The default value is  $-18^\circ C$ .
  - 3) Choose F: 01, indicating the volume of the water tank. Display the number of water tanks of the indoor unit in the temperature setting area. Water tank volume = displayed value \* 10.

### 1.6.2 Water Pump Control

- Three built-in electric heaters are installed in the hydraulic module, and their control and heating modes are identical.
- The temperature of the water tank is controlled within  $5^\circ C$  return difference and set via F: 15.
- Close the two-way valve and three-way valve connected to pipelines in the water heating tank for heating. Start the water pump, detect water flow, and start the compressor after water flow is normal.
- Close the service water pump in heating mode. It is suggested that the service water pump should be installed on the heating pipeline instead of on the main pipeline.

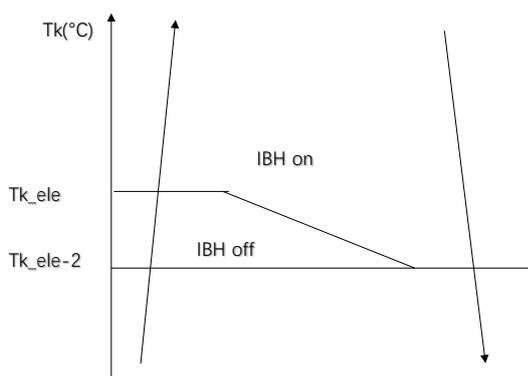
### 1.6.3 Electrical Auxiliary Heater Control

- The AHS of the service EA heater is closed in water heating mode.
- Control of EA heaters of the water tank
  - If the ambient temperature( $T_4$ ) is lower than  $-20^\circ C$  or higher than  $43^\circ C$ , it is not allowed to start the heat pump, but the EA heater of water tank will run.



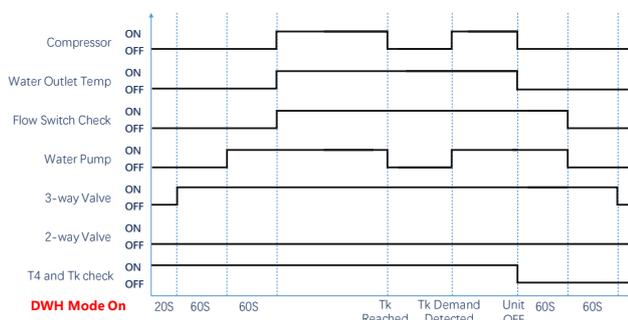
Choose F:15, indicating the temperature difference of dTkSC water heating, ranging from 2°C to 10°C. The default value is 5°C.

- If the ambient temperature is between -20°C and 43°C and the water temperature is greater than 52°C, start the EA heater, and stop it at the set temperature.



Choose F:16, indicating the temperature (Tk\_ele) of water tank for startup of the EA heater, ranging from -40°C to 54°C. Default: 52°C.

### 1.6.4 Outline of Parts Control

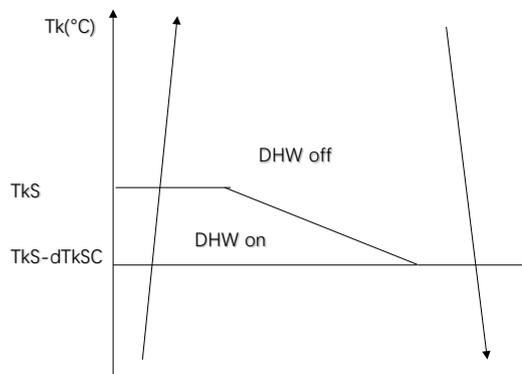


Note:

1. 3-way valve functions to switch the circulating water between floor-heating/radiator and water tank.
2. 2-way valve functions to close or open the circulating water.

## 1.7 Heat and DHW Mode

### 1.7.1 While the water tank temperature reaches the set temperature



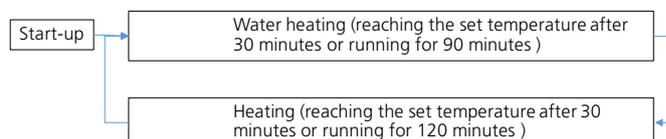
Choose F:15, indicating the temperature difference of dTkSC water heating, ranging from 2°C to 10°C. The default value is 5°C.

### 1.7.2 DHW Priority

- If the wired controller is set as water heating preferred, the hot water mode will be operated first in case of hot water demand, and such mode runs for 30 minutes and will be changed to heating mode at the set temperature.

### 1.7.3 No Setting Priority

If the wired controller has no setting priority:



- 1) Choose F:26, indicating the water heating preferred of the hydraulic module: 0: not preferred; 1: preferred. Default: 1
- 2) Choose F:17, indicating the continuous running time of heating in heating + water heating mode, ranging from 60min to 240min. Default: 120min.
- 3) Choose F:18, indicating the continuous running time of water heating in heating + water heating mode, ranging from 60min to 180 min. Default: 90min.

## 1.8 Return Water Function

- Connect the temperature sensor for return water (TH) and the return water pump. SW1-3 is OFF by default. If SW1-3 is ON, the return water pump and the temperature sensor for return water are effective.
- Return water control is divided into: user forced return water and automatic return water. Whether the automatic return water is valid needs to be set

in the wired controller, and valid by default. If the temperature of return water is less than 42-3°C, the return water pump runs for 10min or shuts down at 42°C, with an interval of 30min.

- 1) Choose F:27, indicating whether the automatic return water is valid: 0: invalid; 1: valid. Default: 1
- 2) Choose F:19, indicating the set temperature of return water, ranging from 15°C to 60°C. Default: 42°C.
- 3) Choose F:20, indicating the temperature difference of return water, ranging from 0°C to 8°C. Default: 3°C.
- 4) Choose F:21, indicating the continuous running time of return water, ranging from 5min to 60 min. Default: 10min.
- 5) Choose F:22, indicating the interval time of return water, ranging from 10min to 120min. Default: 30min.

## 1.9 Water Tank Disinfection Function

- In case of the hot water mode or heating + water heating mode in On/Off, press the function key to choose the disinfection icon, and then press OK to turn on or off the disinfection function.
  - In case of the hot water mode or heating + water heating mode in On/Off, press the function key to choose the disinfection icon, and then press OK to turn on or off the disinfection function.
  - Disinfection operation: before the water temperature of the water tank is lower than 55°C, the water tank is heated with the heat pump; such tank is heated from 55°C to 70°C with the EA heater, and it is kept for 60min at the set temperature.
- 1) Choose F:23, indicating the temperature for water tank disinfection, ranging from 65°C to 70°C. The default value is 70°C.
  - 2) Choose F:24, indicating the continuous disinfection time of water tank, ranging from 30min to 120min. The default value is 60min.

## 1.10 ECO function

- The ECO function is available in HEAT mode or HEAT and DHW mode.
- The operational process for ECO mode is as follows:
  - The temperature decreases 1°C every hour. After 2 hours, the temperature stops decreasing.
- After the energy saving function is turned on, the turbo heating function is cancelled.

## 1.11 Auto-Restart function

- The indoor unit has an auto-restart module that

allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

## 1.12 Commissioning and other related functions

### 1.12.1 Cleaning function

Press SET for two seconds and enter the query mode. Enter the engineer mode, if CL is displayed in the time zone at the lower right corner, it indicated the cleaning function. Now press SET and enter the setting interface. Press UP and DOWN and choose ON or OFF, and then press OK for confirmation. Choose ON and turn on the cleaning function. Meanwhile, CL is displayed on the screen. Press ON or BACK to exit, or exit after the indoor unit runs 20min and completes the cleaning function.

- 1) Open the two-way valve SV2
- 2) Then open the three-way valve SV3 to the end water flow (SV3\_1 energized, SV3\_2 de-energized)
- 3) Start the built-in water pump and service water pump (PUMPO); (the water flow fault is not detected during the operation process);

### 1.12.2 Forced return water

Press UP and DOWN and choose other parameters for query. If Fb is chosen, turn on the forced water return function. Press SET and enter the setting interface to choose whether such function is started. Choose ON to turn on such function.

### 1.12.3 Forced operation function

Press the SW3 button on PCB, the unit will run as below sequence:

Status of wired controller → Forced heating → (Forced cooling) → Off



- Forced heating mode:

In case of forced heating, the water temperature is set at 35°C, and all kinds of general protection functions are effective.

- Forced cooling mode:

The equipment shuts down if the forced cooling time is more than or equal to 10min. Energize and open the two-way valve and the three-way valve SV3\_1 of hydraulic module, and start the water pump. The flow switch fault in the hydraulic module isn't detected. The low-voltage switch fault, water flow switch fault and shutdown at the unset temperature are not detected. Other protection

---

faults are valid, which is not limited by the judgment of ambient temperature and water temperature.

Note: forced cooling can also be switched on in the wired controller engineer mode. Choose F: 34, indicating the forced cooling function: OFF: switched off; ON: switched on. In case of forced cooling, press ON/OFF and BACK to exit the forced cooling. Other keys are invalid.

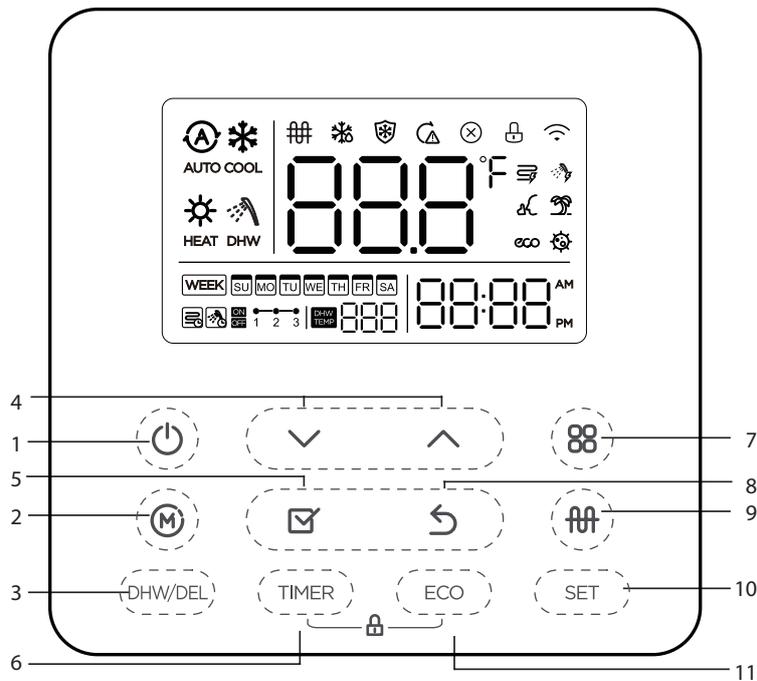
- Forced defrosting control: in the forced cooling state (the single heat engine is in forced automatic state), press and hold Forced for 5 seconds to enter the forced defrosting immediately.

## 2. Wired Controller Functions

### LCD Wired Remote Controller KJR-120J/TFBG-E

The KJR-120J/TFBG-E wired remote controller is standard for hydraulic module.

#### i) Buttons and Functions



- |                  |                   |
|------------------|-------------------|
| 1 POWER button   | 7 FUNC. button    |
| 2 MODE button    | 8 BACK button     |
| 3 DHW/DEL button | 9 AUXILIARY       |
| 4 ADJUST button  | ELECTRICAL button |
| 5 CONFIRM button | 10 SET button     |
| 6 TIMER button   | 11 ECO button     |



### iii) Preparatory operation

#### Set the current day and time

1. Press the Timer button for 2 seconds or more. The timer display will flash.



2. Press the button "∨" or "∧" to set the date. The selected date will flash.



3. The date setting is finished and the time setting is prepared after pressing Timer button or CONFIRM button or there is no pressing button in 10 seconds.



4. Press the button "∨" or "∧" to set the current time. Press repeatedly to adjust the current time in 1-minute increments. Press and hold to adjust the current time continuous.



ex. Monday 11:20

5. The setting is done after pressing CONFIRM button or there is no pressing button in 10 seconds.
6. Time scale selection Press the buttons "TIMER" and "DHW/DEL" for 3 seconds will alternate the clock time display between the 12h & 24h scale.



### iv) Operation

1. To start/stop operation

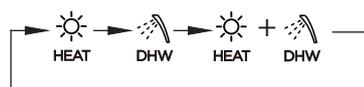
Press the Power button.



2. To set the operation mode

Operation mode setting

Press the Mode button to set the operation mode.

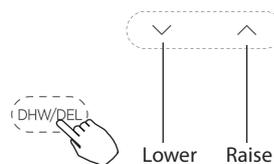


NOTE: When HEAT and DHW mode is selected, the system will heat alternate between heating hot water and domestic hot water.

#### 3. Temperature setting

Press DHW key to enter the hot water setting temperature adjustment, press "∨" and "∧" to select the temperature.

Setting Temperature Range :35~55°C(95~131°F).



#### 4. °C & °F scale selection

Press the buttons "∨" and "∧" for 3 seconds will alternate the temperature display between the °C & °F scale.

#### 5. Child lock function

Press the buttons "TIMER" and "ECO" for 3 seconds to activate the child lock function and lock all buttons on the wire controller.

Press the buttons again for 3 seconds to deactivate the child lock function.



When the child lock function is activated, the mark  appears.

#### 7. Energy saving button (Effective in heating mode)

Press this button, the indoor unit operates in economy mode, press again, exit this mode (it may be ineffective for some models)



#### 8. Auxiliary electrical heater function

Press this button to turn on or off the auxiliary electric heat function.

- Press this button, it is forced to turn on the electric auxiliary heating (the user has a turbo heating demand). Electric auxiliary heat is turned on when it meets the mandatory opening condition.
- Press Again, it is the electric auxiliary heat automatic control. Electric auxiliary heat is turned on at the

most suitable time according to the control scheme, considering energy saving and comfort.



### 9. Set button

Press SET button for 2 seconds to enter the query mode.



1). After entering the query mode, the time area at the lower right corner displays CL, indicating the cleaning function.

2). Press SET button to enter the setting interface, press “√” and “^” to select on or of, then press Confm button to confirm, select on to indicate the cleaning function is turned on, at the same time, the interface will display CL.



3). Press Power button or Back button to exit, or the internal machine finishes the cleaning function to exit.



4). Press “√” and “^” can choose other parameter query.



- When FB is selected, it means the forced return function. Press set to enter the setting interface, and select whether to enable forced return. When on is selected, it means enabled.
- When CB is selected, it means the disinfection function. Press set to enter the setting interface, select whether to enable disinfection function. When On is selected, it means that it is on. After selecting ON, set the day of the week. After setting, press Confm button to enter the time setting, and then press the Confm button to confirm.

Select T: 01, it means TW\_in temperature sensor for exchanger inlet water.

Select T: 02 it means TW\_out temperature sensor for exchanger outlet water.

TW\_Out heat exchanger.

Select T: 03, it means TW1 temperature sensor for outlet water of hydraulic module.

Select T: 04, it means TR\_out temperature sensor for refrigerant gas.

Select T: 05, it means TR\_in temperature sensor for

refrigerant liquid.

Select T: 06, it means Tk temperature sensor for water of water tank.

Select T: 07, it means TH temperature sensor for return water.

Select T: 08, it means TW1B temperature sensor for total outlet water.

Select T: 09, which means the outdoor T3 temperature.

Select T: 10, which means the outdoor T4 temperature.

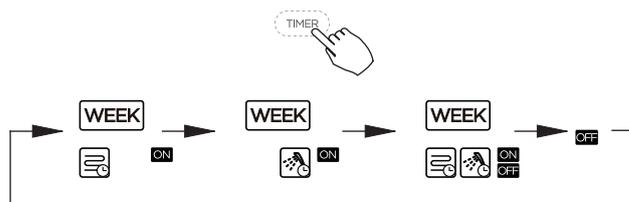
Select PU: 11 to indicate the pump status.

Select Er: 12 for error codes.

5). From the last operation button 30 seconds after or press Back, switch to directly exit.

### V) Timer functions

Press the Timer button for one second to set timing mode.



### VI). Weekly timer

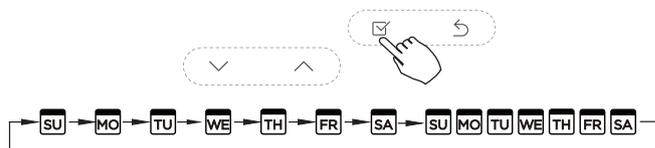
#### 1. Weekly timer setting

Press the Timer button and then press the SET button to enter the Weekly timer setting.



#### 2. Day of the week setting

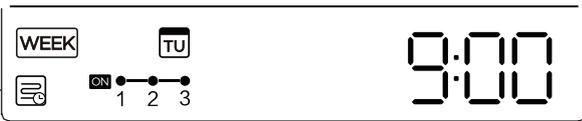
Press the button “√” and “^” to select the day of the week and then press the Confm button to confirm the setting.



#### 3. ON timer setting of timer setting

Press the button “√” and “^” to set the time of On timer and then press the Confirm button to confirm the setting.





ex. Tuesday time scale 1

Up to 3 timer settings can be saved for each day of the week. It is convenient if the WEEKLY TIMER is set according to the user's life style.

#### 4. Off timer setting of timer setting

Press the button "∨" and "∧" to set the time of Off timer and then press the Confirm button to confirm the setting.



ex. Tuesday time scale 1

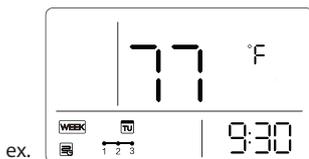
NOTE: The weekly timer setting can be returned to the previous step by pressing Back button. The time of timer setting can be delete by pressing Del button. The current setting will be restored and withdrawn the weekly timer setting automatically when there is no operation for 30 seconds.

#### 5. WEEKLY timer operation

- To activate WEEKLY TIMER operation.



Press the Timer button while **WEEK** is displayed on the LCD.



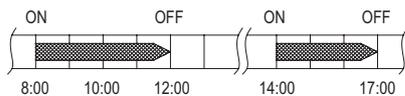
ex.

- To deactivate WEEKLY TIMER operation

Press the Timer button while **WEEK** is disappear from the LCD.

- To turn off the module during the weekly timer

1. If press the Power button once and quickly, the module will turn off temporarily. And the air conditioner will turn on automatically until the time of On timer.



ex. If press the POWER button once and quickly at 10:00, The air conditioner will turn on at 14:00.

2. When press the Power button for 2 seconds, the module will turn of completely, at the same time cancel the

timing function.

#### VII) FUNC. Button

- Press the function key to select WLAN distribution network, strong heating, strong hot water, going out, disinfection (effective under shutdown) and other functions.
- Press the Confirm button to confirm.



#### WLAN

When the WLAN icon flashes, press the Confirm button to enter the AP distribution mode. If the AP mode is successfully entered, the LCD flashes the AP character. If the distribution network is not successful, the AP mode will exit automatically after 8 minutes. After the successful distribution network, if the network is connected, the WiFi icon will be on; if the network is disconnected for 15 minutes, the WiFi icon will be off.

#### Strong Heating

In the HEAT mode or HEAT and DHW mode, press the FUNC. button to select the Strong Heating icon and press the Confirm button to turn on or off the Strong Heating function. After the strong heating function is turned on, the energy saving function is cancelled.

#### Strong Domestic Hot Water

In the DHW mode or HEAT and DHW mode, press the FUNC. button to select the Strong domestic hot water icon and press the Confirm button to turn on or off the function.

#### Outgoing function

Press the FUNC. button to select the Outgoing function icon, and press the Confirm button to turn on or off the function.

After opening the out function, the set temperature of heating mode is 25°C, and the set temperature of hot water mode is 35°C.

After canceling the out of ofce function, the set temperature will return to the original set temperature.

#### Energy saving *ECO*

In the HEAT mode or HEAT and DHW mode, press the ECO button to select the Energy saving icon and press the Confirm button to turn on or off the function.

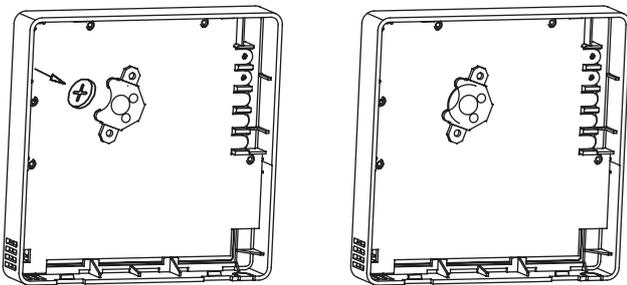
After the energy saving function is turned on, the strong heating function is cancelled.

#### Disinfection

Under DHW mode or HEAT and DHW mode, press the FUNC. button to select the disinfection icon, press the Confm button to turn on or off the disinfection function.

### VIII) Battery Installation

1. The battery is placed in the accessory bag and needs to be installed in the wired controller on site.
2. Please remove the wired controller, place the battery in the unit and ensure the positive side of the battery is in accordance with the polarity markings.
3. Set the correct time before operating. Battery in the wired controller can maintain the correct time during a power failure. When the power is restored and the displayed time is not correct, replace the battery.



## 3. SMART KIT Configuration Guidelines

The wired controller realizes intelligent control with a built-in WIFI module, which receives control signal from the APP. Before connecting the WLAN, please check for it if the router in your environment is active and make sure that the wired controller is well-connected to the wireless signal. When the product is connected to the network, please make sure that the phone is as close as possible to the product. Midea only supports 2.4GHz band routers at present. Special characters (punctuation, spaces, etc.) are not recommended as part of the WLAN name. It is recommended that you connect no more than 10 devices to a single router lest home appliances are affected by weak or unstable network signal. If the password of the router or WLAN is changed, clear all settings and reset the appliance. APP interface changes from time to time as APP is updated and may change slightly vary from those in this document.

## 3.1 Install APP

Scan the following QR code:



Android

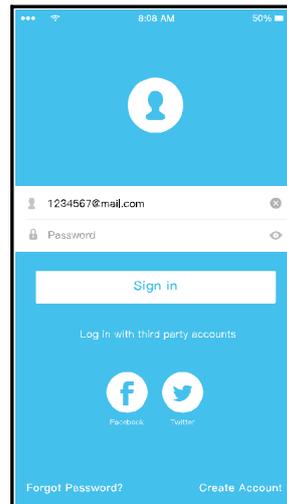


iOS

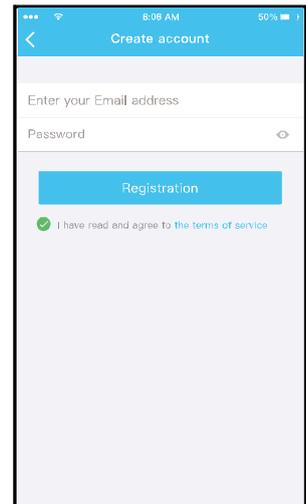
- Android Phone users: scan Android QR code or go to google play, search 'NetHome Plus' app and download it.
- iOS users: scan iOS QR code or go to APP Store, search 'NetHome Plus' app and download it.

## 3.2 Sign In

After installation, open the APP and login.



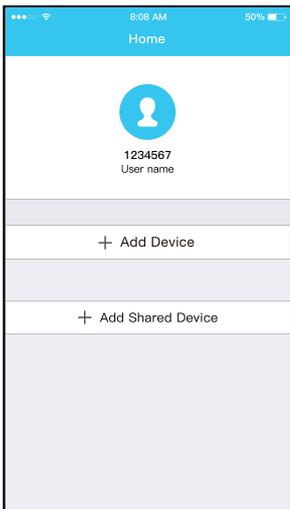
① Click "Sign up"



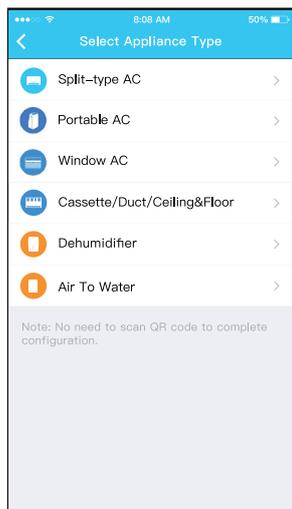
② Enter your email address and password, and then click "Registration".

## 3.3 Add device and login to home Wi-Fi

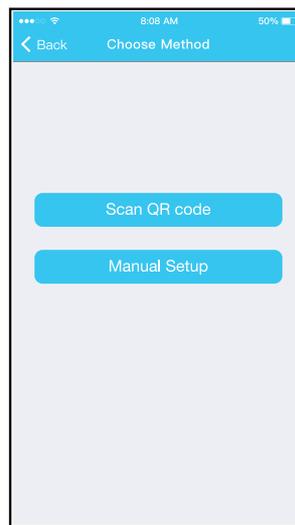
### 3.3.1 Using Android device to do network configuration



Press “ + Add Device ”



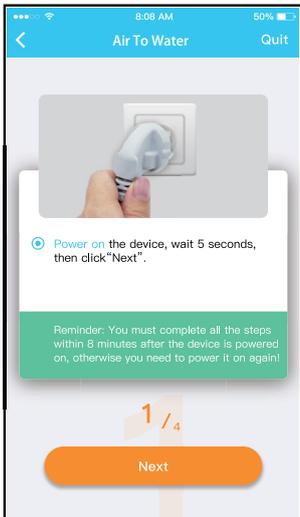
Select appliance type (Select Air To Water)



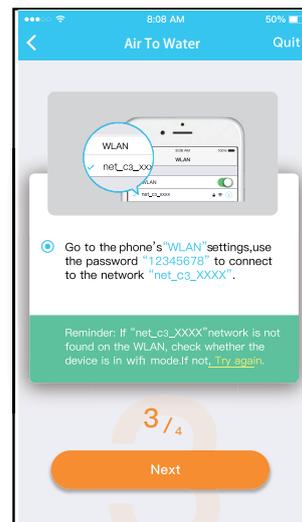
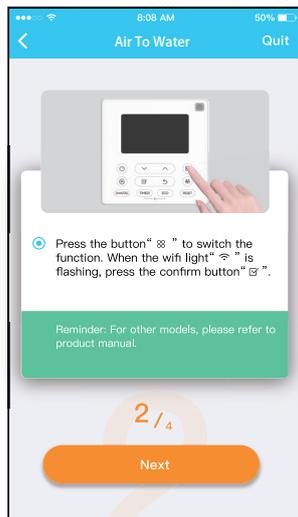
Choose the network configuration method.



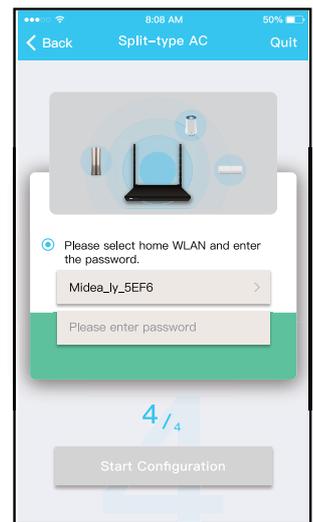
Choose the “ Scan the QR code ” method.



Follow the above steps to enter “AP” mode.



Or choose the “Manual Setup” method.

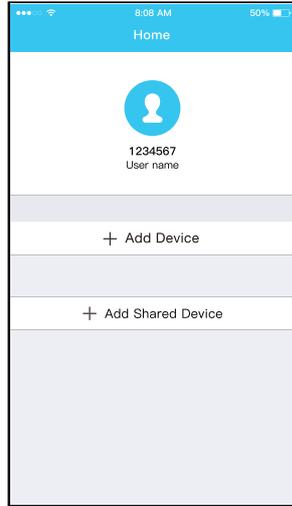


Please enter password

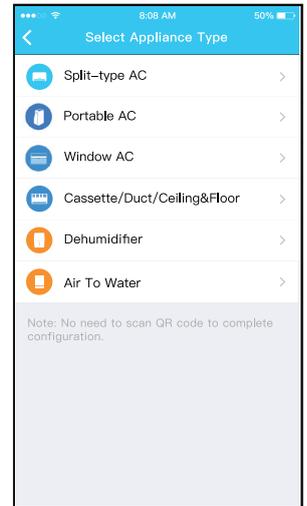


Network configuration is successful.

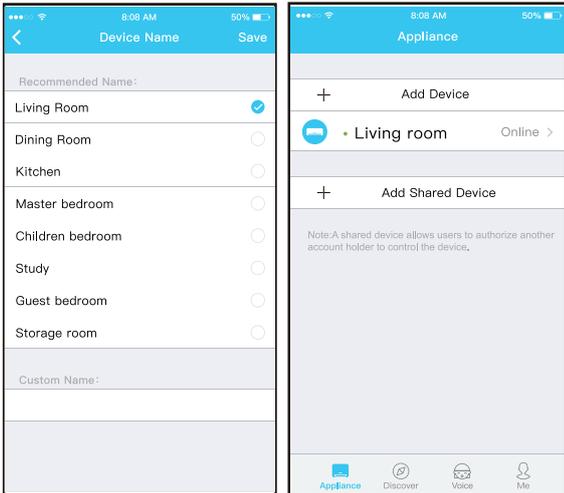
### 3.3.2 Using iOS device to do network configuration



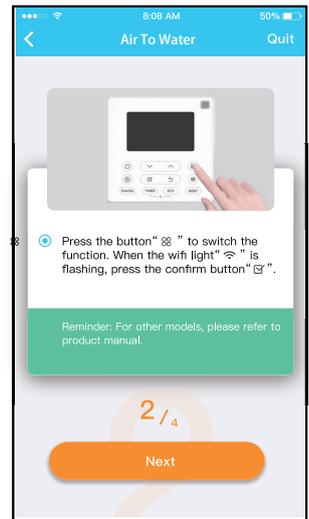
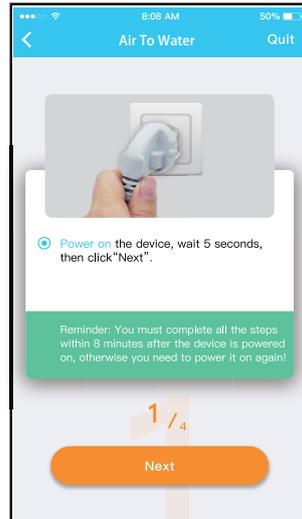
Press "+ Add Device"



Select appliance type (Select Air To Water)



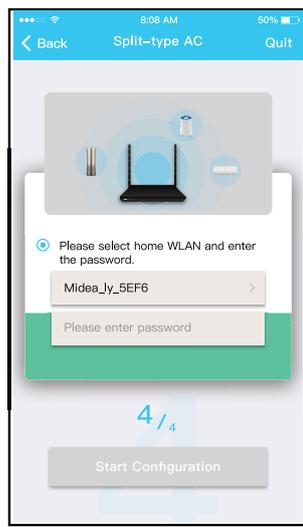
Configuration Success, you can see the device on the list.



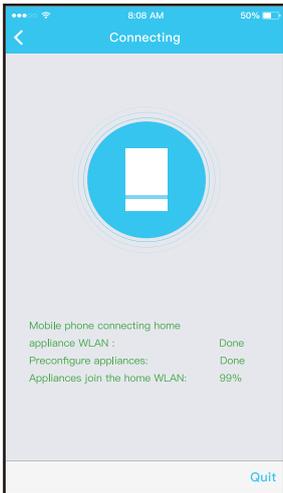
Follow the above steps to enter "AP" mode.



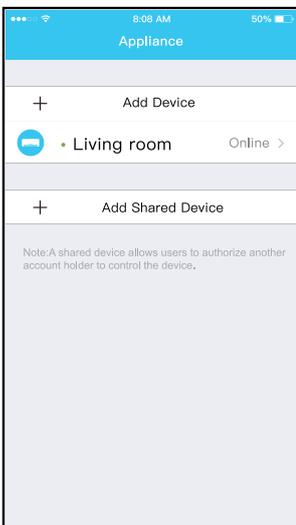
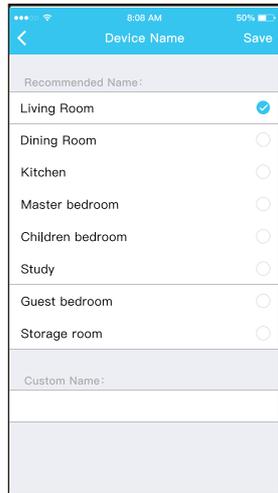
Or choose the "Manual Setup" method.



Please enter password

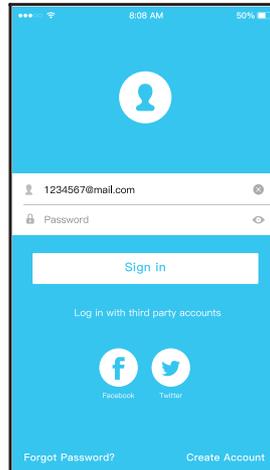


Network configuration is successful.

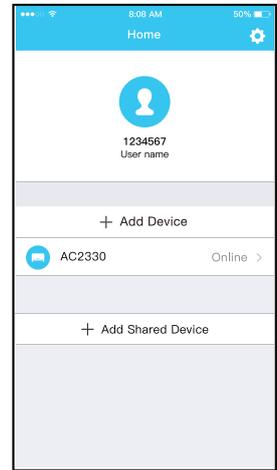


### 3.4 How to use the APP

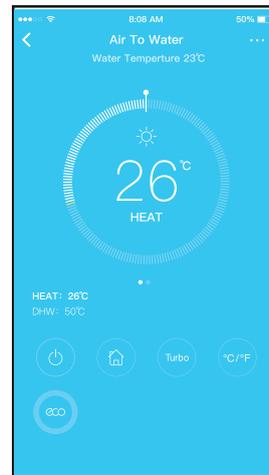
Please ensure both your mobile device and air conditioner are connected to the Internet before using app to control the air conditioner via internet, please follow the next steps:



① Click "Sign up"



② Choose the air conditioner.



③ Thus, user can control air conditioners on/off status, operation mode, temperature, fan speed and so on.

NOTE:

Heat The temperature adjustment range is 25°C -60°C.

The initial default temperature is 35°C.

The DWH temperature adjustment range is 35°C -55°C.

The initial default temperature is 50°C.

The interactive method of temperature adjustment is ring adjustment.

Not all the function of the APP is available on air

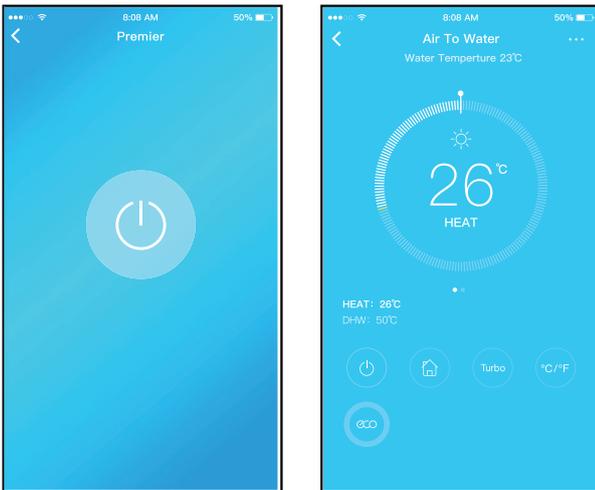
conditioner. For example: ECO, Turbo, please check the user manual to find more information.

### 3.5 Function

#### 3.5.1 ON/OFF

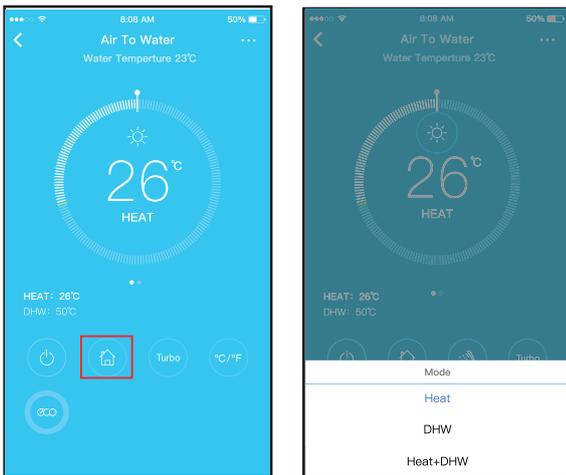
In the shutdown state, there is a separate shutdown status page. Click the  button to enter the device control page.

In the power-on state, click the  button, the device will shut down, and the page will jump to the shutdown state page.



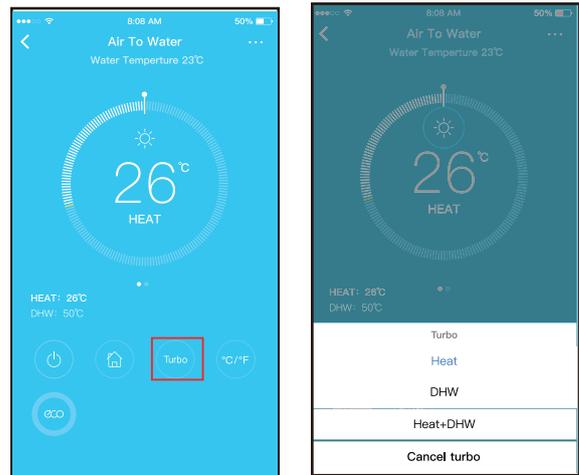
#### 3.5.2 Mode

Click the Mode button to select Heat, DHW, Heat+DHW modes.



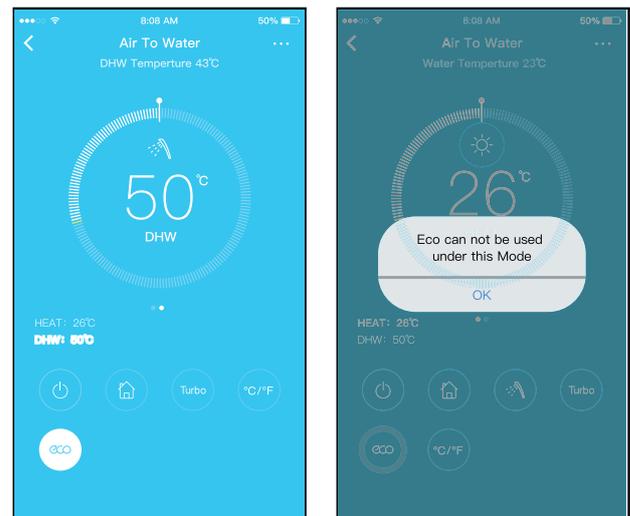
#### 3.5.3 Turbo

Click the Turbo button to select Heat, DHW, Heat+DHW modes.



#### 3.5.4 ECO

In Heat or Heat+DHW mode, press the eco button to turn on or turn off the eco function. In DHW mode, there is no eco function.



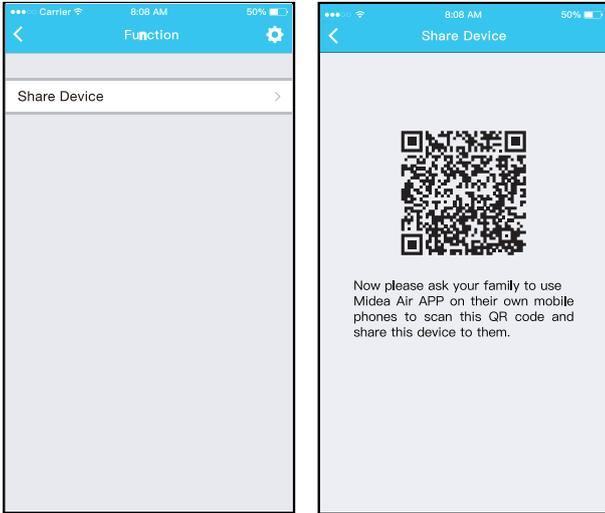
#### 3.5.5 °C & °F

Press this button will alternate the temperature display between the °C & °F.

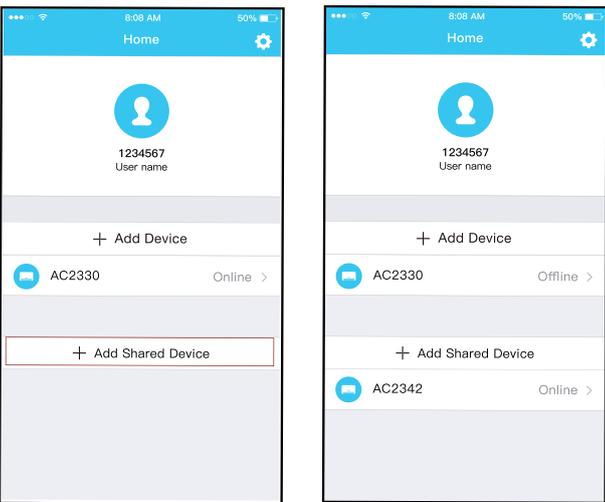


### 3.5.6 Share Device

The air conditioner can be controlled by multi-users at the same time by Share Device function.

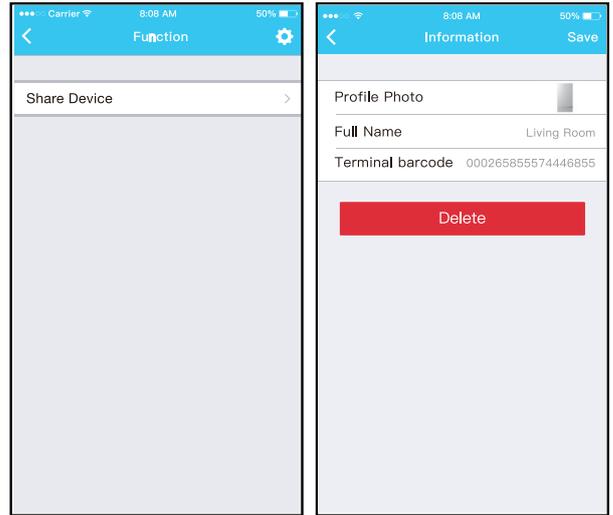


- ① Click "Share device "
- ② Let the others to scan the displayed QR code.

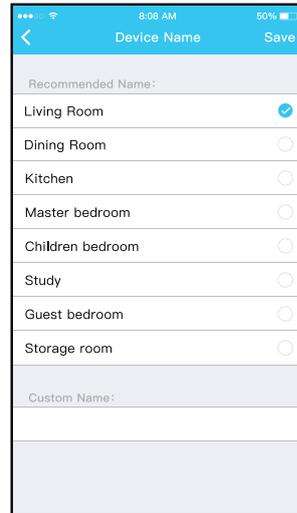


- ③ Click "Add Share Device"
- ④ Add the shared device.

### 3.5.7 Site



- ① Click " ⚙ "
- ② Click "Full Name"



- ③ Click "Living Room"  
Click "Save"

---

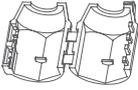
# Installation

## Contents

Accessories .....	60
1. Installation Overview .....	61
2. Location Selection .....	62
3. Indoor Unit Installation .....	63
4. Outdoor Unit Installation.....	65
5. Refrigerant Pipe Installation.....	66
6. Vacuum Drying and Leakage Checking.....	67
7. Water Pipework .....	67
8. Additional Refrigerant Charge .....	68
9. Engineering of Insulation .....	69
10. Engineering of Electrical Wiring.....	70
11. Selection of Water Tank .....	74
12. Test Operation .....	74
13. Error Code .....	75

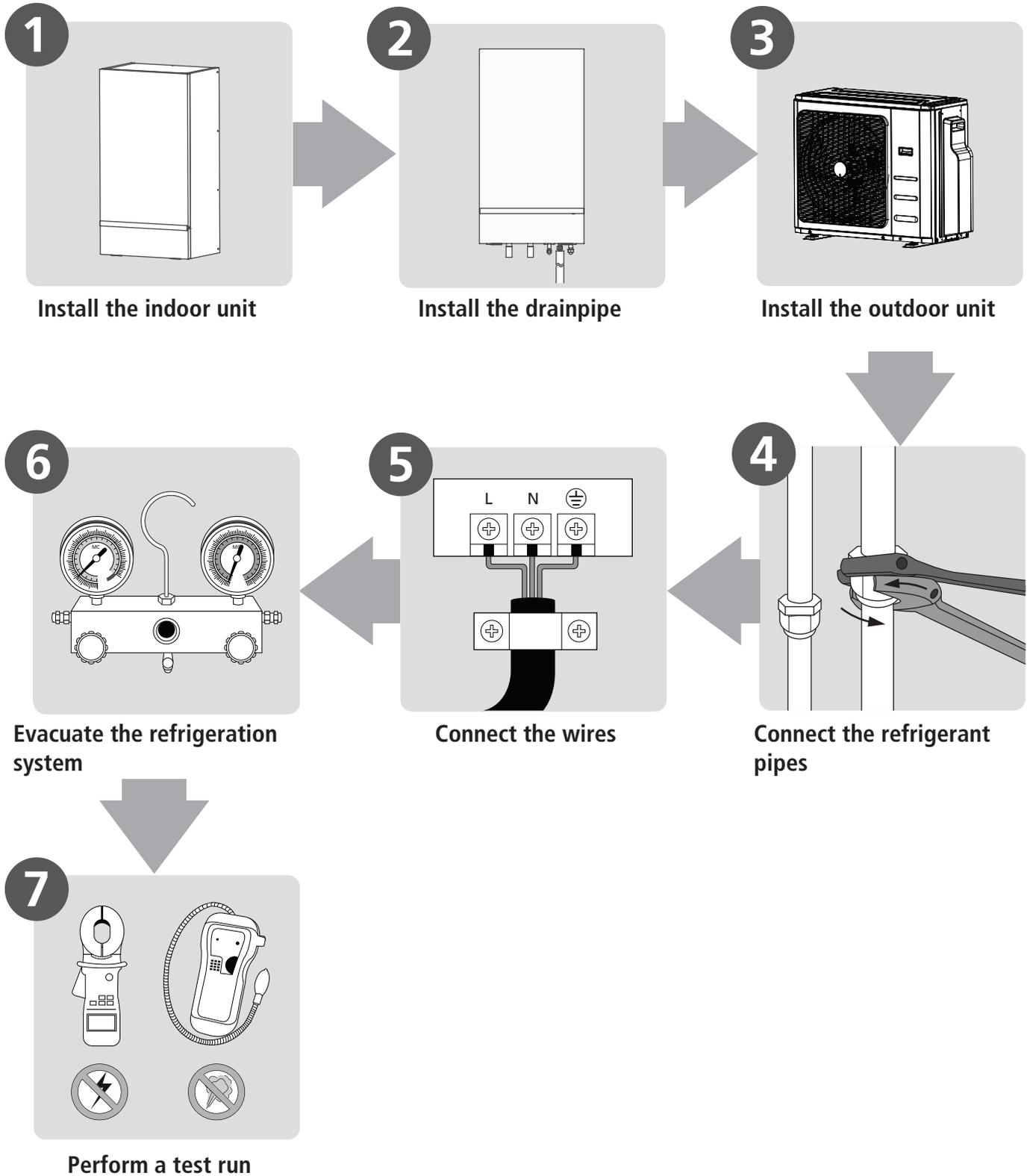
## Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

Name	Shape	Quantity
Manual		3
Mounting bracket		1
3/4 Copper nut		1
7/16 Copper nut		1
Label(Note:Please stick the label to the power switch of the unit )		1
Wiring rubber ring		1
3/4 Copper nut anti disassembly cap		1
7/16 Copper nut anti disassembly cap		1
Smart kit		1
WLAN cable		1
WLAN rubber sleeve		1
Battery		1

# 1. Installation Overview

## Installation Order



Installation

## 2. Location selection

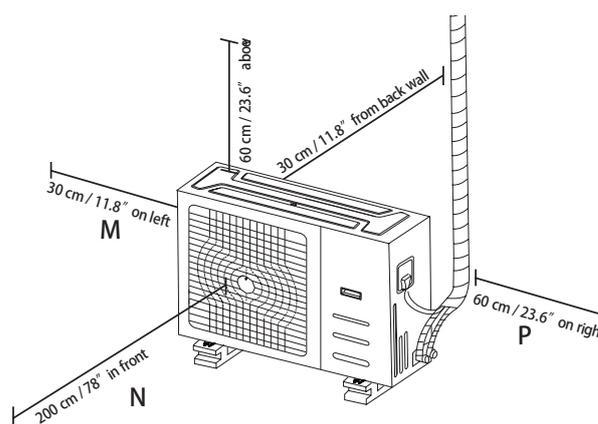
### 2.1 The indoor unit is to be wall mounted in an indoor location that meets the following requirements:

- The installation location is frost-free.
- The space around the unit is adequate for serving.
- The space around the unit allows for sufficient air circulation.
- There is a provision for condensate drain and pressure relief valve blow-off.
- The installation surface is a flat and vertical non-combustible wall, capable of supporting the operation weight of the unit.
- There is no danger of fire due to leakage of inflammable gas.
- The equipment is not intended for use in a potentially explosive atmosphere.

### 2.2 Inspecting, handling and unpacking the unit

- The indoor unit is packed in a box.
- At delivery, the unit must be checked and any damage must be reported immediately to the carrier claims agent.
- Check if all indoor unit accessories are enclosed.
- Bring the unit as close as possible to the final installation position in its original package in order to prevent damage during transport.
- The indoor unit weights approximately 60kg and should be lifted by two persons using the two lifting bars provided.

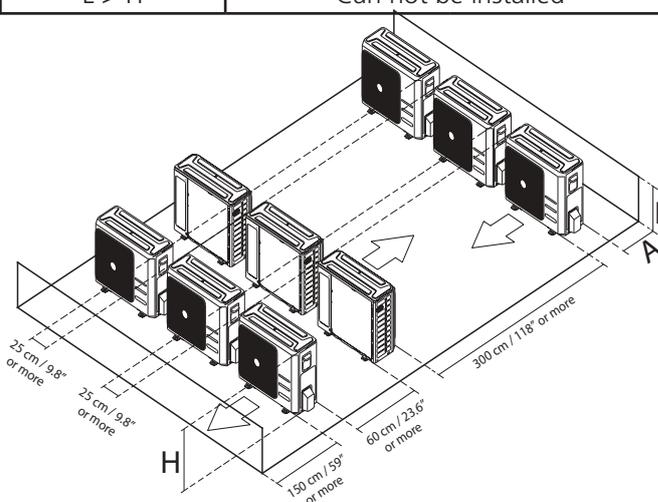
### 2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



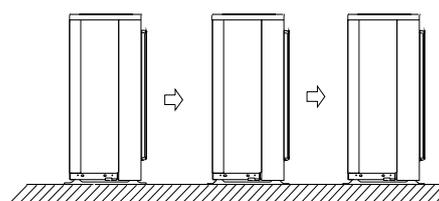
### 2.4 Rows of series installation

The relations between H, A and L are as follows.

	L	A
L ≤ H	$L \leq 1/2H$	25 cm / 9.8" or more
	$1/2H < L \leq H$	30 cm / 11.8" or more
L > H	Can not be installed	



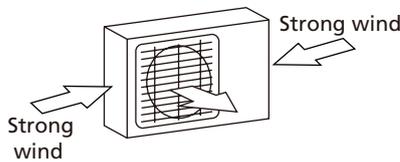
DO NOT install the rows of series like following figure.



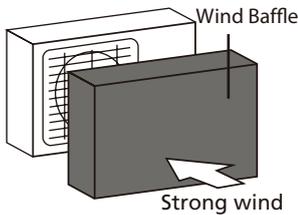
## 2.5 Strong Wind Installation

Wind of 5m/s or more blowing against an outdoor unit's air outlet blocks the flow of air through the unit, leading to deterioration in unit capacity, accelerated frost accumulation when in heating mode or domestic hot water mode, and potential disruption to operation due to increased pressure in the refrigerant circuit. Exposure to very strong wind can also cause the fan to rotate excessively fast, potentially leading to damage to the fan. In locations where exposure to high winds may occur should take account of the following considerations:

- For installation of the outdoor unit in a place where the wind direction can be foreseen. Set the outlet side at a right angle to the direction of the wind, refer to Figure.

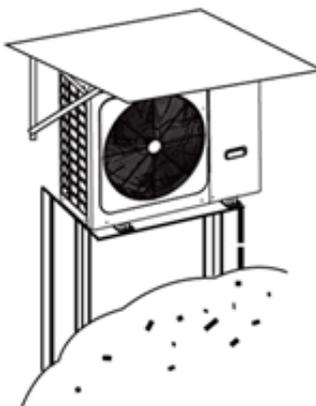


- If turn the air outlet side toward the building's wall, fence or screen. Make sure there is enough room to do the installation



## 2.6 If the unit is frequently exposed to heavy rain or snow:

In areas of heavy snowfall, a canopy should be installed to prevent snow entering the unit. Additionally, the height of the base structure should be increased so as to raise the unit further off the ground.

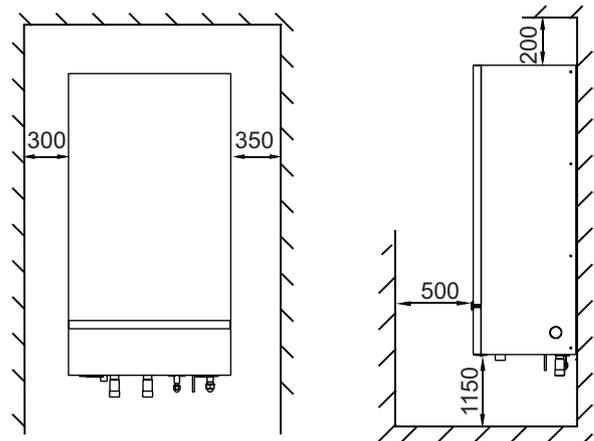


## 2.7 Salty Air Installation(seaside)

Use outdoor unit that is specially designed to resist corrosion.

## 3. Indoor Unit Installation

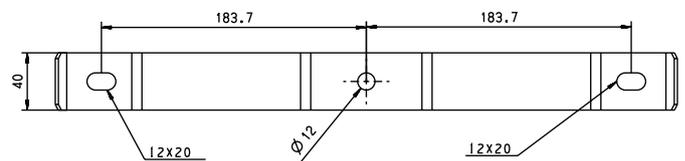
### 3.1 Service space for indoor unit



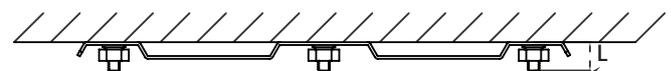
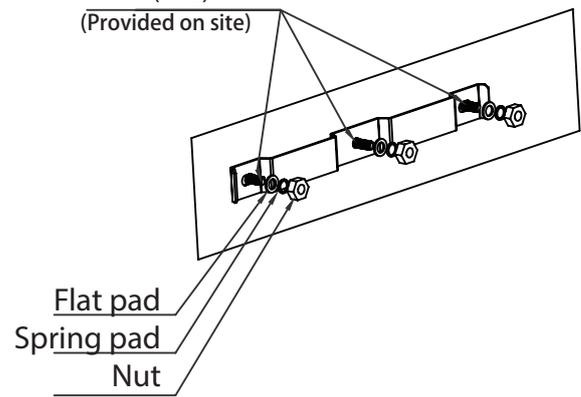
### 3.2 Mounting the indoor unit

1. Fix the wall mounting bracket to the wall using appropriate plugs and screws.

Dimensions of the wall bracket:



Screws (M12)  
(Provided on site)

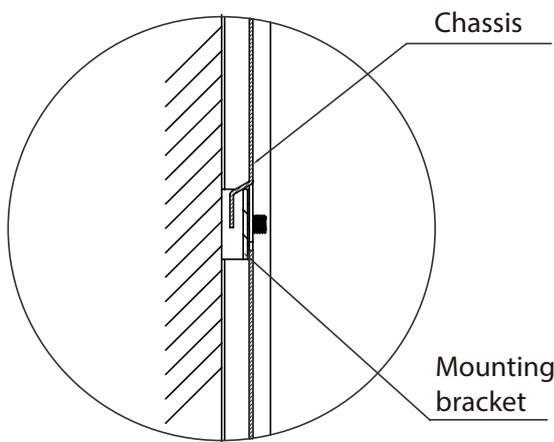
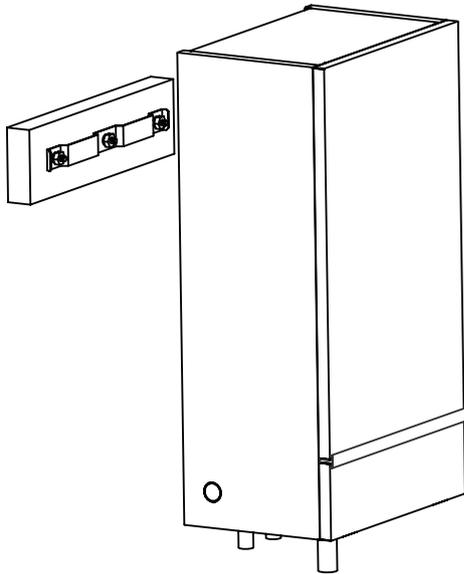


Expansion bolts protrude from the wall  
length  $\leq 25\text{mm}$

2. Make sure the wall mounting bracket is completely

level. When the unit is not installed level, air might get trapped in the water circuit resulting in malfunctioning of the unit.

3. Hang the indoor unit on the wall mounting bracket.
4. Fix the indoor unit inside using appropriate plugs and screw.



### 3.3 Water filling and anti freezing measures

Water filling and emptying

- For the first operation, it is recommended to rotate the pump shaft for more than 10 turns to prevent the pump from getting stuck.
- Exhaust valve shall be set at the highest point and local highest point of water system pipeline, and drain valve shall be set at the lowest point.
- After the indoor unit and outdoor unit are installed, confirm that the power supply is closed, loosen the vent valve on the indoor unit, and inject water into the

water system of indoor unit.

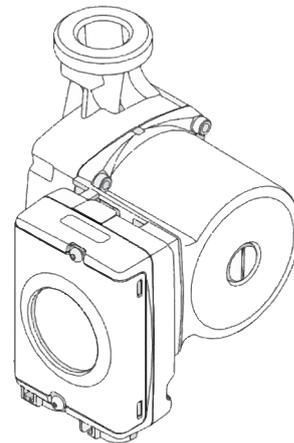
- Check the water system for leaks.
- If there is no leakage in the system pipeline, the power supply of the unit will enter the emptying mode of the wire controller to carry out the forced operation of the water pump. Remove air in the circuit as much as possible using the air purge valves. When there is no "hissing" pneumatic sound at the vent valve, close the vent valve on the indoor unit and exit the forced water pump.
- Fill with water until the manometer indicates a pressure of approximately 1.0~2.0 bar.

Antifreezing measures:

- When the ambient temperature is below 2 °C, please make sure to keep the unit energized.
- If the unit cannot be powered on, please open the drain valve in the indoor unit to completely drain the water to avoid freezing and cracking the equipment and pipes.

### 3.4 Description of water pump exhaust

1. Make sure the water pump is running.
2. Insert the service tool into the slot of the bleeder bolt and remove the bleeder bolt.
3. When the small water column or water drop flows out of the vent hole, screw on the vent bolt.



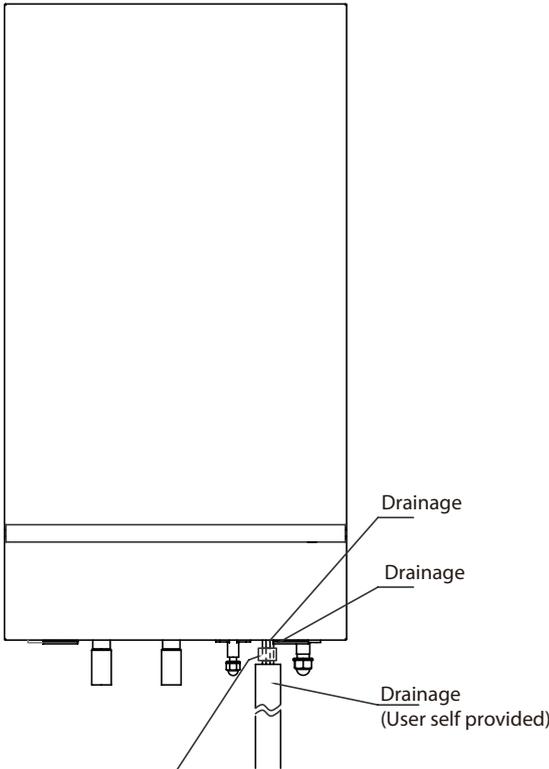
NOTE: The water pressure of the system must be guaranteed, and it cannot be directly connected to the water source.

### 3.5 Indoor Drainpipe Installation

- It must be confirmed that the drainpipe outlet is exposed in the air. When flexible drainpipe is jointed to the drainpipe of the hydraulic module, it must be confirmed that the flexible drainpipe is downwards

vertically, direct drainage to the floor drain.

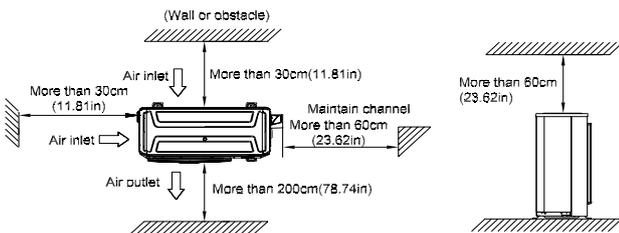
- The drainage pipe should be well installed, in order to avoid freezing up in cold weather. Do not block off or bend the Drainage pipe.
- Arrange the drain hose to ensure smooth drainpipe. Improper drainpipe may cause wetting of the building, furniture etc.



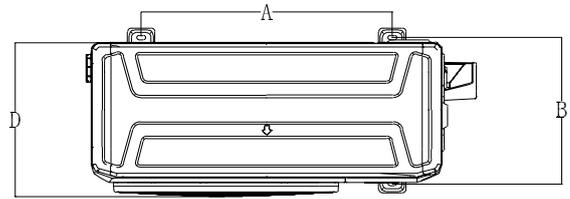
**Tape**  
Wrap the two drainage pipes together with tape and connect them to the user's drainage pipe together.

## 4. Outdoor unit installation(Side Discharge Unit)

### 4.1 Service space for outdoor unit



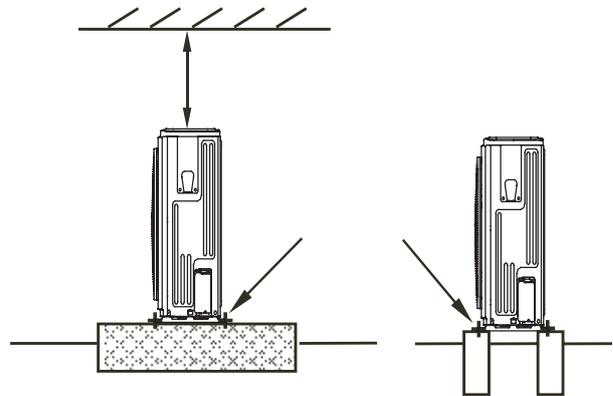
### 4.2 Bolt pitch



Size	Unit	D	A	B
MU2-Y 105M	mm	410	673	403
	inch	16.14	26.50	15.87

### 4.3 Install Outdoor Unit

**Fix the outdoor unit with anchor bolts(M10)**



#### Caution

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.

Never hold the inlet of the outdoor unit to prevent it from deforming.

Do not touch the fan with hands or other objects.

Do not lean it more than 45 degree, and do not lay it sidelong.

Make concrete foundation according to the specifications of the outdoor units.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.

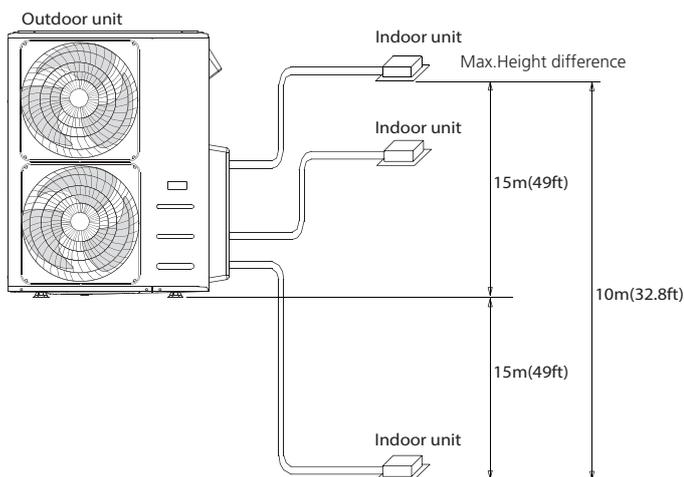
## 5. Refrigerant Pipe Installation

### 5.1 Maximum length and drop height

Ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meets the requirements shown in the following table.

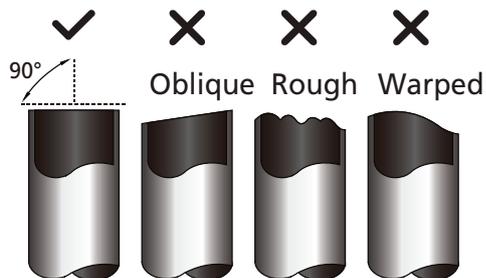
	MU2-Y 105M
Max. length for all rooms	80
Max. length for one indoor unit	35
Max. height different between IDU and ODU	15
Max. height different between IDUs	10

- When installing multiple indoor units with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram:



### 6.2 The procedure of connecting pipes

- Choose the pipe size according to the specification table.
- Confirm the cross way of the pipes.
- Measure the necessary pipe length.
- Cut the selected pipe with pipe cutter
  - Make the section flat and smooth.



5. Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

6. Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe.

Pipe diameter (inch(mm))	Flare dimension A (mm/inch)		Flare shape
	Min	Max	
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	
3/4" (19)	23.2/0.91	23.7/0.93	
7/8" (22)	26.4/1.04	26.9/1.06	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

7. Drill holes if the pipes need to pass the wall.

8. According to the field condition to bend the pipes so that it can pass the wall smoothly.

9. Bind and wrap the wire together with the insulated pipe if necessary.

10. Set the wall conduit

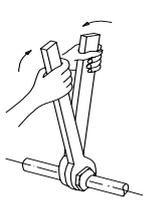
11. Set the supporter for the pipe.

12. Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

13. Connect the pipe to indoor unit and outdoor unit by using two spanners.

- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque	Sketch map
	N.m(lb.ft)	
1/4" (6.35)	15~16 (11~11.8)	
3/8" (9.52)	25~26 (18.4~19.18)	
1/2" (12.7)	35~36 (25.8~26.55)	
5/8" (15.9)	45~47 (33.19~34.67)	
3/4" (19)	65~67 (47.94~49.42)	
7/8" (22)	75~85 (55.3~62.7)	

## 6. Vacuum Drying and Leakage Checking

### 6.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation. Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

### 6.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

### 6.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

#### 6.3.1 Ordinary vacuum drying

- When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1 hour (vacuum degree of vacuum pump shall be reached -755mmHg).
- If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is

moisture or leakage in pipeline system and need to go on with drying for half an hour.

- If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.

- Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

#### 6.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

- Finding moisture during flushing refrigerant pipe.
- Conducting construction on rainy day, because rain water might penetrated into pipeline.
- Construction period is long, and rain water might penetrated into pipeline.
- Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

- Vacuum drying for 1 hour.
- Vacuum damage, filling nitrogen to reach 0.5Kgf/cm<sup>2</sup>.

Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.

- Vacuum drying again for half an hour.

If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

- Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

## 7. Additional Refrigerant Charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe be-

tween indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Formula
6.35	$V=12g/m \times ((\text{Total pipe length} - \text{pre-charge pipe length} \times N))$
9.52	$V=24g/m \times ((\text{Total pipe length} - \text{pre-charge pipe length} \times N))$

The pre-charge pipe length is 7.5m.

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

## 8. Water Pipework

### 8.1 Water Circuit Checks

Hydronic box are equipped with a water inlet and outlet for connection to a water circuit. Split units should only be connected to closed water circuits. Connection to an open water circuit would lead to excessive corrosion of the water piping. Only materials complying with all applicable legislation should be used.

Before continuing installation of the unit, check the following:

- The maximum water pressure  $\leq 3$  bar.
- The maximum water temperature  $\leq 70^\circ\text{C}$  according to safety device setting.
- Always use materials that are compatible with the water used in the system and with the materials used in the unit.
- Ensure that components installed in the field piping can withstand the water pressure and temperature.
- Drain taps must be provided at all low points of the

system to permit complete drainage of the circuit during maintenance.

- Air vents must be provided at all high points of the system. The vents should be located at points that are easily accessible for service. An automatic air purge is provided inside the unit. Check that this air purge valve is not tightened so that automatic release of air in the water circuit is possible.

### 8.2 Water Circuit Connection

Water connections must be made correctly in accordance with the labels on the hydronic box, with respect to the water inlet and water outlet. If air, moisture or dust gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

- Use clean pipes only.
- Hold the pipe end downwards when removing burrs
- Cover the pipe end when inserting it through a wall to prevent dust and dirt entering.
- Use a good thread sealant for sealing the connections. The sealing must be able to withstand the pressures and temperatures of the system.
- When using non-copper metallic piping, be sure to insulate the two kinds of materials from each other to prevent galvanic corrosion.
- For copper is a soft material, use appropriate tools for connecting the water circuit. Inappropriate tools will cause damage to the pipes

### 8.3 Anti-freeze Protection

If the following condition are satisfied, enter anti-freeze protection,

- The unit is in shutdown state
- $T_4$  is lower than  $5^\circ\text{C}$
- $\text{Min}(TW_{in}, TW_{out}, TW_1, TW_{1B}) < T_{freezW}$  is detected continuously for 5S.(Ranging from  $1^\circ\text{C}$  to  $4^\circ\text{C}$ , the default value is  $3^\circ\text{C}$ )
- Shutdown time for 30 minutes or the restore failure for 30 minutes or exit cleaning for 30 minutes.

Note:

- If one of the sensors fails, the temperature judgment of this sensor is eliminated. If all sensors fail, exit the protection
- EEPROM error, water flow failure, exit the protection
- Water flow protection is not detected during the anti-freeze protection

## 8.4 Water Flow Switch

Water may enter into the flow switch and cannot be drained out and may freeze when the temperature is low enough. The flow switch should be removed and dried, then can be reinstalled in the unit.

## 8.5 Adding Water

- Connect the water supply to the fill valve and open the valve.
- Make sure the automatic air purge valve is open (at least 2 turns).
- Fill with water until the manometer indicates a pressure of approximately 1.0 to 2.0 bars. Remove air in the circuit as much as possible using the air purge valve. Air in the water circuit could lead to malfunction of the backup electric heater.

## 9. Engineering of Insulation

### 9.1 Insulation of refrigerant pipe

#### 1. Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection → vacuum drying → insulate the joint parts

#### 2. Purpose of refrigerant pipe insulation

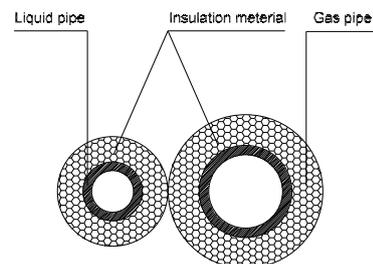
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100 °C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

#### 3. Insulation material selection for refrigerant pipe

- The burning performance should over 120 °C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm. If in hot or wet environment place, the layer of insulation should be thicker accordingly.

#### 4. Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gas pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad

insulation and cause easy aging of the material.

## 9.2 Insulation of drainage pipe

### 1. Operational procedure of refrigerant pipe insulation

Select the suitable pipe → insulation (except joint section) → piping layout and connection → drainage test → insulate the joint parts

### 2. Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

### 3. Insulation material selection for drainage pipe

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

### 4. Installation and highlights of insulation construction

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

## 10. Engineering of Electrical Wiring

### 10.1 Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- The equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named "the specification of the power" to choose the wiring, make sure the selected wiring not small than the date showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.
- You must first choose the right cable size before preparing it for connection. Be sure to use H07RN-F cables.

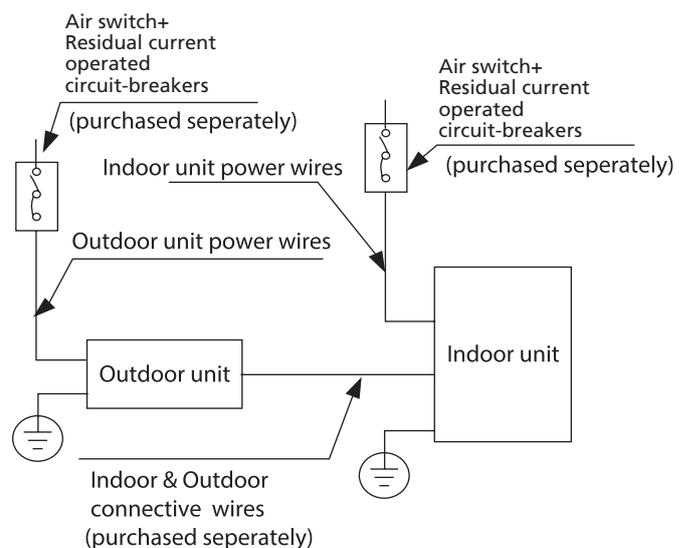
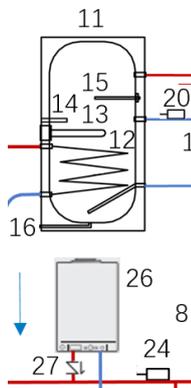


Table: Minimum Cross-Sectional Area able of Power and Signal Cables

Rated Current of Appliance (A)	Nominal Cross-Sectional Area(mm <sup>2</sup> )
≤ 6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25 - 32	4
32 - 45	6

## 10.2 Selection of Tk, TH, TW1B

10K thermistor is used, specification: R25 (resistance value at 25°C)= 10KΩ±3%,B25/50 (B value)=4100K±3%, temperature probe with brass case



Tk water temperature of water tank - It is installed at 14 temperature probe tube, and thermally conductive silicone shall be provided to make the temperature sensor and the probe tube wall fully thermally conductive. SW1-4 is OFF by default, and the water tank won't be connected. If SW1-4 is ON, the temperature sensor and EA heater of the water tank are effective, and at the moment, the return water can be started.

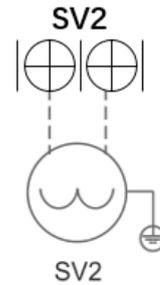
TH return water temperature - It is position 20 in the figure. The temperature sensor can be wrapped to the steel pipe by tin foil paper and heat insulation cotton. The plastic water pipe needs to be installed with a temperature detection tube and provided with thermally conductive silicone. SW1-3 is OFF by default. If SW1-3 is ON, the return water pump and the temperature sensor for return water are effective.

TW1B total outlet water temperature of system - at position 24 in the figure, its installation method is the same as above. SW1-2 is OFF by default, and the external heat source won't be connected. If SW1-2 is ON, the total outlet water temperature sensor and the external heat source are effective.

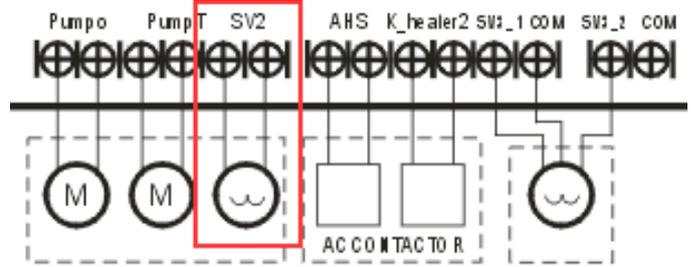
They need to be started by dialing, and the corresponding functions will be started while the temperature sensor is started.

## 10.3 2-Way Valve

Normally closed two-way valve, opened when power on, closed, 220-240V 50Hz, valve size selected as per pipeline size. The main function of this valve is to close the floor heating water flow in case of cooling (if provided), and it may not be installed if the cooling function is not provided.

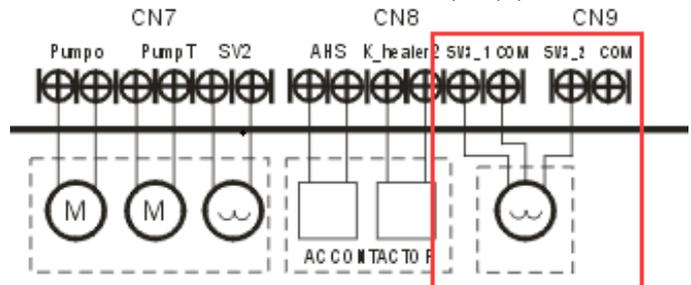


Valve power <100W



## 10.4 3-Way Valve

220-240V 50Hz, valve size selected as per pipeline size.



Valve position 1  
straight through

Valve position 2  
side through

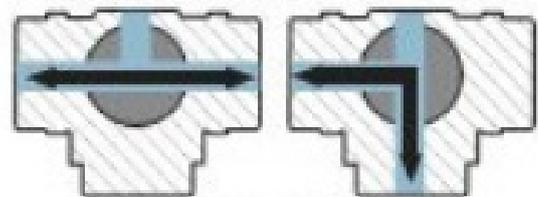
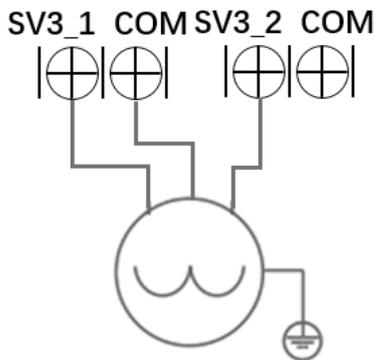
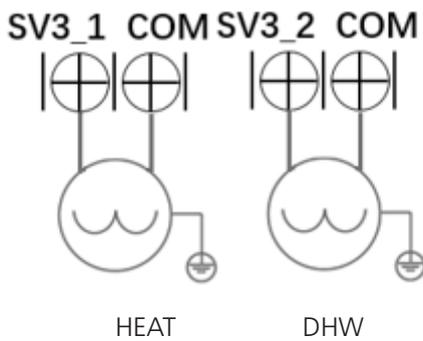


Diagram of 3-way valve

SV3\_1 powered on, A-B gets through, B end is connected to the heating pipeline  
SV3\_2 powered on, A-C gets through, C end is connected to the domestic water tank



If there is no 3-way valve, 2 normally closed 2-way valves can be used instead, as shown in the figure below

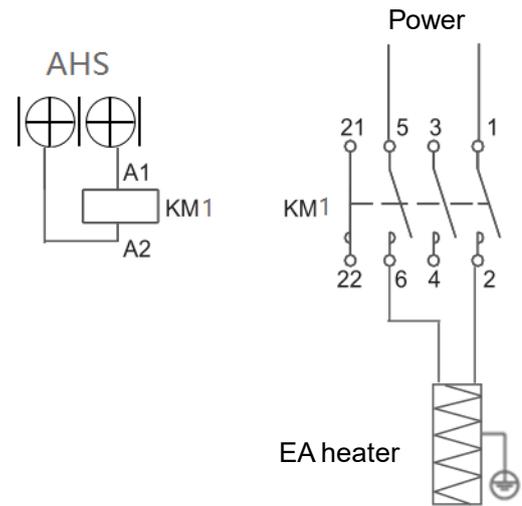
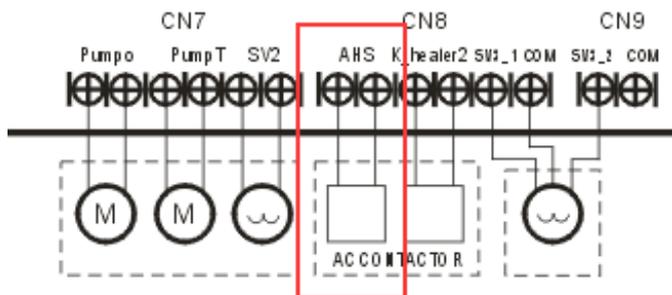


HEAT

DHW

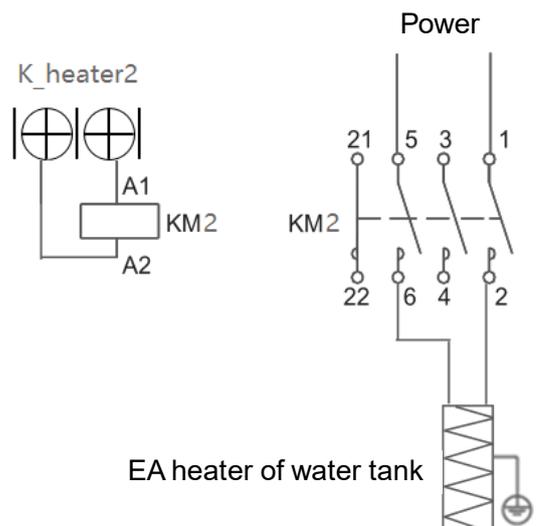
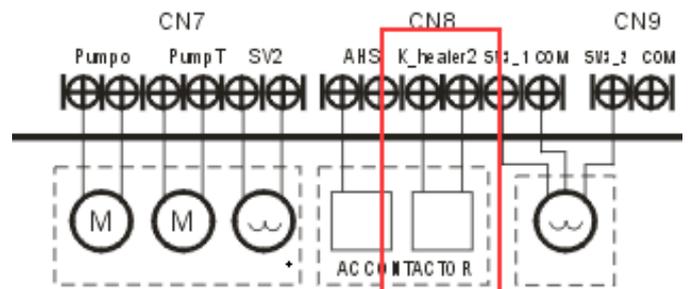
### 10.5 Auxiliary heating source for heating

The auxiliary heating source is controlled by AC contactor, with control end output voltage of 220-240V 50Hz



### 10.6 EA heater for water tank

It is controlled by AC contactor, with control end output voltage of 220-240V 50Hz



Selection method of capacity of EA heater:

- Suggestions on the selection of EA heater:
  - A. The tubular EA heater is preferential.
  - B. Capacity selection method: The EA heater

with the capacity equivalent to 30% of the unit's nominal capacity is used in the region with minimum temperature no less than - 7°C.

- In the region with the minimum temperature lower than - 7°C, the household power supply load and the unit's nominal capacity should be taken into account for selecting an EA heater.

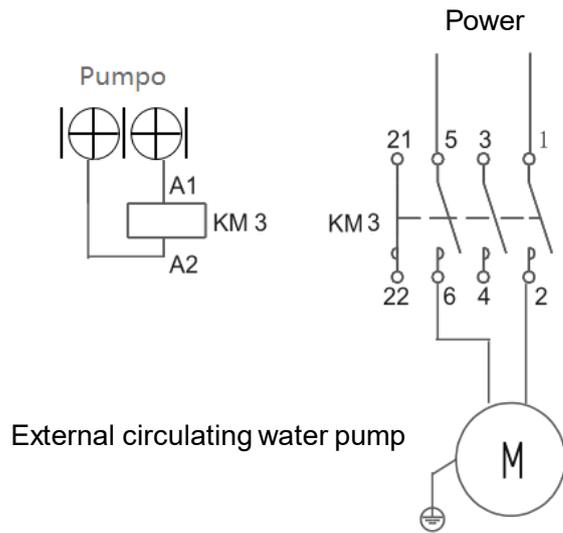
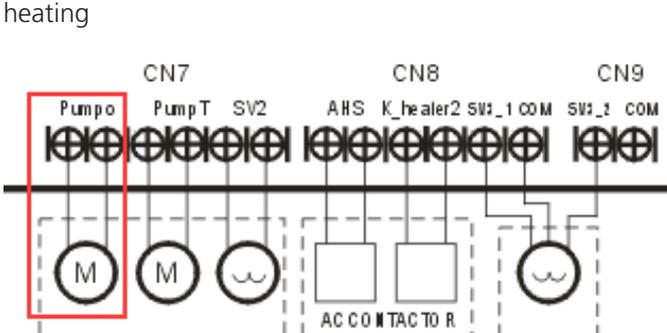


If the external heat source is connected in parallel on the main pipeline, it is necessary to contain a water pump and install a one-way valve on the pipeline.

### 10.7 Service Water Pump (External Circulating Water Pump)

It is controlled by AC contactor, with control end output voltage of 220-240V 50Hz

This water pump can only be installed on the heating pipeline after the 3-way valve and will be closed in water heating



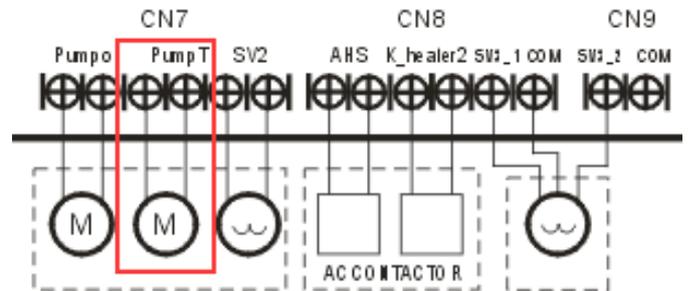
### 10.8 Return Water Pump Or Mixing Water Pump

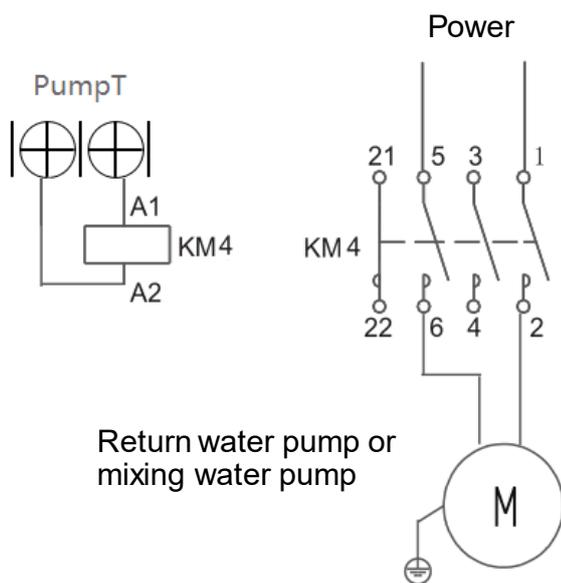
The mixing pump is provided by the user and used to provide the floor heating coil with water of suitable temperature in combination with the automatic mixing valve (provided by the user) in heating mode. Start and stop the mixing pump and the built-in water pump simultaneously in heating mode.

It is controlled by AC contactor, with control end output voltage of 220-240V 50Hz

SW1-3 is OFF by default, and it is in mixing water pump state. If SW1-3 is on, it is in return water state and should be connected to the return water temperature sensor, otherwise it will sound fault alarm.

If there are return water and mixing water demands simultaneously, turn to ON, and the mixing water pump is controlled by interface SV2





## 11. Selection of Water Tank

Material	Outdoor unit capacity	Water tank heat exchanger area requirement	Water tank exchanger recommended area	Heat exchanger inside volume requirement	Heat exchanger inside volume recommended
stainless steel	10-16kW	$\geq 1.75\text{m}^2$	4.0m <sup>2</sup>	$\geq 14\text{L}$	32L
stainless steel	4-9kW	$\geq 1.4\text{m}^2$	2.5m <sup>2</sup>	$\geq 12\text{L}$	20L
enamel	10-16kW	$\geq 2.5\text{m}^2$	5.6m <sup>2</sup>	$\geq 20\text{L}$	45L
enamel	4-9kW	$\geq 1.7\text{m}^2$	3.0m <sup>2</sup>	$\geq 14\text{L}$	24L

For the size of water tanks, refer to the following contents:

- Generally, the required hot water for each person to take a shower is 40-50l, but it depends on the bathing habits. If the shower time is longer, it can be increased as appropriate.
- In case of more than one bathroom at home, as persons may take showers in different bathrooms at the same time, the water tank capacity is to be increased by about 50-100l.
- If you have a bathtub at home and like to take a bath in the bathtub, the water tank capacity is also to be increased by about 50-100l. For example: If your family has three members and a bathroom is available without bathtub, you can choose a 150l water tank. If there are two bathrooms, a 200l water tank is recommended. If one of the bathrooms has a bathtub, a 300l water tank can meet your hot water needs.

## 12. Test Operation

**1. The test operation must be carried out after the entire installation has been completed.**

**2. Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Piping and wiring are properly connected.
- Ensure that there are no obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- The refrigeration system does not leak.
- The drainage system is unimpeded and draining to a safe location.
- The heating insulation is properly installed.
- The grounding wires are properly connected
- The length of the piping and the added refrigerant stow capacity have been recorded.
- The power voltage is the correct voltage for the air conditioner.

**CAUTION:** Failure to perform the test run may result in unit damage, property damage or personal injury.

## 3. Test Run Instructions

- Open both the liquid and gas stop valves.
- Turn on the main power switch and allow the unit to warm up.

### Indoor unit

- Ensure the wired controller and its buttons work properly.
- Double check to see if the water temperature is being registered correctly.
- Check to see that the drainage system is unimpeded and draining smoothly. If the water quality is poor, an electronic water treatment device or scale inhibitors should be used to ensure the water quality.
- Ensure there is no vibration or abnormal noise during operation.

### Outdoor unit

- Check to see if the refrigeration system is leaking.
- Make sure there is no vibration or abnormal noise during operation.
- Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.

## 13 Error Code

Display	Error Information
EH 00	Indoor unit EEPROM parameter error
EL 01	Indoor / outdoor unit communication error
EC 51	Outdoor unit EEPROM parameter error
EC 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited
EC 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited
EC 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited
EC 55	IGBT temperature sensor TH is in open circuit or has short circuited
EC 56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited(for free-match indoor units)
EH 40	Flow malfunction
EH 41	TW_in temperature sensor for exchanger inlet water is in open circuit or has short circuited
EH 42	TW_out temperature sensor for exchanger outlet water is in open circuit or has short
EH 43	TW1 temperature sensor for outlet water of hydraulic modules in open circuit or has short
EH 44	TR_out temperature sensor for refrigerant gas is in open circuit or has short
EH 45	TR_in temperature sensor for refrigerant liquid is in open circuit or has short
EH 46	Tk temperature sensor for water of water tank is in open circuit or has short
EH 47	TH temperature sensor back water is in open circuit or has short
EH 48	TW1B temperature sensor for total outlet water is in open circuit or has short
EH 49	Temperature sensor of heat exchanger inlet and outlet water shedding protection
EH b3	Communication error between wire controller and indoor unit
EC 07	The outdoor fan speed is operating outside of the normal range(for some models)
PC 00	IPM malfunction or IGBT over-strong current protection
PC 01	Over voltage or over low voltage protection
PC 02	Top temperature protection of compressor
PC 04	Inverter compressor drive error

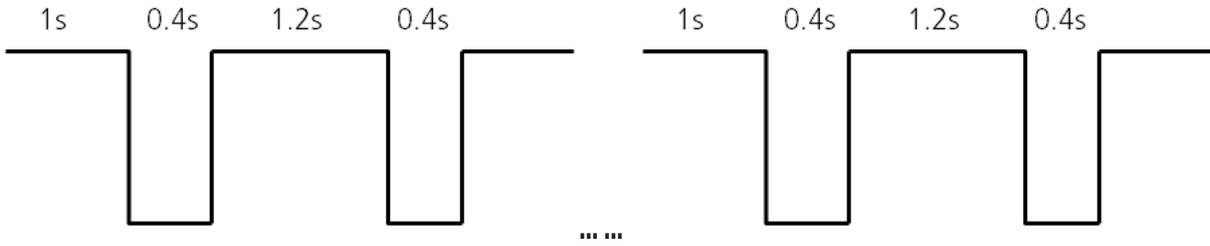
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PC 03	Low pressure protection (for some models)
--	Indoor units mode conflict(match with multi outdoor unit) (for some models)

**For other errors:**

The display board may show a garbled code or a code undefined by the service manual. Ensure that this code is not a temperature reading.

**LED flash frequency:**





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