FULL DC INVERTER SYSTEMS

USER AND INSTALLATION MANUAL

SAHK-xx

SINCLAIR AIR HANDLING KIT

sinclair

Original instructions

IMPORTANT NOTE:
Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

Contents

ABOUT THE DOCUMENTATION

1 About this Document

NOTE

Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

Target audience

Authorised installers + end users

NOTE

This appliance is intended to be used by expert or trained users in shops, in light industry, and on farms, or for commercial and household use by lay persons.

WARNING

Please thoroughly read and ensure that you fully understand the safety precautions (including the signs and symbols) in this manual, and follow relevant instructions during use to prevent damage to health or property.

Documentation set

This document is part of a documentation set. The complete set consists of:

- General safety precautions:
  - Safety instructions that you must read before installing
- Indoor unit installation and operation manual:
  - Installation and operation instructions
- Repeater installation and operation manual:
  - Installation and operation instructions
- Controller installation and operation manual:
  - Installation and operation instructions

Please refer to the product manual for other accessories.

Technical engineering data

Latest revisions of the supplied documentation may be available via your dealer.

The original documentation is written in English. All other languages are translations.

2 Safety Instructions

Please thoroughly read and ensure that you fully understand the safety precautions (including the signs and symbols) in this manual, and follow relevant instructions during use to prevent damage to health or property.

Safety signs

⚠ **DANGER**	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **CAUTION**	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTE	Useful operation and maintenance information.

Explanation of symbols displayed on the unit

	WARNING	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

WARNING: Risk of fire

(for IEC 60335-2-40: 2018 only)

WARNING: Risk of fire

(for IEC/EN 60335-2-40
except IEC 60335-2-40: 2018)

NOTE

The symbols above are for R32 refrigerant system.

⚠ DANGER

Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.

Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

These instructions are exclusively intended for qualified contractors and authorised installers

- **Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorised heating contractors. These heating contractors must be trained in accordance with EN 378 Part 4 or IEC 60335-2-40, Section HH. The certificate of competence from an industry accredited body.**
- **Brazing/soldering work on the refrigerant circuit may only be carried out by contractors certified in accordance with ISO 13585 and AD 2000, Datasheet HP 100R. And only by contractors qualified and certified for the processes to be carried out. The work must fall within the range of applications purchased and be carried out in accordance with the prescribed procedures. Soldering/brazing work on accumulator connections requires certification of personnel and processes by a notified body according to the Pressure Equipment Directive (2014/68/EU).**
- **Work on electrical equipment may only be carried out by a qualified electrician.**
- **Before initial commissioning, all safety relevant points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorised by the installer.**

SAFETY WARNING

⚠ WARNING CONTENTS

Ensure Proper Earthing

Professional Only

PROHIBITION SIGNS

No Laying Inflammable Thing

No Strong Currents

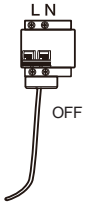
No Open Flame; Fire, Open Ignition Source and Smoking Prohibited

No Acid or Alkali Materials

1 Safety Precautions

⚠ DANGER

In the event of refrigerant leakage, smoking and open flames are prohibited. Disconnect the main power switch immediately, open windows to allow ventilation, keep away from the leakage point, and contact your local dealer or technical support to request a professional repair.



⚠ WARNING

Air conditioner installation must comply with local standards and electrical codes, and relevant instructions in this manual.

The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.

The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).

The appliance shall be stored so as to prevent mechanical damage from occurring.

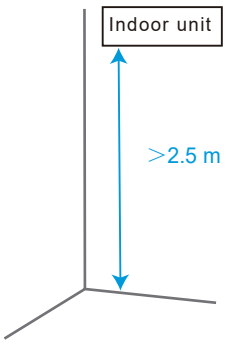
Do not use any liquid cleanser, liquefied cleanser, or corrosive cleanser to wipe this unit or spray water or other liquids on the unit. Otherwise, the plastic parts of the unit will become damaged and an electrical shock may occur. Disconnect the main power switch before cleaning and maintenance to avoid accidents.

Ask a professional to remove and reinstall the air conditioner.

Ask a professional for maintenance and repair assistance.

This air conditioner is classified as an "appliance which is not accessible to the general public".

The indoor unit shall be placed at a height not accessible to children, at least 2.5 m above the ground.



⚠ CAUTION

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision.

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

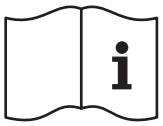
When the product is used for commercial application. This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

The sound pressure level is below 70 dB(A).

2 Electric Safety Requirements

⚠ WARNING

The air conditioner shall be installed according to the local wiring specifications.



Wiring work must be completed by qualified electricians.

The air conditioner must be well earthed. Specifically, the main switch of the air conditioner must have a reliable earthing cable.

Before contacting wiring devices, cut off all the power supplies.

The user MAY NOT disassemble or repair the air conditioner. Doing so can be dangerous. In the event of a fault, immediately cut off the power and contact your local dealer or technical support.

A separate power supply that meets the rated parameter values must be provided for the air conditioner.

The fixed wiring to which the air conditioner is connected must be equipped with a power cut-off device that meets the wiring requirements.

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection.
The specifications of the fuse are printed on the circuit board.
NOTE: For the units with R32 refrigerant, only the blast-proof ceramic fuse can be used.

⚠ CAUTION

Under no circumstances should the earth wires of the power supply system be disconnected.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Do not use a damaged power supply cable and replace it if it is damaged.

When the air conditioner is used for the first time or is in a power-off state for a long time, it needs to be connected to the power supply and warmed up for at least 12 hours before use.

3 About the Refrigerant

⚠ WARNING

The following applies to R32 refrigerant systems.

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.

For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt consult the manufacturer’s technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:
– the charge size is in accordance with the room size within which the refrigerant containing parts are installed;
– the ventilation machinery and outlets are operating adequately and are not obstructed;
– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
– refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:
- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continual vibration from sources such as compressors or fans.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed.

Since flammability is a consideration. The following procedure shall be adhered to:
• remove refrigerant;
• purge the circuit with inert gas;
• evacuate;
• purge again with inert gas;
• open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.

Prior to recharging the system, it shall be pressure tested with OFN.

DD.12 Decommissioning:

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
  • *mechanical handling equipment is available, if required, for handling refrigerant cylinders;*
  • *all personal protective equipment is available and being used correctly;*
  • *the recovery process is supervised at all times by a competent person;*
  • *recovery equipment and cylinders conform to the appropriate standards.*
d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Warning: disconnect the appliance from its power source during service and when replacing parts.

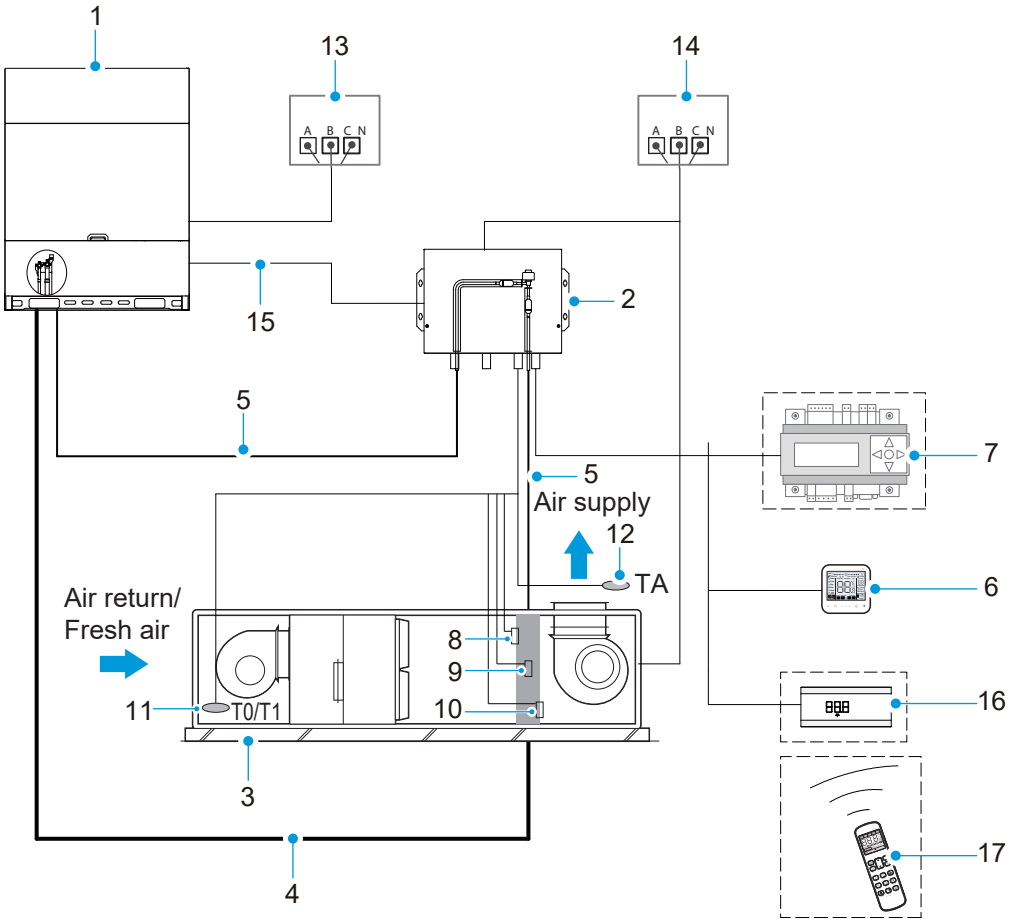
These units are partial unit air conditioners, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

INTRODUCTION

1 Overview

- This Kit device can only be connected to VRF systems and cannot be connected to modular systems.
- Kit devices can only be used in conjunction with third-party AHUs. Do not connect this Kit device to other indoor devices.
- Each third-party AHU can connect one Kit or several Kits in parallel (up to 4 Kits in parallel are allowed).
- Kit can choose any of the following control methods: return air temperature control, supply air temperature control, and variable capacity control.
- When the outdoor unit is a heat recovery type, only the return air temperature control can be used, and the supply air temperature control and variable capacity control cannot be used.
- When selecting return air temperature control, AHU+Kit is equivalent to a standard multi unit indoor unit.
- Kit can be connected to factory controllers or third-party controllers; When using a third-party controller, Kit does not receive input signals from the factory provided controller.
- This manual introduces the installation and operation of Kit equipment.

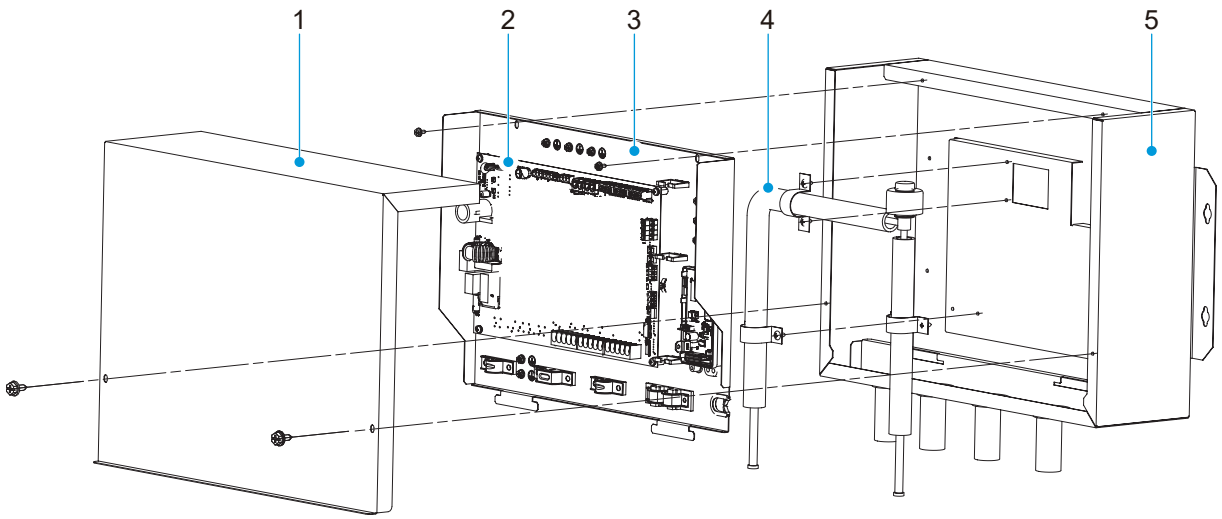
2 System Diagram



NOTE

The components marked with dashed boxes in the system diagram indicate that they need to be purchased separately from the factory.

No.	Name	Procurement Requirement	Description
1	Outdoor unit	Factory-supplied	Supports heat pump type and heat recovery type VRF outdoor units
2	Kit	Factory-supplied	Reserve brazing joint for the refrigerant inlet/outlet pipe
3	Third-party AHU	Provided on site	Only air-cooled direct expansion AHU is supported
4	Connecting piping between outdoor unit and AHU	Provided on site	For piping diameters, see Pipe Layout in the related outdoor unit Installation Manual
5	Connecting piping between outdoor unit and the kit, connecting piping between AHU and the kit	Provided on site	For piping diameters, see Pipe Connection in this manual
6	Wired controller	Factory-supplied	Factory default
7	Third-party controller	Provided on site	DDC controller
8	T2A-AHU heat exchanger liquid pipe temperature sensor	Factory-supplied	Factory default
9	T2-AHU heat exchanger middle temperature sensor	Factory-supplied	Factory default
10	T2B-AHU heat exchanger gas pipe temperature sensor	Factory-supplied	Factory default
11	T1-AHU indoor return air temperature sensor	Factory-supplied	Factory default
11	T0-AHU outdoor fresh air temperature sensor	Factory-supplied	Factory default
12	TA-AHU outlet air temperature sensor	Factory-supplied	Factory default
13	Outdoor unit power supply	Provided on site	For power supply specifications, see Power Supply Selection in the related outdoor unit Installation Manual
14	AHU and kit power supply	Provided on site	The power supply is separated from the outdoor unit
15	Communication wires between the kit and outdoor unit	Provided on site	For the materials and specifications of communication wires, see Electrical Installation-Connection of Signal Cables in this manual
16	Display box	Factory-supplied	Optional, can be purchased separately from the factory
17	Remote controller	Factory-supplied	Optional, can be purchased separately from the factory

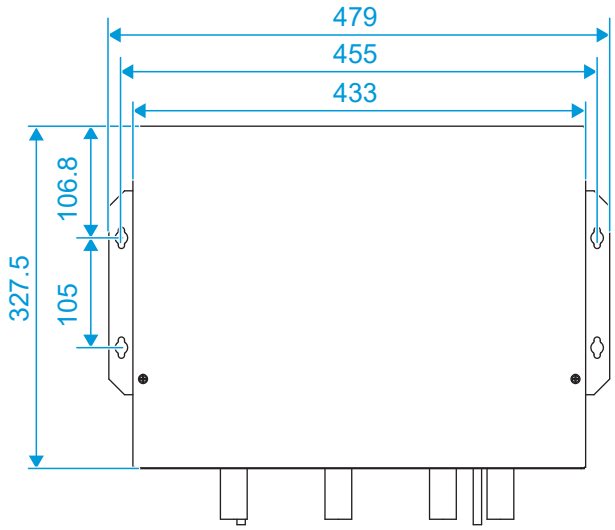


No.	Name
1	Box cover
2	Main control board
3	Main control board support seat
4	Electronic expansion valve assembly
5	Box body

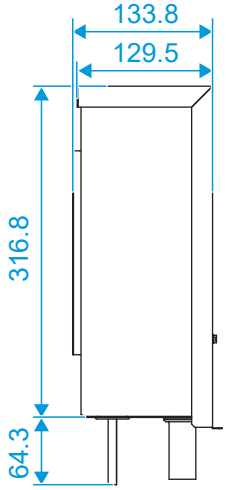
3 Three Views

(Unit: mm)

Front view

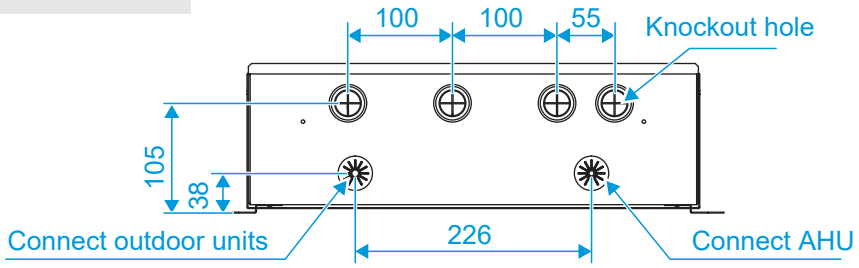


Left view



Vertical installation

Bottom view



4 Specifications

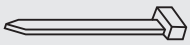
Kit models			SAHK-00	SAHK-01	SAHK-02	SAHK-03
Power supply			220–240 V~ 50/60 Hz			
Net weight		kg	6.2	6.2	6.4	6.4
Gross weight		kg	8.8	8.8	9.0	9.0
Operating ambient temperature		°C	-25 ~ 52			
AHU heat exchanger air inlet temperature (DB)	Cooling	°C	17 ~ 43			
	Heating	°C	5 ~ 30			
EEV drive pulse count		PLS	500	500	500	300
Max. input current bearable		A	3.5		15	
PCB fuse specifications		A	10		30	
Refrigerant type			R410A/R32			

00-01

BEFORE INSTALLATION

1 Accessory Package

No.	Name	Illustration	Quantity	Specifications	Remarks
1	Installation and Operation Manual		1	—	Kit selection, installation and use
2	Wired controller		1	—	Kit control and information query
3	Electronic expansion valve coil extension adapter cable		1	4 000 mm	For connection when the electronic expansion valve is installed separately and the distance from the kit control box is greater than 1000 mm
4	T1-AHU indoor return air temperature sensor		1	1 150 mm	Measure the AHU air temperature at the indoor return air outlet
5	AHU indoor return air temperature sensor extension adapter cable		1	9 000 mm	For connection when the T1 sensor wire length is insufficient to connect to the kit control box
6	T0-AHU outdoor fresh air temperature sensor		1	1 150 mm	Measure the AHU air temperature at the indoor fresh air inlet
7	AHU outdoor fresh air temperature sensor extension adapter cable		1	9 000 mm	For connection when the T0 sensor wire length is insufficient to connect to the kit control box
8	TA-AHU outlet air temperature sensor		1	1 150 mm	Measure the AHU air temperature at air outlet
9	AHU supply air temperature sensor extension adapter cable		1	9 000 mm	For connection when the TA sensor wire length is insufficient to connect to the kit control box
10	T2A-AHU heat exchanger liquid pipe temperature sensor		1	1 400 mm	Measure the AHU heat exchanger liquid pipe refrigerant temperature
11	AHU heat exchanger liquid pipe temperature sensor extension adapter cable		1	9 000 mm	For connection when the T2A sensor wire length is insufficient to connect to the kit control box
12	T2-AHU heat exchanger middle temperature sensor		1	1 300 mm	Measure the AHU heat exchanger middle refrigerant temperature
13	AHU heat exchanger middle temperature sensor extension adapter cable		1	9 000 mm	For connection when the T2 sensor wire length is insufficient to connect to the kit control box
14	T2B-AHU heat exchanger gas pipe temperature sensor		1	1 600 mm	Measure the AHU heat exchanger gas pipe refrigerant temperature
15	AHU heat exchanger gas pipe temperature sensor extension adapter cable		1	9 000 mm	For connection when the T2B sensor wire length is insufficient to connect to the kit control box
16	Sleeve		3	—	Be welded at AHU heat exchanger T2A/T2/T2B temperature sensor placement points
17	Fixing clip		3	—	Fix T2A/T2/T2B temperature sensor
18	Self-tapping screw		4	ST 3.9 × 25 mm	Secure the mounting holes for the kit box

No.	Name	Illustration	Quantity	Specifications	Remarks
19	Plastic expansion pipe		4	4×30 mm	Used with self-tapping screws
20	Cable tie		6	4.8×300 mm	Bind the extension cable of the sensor

NOTE

Check the accessories against the above list and contact your local dealer if any items are missing.

2 Connection of Indoor Unit and Outdoor Unit

Supported models

CAUTION

For a set of refrigeration system, the matching rules of indoor unit and outdoor unit models are shown in the table below. The matching requirements listed in the table are only for preliminary selection reference. For detailed configuration requirements, please use the selection software provided by the factory for selection;

Please consult the distributor or factory technical support personnel to confirm the model belongs to the series. If the selected indoor unit or outdoor unit does not belong to the model series listed in the table, please consult the distributor or factory technical support personnel to confirm whether it can be configured.

Indoor unit combination			Outdoor unit					Connection rate[4]	
Combination	Capacity control method		SDV6 Platform	SDV5 Platform	SDV 5-3P	SDV5-80-160 EAS/EAS2	SDV4 SDV4F		
SAHK-0x	Input set temperature [2]	Control 1	√	√	×	×	×	Indoor unit / outdoor unit	50 % ~ 100 %
		Control 2	√	√	√	×	×	Indoor unit / outdoor unit	50 % ~ 100 %
	Input the capacity value	Control 3I[3]	√	√	×	×	×	Indoor unit / outdoor unit	50 % ~ 100 %
SAHK-0x Indoor unit [1]	Input set temperature [2]	Control 1	×	×	×	×	×	/	
		Control 2	√	√	√	×	×	Indoor unit / outdoor unit	50 % ~ 100 %
	Input the capacity value	Control 3I[3]	×	×	×	×	×	/	
SAHK-0x + Fresh Air Processing Unit	Input set temperature [2]	Control 1	×	×	×	×	×	/	
								/	
		Control 2	×	×	×	×	×	/	
	Input the capacity value	Control 3I[3]	×	×	×	×	×	/	
SAHK-0x + AHUKZ-0xD	Input set temperature [2]	Control 1	×	×	×	×	×	/	
		Control 2	×	×	×	×	×	/	
	Input the capacity value	Control 3I[3]	×	×	×	×	×	/	

Control 1——Control: AHU supply air temperature

Control 2——Control: AHU return air temperature

Control 3——Control: AHU return air temperature or AHU supply air temperature or room temperature

The detailed explanation of the three control methods can be found in Chapter 10- Capacity Control.

[1] Indoor unit does not include Fresh Air Processing Unit and Hydro Module.

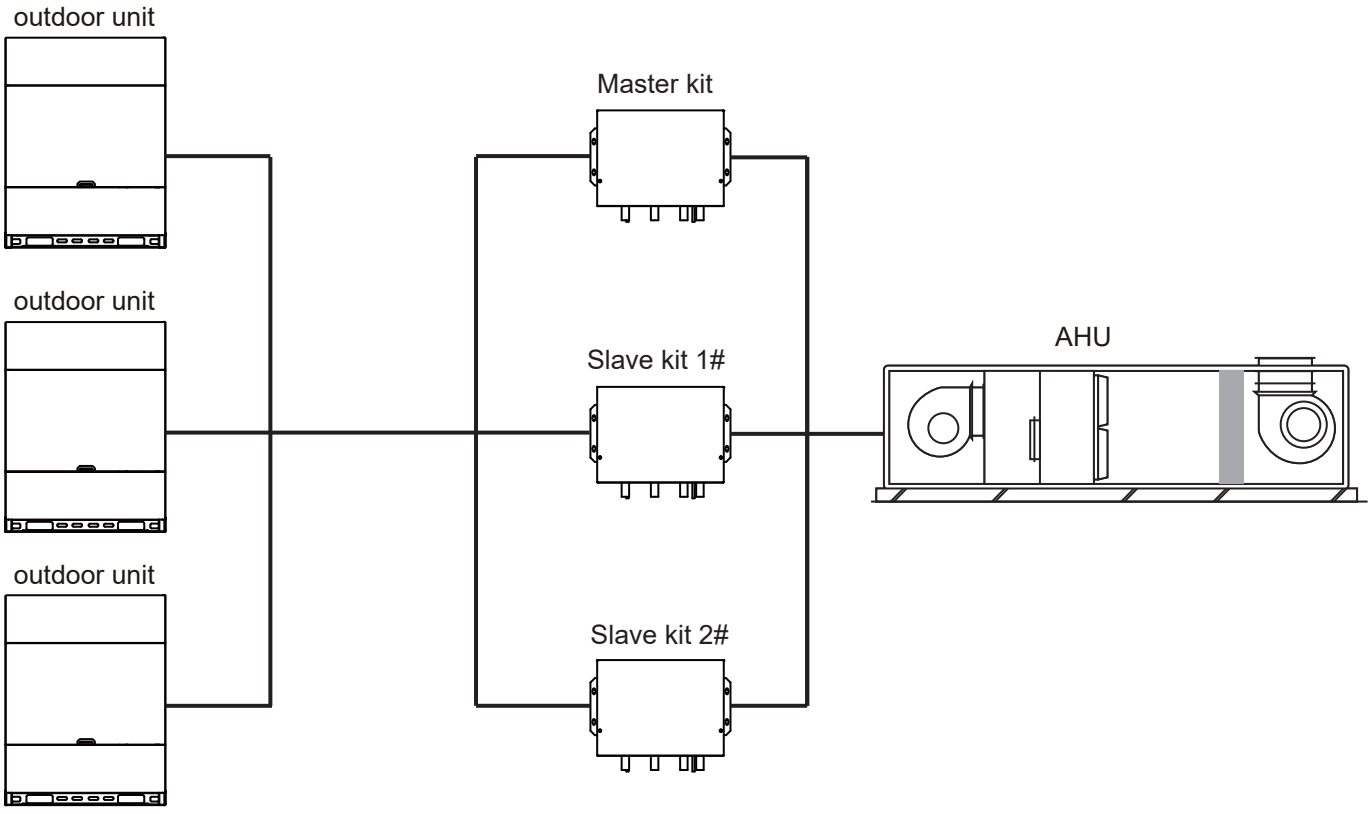
[2] Input the setting temperature (Ts) using the Sinclair controller or input the set temperature value (Ts) using a third party controller 0-10 V.

[3] Connection rate: The ratio between the total nominal cooling capacity of indoor units in the system and the total nominal cooling capacity of outdoor units is defined as the connection rate, and the nominal cooling capacity is measured in HP.

Description of the connection mode of the outdoor unit, ahu, and kit

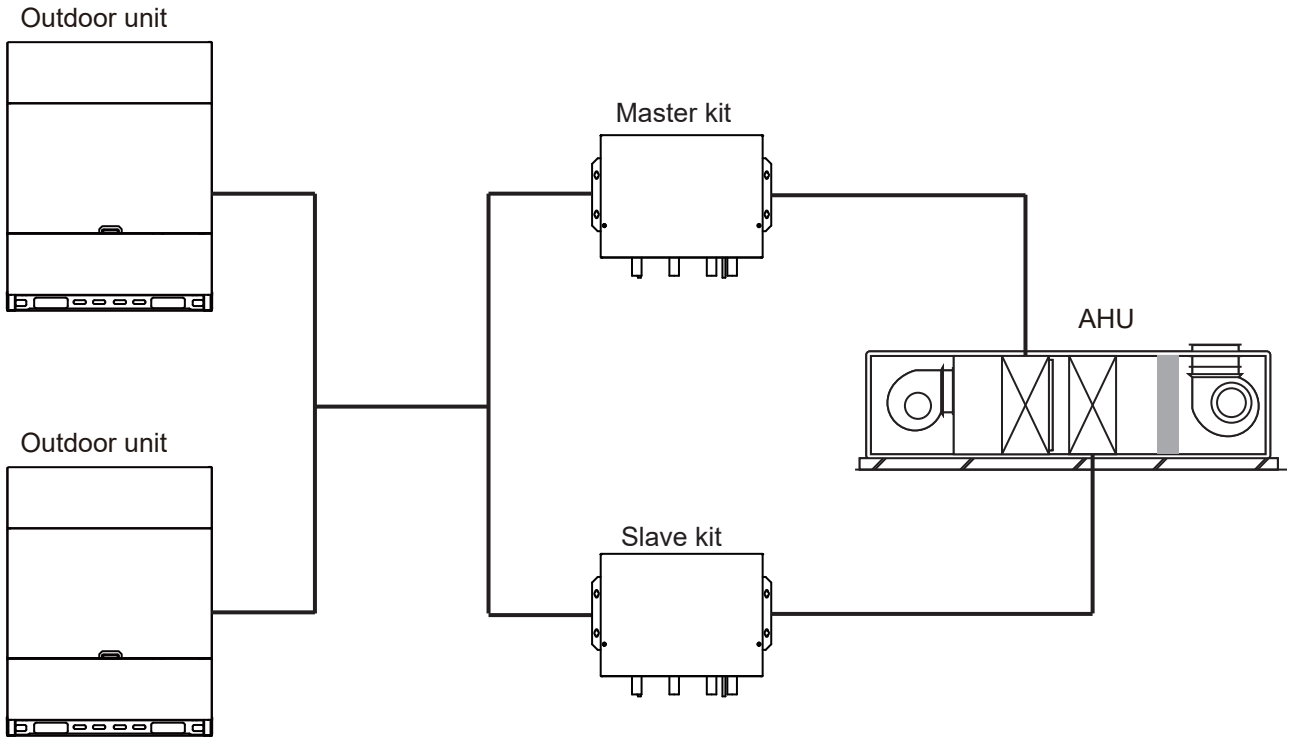
1 No general indoor unit in the system, and a heat exchanger is connected after kits are connected in parallel

Multiple kits are connected in parallel, and the refrigerant is connected to the AHU heat exchanger after converging through the branch joint. A maximum of four kits can be connected in parallel. The system connection is shown in the figure below:



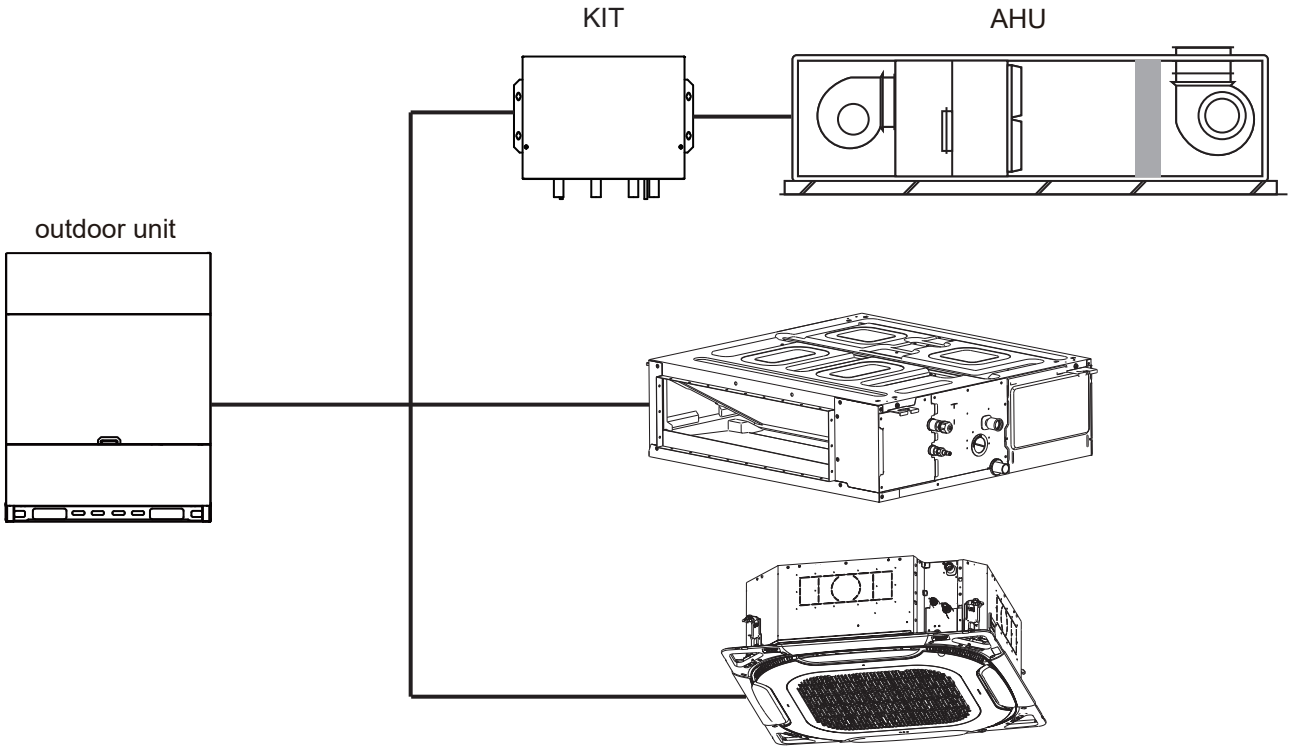
2 No general indoor unit in the system, and multiple heat exchangers are connected after kits are connected in parallel

Multiple kits are connected in parallel, and each kit corresponds to a heat exchanger of the AHU. A maximum of four kits can be connected in parallel. The system connection is shown in the figure below:



3 General indoor units and AHU co-exist in the system

General indoor units and the AHU kit co-exist in the system. The system connection is shown in the figure below:



3 Selection of AHU Heat Exchanger

Select the appropriate AHU heat exchanger according to the parameters and requirements listed in the following table. If these limitations are ignored, the service life, operating range and operating reliability of the outdoor unit may be affected.

AHU heat exchanger cooling/heating capacity

If the total capacity of the connected indoor unit exceeds the rated capacity of the outdoor unit, the cooling and heating performance may be reduced when operating the indoor unit.

Operation in Cool mode: vapourization temperature 6 °C, AHU heat exchanger inlet air temperature 27 °C DB/19 °C WB, superheat = 3 °C.

Operation in Heat mode: condensation temperature 48 °C, AHU heat exchanger inlet air temperature 20 °C DB/15 °C WB, subcooling = 5 °C.

Model	DIP Set Capacity	Cooling Capacity Design Range (kW)		Heating Capacity Design Range (kW)	
	Index (HP)	Minimum Value	Maximum Value	Minimum Value	Maximum Value
SAHK-00	0.8	1.8	2.8	2.2	3.2
	1	2.8	3.6	3.2	4
	1.2	3.6	4.5	4	5
	1.7	4.5	5.6	5	6.3
	2	5.6	7.1	6.3	8
	2.5	7.1	8	8	9
	3	8	9	9	10
SAHK-01	3.2	9	10	10	11.2
	3.6	10	11.2	11.2	12.5
	4	11.2	14	12.5	16
	5	14	16	16	18
	6	16	18	18	20
	6.5	18	20	20	22
SAHK-02	7	20	22	22	25
	8	22	25	25	30
	10	25	30	30	36
	12	30	36	36	40
SAHK-03	14	36	40	40	45
	16	40	45	45	50
	18	45	50	50	56
	20	50	56	56	62

AHU heat exchanger copper tube internal volume

Model	DIP Set Capacity Index (HP)	Heat Exchanger Copper Tube Internal Volume (cm^3)	
		Minimum Value	Maximum Value
SAHK-00	0.8	450	670
	1	560	840
	1.2	670	1 000
	1.7	950	1 420
	2	1 120	1 670
	2.5	1 400	2 090
	3	1 670	2 510
SAHK-01	3.2	1 790	2 680
	3.6	2 010	3 010
	4	2 230	3 350
	5	2 790	4 190
	6	3 350	5 020
	6.5	3 880	5 660
SAHK-02	7	4 420	6 310
	8	5 490	7 600
	10	6 070	8 380
	12	6 200	10 050
SAHK-03	14	7 750	11 730
	16	7 850	13 400
	18	9 020	15 080
	20	10 550	16 750

AHU heat exchanger inlet air flow

Model	DIP Set Capacity Index (HP)	AHU Air flow (m^3/h)			
		Return Air Temperature Control		Supply Air Temperature Control	
		Minimum Value	Maximum Value	Minimum Value	Maximum Value
SAHK-00	0.8	358	493	179	269
	1	448	616	224	336
	1.2	538	739	269	403
	1.7	762	1 047	381	571
	2	896	1 232	448	672
	2.5	1 120	1 540	560	840
	3	1 344	1 848	672	1 008
SAHK-01	3.2	1 434	1 971	717	1 075
	3.6	1 613	2 218	860	1 210
	4	1 792	2 464	896	1 344
	5	2 240	3 080	1 120	1 680
	6	2 688	3 696	1 344	2 016
	6.5	2 912	4 004	1 456	2 184
SAHK-02	7	3 136	4 312	1 568	2 352
	8	3 584	4 928	1 792	2 688
	10	4 480	6 160	2 240	3 360
	12	5 376	7 392	2 688	4 032
SAHK-03	14	6 272	8 624	3 136	4 704
	16	7 168	9 856	3 584	5 376
	18	8 064	11 088	4 032	6 048
	20	8 960	12 320	4 480	6 720

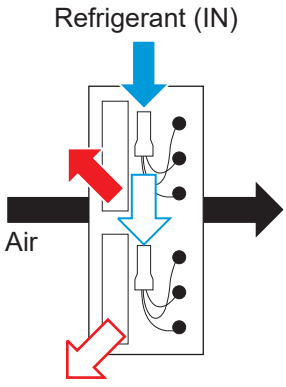
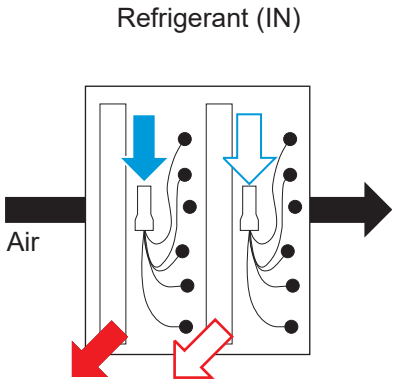
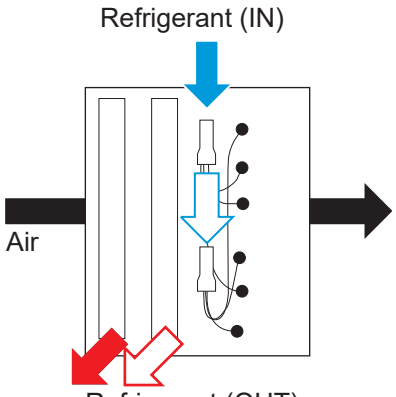
Selection of ahu heat exchanger when multiple kits are connected in parallel

When connecting Kits in parallel, comply with the following requirements: The maximum capacity model and the minimum capacity model in the parallel combination must be adjacent models. For example:

Combinations	Allow or not（m^3/h）
SAHK-02 + SAHK-03	Yes, the maximum capacity model is 03F, and the minimum capacity model is 02F. The two models must be adjacent to each other
SAHK-00 + SAHK-01 + SAHK-01	Yes, the maximum capacity model is 01F, and the minimum capacity model is 00F. The two models must be adjacent to each other
SAHK-01 + SAHK-03	No, the maximum capacity model is 03F, and the minimum capacity model is 01F. The two models do not meet the requirements for adjacent space
SAHK-00 + SAHK-01 + SAHK-03	If no, the maximum capacity model is 03F, and the minimum capacity model is 00F. The two models do not meet adjacency requirements

AHU flow path design when multiple heat exchangers are in parallel

When multiple heat exchangers of the AHU are connected in parallel, each flow path must have: 1) the same return air temperature, 2) the same refrigerant inlet and outlet parameters, and 3) the same diameter of the inlet and outlet pipes. Therefore, the designs in Figure 1 and Figure 2 in the following table are incorrect, and the design in Figure 3 is correct.

 Face control	 Row control	 Interlaced(IN)
Figure 1	Figure 2	Figure 3
✖	✖	√

INSTALLATION OF COOLING SYSTEM

1 Installation of Kit

Selection of installation location

Select an installation location that meets the following conditions:

- ☑ The AHU kit is not waterproof. If it is installed outdoors, it needs protective devices to keep rainwater out.
- ☑ Do not install it in direct sunlight, which will increase the internal temperature of the AHU kit, shorten the service life and affect the operation.
- ☑ Choose a flat and solid mounting surface.
- ☑ Do not install it on or above the surface of an outdoor unit.
- ☑ A certain space is reserved on the front surface of the AHU kit for future maintenance.

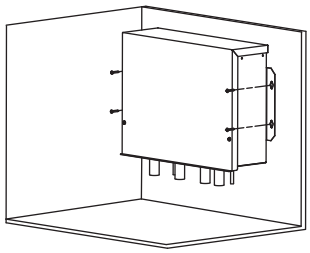
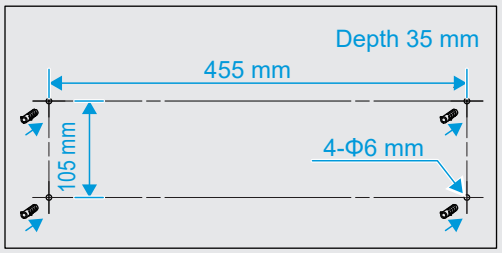
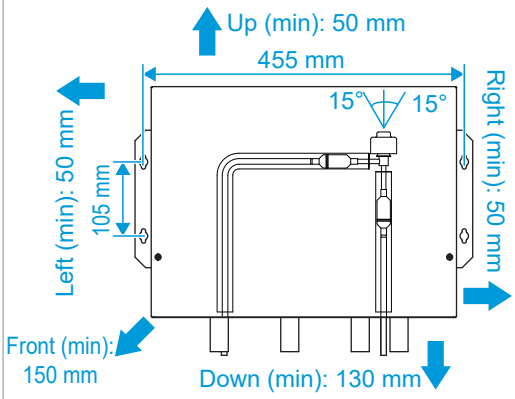
Do not install or operate the AHU kit in the following environments:

- ⊘ Places where flammable gas may leak, carbon fiber or flammable dust is floating, or volatile combustible materials such as diluents and gasoline are present; when the leaking gas condenses on the main valve, it may cause fire;
- ⊘ Corrosion or PCB failure may occur in coastal or hot spring areas;
- ⊘ In the area is exposed to a strong electromagnetic environment, control system abnormalities are more likely to occur, which leads to abnormal operation;
- ⊘ Areas with large voltage fluctuations;
- ⊘ Places where corrosive gases such as acid or alkali are generated, such as the places near the exhaust port or vent outlet of the bathroom; such areas may easily lead to corrosion of the welded parts of copper pipes and may lead to refrigerant leakage;
- ⊘ Places full of mineral oil, kitchens and other places with more scattered oil smoke and steam;
- ⊘ Places directly affected by the external environment (temperature/humidity/dust, etc.).

Fixation of box body and electronic expansion valve assembly

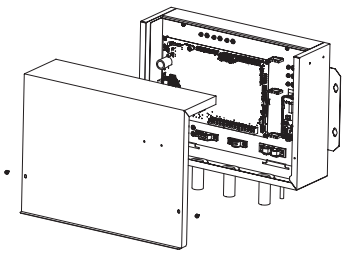
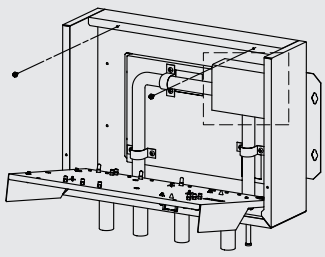
The PCB and the electronic expansion valve assembly are assembled as a whole when the kit leaves the factory. They can be installed as a whole or the electronic expansion valve assembly can be installed separately.

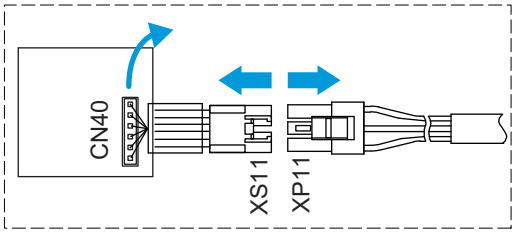
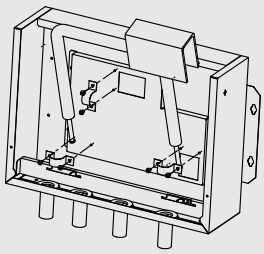
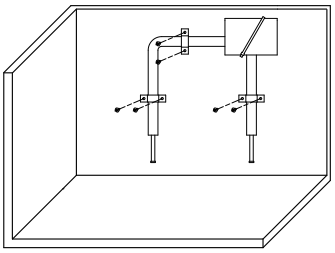
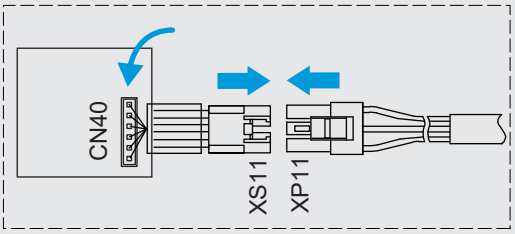
1 Fixation Method 1: The electronic expansion valve assembly is placed in the box

Operation Procedure	Illustration	Precautions
Step 1: Install the kit box on a flat, solid wall surface (wall, thick wooden board, or insulation board).		The distance between the box body and the AHU must be kept within 10 meters (the length of the temperature sensor wire is about 1150mm – 1400 mm, and the length of the temperature extension adapter cable is 9000 mm).
Step 2: According to the positioning size of the installation holes shown in the figure, mark the hole positions on the fixed wall of the kit box with a pen, and use a drilling tool to drill holes; then drive plastic expansion tubes in the accessory package into the hole positions.		It is recommended to use tools such as a level or tape measure to trace the hole positions to prevent deviation of hole positions.
Step 3: Fix the AHU kit box on the wall with the screws in the accessory package as shown in the figure.		1) The spacing in all directions needs to be reserved at the installation position of the kit box, as shown in the figure. 2) During installation, the electronic expansion valve body inside the Kit box must be kept perpendicular to the ground, and the left-right deflection should not exceed ±15°.

2 Fixation Method 2: The electronic expansion valve assembly is fixed separately

When the electronic expansion valve assembly is installed separately, follow the following illustrated steps. After the electronic expansion valve assembly is removed, connect the PCB support plate and the box cover with the box body by screws, and then install the electronic expansion valve according to fixation method 1.

Operation Procedure	Illustration	Precautions
Step 1: Remove the two screws fixing the kit box cover and remove the box cover.		Keep the screws fixing the box cover. Fix the box cover again after the operation is completed.
Step 2: Remove the two screws fixing the PCB support plate and turn the support plate over.		Keep the screws fixing the PCB support plate. Reinstall the support plate after the operation is completed.

Operation Procedure	Illustration	Precautions
Step 3: Separate the coil terminal XP11 of the electronic expansion valve from the connector terminal XS11, and then pull out the connecting cable from the PCB CN40 port.		The coil body terminal XP11 and the connector terminal XS11 are connected in a buckle-type manner. When separating, press the XP11 terminal card with your fingers and then pull out the XS11 terminal.
Step 4: Remove the screws fixing the pipe clamp (3 pipe clamps, 6 screws in total), pipe clamps and electronic expansion valve assembly in turn.		1) Keep the screws fixing the pipe clamp; the pipe clamp needs to be fixed again after the operation is completed; 2) It is necessary to protect the thermal insulation cotton and damping glue on the electronic expansion valve assembly during operation.
Step 5: Reuse the pipe clamp to fix the electronic expansion valve assembly at the pre-selected position.		1) The coil length of the electronic expansion valve is about 1000 mm, and the extension adapter cable length is 4000mm. Therefore, the distance between the pre-selected position to the kit control box must be kept within 5 meters; 2) The wall surface of the fixed electronic expansion valve assembly should be flat and firm, and must be waterproof and protected from direct sunlight; 3) During installation, the electronic expansion valve body inside the kit box must be kept perpendicular to the ground, and the left-right deflection should not exceed ±15°.
Step 6: Plug and connect one end of the coil extension cable in the accessory package to the coil of the electronic expansion valve, and plug and connect the other end to the connecting cable (connected to the PCB CN40 port).		Cables must be routed through special trunking or conduit, and it is forbidden to share trunking or conduit with strong wire bodies!

2 Pipe Connection

Precautions

⚠ CAUTION

The installation of refrigerant pipeline should not damage the load-bearing structure and decorative style of the building;

Refrigerant pipeline should be designed to ensure correct direction, reasonable branching and the shortest length;

The layout of refrigerant pipeline must bypass the position of the maintenance port of the unit and reserve enough maintenance space;

The air-conditioning riser pipeline should be laid as far as possible into the air-conditioning pipe shaft, and horizontal pipeline should be laid as far as possible into the ceiling;

During the installation of the connecting piping, do not allow air, dust, and other debris to enter the piping system, and make sure the interior of the connecting piping is dry;

Install the connecting piping only when the indoor units and outdoor units are secured;

When installing the connecting piping, record the actual installation length of the liquid pipe so that additional refrigerant can be calculated;

Connecting piping must be wrapped with insulation materials;

In the event of refrigerant gas leakage during operation, please ventilate immediately.

Pipeline material requirements

① The inner and outer surfaces of copper pipes should be free of pinholes, cracks, peeling, bubbles, inclusions, copper powder, carbon deposit, green rust, dirt, serious oxide film, or obvious defects such as scratches, pits and spots.

② Foreign matters (including manufacturing oil) in copper pipes must be less than or equal to 30mg/10m.

③ The copper piping must be made of phosphoric acid deoxidized seamless copper pipe, and the tempering grade of the pipe shall be in accordance with the following table.

Outer diameter of copper pipe (mm)	Temper classification of pipeline materials
≤ 15.9	O (annealed)
≥ 19.1	1/2H (1/2 hard)

④ The thickness of copper pipes must comply with the relevant laws and regulations of local countries/regions.

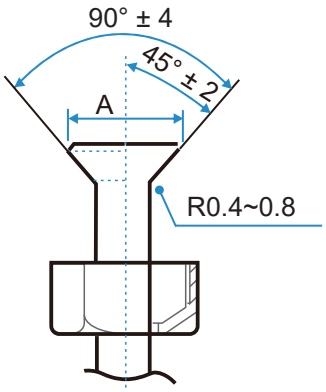
⑤ If you cannot find the copper tube with the specified outer diameter in the manual locally, the copper pipe closest to the specified outer diameter can be selected instead.

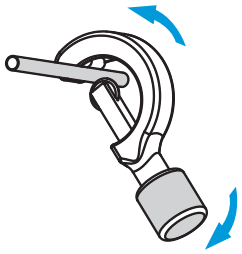
Pipeline processing

1 Flaring

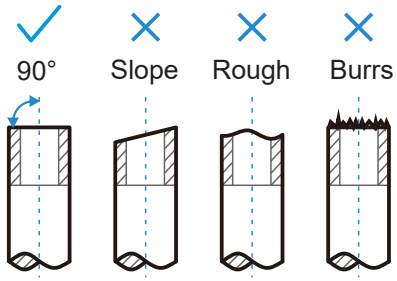
Flaring and nut fastening method

Cut off the piping with a pipe cutter (by repeatedly rotating the pipe cutter), and insert the pipe into the connecting nut to flare. The gas pipe and liquid pipe with an outer diameter of less than or equal to 19mm can be connected by flaring.





Pipe cutter



Outer diameter (mm)	A (mm)	
	Max.	Min.
φ 6.35	8.7	8.3
φ 9.52	12.4	12.0
φ 12.7	15.8	15.4
φ 15.9	19.1	18.6
φ 19.1	23.3	22.9

⚠ CAUTION

The hard pipe must be annealed before the flaring operation.

Pipe cutters should be used for cutting pipes (do not use hacksaws or metal cutting equipment to prevent excessive deformation of copper pipe sections and copper chips from entering the pipes).

Carefully remove burrs to avoid scars at the pipe socket, which may lead to refrigerant leakage.

When connecting pipes, two wrenches (a torque wrench and a fixed wrench) must be used.

Before flaring, the flaring nut should be fitted with a pipe.

Check whether the flaring surface is damaged.

Do not reuse the flared parts.

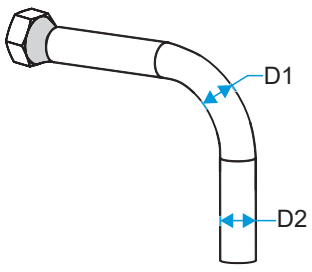
2 Bend pipe

Bending method

Hand bending processing: Applicable to thin copper pipes (ϕ6.4-ϕ12.7).

Mechanical bending processing: Wider application (ϕ 6.4-ϕ28), using a spring pipe bender, manual pipe bender or electric pipe bender.

Pipe bending



$\frac{D1}{D2} \geq 85\ \%$

Note: D1 is the minimum diameter, and D2 is the nominal diameter.

⚠ CAUTION

When bending pipes, the copper pipes shall not be wrinkled or deformed on the inside.

When a spring pipe bender is used, clean it before it is inserted into the copper pipe.

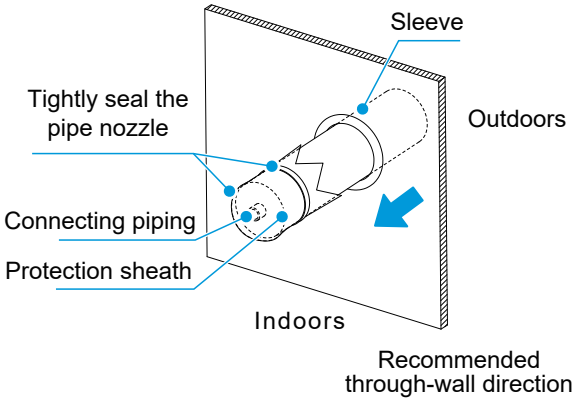
The bending angle should not exceed 90°; otherwise, wrinkles will be form in the pipe, which increases the likelihood of breakage.

The bending radius should not be smaller than 3.5D (connecting piping diameter) and should be as large as possible to prevent the connecting piping from becoming flattened or crushed. When mechanically bending the pipe, the pipe bender inserted into the connecting piping must be cleaned.

3 Through-wall

Through-wall method

1. Locate the indoor unit and outdoor unit of the air conditioner in the corner, and ensure that the distance between the indoor unit and outdoor unit does not exceed the specified maximum pipe length of the air conditioner.
2. Find the corner position of the copper pipe, and use a ruler and pencil to draw a vertical line and a horizontal line on the wall as a guide.
3. Use a drilling machine or an electric drill to punch holes near the corner. Choose a drill bit and hole position of appropriate size according to the air conditioning specifications, so that the copper pipe can pass through the wall.
4. Insert the copper pipe into the drilled hole from one end of the indoor unit and extend to the corner of the outdoor unit.
5. Use the pipe sheath to fix the copper pipe in the corner. The pipe sheath is an external sleeve to protect the pipe, which can provide additional protection and aesthetic effect.



⚠ CAUTION

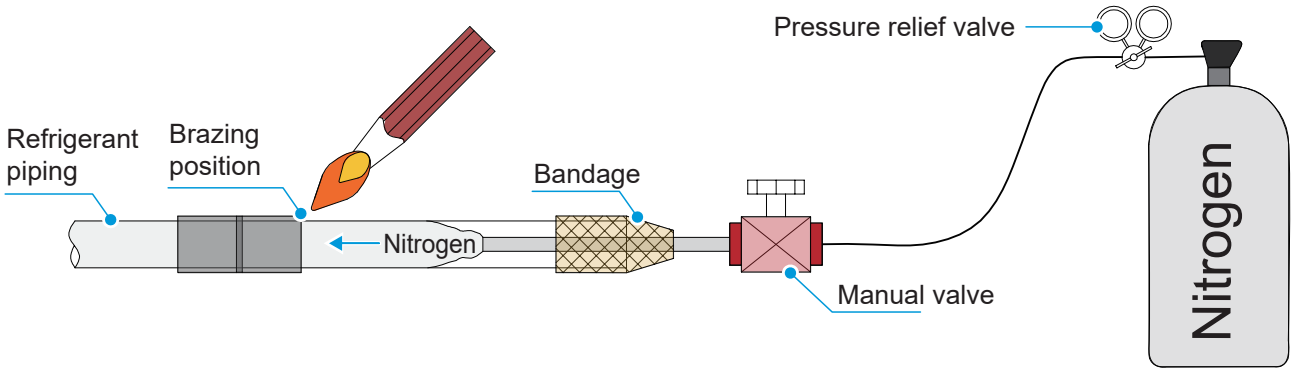
When passing through the wall or floor, a protective sheath should be provided, and the weld should not be in the sheath; the connecting pipe must be sealed at the pipe opening through the external wall.

Ensure that the bending radius of the copper pipe meets the requirements of the air conditioner manufacturer. Excessive bending may damage the pipe or affect the normal operation of the air conditioner system.

4 Braze

Brazing method

When brazing pipes, fill the pipes with nitrogen. First evenly heat the inner pipes, then the outer pipes, and fill the joints with welding material.



⚠ CAUTION

Nitrogen pressure is kept at about 0.2–0.3 kgf/cm^2 during welding.

Use nitrogen for welding. Do not use flammable gas such as oxygen to avoid the risk of explosion.

Use a pressure relief valve to keep the nitrogen pressure at 0.2 kgf/cm^2.

Select an appropriate position to add nitrogen.

Make sure that the nitrogen passes the welding spot.

If there is a long distance between the position of adding nitrogen and the welding spot, keep adding the nitrogen for a while until oxygen at the welding spot is completely removed.

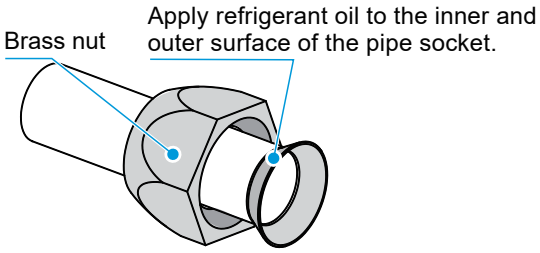
After welding is completed, continue adding nitrogen until the pipe becomes cool.

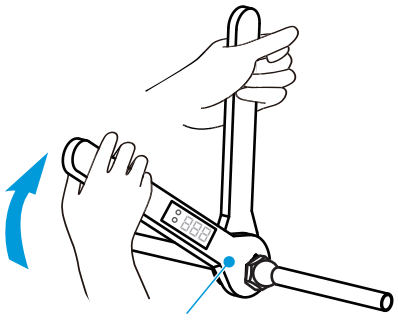
Perform welding downwards or horizontally from either side.

5 Pipe connection

Connection method

Before tightening the flare nut, apply refrigeration oil on the inner and outer surface of the pipe flare (you must use refrigeration oil compatible with the refrigerant for this model); align the connecting piping, firstly tighten most of the thread of the connecting nut by hand, and then use a wrench to tighten the last 1–2 turns of the thread as shown in the figure on the right.





Pipe size (mm)	Tightening torque [N·m (kgf·cm)]
φ 6.35	14.2–17.2 (144–176)
φ 9.52	32.7–39.9 (333–407)
φ 12.7	49.5–60.3 (504–616)
φ 15.9	61.8–75.4 (630–770)
φ 19.1	97.2–118.6 (990–1 210)

⚠ CAUTION

Connect the indoor unit first, and then connect the outdoor unit. When connecting or removing a pipe, use two wrenches at the same time. Tighten the flaring nut according to the torque specified in the table.

6 Heat insulation

Copper pipe insulation

① Use the closed-cell foam insulation material, which is rated at a flame retardancy level of B1 and has a heat resistance of over 120 °C.

② Thickness of the insulation pipe:
1. When the diameter is equal to or greater than 15.9 mm, the insulation thickness is at least 20 mm.
2. When the diameter is equal to or smaller than 12.7 mm, the insulation thickness is at least 15 mm.

③ For insulation of the outdoor copper pipe, the thickness of insulation pipes for winter heating systems is generally increased to at least 40 mm in regions with severe cold. For insulation of the indoor gas pipe, the thickness of insulation pipes is recommended to be greater than 20 mm.

④ The joints and cut-out parts of heat insulation pipes shall be glued and then wrapped with electrical adhesive tape, the width of which shall be no less than 50 mm, so as to ensure firm connection.

⑤ The insulation between the copper pipe and the indoor unit should be tight to prevent condensation.

⑥ After the system leakage detection test indicates that there are no leaks, carry out insulation of the copper pipe.

⑦ The gas pipe must be made of thermal insulation material with a heat resistance of 120 °C or higher. For outdoor pipelines, additional protective treatments should be performed, such as adding metal duct boxes or wrapping the pipes with aluminum foil materials. Thermal insulation materials directly exposed to the open air will degrade and lose their insulating properties.

Air duct insulation

① Insulate the FCU components and the unit after the FCU system passes the air leakage test or quality check.

② Use centrifugal glass wool, rubber and plastic materials or other types of materials for thermal insulation of the FCU. The insulation layer should be smooth and dense without cracks or gaps.

③ The supports, suspension brackets, and brackets of the FCU should be arranged outside the insulation layer with wooden sleepers.

④ Thickness of the insulation layer:
1. The thickness of the insulation layer should not be less than 40 mm if the layer is made of centrifugal glass wool and is used for the air supply pipes and air return pipes in rooms without air conditioning.
2. The thickness of the insulation layer shall not be less than 25 mm if the layer is made of centrifugal glass wool and is used for the air supply pipes and air return pipes in rooms with air conditioning.
3. If the insulation layer is made of rubber and plastic materials or other materials, the thickness of the insulation layer shall be obtained according to design requirements or calculation results.

Drain pipe insulation

① Indoor parts of the drain pipe should be insulated to prevent condensation, and protective sheathes with a thickness of more than 10 mm are required.

② If the pipe is not insulated as a whole, the cut parts must be re-bonded.

③ The joints and cut points of the insulation pipe shall be glued or fastened with clips, and ensure they are at the top of the pipeline.

④ After the drainage test shows that there are no leaks, carry out the insulation of the water distribution pipe.

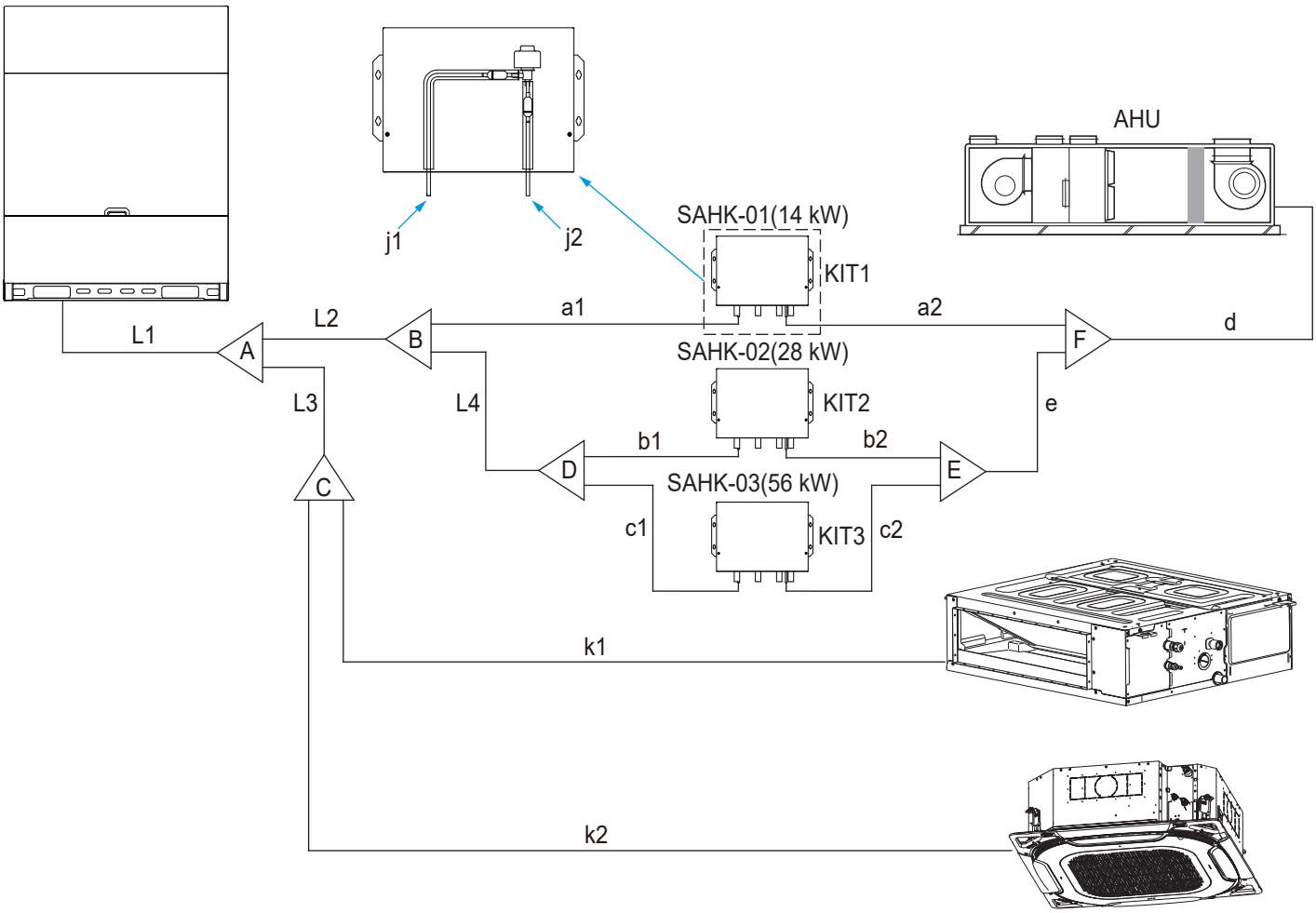
System piping type and connection description

1 Schematic diagram of system piping connection and description of piping type

Schematic diagram of piping connection (taking heat pump outdoor unit as an example):

⚠ CAUTION

The piping classification given in the figure is all liquid-side piping. For the gas-side piping, refer to the corresponding outdoor unit Installation Manual.



No.	Pipe classification	Code in diagram	Description
1	Kit inlet adapter/outlet adapter	j1, j2…	Factory reserved, brazed connection with kit piping (serial number 1/2)
2	Connect piping at a single kit inlet and outlet	a1, a2, b1, b2, c1, c2	On-site procurement; brazed connection with Kit inlet adapter/outlet adapter
3	Connect pipes after multiple kits are connected in parallel	d, e	On-site procurement; brazed connection with kit inlet adapter/outlet adapter
4	Branch pipes used for kits in parallel	E, F	Factory supplied (optional) for parallel connection of multiple kits
5	System main pipe	L1	On-site procurement; piping between the outdoor unit and the first indoor branch joint
6	Indoor primary piping	L2, L3, L4	On-site procurement; piping is not directly connected to the indoor unit after the first indoor branch joint
7	Indoor secondary piping	k1, k2	On-site procurement; piping directly connected to indoor unit branch joint and indoor unit
8	Indoor branch joint assembly	A, B, C, D	Factory supplied (optional); pipe assembly connecting the main pipe, indoor primary piping, and indoor secondary piping

2 Piping diameter description

⚠ CAUTION

The connecting pipe length between each kit and AHU must be ≤ 8 m:
1) a2 + d ≤ 8 m; 2) b2 + d + e ≤ 8 m; 3) c2 + d + e ≤ 8 m.

Inlet adapter and outlet adapter j1, j2	
Kit model	Pipe outer diameter × wall thickness (mm)
SAHK-00	Φ 8.0 × 0.75
SAHK-01	Φ 8.0 × 0.75
SAHK-02	Φ 12.7 × 0.75
SAHK-03	Φ 12.7 × 0.75

Connect piping at a single kit inlet and outlet: a1, a2, b1, b2, c1, c2		
Kit model	AHU Kit capacity value A(× 100 W)	Pipe outer diameter (mm)
SAHK-00	A ≤ 56	Φ 6.35
	56 < A ≤ 90	Φ 9.52
SAHK-01	90 < A ≤ 200	Φ 9.52
SAHK-02	200 < A ≤ 360	Φ 12.7
SAHK-03	360 < A ≤ 560	Φ 15.9

System main pipe: L1
Indoor primary piping: L2, L3, L4
Indoor secondary piping: k1, k2
Indoor branch joint assembly A, B, C, D
For pipe outer diameter, allowable piping length, and height difference between the indoor unit and outdoor unit, see the Installation Manual of the outdoor unit connected to the system

The diameter of the piping after Kit parallel connection and the model of the manifold used for parallel connection		
Kit capacity value A after parallel connection(× 100 W)	Parallel branch pipe e, f models(mm)	After parallel connection, the outer diameter of pipes d and e
36 < A < 168	SREF-01	Φ 9.52
168 ≤ A < 224	SREF-01	
224 ≤ A < 330	SREF-02	
330 ≤ A < 470	SREF-03	Φ 12.7
470 ≤ A < 710	SREF-03	Φ 15.9
710 ≤ A < 1 040	SREF-03	Φ 19.1
1 040 ≤ A < 1 540	SREF-04	
1 540 ≤ A < 1 900	SREF-05	
1 900 ≤ A < 2 350	SREF-05	Φ 22.2

3 Example of pipe diameter calculation

In the system connection diagram, if the 03F, 02F, and 02F kits are connected in parallel (their capacities are 56 kW, 28 kW, and 22 kW, respectively):

No.	Pipe classification	Code in diagram	Pipe diameter and branch pipe type
1	Kit inlet adapter/outlet adapter	j1, j2…	03F: Φ12.7; 02F: Φ12.7; 02F： Φ12.7
2	Connect piping at a single kit inlet and outlet	a1, a2, b1, b2, c1, c2	a1, a2: Φ9.53; b1, b2: Φ 12.7; c1, c2: Φ 15.9
3	Connect pipes after multiple kits are connected in parallel	d, e	e: 28 + 56 = 84 kW: pipe diameter Φ 19.1; d: 22 + 28 + 56 = 106 kW: pipe diameter Φ19.1
4	Branch pipes used for kits in parallel	E, F	E: 28 + 54 = 84 kW: branch joint FQZHD-03; F: 22 + 28 + 56 = 106 kW: branch joint FQZHD-03.
5	System main pipe	L1	Refer to the system piping cases in outdoor unit Installation Manual
6	Indoor primary piping	L2, L3, L4	
7	Indoor secondary piping	k1, k2	
8	Indoor branch joint assembly	A, B, C, D	

4 Connection between kit inlet and outlet adapter and piping

① Pipeline size confirmation.

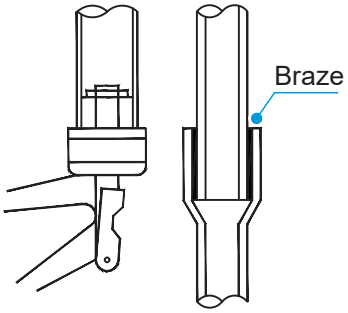


Figure 1

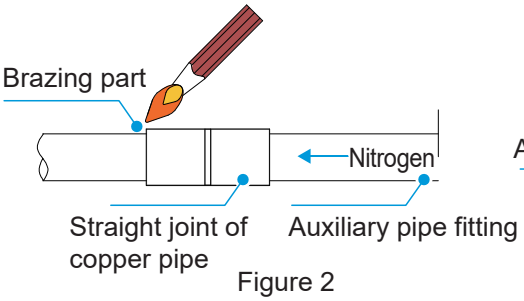


Figure 2

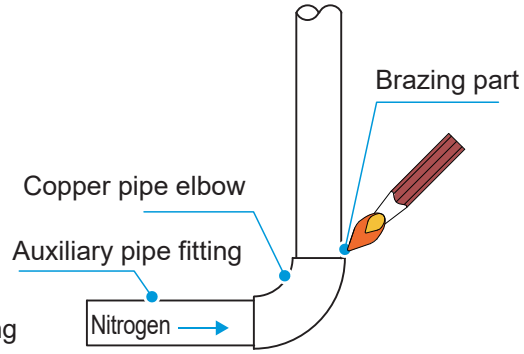
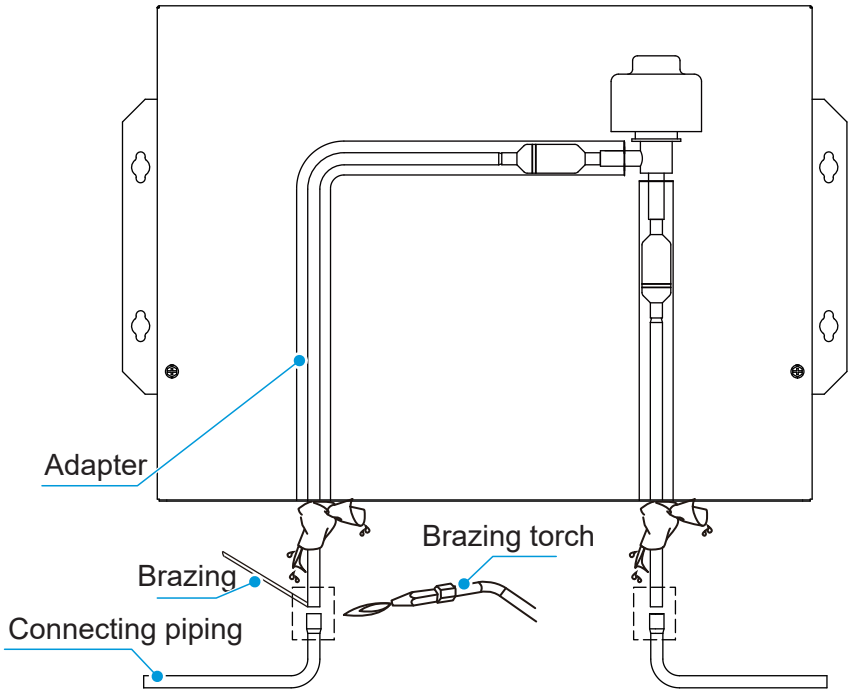


Figure 3

⚠ CAUTION

Check the pipe diameters and wall thicknesses of the kit inlet and outlet adapters (see "Installation of Refrigeration System-Pipe Connection-Pipe Diameter Description") and connecting piping, and confirm whether the dimensions meet the requirements of plugging (it is recommended to insert the adapter into the connecting pipes). If not, you can use a pipe expander to enlarge the nozzle of connecting pipes (see Figure 2), or use straight pipes and elbows for transit connection (see Figure 3).

② Preparation for brazing.



⚠ CAUTION

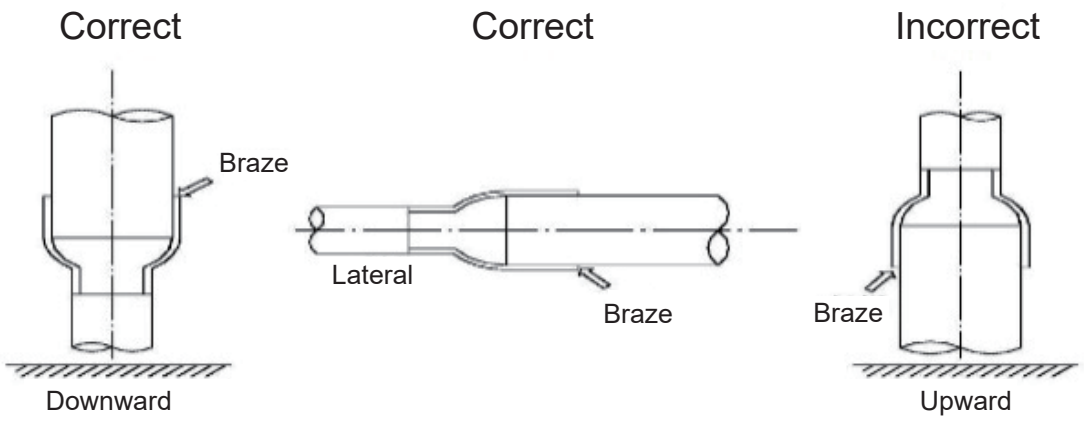
Unscrew 2 screws on the front of the box cover and open the kit cover.

Turn up the insulation material covered on the surface of the adapter to expose a section of copper pipe (about 50mm).

Wrap the adapter with a wet cloth (see Figure 3) and prepare the sprinkler.

Move the wires, cable ties, etc. in the box that affect the welding operation to a place far away from the welding flame.

③ Welding requirements.



⚠ CAUTION

During welding, use a water spray device to spray water on wet cloth to ensure that the valve body temperature does not exceed 120°C during brazing.

During the brazing process, ensure that other parts such as box, wire, and wiring across ring are protected from the influence of direct brazing flame.

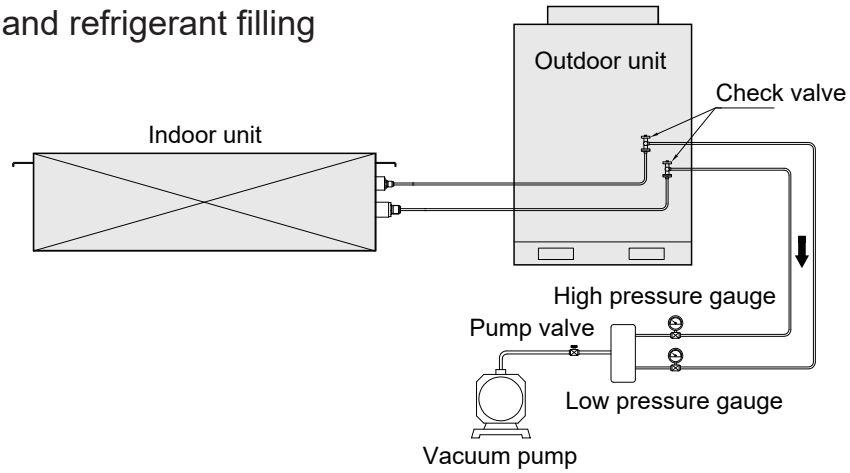
After brazing, when the copper tube is cooled to normal temperature, put the thermal insulation material back in its original position, and ensure the connection gap of the thermal insulation material (connected with special adhesive tape) to avoid condensate dripping.

Fix the box cover with screws again.

5 Vacuum pumping, leak detection and refrigerant filling

For the vacuum pumping, leak detection, refrigerant filling method,

refer to the Installation and Operation Manual of the outdoor unit.



⚠ CAUTION

Do not use the refrigerant enclosed in the outdoor unit for vacuuming.

During leak detection, use leak detection foam to detect the leakage of piping solder joints and valve interfaces.

Do not use soapy water for leak detection. Leak detection with soapy water may lead to corrosion and leakage of solder joints.

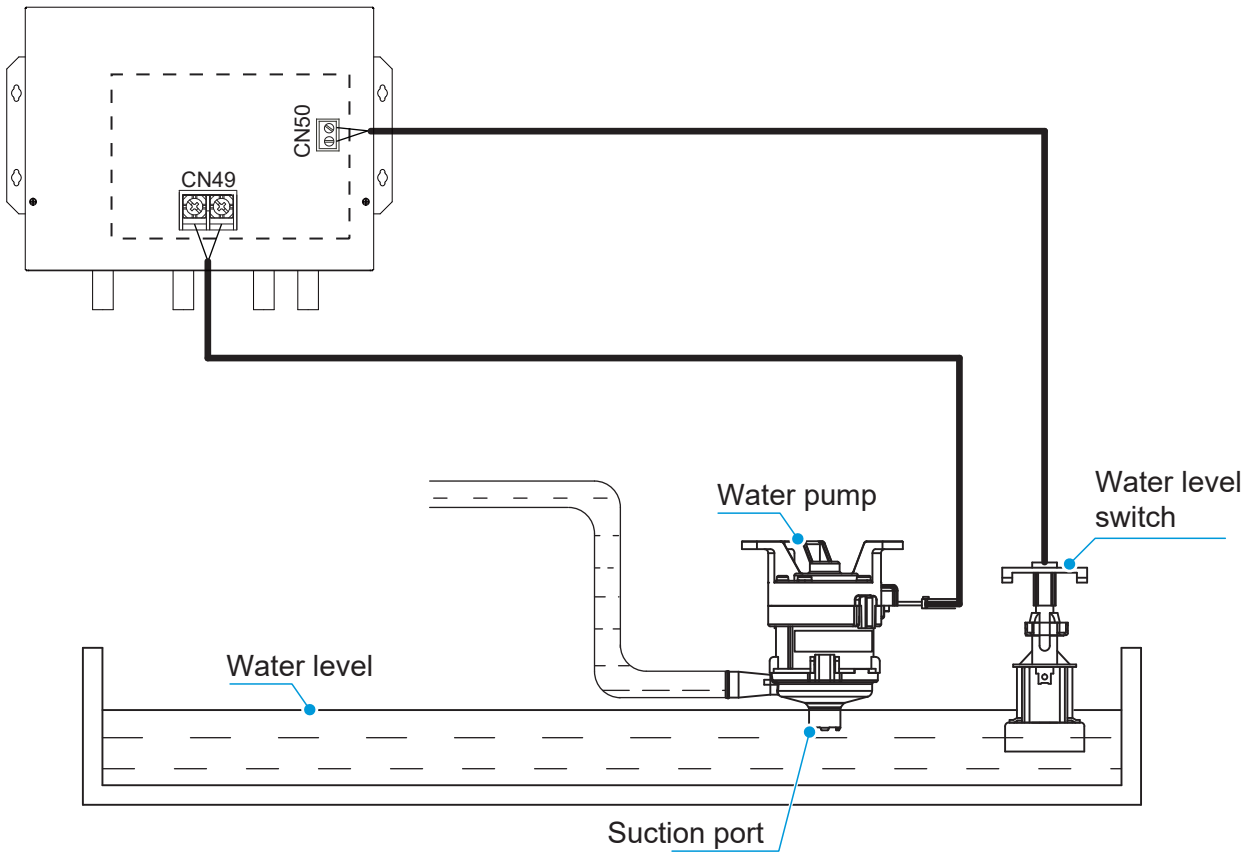
6 Installation of drain pump and water level switch

Installation method of drain pump and water level switch

① In the selection of pump flow and lift, the maximum displacement of the AHU heat exchanger should be calculated, and the lift should be selected according to the actual installation site requirements; the appropriate pump should be selected in combination with the flow and lift characteristic curve of the pump.

② Plug the power supply terminal of the drain pump into port CN49 of the kit main control PCB, and plug the power supply terminal of the water level switch into port CN50 of the main control PCB.

③ The built-in drain pump needs to fix the suction port at the lowest water level of the AHU drain pan; the water level switch is installed near the water pump, and the upper limit position of the water level switch float valve must be lower than the alarm water level.



⚠ CAUTION

The water pump must be installed at a suitable position: The height of the water pump must enable the water pump to suck enough vacuum, and the installation position of the water pump must be horizontal and stable, so as to achieve the maximum working efficiency of the water pump.

The float valve of water level switch cannot be blocked by various foreign bodies such as wires; otherwise it will lead to fault alarm.

Clean the drain pan and drain pipe often to prevent impurities from blocking the drain pump.

The kit can only drive AC water pumps with a maximum current of 1A. If you need to drive more powerful water pumps, connect an external AC contactor.

The water level switch port is connected to a short-circuit terminal by default. Remove the terminal before connecting it to drive the water pump.

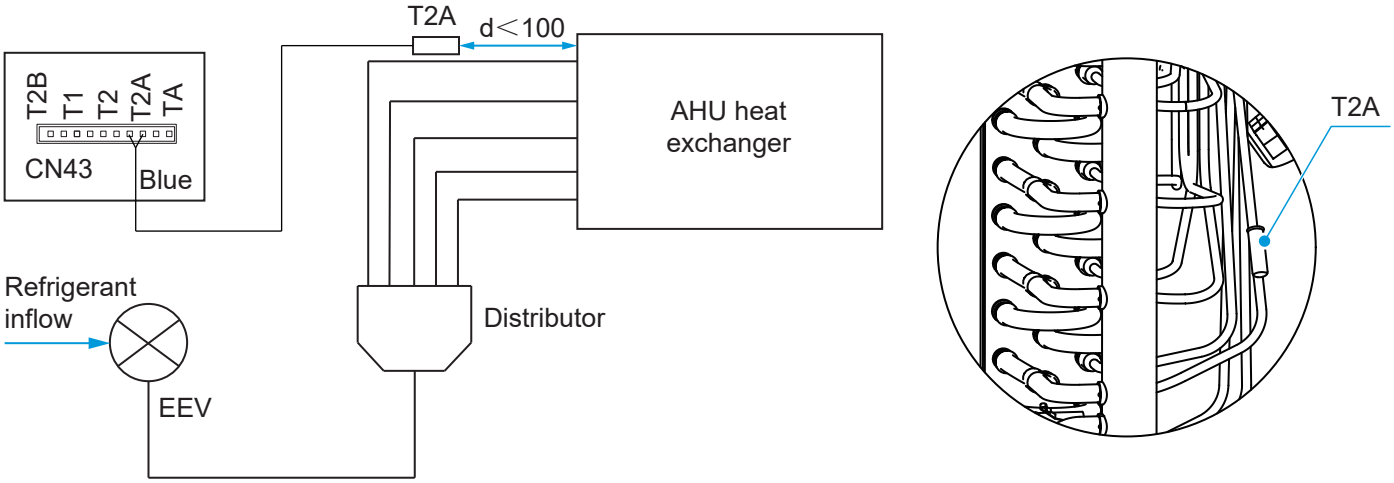
7 Installation of temperature sensor

① Location selection of T2A, T2 and T2B pipe temperature sensors

① Sensor composition

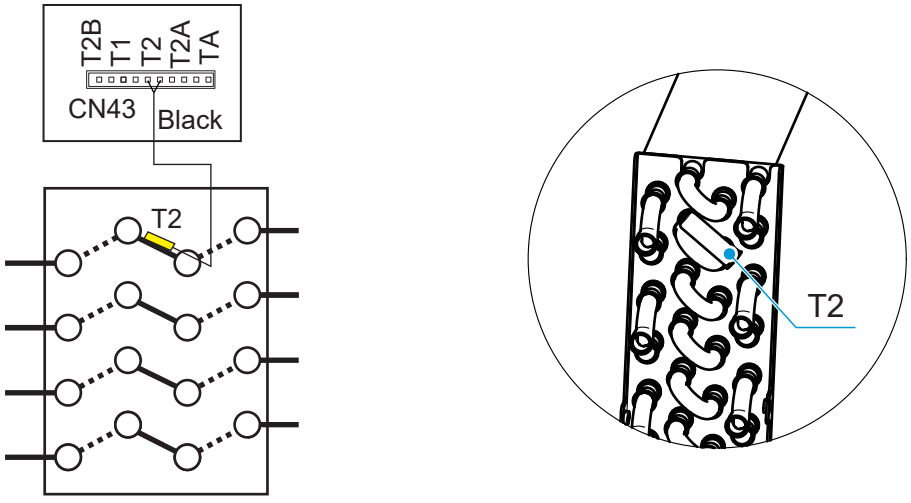
Sensor body and cable body diagram

② T2A pipe temperature sensor



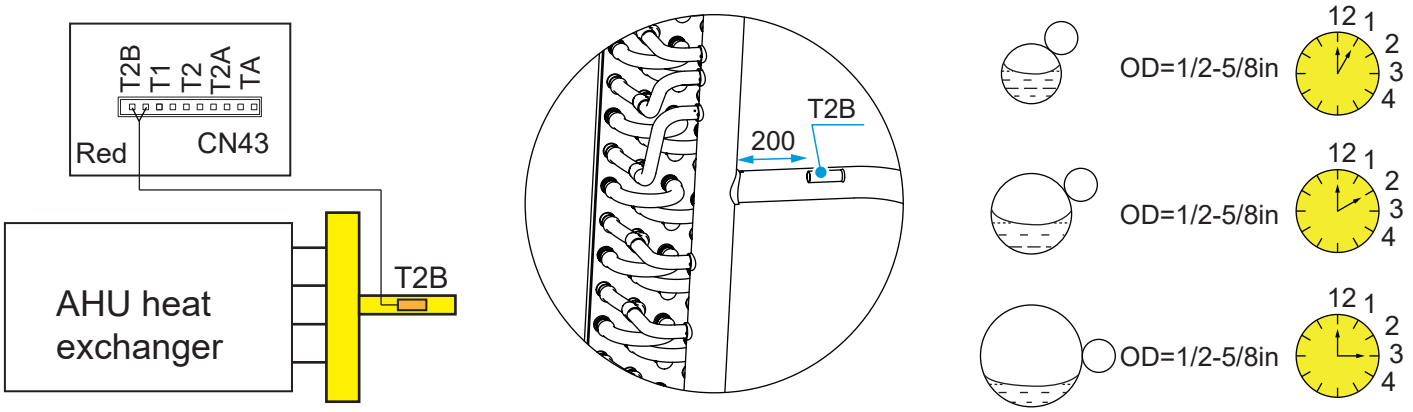
The T2A sensor must be fixed to the capillary tube with the lowest temperature behind the distributor, as close to the heat exchanger side as possible (d < 100 mm in the figure).

③ T2 pipe temperature sensor



The T2 sensor must be fixed to a semicircle pipe located in the middle of a heat transfer process; if there is more than one flow path, fix T2 to the top flow path.

④ T2B tube temperature sensor

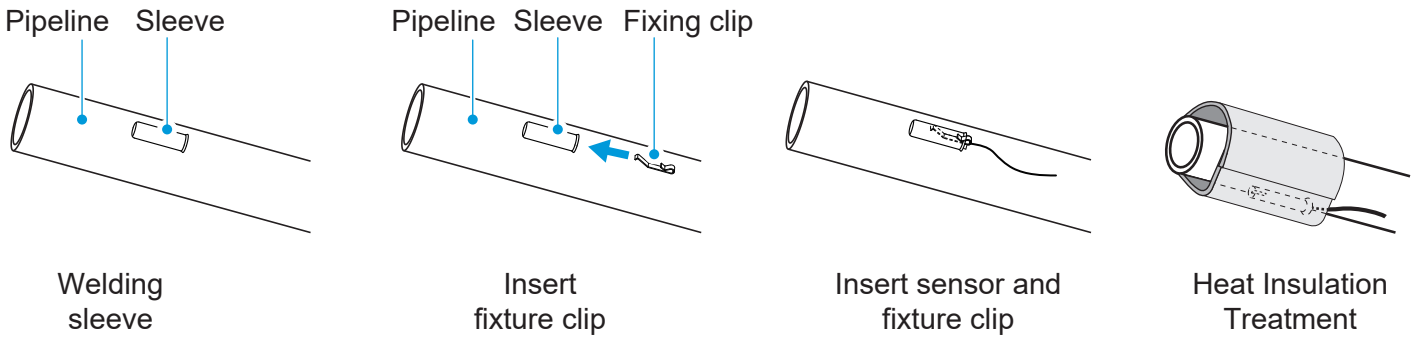


The T2B sensor must be fixed on the horizontal gas collecting pipe of the heat exchanger (about 200mm away from the vertical gas collecting pipe), and the appropriate placement should be selected according to the pipe diameter.

② Fixation and insulation of T2A, T2 and T2B pipe temperature sensors

Fixing method

① Method 1: After welding the sleeve, push the sensor body into the sleeve and use a fixture clip to clamp the sensor body.



Welding sleeve | Insert fixture clip | Insert sensor and fixture clip | Heat Insulation Treatment

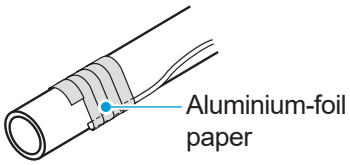
⚠ CAUTION

The small opening side of the sleeve must face the inflow direction of the condensate on the pipeline to prevent the sensor detection temperature from deviating from the real refrigerant temperature due to the accumulated condensation at the big opening side of the sleeve (where the sensor body is fixed).

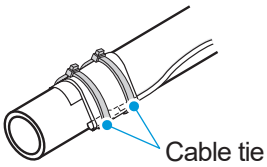
Insert a fixture clip on the big opening side of the sleeve and then push the temperature sensor body into the sleeve.

When the sensor wire is long, fix it with cable ties.

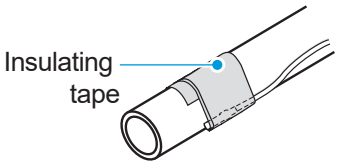
② Method 2: The sensor body is directly fixed using an adiabatic aluminum foil.



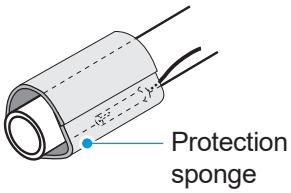
Use Aluminium-foil paper to fix the sensor body



Fasten the sensor with a cable tie



Wrap with insulating tape



Heat Insulation Treatment

NOTE

The Aluminium-foil paper must completely wrap the sensor body, and the entire sensor body should be kept close to the surface of the copper pipe.

After wrapping the insulation tape, squeeze out the air in the tape strip by hand.

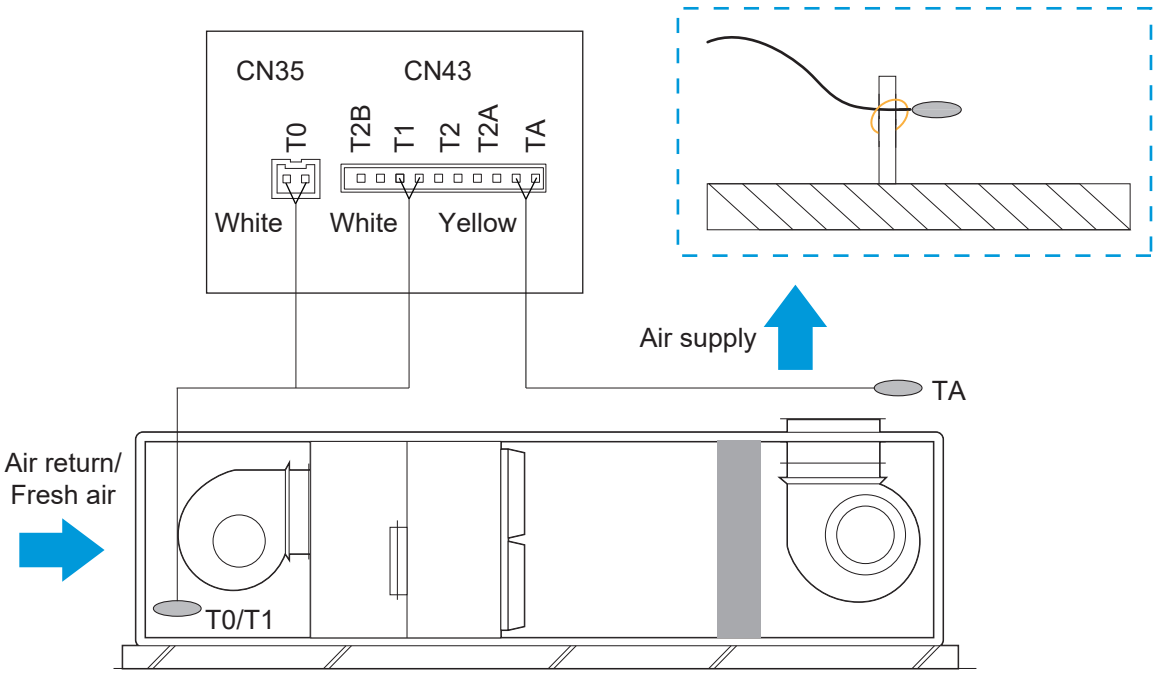
Tie both ends of the sensor body tightly with two cable ties.

③ Location selection of T1, T0 and TA air temperature sensors

CAUTION

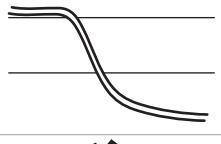
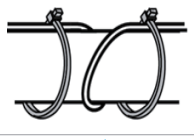
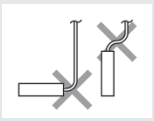
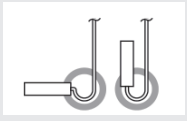
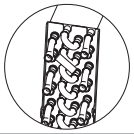
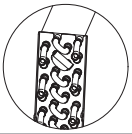
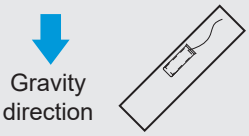
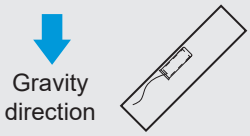
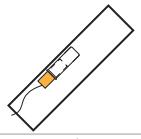
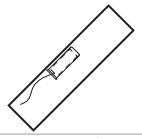
Arrange the T1/T0/TA temperature sensor according to the selected capacity control mode, as shown in the following table:

Return air temperature control	Supply air temperature control
T1 sensor is placed at the AHU return air outlet	The T0 sensor is placed at the AHU return air outlet
	TA sensor is placed at the AHU air supply port



According to the diagram, the T0/T1/TA sensors are arranged at the corresponding positions, and the sensors are fixed on the side wall in the air flow direction by using cable ties.

④ Sensor installation precautions

No.	Precautions	Illustration	
1	The pipe temperature sensor wire body is fixed by a cable tie to prevent the sensor from loosening due to the stress of the body, which leads to the sensor detection temperature deviating from the real refrigerant temperature.		
		✖	✔
2	A U bend is added at the connection part between the sensor wire body and the body as shown on the right to prevent water droplets from gathering on the sensor body along the direction of the wire body, resulting in the sensor detection temperature deviating from the real refrigerant temperature.		
		✖	✔
3	The contact area of the sleeve arranged on the surface of copper pipe or semicircular pipe should be increased as much as possible.		
		✖	✔
4	When arranging the sleeve, the small opening side of the sleeve must face the inflow direction of the condensate on the pipeline and the sensor body must be pushed in from the big opening side of the sleeve, to prevent the detection temperature from deviating from the real refrigerant temperature due to the accumulated condensation at the connection position between the sensor body and the wire body (see the dotted box on the right).		
		✖	✔
5	The sensor body should be fully pushed into the sleeve to ensure that the most sensitive position of the body is close to the sleeve.		
		✖	✔

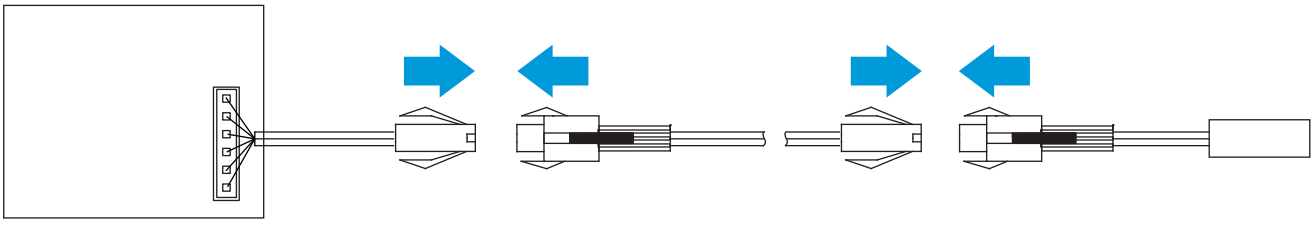
⑤ Extension of sensor wire

When the distance between the sensor arrangement position and the kit control box is greater than the length of the sensor wire, use the extension cable in the accessory package.

⚠ CAUTION

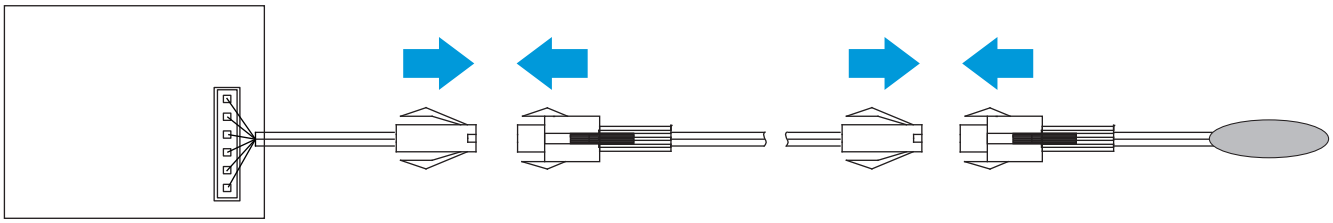
The length of the sensor wire is about 1 000 mm – 1 600 mm, and the length of the extension adapter cable is 9 000 mm. Therefore, the distance between the sensor arrangement position and the kit control box must be controlled within 10 meters.

① Extensive sensor type



Extension of Pipe Temperature Sensor

② Extensive sensor type



Extension of Air Temperature Sensor

⚠ CAUTION

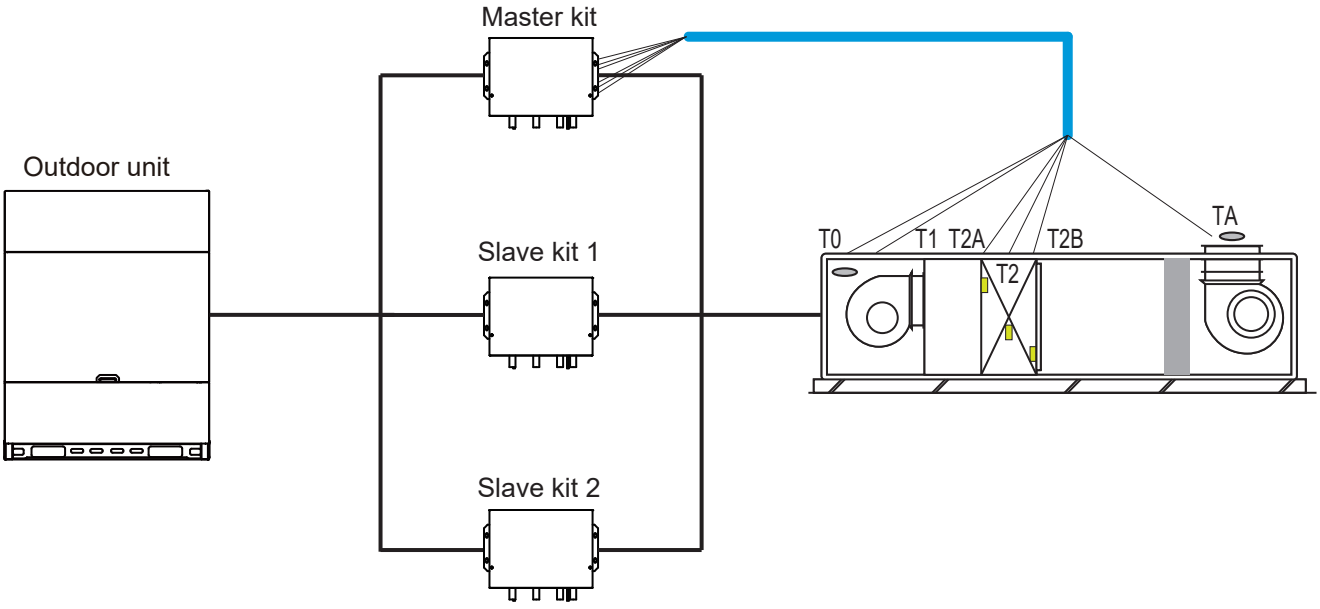
Fasten and fix the sensor extension cord at intervals with a cable tie.

The sensor extension cable should be routed by special trunking or conduit, and it is forbidden to share trunking or conduit with strong-current wires!

8 Installation of temperature sensors when kits are connected in parallel

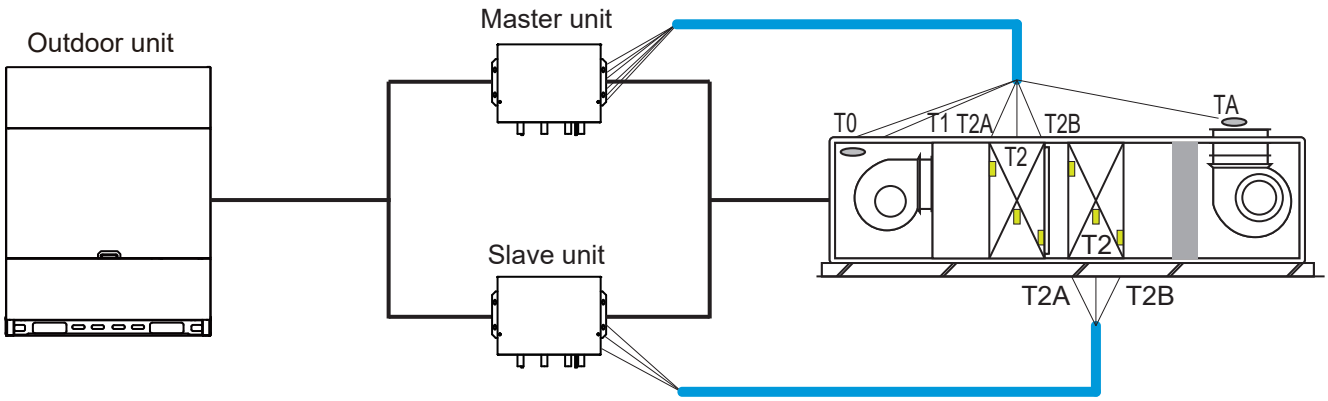
① Parallel connection mode 1: After the kits are connected in parallel, only 1 heat exchanger is connected

The 6 temperature sensors of AHU (T1, TA, T0, T2, T2A, T2B) need to be connected to the master PCB, but not to the temperature sensor port on the slave PCB. The connection diagram is as follows:



② Parallel connection mode 2: After the kits are connected in parallel, multiple heat exchangers are connected

The 3 temperature sensors (T1, TA, T0) of AHU are connected to the master PCB as required, but not to the slave PCB. The three pipe temperature sensors (T2, T2A, T2B) on each heat exchanger coil are respectively connected to the corresponding kit PCB, and the connection diagram is as follows:



ELECTRICAL SYSTEM INSTALLATION

1 Precautions

⚠ DANGER

The power supply must be cut off before any electrical work is carried out. Do not conduct electrical work when the power is on; otherwise, it may cause serious personal injury.

The unit must be earthed reliably and must meet the requirements of the local country/region. If the earthing is not reliable, serious personal injury due to electric leakage may occur.

⚠ WARNING

Installation, inspection or maintenance operations must be completed by professional technicians. All parts and materials must comply with the relevant regulations of the local country/region.

The air conditioning unit must be equipped with a special power supply, and the power supply voltage should conform to the nominal working voltage range of the air conditioning unit.

The power supply of the air conditioning unit must be equipped with a power disconnect device that conforms to the requirements of relevant local technical standards for electrical equipment. The power disconnecting device must be equipped with short circuit protection, overload protection and electric leakage protection. The clearance between open contacts of the power disconnecting device shall be at least 3mm.

The core of the power supply cable must be made of copper, and the wire diameter should meet the current-carrying requirements. For details, refer to the "Power Supply Cable Diameter and Electric Leakage Protector Selection". A wire diameter that is too small may cause the power supply cable to heat up, resulting in a fire.

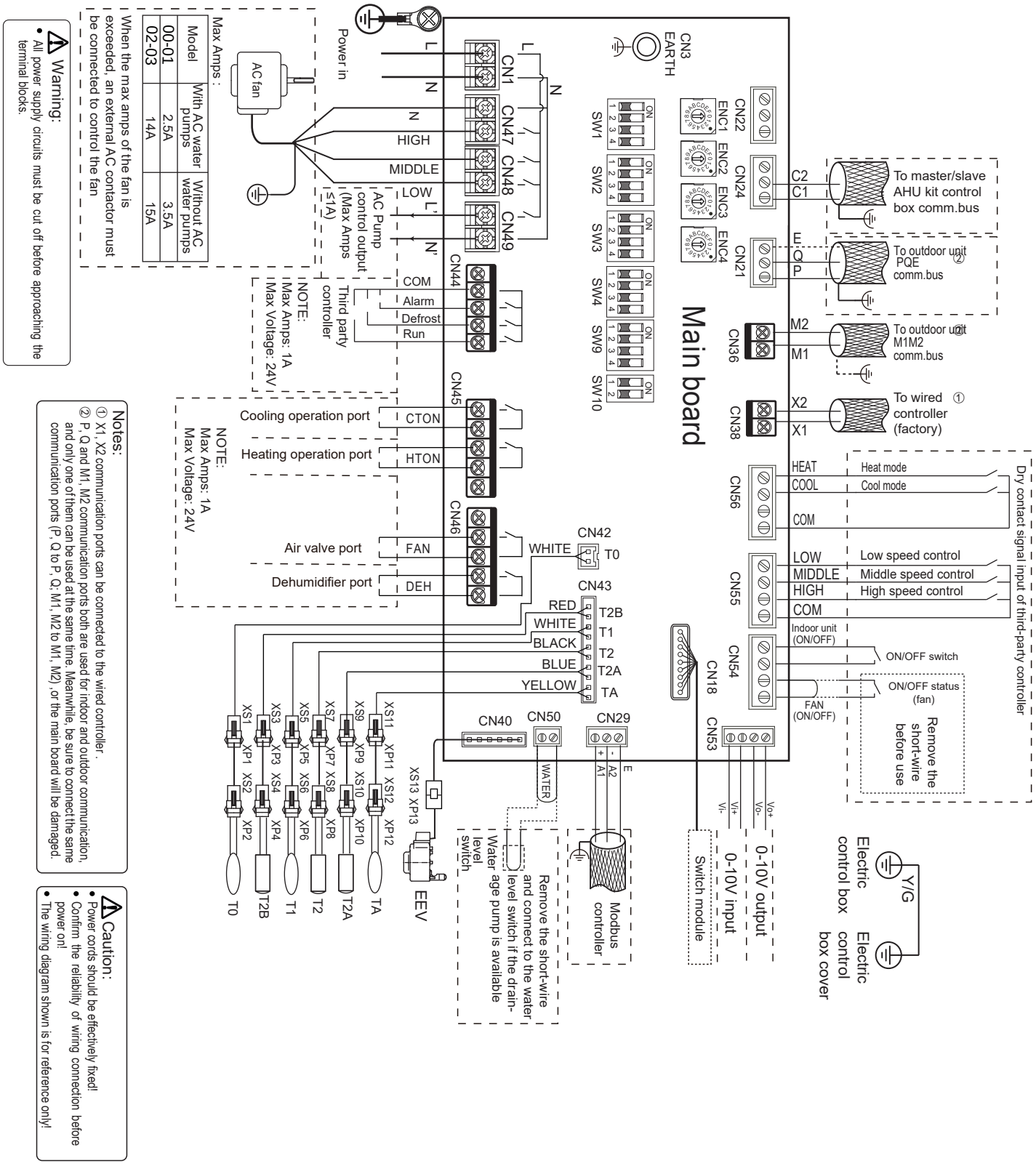
The power supply cable and the earth wire should be secured reliably to avoid stress on the terminals. Do not pull the power supply cable forcibly; otherwise, the wiring may become loosened or the terminal blocks may be damaged.

Strong current wires such as power supply cables cannot be connected to weak current wires such as communication wires; otherwise, the product may become seriously damaged.

Do not bond and connect the power supply cable. Bonding and connecting the power supply cable may cause it to heat up, resulting in a fire.

2 PCB Port

PCB port diagram



Notes:

① X1, X2 communication ports can be connected to the wired controller.

② P, Q and M1, M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at the same time. Meanwhile, be sure to connect the same communication ports (P, Q to P, Q; M1, M2 to M1, M2), or the main board will be damaged.

Caution:

- Power cords should be effectively fixed!
- Confirm the reliability of wiring connection before power on!
- The wiring diagram shown is for reference only!

Warning:

- All power supply circuits must be cut off before approaching the terminal blocks.

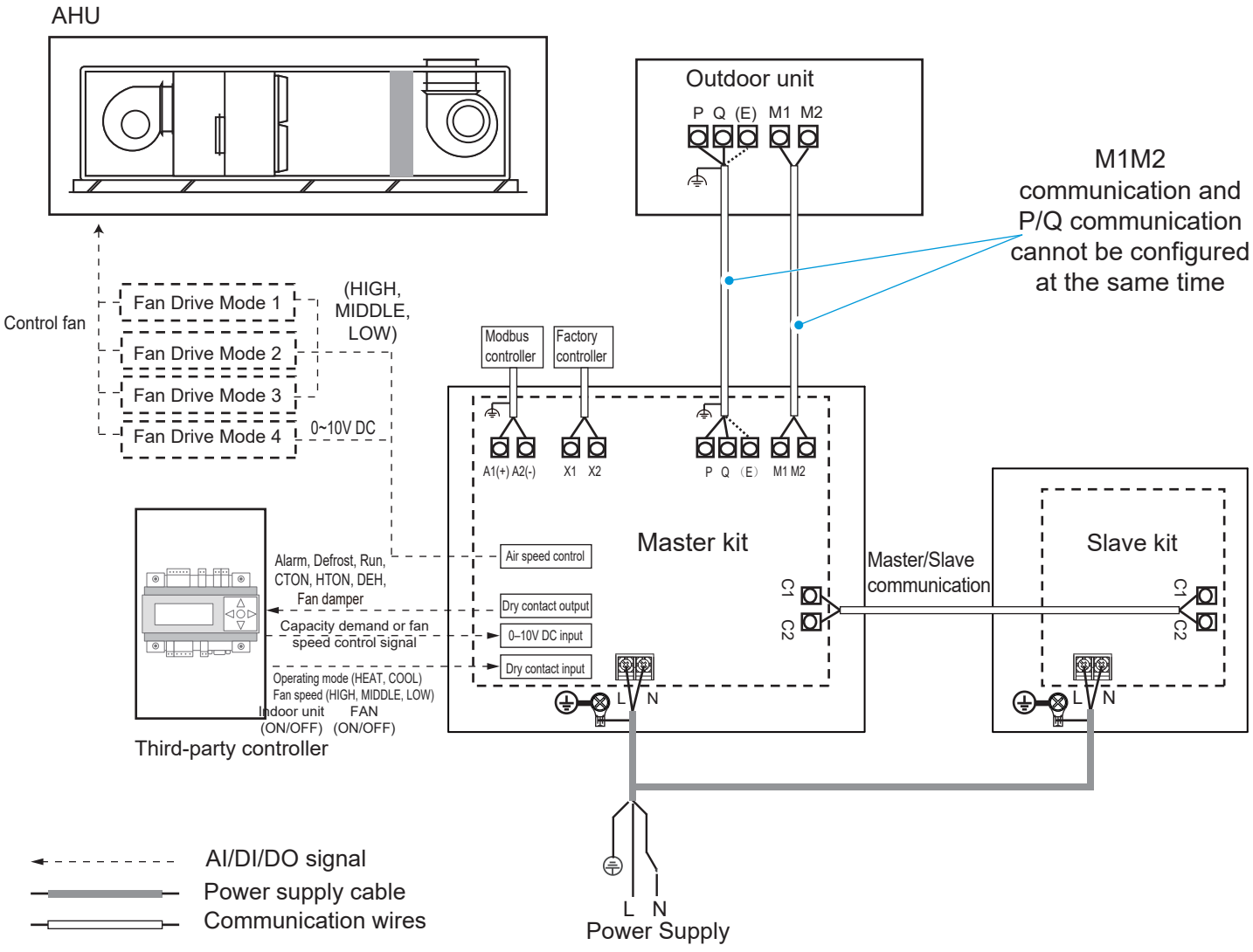
PCB port description and function

No.	Port code		Function	Specification
1	CN1	L N	PCB power supply input	220-240 V~
2	CN47-2	HIGH	Fan speed power input-HIGH	220-240 V~
3	CN48-1	MIDDLE	Fan speed power input-MIDDLE	220-240 V~
	CN48-2	LOW	Fan speed power input-LOW	220-240 V~
4	CN49	PUMP	Pump running signal output	220-240 V~
5	CN44-3 (CN44-2 is a point of common coupling)	Alarm	ALARM output	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
	CN44-4 (CN44-2 is a point of common coupling)	Defrost	Defrosting status output	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
	CN44-5 (CN44-2 is a point of common coupling)	Run	Running status output	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
6	CN45-1, CN45-2	CTON	Feedback output in Cool mode	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
	CN45-3, CN45-4	HTOM	Feedback output in Heat mode	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
	CN45-5, CN46-1	AUX	Reserved	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
7	CN46-2, CN46-3	FAN	Interlocked air valve signal output	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
	CN46-4, CN46-5	DEH	Third-party dehumidifier output	Depends on the access device (accessible voltage: 0–24 V AC/DC, maximum current: 1 A)
8	CN40	EEV1	1# Electronic expansion valve	0 V or 12 V DC
9	CN50	WATER	Water level switch	0 V or 3.3 V DC
10	CN29	A1 A2 E	Connect to a Modbus protocol controller provided by a third party	5 V DC
11	CN53-1 (positive), CN53-2 (negative)	0–10V output	0–10V output	0~10 V DC
	CN53-3 (positive), CN53-4 (negative)	0–10V input	0–10V input	0~10 V DC
12	CN54-1, CN54-2(GND)	Indoor unit (ON/OFF)	Remote ON/OFF input	0 V or 12 V DC
	CN54-3, CN54-4(GND)	FAN (ON/OFF)	Fan ON/OFF input	0 V or 12 V DC
13	CN55-1 (CN55-4 is a point of common coupling)	LOW	Fan speed input-LOW	0 V or 12 V DC
	CN55-2 (CN55-4 is a point of common coupling)	MIDDLE	Fan speed input-MIDDLE	0 V or 12 V DC
	CN55-3 (CN55-4 is a point of common coupling)	HIGH	Fan speed input-HIGH	0 V or 12 V DC
14	CN56-1 (CN56-4 is a point of common coupling)	HEAT	Mode input-HEAT	0 V or 12 V DC
	CN56-2 (CN56-4 is a point of common coupling)	COOL	Mode input-COOL	0 V or 12 V DC
	CN56-3 (CN56-4 is a point of common coupling)	FAN	Reserved	0 V or 12 V DC
15	CN38	X1 X2	Connect to the X1X2 port of wired controller supplied by factory	18 V DC
16	CN36	M1 M2	Connect to the outdoor unit M1M2 port	24 V DC
17	CN21	P Q E	Connect to the outdoor unit P/Q/E port	2.5-2.7 V DC
18	CN24	C1 C2 E	Port for connecting the master and slave units	2.5-2.7 V DC

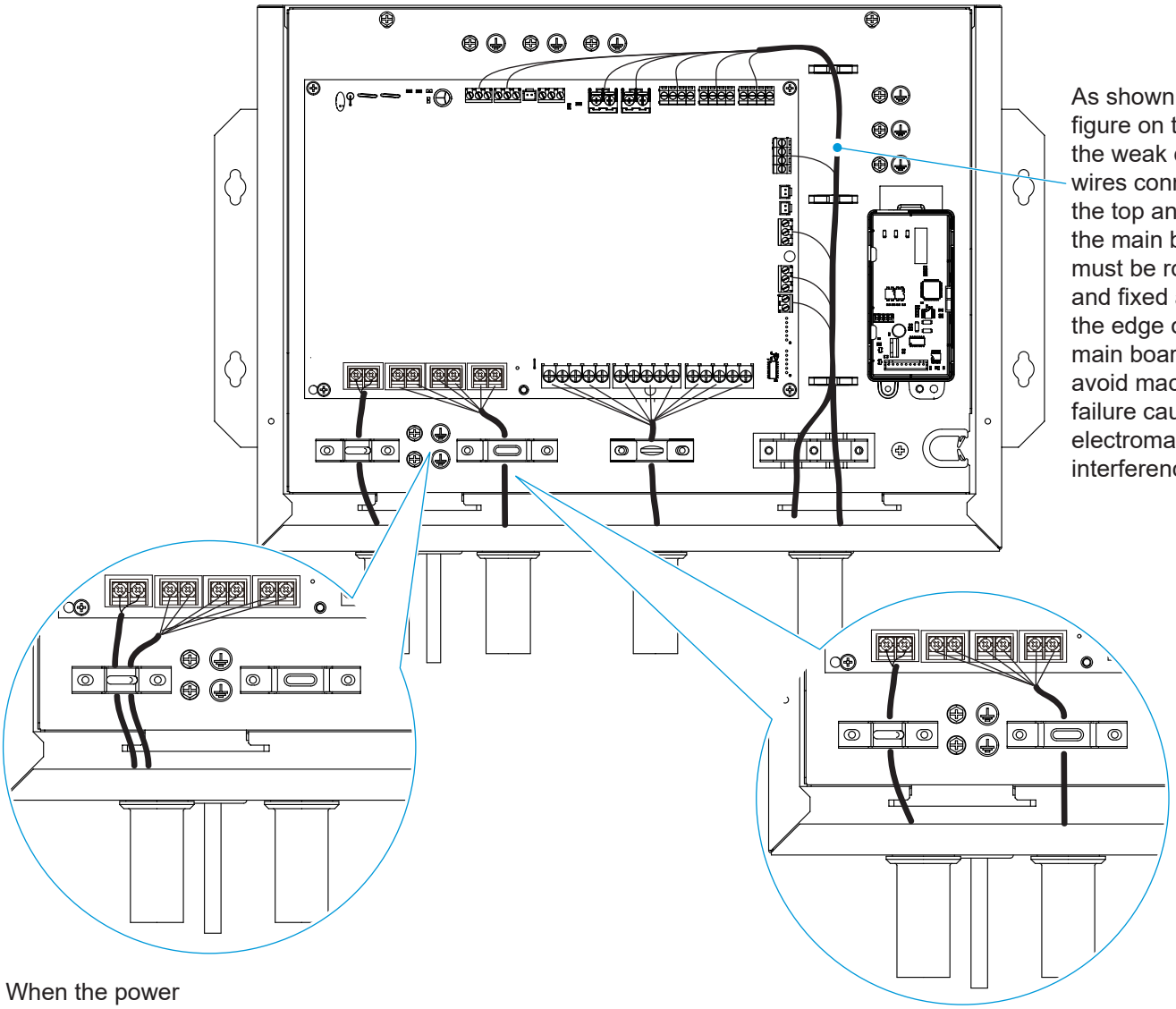
No.	Port code		Function	Specification
19	CN43-10, CN43-9 (power supply)	TA	TA temperature sensor	0-3.3 V DC (varying)
	CN43-2, CN43-1 (power supply)	T2B	T2B temperature sensor	0-3.3 V DC (varying)
	CN43-4, CN43-3 (power supply)	T1	T1 temperature sensor	0-3.3 V DC (varying)
	CN43-6, CN43-5 (power supply)	T2	T2 temperature sensor	0-3.3 V DC (varying)
	CN43-8, CN43-7 (power supply)	T2A	T2A temperature sensor	0-3.3 V DC (varying)
20	CN42 (CN42-1: power supply)	T0	T0 temperature sensor	0-3.3 V DC (varying)
21	CN30	DISPLAY	Port to connect the display box	12 V DC
22	CN18	Extend	Port to connect the communication switch module	12 V DC
23	KEY1	KEY1	Spot check button	0-3.3 V DC

3 System Wiring and Description

System wiring diagram



Kit internal cabling



As shown in the figure on the left, the weak current wires connected to the top and right of the main board must be routed and fixed along the edge of the main board to avoid machine failure caused by electromagnetic interference.

When the power supply cable diameter ≤1.5 mm^2: Press the power supply cable or fan wire into the first cable clamp to avoid pulling and loosening the power supply cable.

When the power supply cable diameter >1.5 mm^2: Divide power supply cables and fan wires into different cable clamps to avoid unclamped cables and wires, resulting in loosened power supply cables.

⚠ CAUTION

The power cord should be reliably fixed.

4 Connection of Communication Wires

Connection of communication wires

Function	Communication between kit and outdoor unit			One controller to one indoor unit (Two controllers to one indoor unit) communication	Communication of master/slave kits
Type	HyperLink communication (M1M2)	RS-485 (P/Q) communication	RS-485 (P/Q/E) communication	X1X2 communication	RS-485 (C1C2) communication
Wire diameter	2 × 0.75 mm^2	2 × 0.75 mm^2 (shielded cable)	3 × 0.75 mm^2 (shielded cable)	2 × 0.75 mm^2 (shielded cable)	2×0.75mm^2 (shielded cable)
Length	≤ 2 000 m	≤ 1 200 m	≤ 1 200 m	≤ 200 m	≤ 1 200 m

⚠ CAUTION

Please select the communication wire according to the requirements in the above reference table. Use shielded cables for communication when strong magnetism or interference is present.

On-site wiring must comply with the relevant regulations of the local country/region and must be completed by professionals.

Do not connect the communication wire when the power is on.

Do not connect the power supply cable to the communication terminal; otherwise, the main control board may be damaged.

The standard value of the screw torque is 0.5 N m for the M1M2 communication wiring terminal, and 0.25 N m for other communication wiring terminals. Insufficient torque may cause poor contact; excessive torque may damage the screws and power supply terminals.

Both HyperLink communication and PQ communication are internal and external, so only one of the two can be selected. Do not connect both HyperLink communication wire and PQ communication wire to the same system, otherwise the indoor unit and outdoor unit cannot communicate normally.

If some of the indoor units in the same refrigerant system are non-SDV6 series, only P/Q/E communication can be selected for the indoor unit and outdoor unit communication. The three-core shielded cable of 3 × 0.75 mm^2 is required to connect " P", "Q", and "E".

Do not bundle the communication wire with the refrigerant pipeline, power supply cable, etc. When the power supply cable and the communication wire are laid in parallel, a distance of more than 5cm should be maintained to prevent interference from the signal source.

When the construction personnel of the indoor unit and outdoor unit are working separately, information communication and synchronization are required. Do not connect the outdoor unit to HyperLink and the indoor unit to PQ. Do not connect the outdoor unit to PQ and the indoor unit to HyperLink.

Bonding and connecting the communication wire should be avoided, but if it is used, at the very least, ensure a reliable connection by crimping or soldering and make sure the copper wire at the connection is not exposed; otherwise, communication failure may occur.

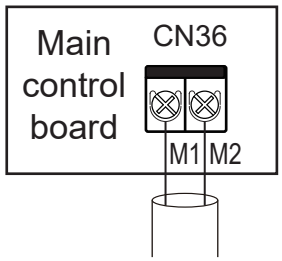
Communication between KIT and outdoor unit

Before installing communication wires, select a proper communication mode based on the following table.

Indoor unit/Kit series	Supported kit-outdoor unit communication mode	Remarks
All indoor units or AHU kits in the system are SDV6 series	HyperLink (M1M2) communication	1. Any topology connection of communication wires. 2. Two-core and non-polar communication for M1M2. 3. The indoor units or kits need to be powered uniformly.
	RS-485 (PQ) communication	1. The indoor units or kits need to be powered uniformly. 2. The communication wires must be connected in serial. 3. Two-core and non-polar communication for PQ.
Some indoor units in the system are non-SDV6 series	RS-485 (PQE) communication	1. The indoor units or kits need to be powered uniformly. 2. The communication wires must be connected in serial. 3. PQE cables must be 3-core and PQ non-polar.

1 HyperLink (M1M2) communication

The communication wires are connected to M1 and M2 ports at power supply terminal "CN36" of the main control board of the master kit. There is no distinction between negative and positive electrodes, as shown in the following figure:



Connect to outdoor unit M1M2 (HyperLink)

⚠ CAUTION

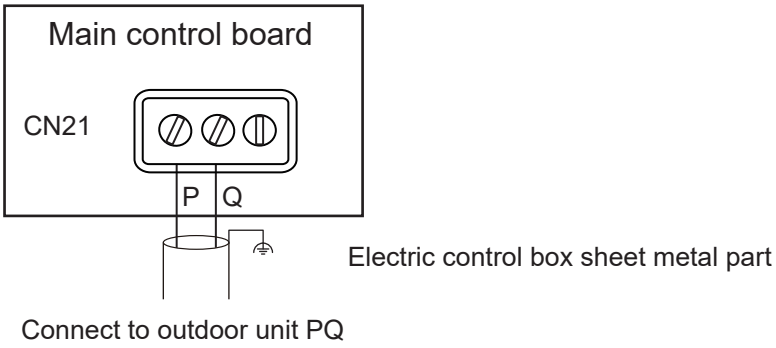
Do not connect the HyperLink communication wire to the PQ communication wire.

The indoor units and kits must be powered uniformly.

P/Q or P/Q/E communication and HyperLink communication cannot be configured at the same time.

2 RS-485 (P/Q) communication

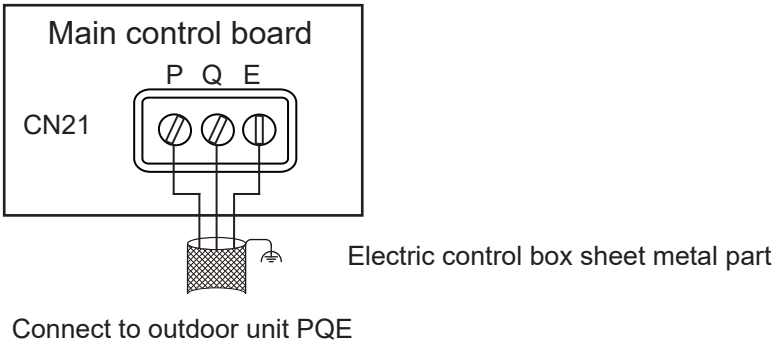
Use a shielded cable for the P/Q communication and ensure the shield layer is properly earthed. P and Q ports are located at power supply terminal "CN21" of the main control board of the master kit. There is no distinction between negative and positive electrodes. Connect the shield layer to the sheet metal of the electrical control box, as shown in the following figure:



3 RS-485 (P/Q/E) communication

If some of the indoor units in the same refrigerant system are non-SDV6 series, it is required to connect "P", "Q", and "E" for P/Q/E communication.

Use a shielded cable for the P/Q/E communication and ensure the shield layer is properly earthed. P, Q, and E ports are located at power supply terminal "CN21" of the main control board of the master kit. There is no distinction between negative and positive electrodes. Connect the shield layer to the sheet metal of the electrical control box, as shown in the following figure:



⚠ CAUTION

The indoor units and kits must be powered uniformly.

P/Q or P/Q/E communication and HyperLink communication cannot be configured at the same time.

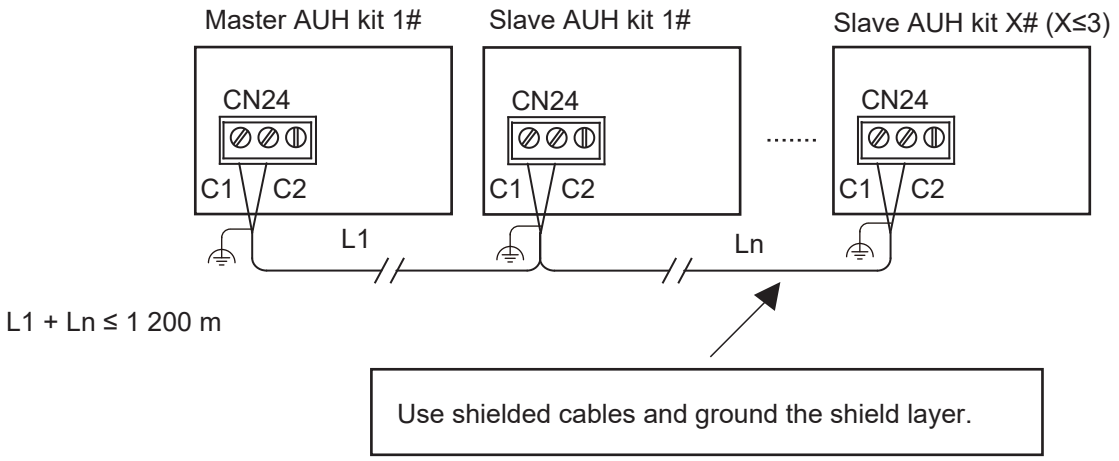
Use only shielded cables for P/Q or P/Q/E communication. Otherwise, the indoor unit and outdoor unit communication may be affected.

A matching resistor needs to be added to the last indoor unit on the PQ (in the accessory bag of the outdoor unit).

Connection of communication wires of master/slave Kits

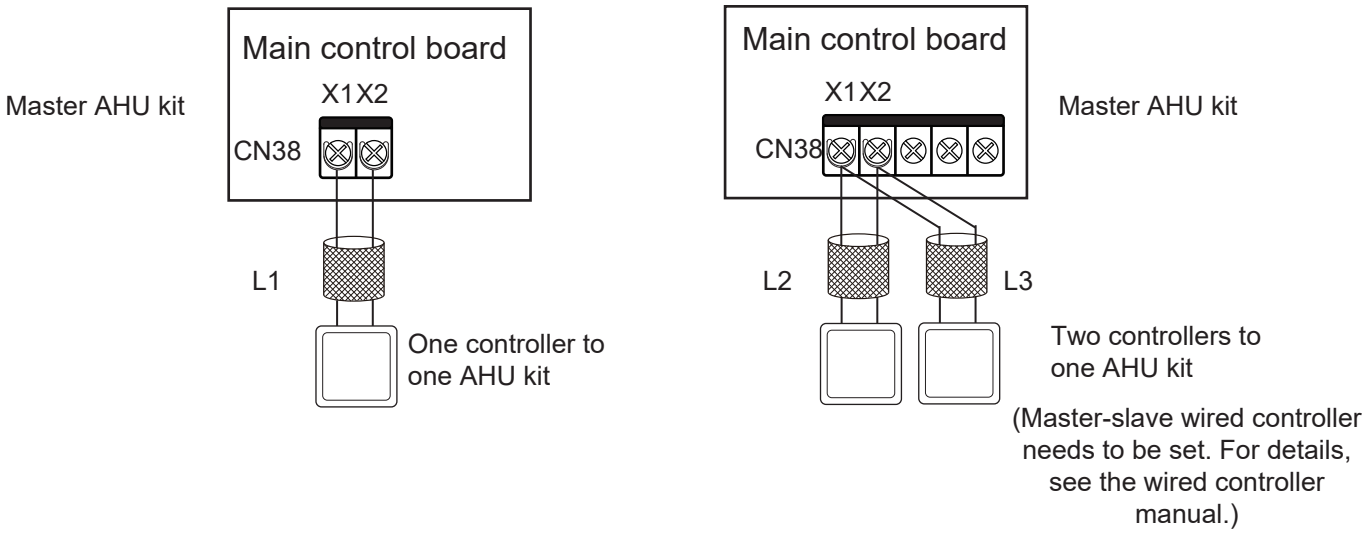
The kit can be connected in parallel through RS-485 (C1C2) communication, and the address of the secondary AHU kit needs to be set by the third and fourth bits of the SW2 DIP. For details, see "Definitions of DIP Switches".

The wiring of master/slave kits is as follows:



Connection of X1/X2 communication wires

The X1X2 communication wire is mainly connected to the wired controller to achieve one controller per indoor unit and two controllers per indoor unit. The total length of the X1X2 communication wire can reach 200 meters. Please use shielded cables, but the shield layer cannot be earthed. The communication wires are connected to X1 and X2 ports at the power supply terminal "CN38" of the main control board of the primary AHU kit. There is no distinction between negative and positive electrodes, as shown in the following figures:



L1 ≤ 200 m, L2 + L3 ≤ 200 m.

⚠ CAUTION

Two wired controllers of the same model can be used to control one kit at the same time. In this case, you need to set one controller to be the master and the other to be the slave. For more details, see the wired controller manual.
L1 ≤ 200 m, L2 + L3 ≤ 200 m.

5 Connection of Power Supply Cables and Fan Wires

Table of selection of power supply cable diameter and circuit breaker

1 Cable diameter selection

Rated current (A)	Nominal cross-sectional area (mm^2)	
	Soft wire	Hard wire
≤ 3	0.5 and 0.75	1 and 2.5
> 3 and ≤ 6	0.75 and 1	1 and 2.5
> 6 and ≤ 10	1 and 1.5	1 and 2.5
> 10 and ≤ 16	1.5 and 2.5	1.5 and 4
> 16 and ≤ 25	2.5 and 4	2.5 and 6
> 25 and ≤ 32	4 and 6	4 and 10
> 32 and ≤ 50	6 and 10	6 and 16
> 50 and ≤ 63	10 and 16	10 and 25

⚠ CAUTION

The above table is a recommended value. If the value conflicts with the local regulations, select the cable diameter based on the local regulations.

2 Circuit breaker selection

Total current (A)	Circuit breaker (A)
Below 5	6
6~8	10
9~14	16
15~18	20
19~22	25
23~29	32
30~36	40
37~45	50
46~57	63

⚠ CAUTION

The preceding table indicates the recommended values. If the values conflict with local regulations, select the circuit breaker based on local regulations.

Connection between power supply cable or fan wire and power supply terminal

The connection between power supply cables and fan wires depends on the fan drive mode. The following table lists the available fan control modes. Select a proper fan control mode to connect power supply cables and fan wires.

Fan drive mode	Optional communication mode between kit and outdoor unit	Remarks
Mode 1	The external AC contactor drives the single-phase AC fan: The AHU kit outputs strong current fan speed signal to control the external relay, so as to indirectly control the single-phase AC fan speed.	1. This wiring scheme must be used when the maximum fan current is greater than the fan speed control port maximum load current of the kit. 2. The external relay should be purchased and installed by yourself during engineering works. 3. The fan speed control port maximum load current and other rated parameters of the kit are shown in Table below.
Mode 2	Directly drive single-phase AC fan: The AHU kit outputs strong current fan speed signal to directly control the single-phase AC fan speed.	1. This wiring scheme can be used when the maximum fan current is not greater than the fan speed control port maximum load current of the kit. 2. The current of the fan is provided by the kit. 3. The fan speed control port maximum load current and other rated parameters of the kit are shown in Table below.
Mode 3	Indirectly drive three-phase AC fan: The AHU kit outputs strong current fan speed signal to control the external AC contactor, so as to indirectly control the three-phase AC fan speed.	1. This wiring scheme must be used when it is a three-phase AC fan. 2. Set SW1-1 to 1, and output at fan speed 1 only. 3. The external AC contactor should be purchased and installed by yourself during engineering works.
Mode 4	The AHU kit outputs 0–10V DC fan speed signal only to the third-party fan driver to control the fan speed.	1. The DC fan can be driven in this drive mode, and the third-party fan driver receives 0–10 V DC fan speed signal to regulate the fan speed. 2. The third-party fan drivers should be purchased and installed by themselves during construction.

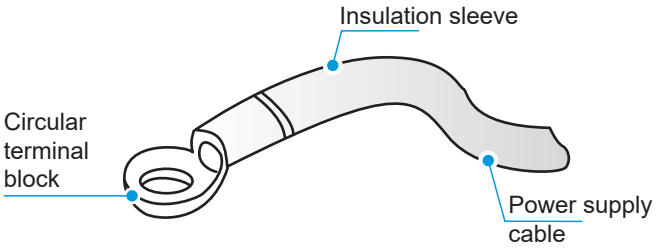
Fan speed control port CN47 and CN48 electrical parameter:

Model	Power supply	Maximum load current (with AC water pumps)	Maximum load current (without AC water pumps)
SAHK-00~01	220-240 V~ 50/60 Hz	2.5 A	3.5 A
SAHK-02~03	220-240 V~ 50/60 Hz	14 A	15 A

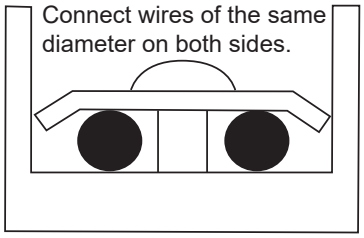
⚠ CAUTION

A Do not bond and connect the power supply cable. Bonding and connecting the power supply cable may cause it to heat up, resulting in a fire.

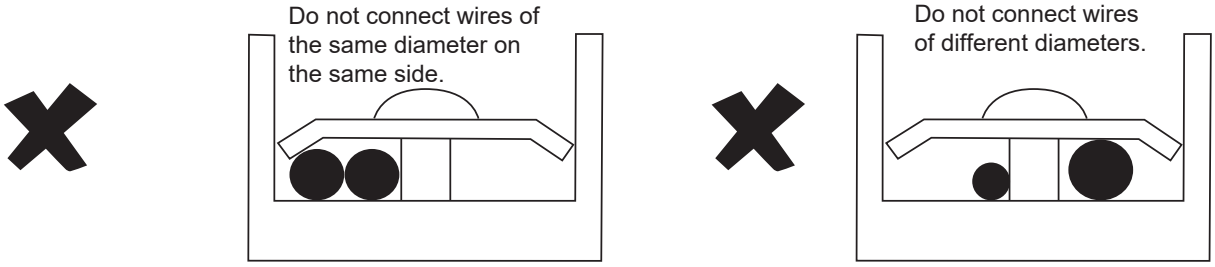
B The power supply cable must be crimped reliably using an insulated circular terminal block, and then connected to the power supply terminal of the indoor unit, as shown in the figure below.



C If it fails to crimp the insulated circular terminal block due to on-site limitations, connect the power supply cables of the same diameter to both sides of the power supply terminal block of the indoor unit, as shown in the figure below.



D Do not press the power supply cables of the same wire diameter on the same side of the terminal. Do not use two power supply cables of different wire diameters for the same terminal blocks; otherwise, they can easily loosen due to uneven pressure and cause accidents, as shown in the figure below.

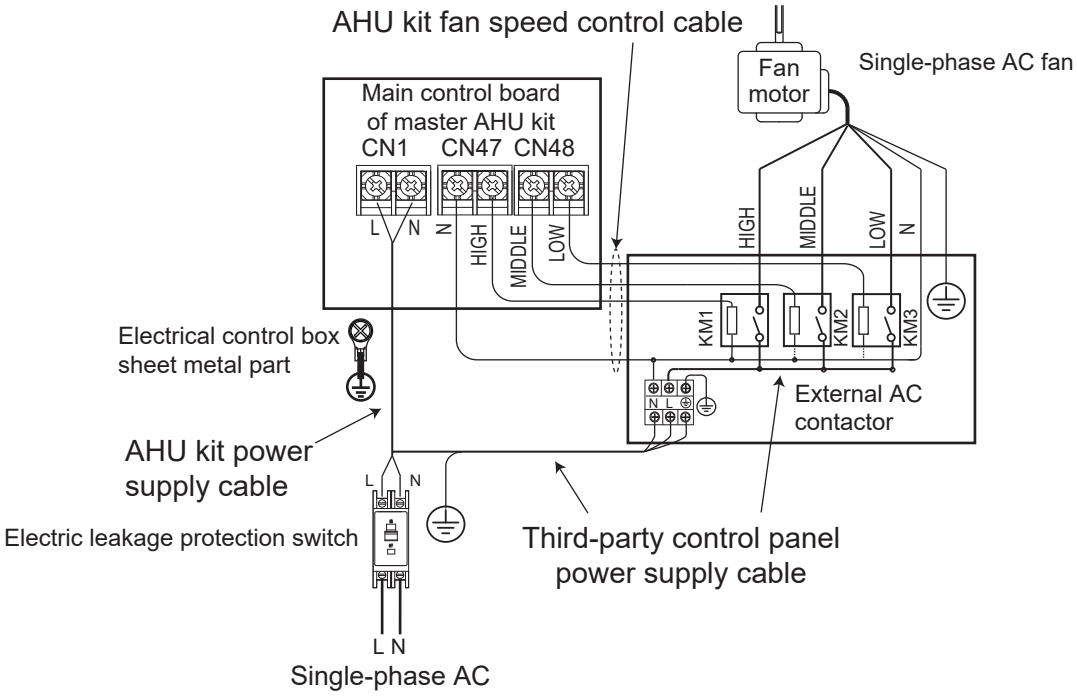


1 Fan drive mode 1

The external AC contactor drives the single-phase AC fan

The kit power supply terminal and the fan terminal are fixed on the main control board. According to the table below. Select wires with appropriate diameters according to the following table and connect them with circuit breakers according to the following figure.

This wiring scheme must be used when the maximum fan current is greater than the maximum load current of the kit.



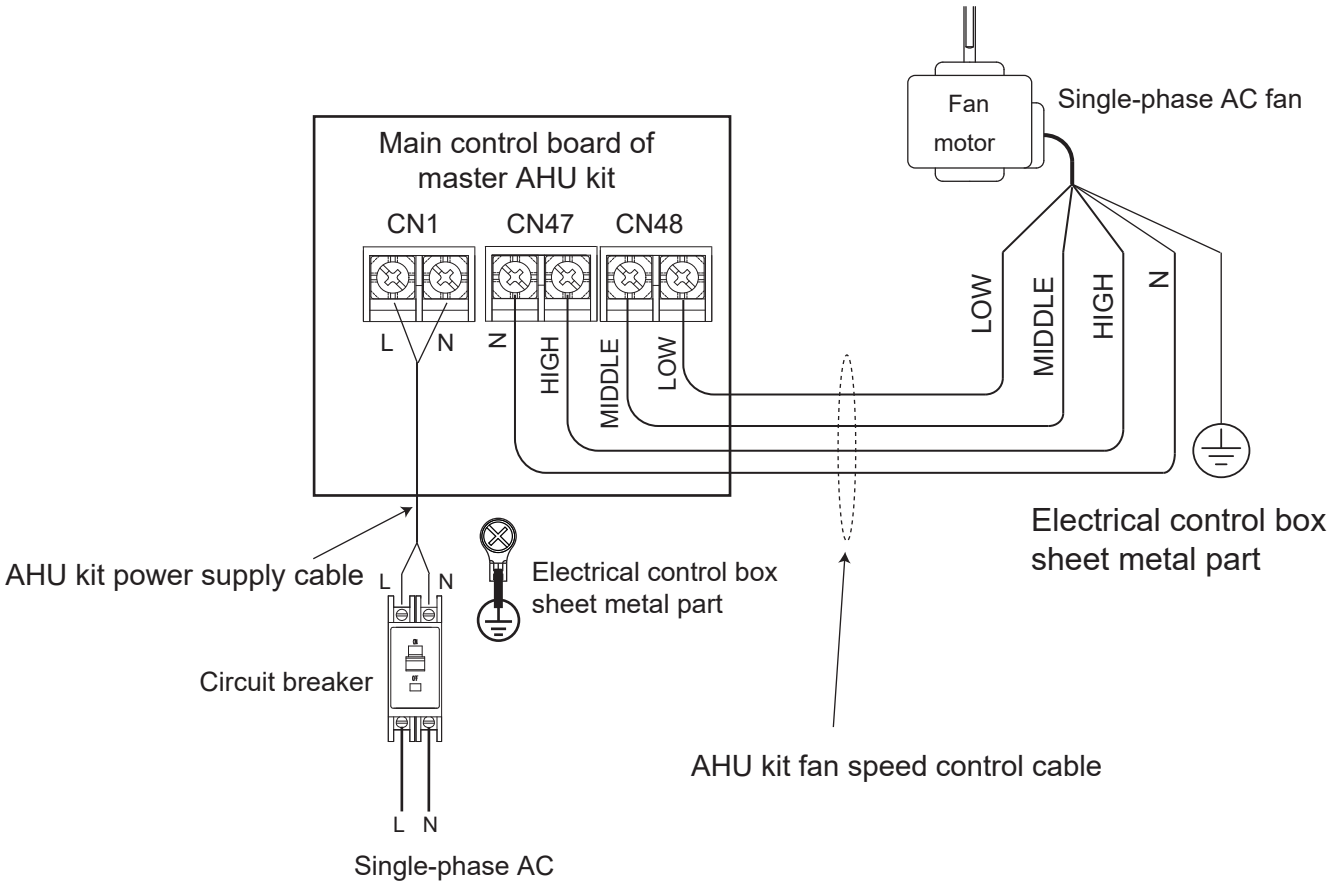
Type	SAHK-00~03
AHU kit power supply cable specifications	3 × 1.0 mm²
AHU kit fan speed control cable specifications	3 × 1.0 mm²
Third-party control panel power supply cable specifications	Refer to the Table of Selection of Line Diameter based on the maximum current of the fan
Circuit breaker specifications	Refer to the Table of Selection of Circuit Breaker based on the maximum current of the fan

2 Fan drive mode 2

Directly drive single-phase AC fan

The kit power supply terminal and the fan terminal are fixed on the main control board. According to the table below. Select wires with appropriate diameters according to the following table and connect them with circuit breakers according to the following figure.

This wiring scheme can be used when the maximum fan current is not greater than the maximum load current of the kit.



Model	SAHK-00~03
AHU kit power supply cable specifications	Refer to the Table of Selection of Line Diameter based on the maximum current of the fan
AHU kit fan speed control cable specifications	
Electric leakage protection switch specifications	Refer to the Table of Selection of Circuit Breaker based on the maximum current of the fan

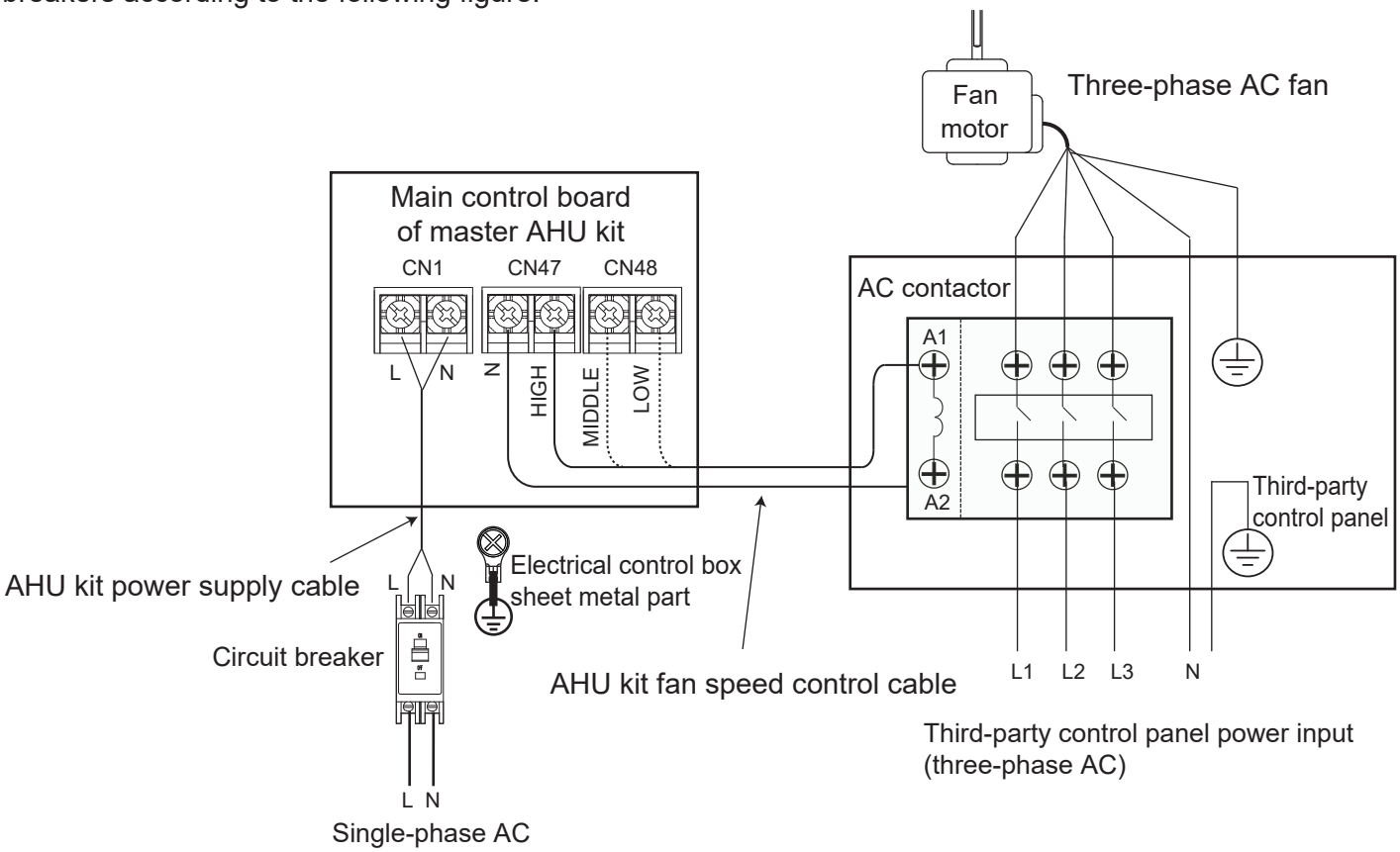
⚠ CAUTION

If the actual maximum current of the fan is greater than the current-carrying requirement of the power supply cable, or greater than the maximum load current of the kit, it may cause the power supply cable to heat up, resulting in a fire.

3 Fan drive mode 3

Indirectly drive three-phase AC fan

The kit power supply terminal and the fan terminal are fixed on the main control board. According to the table below. Select wires with appropriate diameters according to the following table and connect them with circuit breakers according to the following figure.



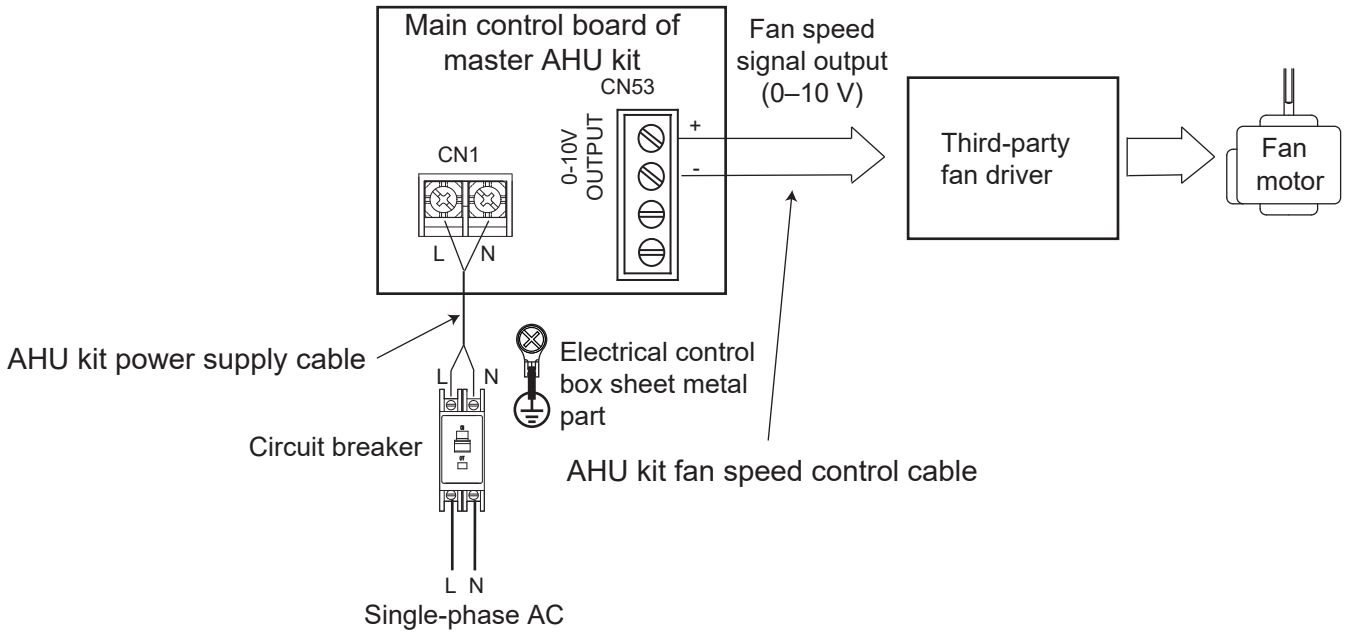
Type	SAHK-00~03
AHU kit power supply cable specifications	3 × 1.0 mm²
AHU kit fan speed control cable specifications	3 × 1.0 mm²
Third-party control panel power supply cable specifications	Refer to the Table of Selection of Line Diameter based on the maximum current of the fan
Circuit breaker specifications	Refer to the Table of Selection of Circuit Breaker based on the maximum current of the fan

4 Fan drive mode 4

Wiring:

The AHU kit outputs 0–10 V DC fan speed signal only to the third-party fan driver to control the fan speed.

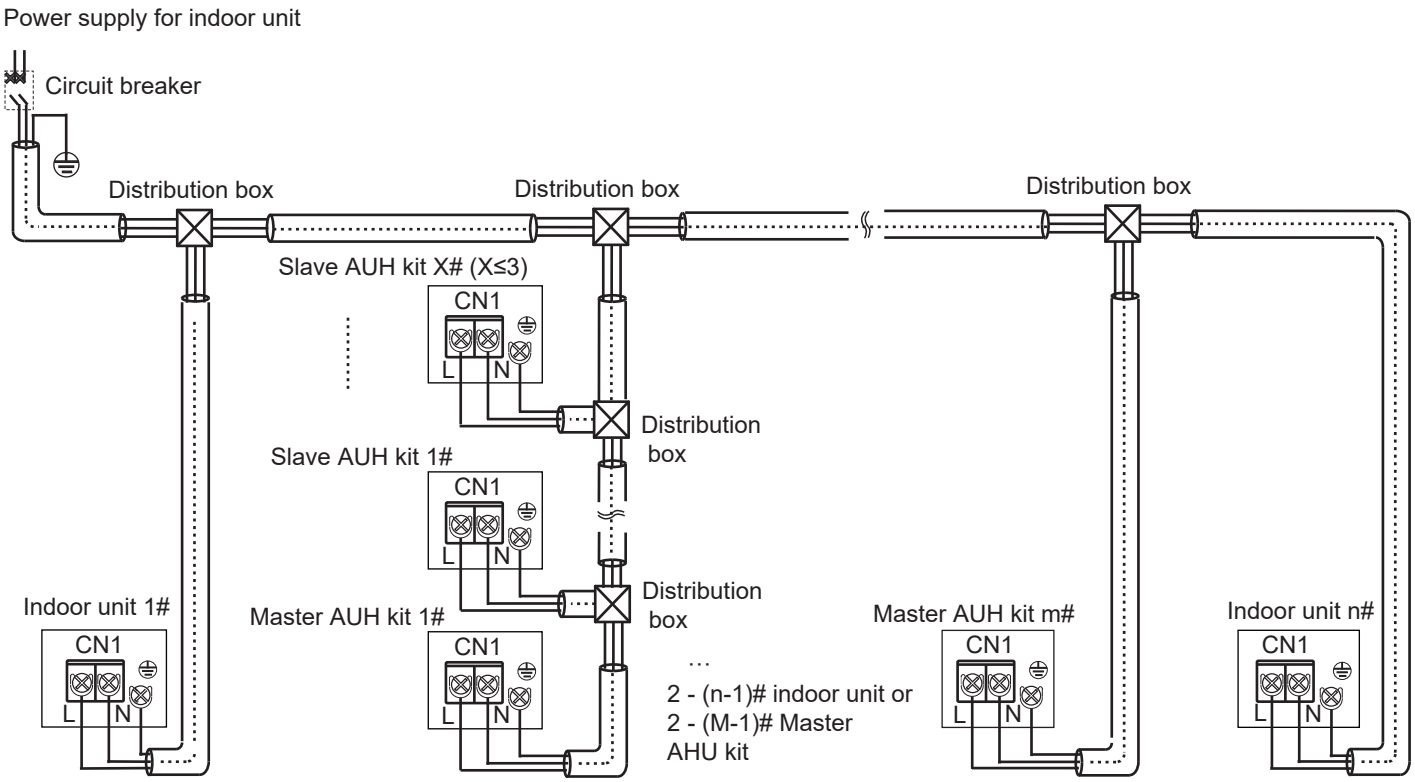
The kit power supply terminal and the 0–10 V DC voltage signal output terminal are fixed on the main control board. Select wires with appropriate diameters according to the following table and connect them with circuit breakers according to the following figure.



Type	SAHK-00~03
AHU kit power supply cable specifications	3 × 1.0 mm^2
0–10V DC fan speed signal cable specifications	2 × 0.75 mm^2
Third-party control panel power supply cable specifications	Refer to the Table of Selection of Line Diameter based on the maximum current of the fan
Circuit breaker specifications	6A

Power supply cable connection

The kits or indoor units in the same air conditioning system must be powered uniformly. The wiring diagram is as follows.



CAUTION

If all indoor units or kits in the same refrigerant system are SDV6 series, indoor units and outdoor units can communicate either via HyperLink or via P/Q communication. If some of the indoor units or kits in the same refrigerant system are non-SDV6 series, the indoor units and outdoor units can only communicate via P/Q or P/Q/E communication.

Both P/Q communication and HyperLink communication (M1M2) are indoor unit and outdoor unit communication, and only one of them can be selected. Do not connect P/Q communication and HyperLink communication at the same time in the same system. Do not connect HyperLink communication to P/Q communication.

NOTE

Unified power supply: All the indoor units in the system are controlled by one circuit breaker.

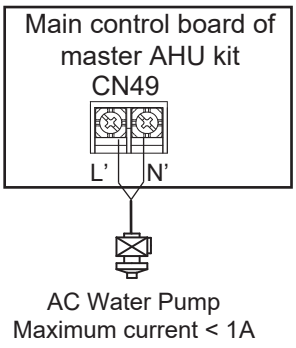
6 Other Wirings

Connection of water pump and water level switch control cable:

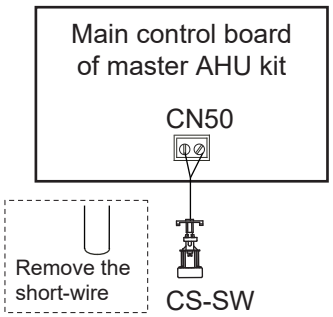
The kit can only drive AC water pumps with a maximum current of 1 A. If you need to drive more powerful water pumps, connect an external AC contactor.

The water level switch port is connected with a short-wire by default before delivery. If you need to drive the water pump, remove the short-wire and connect it to the water level switch. The wiring diagram is as follows.

Wiring diagram of water pump



Wiring diagram of water level switch



ON-SITE SETTINGS

1 Setting Precautions

After the DIP setting is completed, it must be powered off and powered on again before it can take effect.

2 Dip Switch Definition

	OFF means down
	ON means upper

3 Address Setting

When it is powered on for the first time, use the wired controller to set the address of the kit. If no address is set, the wired controller will display U38 error.

Only the master kit communicates with the outdoor unit, so the address code can only be set for the master kit with the wired controller.

Take the 86S wired controller in the accessory package as an example: The parameters can be set when the wired controller is ON or OFF.

Operating procedures:

1) Hold TIMER + Up for 5 seconds at the same time to enter the indoor unit address query and setting interface, if the AHU kit has an address, the current address will be displayed, if there is no address, "FE" will be displayed.
2) Press SWING, and the number area flashes; press UP and DOWN to switch the address, and then press SWING to confirm the setting.
3) The wired controller will automatically exit the address setting page if no operation is performed for 60s, or you can press TIMER to exit the address setting page.

⚠ CAUTION

Kit addresses can be divided into real addresses and virtual addresses, with only one real address, and the number of virtual addresses depends on the nominal capacity of Kit. For the mapping between the actual and virtual addresses of each capacity segment, see Capacity and Address Settings.

If the nominal capacity of Kit is less than or equal to 18kW, only the real address set by the controller is available. If the nominal capacity of Kit is greater than 18kW, the virtual address will be automatically generated based on the current real address set. For example: a Kit nominal capacity of 56 kW (20 HP), a total of 4 addresses, using the controller set the real address,5, then the other 3 virtual addresses are 6,7,8..

The address of the same cooling system cannot be the same. If an indoor unit in the system has a virtual address, do not set the address that is already occupied when setting the address by the controller. For example, if the nominal capacity of a Kit is 56 kW (20 HP) and 5,6,7,8 addresses are used, 5/6/7/8 cannot be used again when the address value of another indoor unit is set.

4 Model Setting

Use the DIP switches SW4-2, SW10-1/ SW10-2 combination on the PCB to set the model of the kit, as shown in the following table.

Model	DIP switch	
	SW4-2	SW10-1/ SW10-2
SAHK-00		
SAHK-01		
SAHK-02		
SAHK-03		

5 Capacity Setting

Use the DIP ENC1 and DIP switch SW9-3/SW9-4 combination on the PCB to set the capacity of the kit.

⚠ CAUTION

The disk dial ENC1 and dial switch SW9-3/SW9-4 combination on the PCB can set the capacity of the Kit, and both the host and slave need to set the capacity.

Capacity setting table

Disc switch: ENC1	DIP switch: SW9-3 / SW9-4							
								
Number	Nominal cooling capacity		Addresses		Nominal cooling capacity		Addresses	
	HP	kW	Real addresses	virtual addresses	HP	kW	Real addresses	virtual addresses
0	0.8	1.8/2.2	Settings	non-existent	10	28.0	Settings	Settings + 1
1	1.0	2.5/2.8	Settings	non-existent	12	33.5	Settings	Settings + 1
2	1.2	3.2/3.6	Settings	non-existent	14	40.0	Settings	Settings + 1 Settings + 2 Settings + 3
3	1.7	4.0/4.5	Settings	non-existent	16	45.0	Settings	Settings + 1 Settings + 2 Settings + 3
4	2.0	5.0/5.6	Settings	non-existent	18	50.0	Settings	Settings + 1 Settings + 2 Settings + 3
5	2.5	6.3/7.1	Settings	non-existent	20	56.0	Settings	Settings + 1 Settings + 2 Settings + 3
6	3.0	8.0	Settings	non-existent	22	61.5	Settings	Settings + 1 Settings + 2 Settings + 3
7	3.2	9.0	Settings	non-existent	24	67.0	Settings	Settings + 1 Settings + 2 Settings + 3
8	3.6	10.0	Settings	non-existent	26	73.0	Settings	Settings + 1 Settings + 2 Settings + 3
9	4.0	11.2	Settings	non-existent	28	78.5	Settings	Settings + 1 …… Settings + 4
A	4.5	12.0/12.5	Settings	non-existent	30	85.0	Settings	Settings + 1 …… Settings + 4
B	5.0	14.0	Settings	non-existent	32	90.0	Settings	Settings + 1 …… Settings + 4
C	6.0	16.0	Settings	non-existent	34	95.0	Settings	Settings + 1 …… Settings + 5
D(Factory default)	6.5	18.0	Settings	non-existent	36	101.0	Settings	Settings + 1 …… Settings + 5
E	7.0	20.0	Settings	Settings+1	38	106.0/108.0	Settings	Settings + 1 …… Settings + 7
F	8.0	25.2	Settings	Settings+1	40	112.0	Settings	Settings + 1 …… Settings + 7

Dip switch: ENC1	DIP switch: SW9-3 / SW9-4							
					(Factory default) 			
Number	Nominal cooling capacity		Addresses		Nominal cooling capacity		Addresses	
	HP	kW	Real addresses	virtual addresses	HP	kW	Real addresses	virtual addresses
0	42.0	117.0	Settings	Settings + 1 …… Settings + 9	74.0	207.0	Settings	Settings + 1 …… Settings + 15
1	44.0	123.0	Settings	Settings + 1 …… Settings + 9	76.0	213.0	Settings	Settings + 1 …… Settings + 15
2	46.0	128.5	Settings	Settings + 1 …… Settings + 9	78.0	218.0	Settings	Settings + 1 …… Settings + 15
3	48.0	134.0	Settings	Settings + 1 …… Settings + 9	80.0	224.0	Settings	Settings + 1 …… Settings + 15
4	50.0	141.0	Settings	Settings + 1 …… Settings + 9	84.0	235.0	Settings	Settings + 1 …… Settings + 15
5	52.0	146.0	Settings	Settings + 1 …… Settings + 11	88.0	246.0	Settings	Settings + 1 …… Settings + 15
6	54.0	151.5	Settings	Settings + 1 …… Settings + 11	92.0	258.0	Settings	Settings + 1 …… Settings + 15
7	56.0	157.0	Settings	Settings + 1 …… Settings + 11	96.0	269.0	Settings	Settings + 1 …… Settings + 15
8	58.0	162.5	Settings	Settings + 1 …… Settings + 11	100.0	280.5	Settings	Settings + 1 …… Settings + 15
9	60.0	168.0	Settings	Settings + 1 …… Settings + 11	104.0	292.0	Settings	Settings + 1 …… Settings + 15
A	62.0	173.5	Settings	Settings + 1 …… Settings + 13	108.0	303.0	Settings	Settings + 1 …… Settings + 17
B	64.0	179.0	Settings	Settings + 1 …… Settings + 13	112.0	314.0	Settings	Settings + 1 …… Settings + 17
C	66.0	185.0	Settings	Settings + 1 …… Settings + 13	116.0	325.0	Settings	Settings + 1 …… Settings + 17
D(Factory default)	68.0	191.0	Settings	Settings + 1 …… Settings + 13	120.0	336.0	Settings	Settings + 1 …… Settings + 19
E	70.0	196.0	Settings	Settings + 1 …… Settings + 13	120.0	336.0	Settings	Settings + 1 …… Settings + 19
F	72.0	202.0	Settings	Settings + 1 …… Settings + 15	120.0	336.0	Settings	Settings + 1 …… Settings + 19

Capacity setting range for each model of KITs

NOTE

The factory default capacity is set to 120 HP. Reset the capacity value according to the selection requirements during installation.

Different kit capacity settings must be set according to the range specified in the following table. Otherwise, “U14” error will be triggered.

When they are connected in parallel, the capacity of both the master and slave must be set. The total capacity of the master and slave must be no more than 120 HP!

Model	Nominal cooling capacity	
	Range	Factory default
	HP	HP
SAHK-00	HP ≤ 3	120
SAHK-01	3.2 ≤ HP ≤ 6.5	120
SAHK-02	7 ≤ HP ≤ 12	120
SAHK-03	14 ≤ HP ≤ 20	120

6 Setting of Parallel Connection

Setting of parallel connection mode

Warning: Only the Master AHU kit settings are valid		
DIP switch	Connect a heat exchanger after parallel connection of Kit (Factory default)	Connect multiple heat exchangers in parallel with Kit
SW9-2	 2	 2

Setting of master and slave in parallel

When the kits are connected in parallel, the combination of DIP switches SW2-3/ SW2-4 on the PCB can set the master/slave.

DIP switch	Master AHU kit (Factory default)	Salve AHU kit 1#	Salve AHU kit 2#	Salve AHU kit 3#
SW2-3 /SW2-4	 3 4	 3 4	 3 4	 3 4

Setting of the number of slaves in parallel

The combination of DIP switch SW1-3/SW1-4 on the master PCB can be used to set the number of slaves.

⚠ CAUTION

The number of connected slave kits in parallel can only be set on the master PCB, and does not need to be set on the slave.

Warning: After setting up the master and slave AHU kits, then set the number of slave AHU kit on the master PCB.				
DIP switch	Only Master AHU kit (Factory default)	Master AHU kit+1 Slave AHU kit	Master AHU kit+2 Slave AHU kit	Master AHU kit+3 Slave AHU kit
SW1-3 /SW1-4 (Only the Master AHU kit settings are valid)				

7 Setting of Controller Type

The combination of DIP switches SW2-2, SW4-3/SW4-4 on the master PCB can set the controller type. The following settings can be made using a third-party controller:

1) Input third party signal: 0–10 V voltage signal, passive dry contact signal in Cool/Heat mode, passive dry contact signal at high/medium/low fan speed;

2) When using a third-party controller, the kit does not receive factory-supplied controller input signals.

⚠ CAUTION

The controller type can only be set on the master PCB, and does not need to be set on the slave.

Controller	Dip switch	
	SW2-2	SW4-3/SW4-4
Factory controller (Factory default)		
Third party controller capacity levels setting		
Third party controller temperature setting		

Control mode setting

⚠ CAUTION

The output number of fan gear can only be set on the PCB of the main machine, and the slave machine does not need to be set.

Dip switch	Return air temperature control (factory default)	Supply air temperature control
SW4-1	 1	 1

8 Mode Control

Controller type	Temperature control type	Supported running mode
Factory supplied controller	Return air temperature control	Cool, Dry, Heat, Fan
	Supply air temperature control	Cool, Heat, Fan
Third-party controller	Return air temperature control	The third-party controller is connected to the input dry contact (CN56) in running mode on the main control PCB, and the output running mode is executed according to the following table:
	Supply air temperature control	

Dry contact state		Output running mode
Cooling dry contact	Heating dry contact	
Open	Open	Shutdown
Close	Open	Cool
Open	Close	Heating
Close	Close	Heating

9 Fan Control

Introduction to fan mode

(*): Some models of the controller provided by the factory can be set with 7 fan speeds, and the relationship between the 7 fan speeds and high/medium/low fan speeds is as follows:

Controller that support 7 fan speeds	Speed 1	Speed 2	Speed 3	Speed 4	Speed 5	Speed 6	Speed 7
Controller that support 3 fan speeds	Low fan speed		Medium fan speed		High fan speed		

Setting of fan gear output quantity

⚠ CAUTION

The output number of fan gear can be set on the master PCB, and does not need to be set on the slave.

*1: When using third-party controllers, If the main control PCB does not receive the fan speed input signal, the fan speed gear is set according to the following table.

Control type	Capacity Control Mode		
	Input set temperature value	Input capacity gear value	
Return air temperature control	Auto	High fan speed	High fan speed
Supply air temperature control	High fan speed	High fan speed	High fan speed

*2: When using third-party controllers, If the main control PCB does not receive the fan speed input signal, the fan speed gear is output according to the ENC2 DIP switch setting value on the PCB.

Setting of fan gear output quantity			Output fan speed gear			
DIP switch: SW1-2	Output fan gears		220–240 V~ fan speed dry contact signal output			0–10 V fan speed signal output
			Low fan speed dry contact	Medium fan speed dry contact	High fan speed dry contact	
 2 (Factory default)	Three fan speeds(*1)	Low fan speed	Close	Open	Open	Use the setting of the ENC2 DIP switch, and define the output voltage as α
		Medium fan speed	Open	Close	Open	Use the setting of the ENC3 DIP switch, and define the output voltage as β
		High fan speed	Open	Open	Close	Use the setting of the ENC4 DIP switch, and define the output voltage as δ
 2	One fan speed only(*2)	Low fan speed	When the ENC2 DIP switch digit is set to 0, the low fan speed dry contact is closed	Open	Open	Use the setting of the ENC3 DIP switch, and define the output voltage as β
		Medium fan speed	Open	When the ENC2 DIP switch digit is set to 1, the medium fan speed dry contact is closed	Open	
		High fan speed	Open	Open	When the ENC2 DIP switch digit is set to 2–F (factory setting is 2), the high fan speed dry contact is closed	

Setting of 0–10 V fan speed signal output voltage values α, β and δ

⚠ CAUTION

When ENC2/ENC3/ENC4 DIP switches are used to set the 0–10 V fan speed signal output voltage value, α<β<δ.

α Set DIP Switch: ENC2		β Set DIP Switch: ENC3		δ Set DIP Switch: ENC4	
	Default DIP value: 2		Default DIP value: 7		Default DIP value: A

Mapping table of Output Voltage Values α, β, δ and DIP Values							
DIP value	0-10 V	DIP value	0-10 V	DIP value	0-10 V	DIP value	0-10 V
0	0.5	4	4.0	8	8.0	C	10.0
1	1.0	5	5.0	9	9.0	D	10.0
2	2.0	6	6.0	A	10.0	E	10.0
3	3.0	7	7.0	B	10.0	F	10.0

Unit delay start setting when connecting the air valve

This setting is required when the user needs to set the linkage operation of Kit and air valve. The factory default unit is not connected to the air valve to start in real time. If the SW9-1 dip switch is set to ON, it means that the unit and the air valve are connected to control, and the unit will start after the air valve is operated for 10 s.

⚠ CAUTION

The output number of fan gear can only be set on the master PCB, and the slave machine does not need to be set!.

Start time	Dip switch：SW9-1
Real time start (Factory default)	 1
Start with a delay of 10 seconds (interlock air valve)	 1

Thermo OFF fan speed control

Cooling/heating thermo OFF	Capacity Control Modes (*1)	
	Return air temperature control	Supply air temperature control
Cooling thermo OFF	Default: Maintain the current set fan speed (set auto fan speed and operate according to 7 fan speed (high fan speed)), but the standby fan speed can be set using the remote control	Maintain the current set fan speed (set auto fan speed and operate according to 7 fan speed (high fan speed))
Heating thermo OFF	Default: Termal fan speed(*2), but the standby fan speed can be set using the remote control	Maintain the current set fan speed (set auto fan speed and operate according to 1 fan speed (low fan speed))

*1: The default return air temperature control at the factory can be set to supply air temperature control by dialing the code on the main machine PCB; The setting is effective when using a third-party controller to input the capacity gear value;

*2: Periodic execution: After running for 1 minute in the first or low wind speed range, the fan stops running for 10 minutes (default value, can be set to stop running for a duration using the remote control).

Auto fan speed control

Cooling/heating	Capacity Control Modes (*1)	
	return air temperature control	Supply air temperature control
Cooling	Automatically adjust the fan speed based on the (T1-Ts) (*2) difference: the larger the temperature difference, the higher the operating fan speed will be (*3)	7 fan speed (high fan speed)
Heating		

*1: The default return air temperature control at the factory can be set to supply air temperature control by dialing the code on the main machine PCB; The setting is effective when using a third-party controller to input the capacity gear value.

*2: (T1-Ts)： AHU return air temperature - user input set temperature.

*3: If the fan only has one fan speed, auto fan speed operation will not be able to change the fan speed

10 Capacity Control

Introduction to capacity control modes

The capacity control mode is selected according to the following table based on the control type and controller type.

(1) : The 0-10V voltage of DDC output is a linear function of the set temperature, and the set temperature value can be converted to 0-10 V voltage value through programming.

(2) : The DDC output 0-10 V voltage and temperature difference (the difference between the actual measured temperature and the target temperature) is a linear function, and the temperature difference value can be converted to 0-10 V voltage value through programming.

(3) : Limited by the air conditioning load or outdoor unit output, the actual output capacity of the outdoor unit may deviate from the set value given in the manual, resulting in failure to reach the set supply air temperature or target temperature.

Enter a set temperature value (Connect factory controllers or third party controllers [1])		Enter the capacity gear value (Variable capacity control [3]) (Only third-party controllers can be connected [2])
Control: AHU return air temperature	Control: AHU supply air temperature [3]	Control: AHU return air temperature or AHU supply air temperature or room temperature
Determine the AHU kit capacity based on the difference between the AHU return air temperature and the set temperature input by the controller and send the AHU Kit capacity to the outdoor unit. The outdoor unit adjusts the compressor output based on the received capacity.	The AHU kit capacity is corrected according to the difference between the AHU supply air temperature and the set temperature input by the controller and then sent to the outdoor unit. The outdoor unit adjusts the output of the compressor according to the received capacity.	The third-party DDC controller provided on site (with air temperature sensor to measure the following temperatures: AHU return air temperature, AHU supply air temperature, room temperature) is connected to the 0-10V input port on the host PCB. After receiving the 0-10V voltage value sent by the DDC, the host converts it into the capacity range value and sends it to the outdoor unit to adjust the output of the compressor.

Use factory-supplied controller to input the set temperature

Control terminal	Supply air temperature control [1] (°C)	Return temperature control [1] (°C)
Bi-directional wired controller	10(*1)~30	16~30
Remote controller [2]	17~30	17~30

(1) Supply air temperature control: When the fresh air temperature is too high in Cool mode or too low in Heat mode, or when the selected AHU heat exchanger capacity and inlet dry air flow approach the maximum limit, the supply air temperature may not reach the set temperature value.

(2) When a SDV6 series remote controller is connected, the set temperature range is from 16 °C to 30 °C.

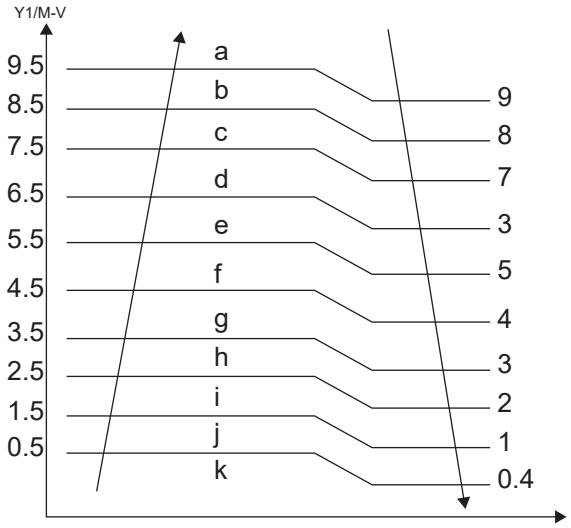
Use a third-party controller to set the 0–10 V input temperature value

(*): The standard value is the intermediate voltage value of each voltage range.

0-10V Input voltage		Enter a set temperature value			
		Return air temperature control		Supply air temperature control	
Standard value(*)	Voltage range Lower limit value ≤V＜Upper limit value	Heating mode (℃)	Cooling mode (℃)	Cooling mode (℃)	Heating mode (℃)
0.5	0~0.75	Can not set	Can not set	Can not set	Can not set
1	0.85~1.15	16	16	10	10
1.4	1.25~1.55	16	16	11	11
1.8	1.65~1.95	16	16	12	12
2.2	2.05~2.35	16	16	13	13
2.6	2.45~2.75	16	16	14	14
3	2.85~3.15	16	16	15	15
3.4	3.25~3.55	16	16	16	16
3.8	3.65~3.95	17	17	17	17
4.2	4.05~4.35	18	18	18	18
4.6	4.45~4.75	19	19	19	19
5	4.85~5.15	20	20	20	20
5.4	5.25~5.55	21	21	21	21
5.8	5.65~5.95	22	22	22	22
6.2	6.05~6.35	23	23	23	23
6.6	6.45~6.75	24	24	24	24
7	6.85~7.15	25	25	25	25
7.4	7.25~7.55	26	26	26	26
7.8	7.65~7.95	27	27	27	27
8.2	8.05~8.35	28	28	28	28
8.6	8.45~8.75	29	29	29	29
9	8.85~9.15	30	30	30	30
9.4	9.25~10	Can not set	Can not set	Can not set	Can not set

Use a third-party controller to set the 0–10 V input capacity gear value

1 0-10 V input voltage and capacity range, capacity demand value corresponding table

0-10 V input voltage and capacity gear back difference diagram	Capacity range and capacity demand value		
	Capacity gear	Capacity requirement sent to the outdoor unit	
		ConnectSDV5series heat pump / single cooling outdoor unit	Connect the SDV6 series outdoor unit
		Cooling/heating	Cooling(default)	Heating(default)
	Interval a	100 %	Te = 5 ℃	Tc = 46 ℃
	Interval b	90 %	Te = 6 ℃	Tc = 44 ℃
	Interval c	80 %	Te = 7 ℃	Tc = 42 ℃
	Interval d	70 %	Te = 8 ℃	Tc = 40 ℃
	Interval e	60 %	Te = 9 ℃	Tc = 38 ℃
	Interval f	50 %	Te = 10 ℃	Tc = 36 ℃
	Interval g	40 %	Te = 11 ℃	Tc = 34 ℃
	Interval h	30 %	Te = 12 ℃	Tc = 32 ℃
	Interval i	20 %	Te = 13 ℃	Tc = 30 ℃
	Interval j	10 %	Te = 14 ℃	Tc = 28 ℃
	Interval k	Thermo OFF	Thermo OFF	Thermo OFF
• Y1/M-V: 0-10 V input voltage received by the host • a-k：indicates the capacity range • Voltage change: up direction ≥, down direction ＜	• HP：Total DIP switch capacity of the master and slave • 10 %-100 %：The percentage of capacity requirement sent to outdoor units • Te:Target evaporation temperature；Tc:target condensation temperature		

2 Conversion of output voltage and temperature difference of third-party controller

If the capacity control mode is set to the input capacity level, connect the third-party controller provided onsite to the 0-10 V voltage input port (CN53-3/CN53-4) of the Kit host PCB. The field-supplied controller is programmed to output a 0-10 V voltage signal based on the temperature difference between the actual measured temperature and the target temperature. The field supplied third-party controller voltage output is a linear function of temperature difference. After receiving the voltage signal, the Kit converts it into the required capacity and sends it to the outdoor unit to adjust the output of the compressor.

⚠ CAUTION

The third-party controller provided on site must be a programmable controller with a temperature sensor, such as a DDC. The temperature sensor can be used to detect any of the following temperatures: AHU return air temperature, room temperature, AHU supply air temperature. After programming, you need to check

For example:

<table>
<tr><th>AHU operation mode</th><th>Output voltage and temperature difference conversion formula</th><th>Example</th></tr>
<tr><td>Cooling</td><td>$V=\frac{3\times\Delta T}{\Delta Tmax}+2$</td><td>
<table>
<tr><td colspan="4">In cooling mode, take ΔTmax=3, the target temperature is 18 ℃</td></tr>
<tr><td>Measured temperature</td><td>ΔT</td><td>Output voltage of the third-party controller</td><td>Cooling capacity output</td></tr>
<tr><td>26 ℃</td><td>8 ℃</td><td>10 V</td><td>Maximum cooling capacity output</td></tr>
<tr><td>22 ℃</td><td>4 ℃</td><td>6 V</td><td>Cooling output is large</td></tr>
<tr><td>20 ℃</td><td>2 ℃</td><td>4 V</td><td>Cooling output rises</td></tr>
<tr><td>18 ℃</td><td>0 ℃</td><td>2 V</td><td>Reach the target temperature, cooling capacity output is small</td></tr>
<tr><td>16 ℃</td><td>-2 ℃</td><td>0 V</td><td>Thermo OFF: The cooling capacity stops output</td></tr>
</table>
</td></tr>
<tr><td>Heating</td><td>$V=\frac{-3\times\Delta T}{\Delta Tmax}+2$</td><td>
<table>
<tr><td colspan="4">In heating mode, take ΔTmax=3, the target temperature is 24 ℃</td></tr>
<tr><td>Measured temperature</td><td>ΔT</td><td>Output voltage of the third-party controller</td><td>Heating capacity output</td></tr>
<tr><td>16 ℃</td><td>-8 ℃</td><td>10 V</td><td>Maximum heat output</td></tr>
<tr><td>18 ℃</td><td>-6 ℃</td><td>8 V</td><td>Large heat output</td></tr>
<tr><td>20 ℃</td><td>-4 ℃</td><td>6 V</td><td>Heat output reduce</td></tr>
<tr><td>24 ℃</td><td>0 ℃</td><td>2 V</td><td>When the target temperature is reached, the heat output is small</td></tr>
<tr><td>26 ℃</td><td>2 ℃</td><td>0 V</td><td>Thermo OFF: Stop the output of heat</td></tr>
</table>
</td></tr>
<tr><td colspan="3">ΔT=The actual measured temperature - target temperature, when = 0, the target temperature is reached;
V: DDC controller output to the host 0-10 V voltage value
ΔTmax : The defined maximum temperature change value. The recommended value range is 2 ℃ ≤ ΔTmax ≤ 5 ℃. The smaller the value, the larger the converted voltage value and the larger the corresponding capacity gear change value</td></tr>
</table>

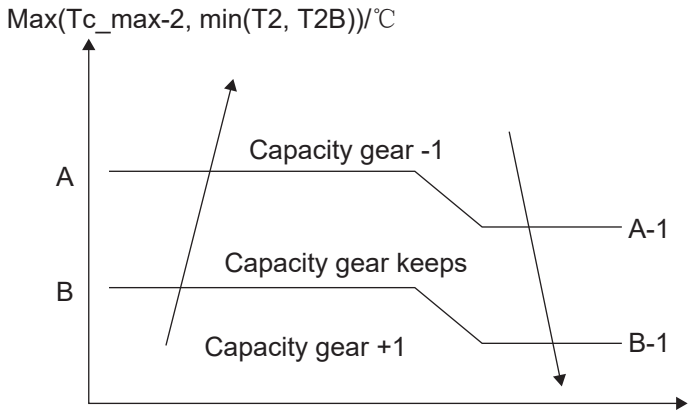
3 Modified capacity level setting when connecting the V6 series heat pump outdoor unit for heating

When the V6 series heat pump outdoor unit is connected for heating operation, the capacity requirements sent by the Kit to the outdoor unit may not meet the set target temperature control requirements. Therefore, the capacity gear can be modified by using DIP switches.

⚠ CAUTION

The capacity gear correction value can only be set on the master PCB, and the slave does not need to be set.

Capacity level correction back difference chart



- Tc_max： indicates the maximum high-pressure pressure saturation temperature detected by the outdoor unit
- T2： Temperature sensor in the middle of the AHU heat exchanger connected to the Kit host
- T2B : The temperature sensor on the trachea side of the AHU heat exchanger connected to the Kit host

Capacity gear	Dip switch：SW3-3/SW3-4							
	(Factory default) 3 4		3 4		3 4		3 4	
	A(℃)	B(℃)	A(℃)	B(℃)	A(℃)	B(℃)	A(℃)	B(℃)
Interval a	48	46	46	44	47	45	45	43
Interval b	46	44	44	42	45	43	43	41
Interval c	44	42	42	40	43	41	41	39
Interval d	42	40	40	38	41	39	39	37
Interval e	40	38	38	36	39	37	37	35
Interval f	38	36	36	34	37	35	35	33
Interval g	36	34	34	32	35	33	33	31
Interval h	34	32	32	30	33	31	31	29
Interval i	32	30	30	28	31	29	29	27
Interval j	30	28	28	26	29	27	27	25
Interval k	/	/	/	/	/	/	/	/

4 Setting Te/Tc values for each capacity gear when connecting SDV6 series outdoor units

The user can set the Te/Tc value corresponding to the capacity gear based on the AHU return air temperature range, the set target temperature, and the AHU heat transfer requirement.

⚠ WARNING

The controller type can only be set on the master PCB, and no setting is required on the slave.

Capacity gear	Dip switch：SW3-3/SW3-4							
	(factory default) 							
	Te(℃)	Tc(℃)	A(℃)	B(℃)	A(℃)	B(℃)	A(℃)	B(℃)
	Standard cooling output	Standard heating output	Maximum cooling output	Maximum heating output	Middle cooling output	Middle heating output	Minimum cooling output	Minimum heating output
Interval a	5	46	3	51	7	43	9	40
Interval b	6	44	4	49	8	41	10	38
Interval c	7	42	5	47	9	39	11	36
Interval d	8	39	6	44	10	37	12	32
Interval e	9	36	7	41	11	34	13	30
Interval f	10	34	8	38	12	31	14	28
Interval g	11	32	9	36	13	29	15	26
Interval h	12	30	10	34	14	27	16	24
Interval i	13	27	11	32	15	25	17	22
Interval j	14	24	12	30	16	23	18	20
Interval k	Thermo OFF	Thermo OFF	Thermo OFF	Thermo OFF	Thermo OFF	Thermo OFF	Thermo OFF	Thermo OFF

11 Anti-cold Air Temperature Setting

Temperature controll type	Dip switch： SW3-1/SW3-2			
Type	 1 2	 1 2	 1 2	 1 2
Return air temperature control	Fan close：15 ℃ Fan run：28 ℃ (Factory default)	Fan close: 10 ℃ Fan run: 18 ℃	Fan close: 24 ℃ Fan run: 28 ℃	Anti cold air ineffective
Supply air temperature control	Fan close：5 ℃ Fan run：10 ℃ (Factory default)	Fan close: 5 ℃ Fan run: 12 ℃	Fan close: 5 ℃ Fan run: 14 ℃	Anti cold air ineffective

12 Setting of T1 Sensor Detection Value Compensation

⚠ CAUTION

Temperature compensation is only effective when connected to the factory controller;

Only the Master AHU kit settings are valid.

Control type		Dip switch： SW3-3/SW3-4(Only the Master AHU kit settings are valid)			
Type	SW4-1 Dip switch	 3 4	 3 4	 3 4	 3 4
Return air temperature control	 1	6 ℃ (Factory default)	2 ℃	4 ℃	0 ℃
Supply air temperature control	 1	Invalid	Invalid	Invalid	Invalid

13 Setting of Project Parameters

Settings of entering and exiting project parameter

This unit can be set with the power failure memory function for power-on recovery, to avoid the failure of user settings caused by short-term power failure. However, it is only valid when the factory supplied controller is connected.

Take the factory controller in the accessory package as an example: The parameters can be set when the controller is in the ON or OFF state. The specific operation steps are as follows:

1) Press and hold Swing + Mode for 3 seconds to enter the parameter setting interface;

2) After entering the parameter setting interface, "u00" indicates the outdoor unit parameter setting, "n00-n63" indicates the indoor unit parameter setting (the two digits after the n letter are the address of the indoor unit), and "CC" indicates the wired controller parameter setting; press ▲ and ▼ to switch the parameter code, and press Swing to enter the parameter setting interface;

3)The wired controller will automatically exit the address setting page if no operation is performed for 60s, or you can press TIMER to exit the parameter setting interface.

Setting of power failure memory

Paramete	Name	Setting Value	Default	Description
N01	Does the indoor unit have memory for power failure	00/01	01	00: No 01: Yes

Settings of remote ON/OFF and alarm output

Paramete	Name	Setting Value	Default	Description
N38	Positive and negative logic of remote ON/OFF port	00/01	00	00: Remote off (closed); 01: Remote off (open) Notes:
N39	Power off delay via remote control	00/01/…/06	00	00: No delay; 01: Delay 1 min; 02: Delay 2min; 03: Delay 3min; 04: Delay 4min; 05: Delay 5min; 06: Delay 10min
N40	Positive and negative logic of alarm port	00/01	00	00: Alarm when closed; 01: Alarm when open

Setting of maximum indoor temperature (T1) drop in dry mode

Paramete	Name	Setting Value	Default	Description
N27	Maximum indoor temperature drop D3 in Dry mode	00/01/02/03/04	01	0:03 ℃ 1:04 ℃ 2:05 ℃ 3:06 ℃ 4:07 ℃

Setting of return air temperature control thermal off fan speed

Paramete	Name	Setting Value	Default	Description	
N18	Cooling operation thermal OFF fan speed setting	00/01/02/03/04/05/06/07/14	01	00	Delayed shutdown of fan
				01	Maintain the current set fan speed (set auto fan speed and operate according to 7 fan speed (high fan speed)), but the standby fan speed can be set using the remote control
				02	1 fan speed (low fan speed)
				03	2 fan speed (low fan speed)
				04	3 fan speed (medium fan speed)
				05	4 fan speed (medium fan speed)
				06	5 fan speed (high fan speed)
				07	6 fan speed (high fan speed)
				14	7 fan speed (high fan speed)
N20	Heating operation thermal OFF fan speed setting	00/01/14	00	00	Termal fan speed
				01	1 fan speed (low fan speed)
				14	1 fan speed (low fan speed)

Setting the duration of termal fan shutdown

Paramete	Name	Setting Value	Default	Description
N21	The duration of termal fan shutdown	00/01/02/03/04	01	00： 10 min 01: 4 min 02: 8 min 03: 12 min 04: 16 min

DRY CONTACT INPUT AND OUTPUT

1 Input Dry Contact

No.	Dry contact	Port	Description	
1	Fan ON/OFF input	CN54	The factory port is in the short-circuit closed state. When the user chooses the fan motor with feedback signal (only the feedback level signal is supported; the pulse signal cannot be identified), connect the feedback signal cable to this port; when it is detected that the main control program has the fan speed output, and the port is in a high level state for 20 seconds, the "d50" alarm code is displayed. (The capacity input will be cut off to ensure the reliable operation of the system)	
2	Remote ON/OFF input	CN54	Set to positive logic (default)	The factory port is in the short-circuit closed state; when the port is connected to the remote control line and the input power level is low, the AHU kit stops running
			Set to negative logic	When the port is disconnected and the input power level is high, the AHU kit stops running

2 Output Dry Contact

No.	Dry contact	Port	Description	
1	Running status output	CN44	When the AHU kit stops running, the port is open; when the AHU kit resumes operation, the port is closed	
2	Defrosting status output	CN54	When the AHU kit is operating in the Heat and DEFROST mode, the fan stops running, and the port is closed; when the AHU kit exits the DEFROST mode, the fan returns to normal operation, and the port is disconnected	
3	Feedback output in Cool mode	CN45	Condition to close the port (when all conditions are met)	Condition to disconnect the port (when any condition is met)
			1) The AHU kit is operating properly in Cool/Dry/Auto Cool mode; 2) The AHU kit is in thermo ON state.	1) The AHU kit is in a fault or shutdown state. 2) The AHU kit is in thermo OFF state. 3) The AHU kit is in Heat/Fan/Dry/Auto Heat mode;
4	Feedback output in Heat mode	CN45	Condition to close the port (when all conditions are met)	Condition to disconnect the port (when any condition is met)
				1) The AHU kit is in a fault or shutdown state. 2) The AHU kit is in thermo OFF state. 3) The AHU kit is in Cool/Fan/Dry/Auto Cool mode.

No.	Dry contact	Port	Description	
5	Failure output	CN44	If a third-party controller is used and the capacity control mode is input capacity gear value, the port status follows the following logic. Note: The positive or negative logic is set up using the factory-supplied wired controller.	
			Set to positive logic (default)	When the AHU kit triggers fault or alarm d16/d17, the port is closed; when the fault or d16/d17 alarm is released, the port is disconnected.
			Set to negative logic	When the AHU kit triggers fault or alarm d16/d17, the port is disconnected; when the fault or d16/d17 alarm is released, the port is closed.
6	Interlocked air valve signal output	CN46	When the power-on signal is received, the port is closed, and the AHU kit is started 10 seconds later; The AHU kit is shut down and the port is disconnected.	
7	Dehumidifier	CN46	When the following conditions are met, the port is closed and the dehumidifier is started properly. Otherwise, the port is disconnected and the dehumidifier stops running. 1) Capacity control mode = Input set temperature value 2) AHU kit is operating properly in Cool mode; 3) The port detects the existence of a humidity sensor, and the detected ambient relative humidity (RH) is larger than or equal to the value set by the user plus 5%. 4) The difference between the set temperature in Cool mode and the indoor ambient temperature (the value detected by the T1 sensor) ≤ the set value (the maximum drop value of the indoor temperature (T1) in Dry mode, which can be set by the wired controller provided by the factory)	

ERROR CODES AND SPOT CHECK QUERY

1 Error Codes

If the faults listed in the following table are triggered, refer to the relevant maintenance manual for treatment.

Definition	Error codes	Digital display
Emergency stop	A01	
R32 refrigerant leaks, ⚠ **DANGER** requiring shutdown immediately	A11	
Outdoor unit fault	A51	
The fault of the AHU Kit slave unit is sent to the master unit	A74	
Self-check fault	A81	
MS (refrigerant flow direction switching device) fault	A82	
Mode conflict (SDV5 communication protocol adopted)	A91	
1# EEV coil fault	b11	
2# EEV coil fault	b13	
Water level switch alarm	b36	
Duplicate indoor unit address code	C11	
Abnormal communication between the indoor unit and outdoor unit	C21	
Abnormal communication between the indoor unit and wired controller	C51	
Abnormal communication between the indoor unit main control board and display board	C61	
Abnormal communication between the AHU Kit slave unit and master unit	C71	
Number of AHU Kits is not the same as the setting number	C72	
Abnormal communication between the master wired controller and slave wired controller	C76	

Definition	Error codes	Digital display
Abnormal communication between the indoor unit main control board and 1# function expansion board	C77	
Abnormal communication between the indoor unit main control board and 2# function expansion board	C78	
Abnormal communication between the indoor unit main control board and switch module	C79	
The indoor unit is powered off	C81	
Air inlet temperature of the indoor unit is too low in heating mode	d16	
Air inlet temperature of the indoor unit is too high in cooling mode	d17	
T0 (fresh inlet air temperature sensor) short circuit or open circuit	E21	
T1 (indoor unit return air temperature sensor) short circuit or open circuit	E24	
The wired controller temperature sensor fails	E31	
TA (Outlet air temperature sensor) Short circuit or open circuit	E81	
R32 refrigerant leakage sensor fault	EC1	
T2A (heat exchanger liquid pipe temperature sensor) short circuit or open circuit	F01	
T2 (heat exchanger middle temperature sensor) short circuit or open circuit	F11	
T2 (heat exchanger middle temperature sensor) overtemperature protection	F12	
T2B (heat exchanger liquid pipe temperature sensor) short circuit or open circuit	F21	
Low power voltage fault	P52	
Main control board EEPROM fault	P71	
Indoor unit display control board EEPROM fault	P72	
Unit model code not set	U11	
Horsepower code not set	U12	
Mismatch of the AHU Kit capacity HP DIP and the model	U14	
AHU Kit fan speed output voltage DIP error	U15	
Address code not detected	U38	

2 Operating Status Code

Code	Definition	Description
d0	Oil return operation	When the indoor unit is running, and the oil return signal sent by the outdoor unit is received, the indoor unit enters the oil return operation. The indoor unit fan may stop running due to the anti-cold air (If the indoor unit returns oil in the heating mode, it will switch to Cool mode, and the fan will be turned off or run at the lowest speed). The oil return operation lasts for about 4 to 6min.
dd	Mode conflict (SDV6communication protocol adopted)	Trigger reason: The operating mode of the indoor unit is inconsistent with that of the outdoor unit. Solution: Use the controller to reset the operation mode of the indoor unit.
dF	Defrosting	When the indoor unit is in Heat mode and the defrosting signal sent by the outdoor unit is received, the indoor unit enters the DEFROST mode and the indoor unit fan will stop running. After defrosting, the indoor unit may enter the Anti-cold wind mode (the fan is turned off or runs at the lowest speed). The defrosting operation lasts for about 4 to 6min, and may be extended to about 12min when the outdoor temperature is low (< -20 °C).
dH	The outdoor unit operates water heating mode	After the indoor unit receives the water heating signal sent by the outdoor unit, the indoor unit is shut down forcibly. After the outdoor unit exits the water heating operation, the indoor unit resumes normal operation.
d50	Abnormal input signal of AHU kit fan in running state	The fan switch status port of the AHU kit main control board on the SDV6 platform is set to off (the voltage measured by multimeter is DC 12 V).
d61	Remote shutdown	The main control board of the indoor unit and the 1# expansion board are both provided with a remote shutdown port. The default positive logic: When the port is disconnected, the indoor unit can be controlled normally; when the port is closed, the remote shutdown command is received and the indoor unit is shut down. For the positive and negative logic setting method, refer to the Installation and Operation Manual of Wired Controller /1# Expansion Board.
OTA	Main control program upgrading	The main control program of the indoor unit is upgraded remotely. During the upgrade, the indoor unit is shut down, and the main control program runs for about 2 to 3 hours.

3 Check Query

If the faults listed in the following table are triggered, refer to the relevant maintenance manual for treatment.

⚠ CAUTION

The spot check query applies only to factory-supplied controllers or display boxes.

Spot check query of display box

(*): Some models of the controller provided by the factory can be set with 7 fan speeds, and the relationship between the 7 fan speeds and high/medium/low fan speeds is as follows:

⚠ CAUTION

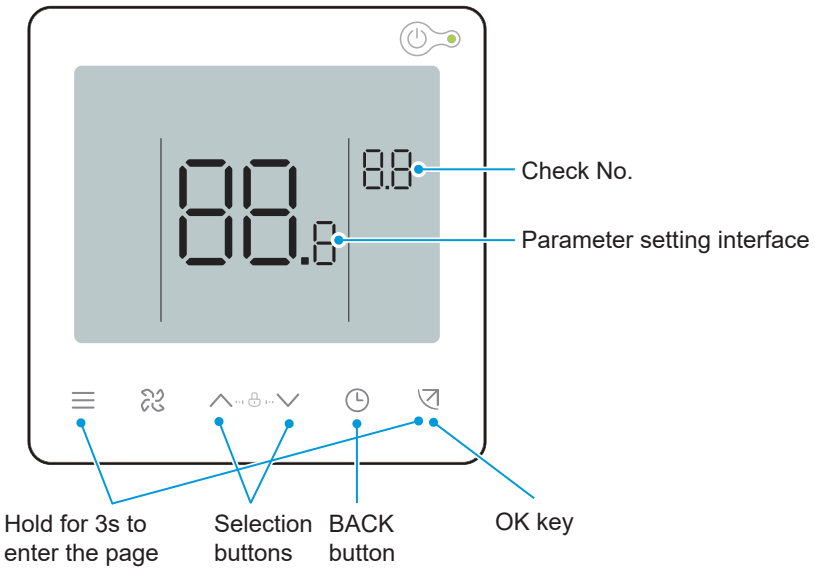
The spot check query of the display box applies only to models which have a Spot Check button on the main control board. After the display box is connected, press Spot Check to enter the spot check interface. When Spot Check is pressed, the spot check list number is increased by one bit and starts from 0 when the value reaches the maximum. After no operation is performed for 10s, the spot check list number automatically returns to 0.

List of Spot Check Information of the Display Box	
No.	Definition
1	Indoor unit address (If there are multiple addresses, they are displayed one by one every 0.5 s)
2	Capacity HP of indoor unit (When multiple units are connected in parallel, the total HP of master and slave units is displayed)
3	Set temperature value or set voltage value
4	Set temperature value or input capacity gear value executed by the program
5	T0 temperature (supply air temperature control) or T1 temperature (return air temperature)
6	T1 temperature after compensation (if not detected, it will be treated as an invalid value, and "99.9" will be displayed)
7	T2 temperature
8	T2A temperature
9	T2B temperature
10	TA temperature (displayed only in supply air temperature control mode; "-- -" is displayed in return air temperature control mode)
11	Set relative humidity ("65" is displayed by default)
12	Real-time relative humidity value detected (if no, "- - -" is displayed)
13	- - -
14	Compressor discharge temperature
15	Target overheating
16	EEV opening degree (actual valve of 500 P value: Displayed opening * 8; actual valve of 3000 P value: Displayed opening * 48)
17	Main control software version No.
18	Display box software version No.
19	----
20	Historical error code (recent)
21	Historical error code (sub-recent)
22	Network address
23	Address of the connected expansion board
24	[———] is displayed

Spot check query of wired controller

Use the factory controller in the accessory package as an example to query the spot check function. The steps are as follows:

1. On the home screen, press and hold MODE and UP at the same time for two seconds to enter the query interface. u00-u03 indicates outdoor units, n00-n63 indicates indoor units, and CC indicates the wired controller. Press ▲ and ▼ to switch the parameter code. Press Swing to enter the parameter query page.
2. Press TIMER to exit the query page. The parameter setting page automatically closes if no button is pressed within 60 seconds.
3. Press ▲ and ▼ to query the parameters. Parameters can be queried cyclically.
4. On the top of the query page, the Timing Area displays the spot check serial number, and the Temperature Area displays the content of the spot check parameters.



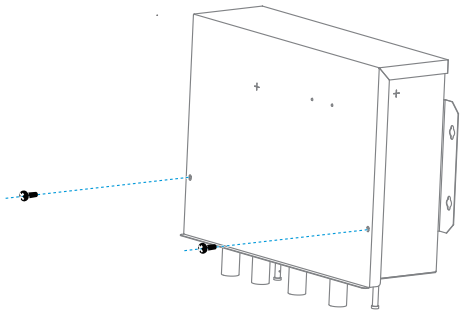
List of Spot Check Information of Wired Controller	
No.	Displayed content
1	Indoor unit address
2	Capacity HP of indoor unit (When multiple units are connected in parallel, the total HP of master and slave units is displayed)
3	Value of the set temperature
4	Set temperature value executed by the program
5	T0 temperature (supply air temperature control) or T1 temperature (return air temperature)
6	T1 temperature after compensation (if not detected, it will be treated as an invalid value, and "99.9" will be displayed)
7	T2 temperature
8	T2A temperature
9	T2B temperature
10	Set relative humidity ("65" is displayed by default)
11	Real-time relative humidity value detected (if no, "- - -" is displayed)
12	TA temperature (if no, "- - -" is displayed)
13	- - -
14	Compressor discharge temperature
15	Target overheating
16	EEV opening display value (actual opening = display opening * 8)
17	Main control software version No.
18	Historical error code (recent)
19	Historical error code (sub-recent)
20	[000] is displayed
21	[———] is displayed

MAINTENANCE AND SERVICE

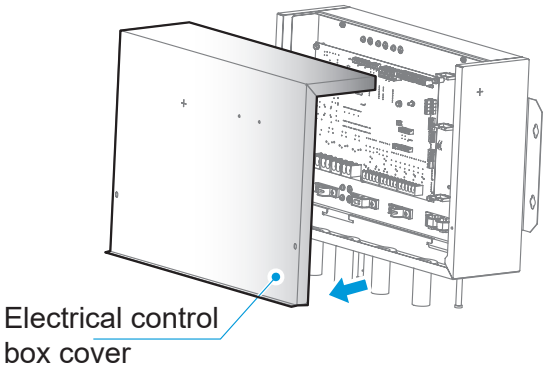
1 Removal of Key Components

Removal of main control board

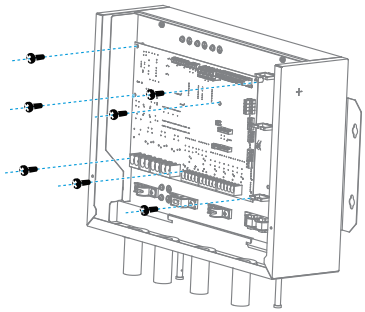
1 Loosen the screws on the electrical control box cover.



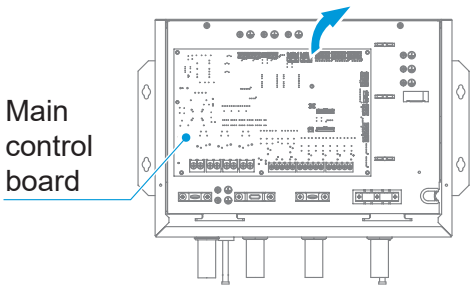
2 Remove the electrical control box cover.



3 Remove the connection cables from the main control board and loosen the screws fixing the main control board in place.



4 Remove the main control board



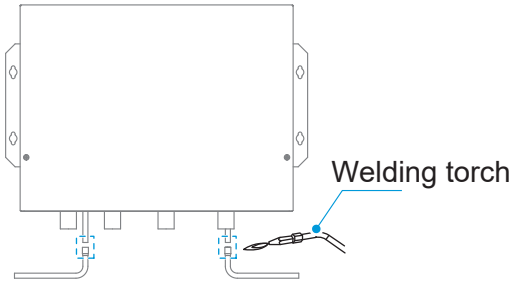
NOTE

The main control board and electronic expansion valve components should be replaced by professional technicians. Any improper operations may cause electric shock or injuries.

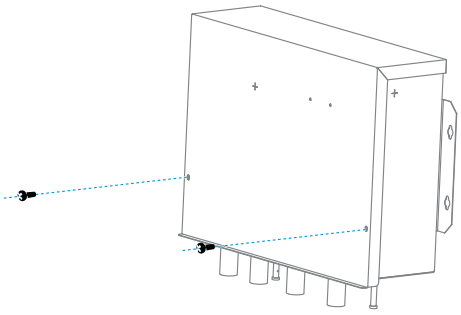
Removal of electronic expansion valve

1 Remove the connecting pipes.

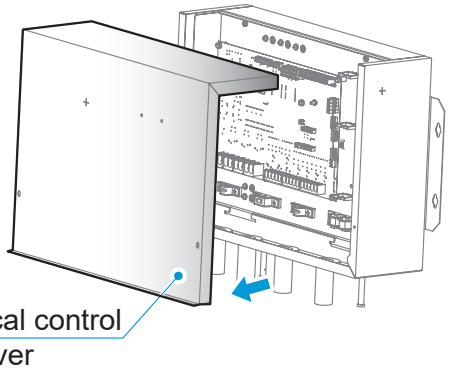
Weld the refrigerant connecting pipes at the nozzle of the electronic expansion valve.



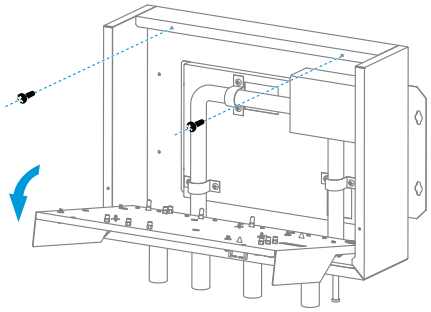
2 Loosen the screws on the electrical control box cover.



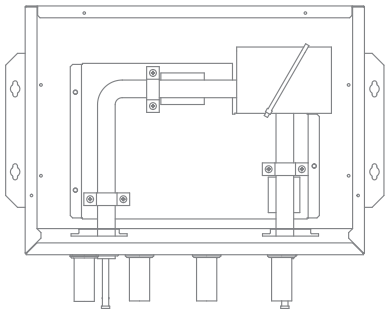
3 Remove the electrical control box cover.



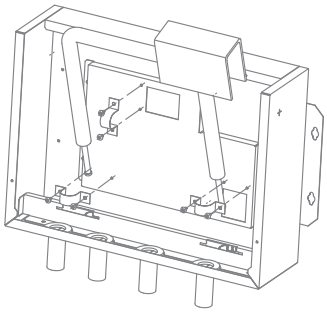
4 Remove the screws fixing the electrical control mounting board and the coil terminals of the electronic expansion valve in place, and turn the electrical control mounting board downward.



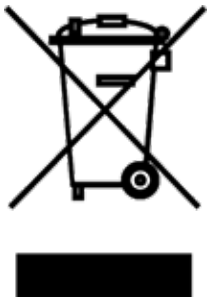
5 Remove the electrical control mounting board.



6 Remove the clip fixing the electronic expansion valve components, and then remove the electronic expansion valve component.



NOTE CONCERNING PROTECTION OF ENVIRONMENT



This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

INFORMATION CONCERNING USED REFRIGERANT MEDIUM

This unit is containing fluorinated gases included in the Kyoto protocol.
The maintenance and the liquidation must be carried out by qualified personnel.
Type of refrigerant: R32/R410a
The composition of the cooling medium R32: (100% HFC-32)
The composition of the cooling medium R410a: (50% HFC-32, 50% HFC-125)
The quantity of the refrigerant: Please see the unit label.
The value GWP of R32: 675 (1 kg R32 = 0,675 t CO_2 eq)
The value GWP of R410a: 2088 (1kg R410a=2,088t CO_2 eq)
GWP = Global Warming Potential
NOTE: Indoor unit can use R32 and R410a, it depence on outdoor unit.

 Appliance filled with flammable gas R32.

In case of quality problem or other please contact your local supplier or authorized service center.
Emergency number: 112

PRODUCER

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