



INSTALLATION & OPERATION MANUAL

Installation & Operation Manual

MINI VRF (Lengyan series)



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No.:

Application Form for Debugging Household Inverter VRF Air Conditioning Unit by Installer		
Full name of installer: _____		
Address of installer: _____		
Owner's name or employer: _____		
Person to contact: _____		Tel: _____
Installation site: _____ Province City _____		
Unit model: _____		
IDU bar code: _____		
ODU bar code: _____		
Distributor: _____	Person to contact: _____	
Tel: _____	Fax: _____	
Installer: _____	Person to contact: _____	
Tel: _____	Fax: _____	
<p>The following items are to be filled by the installer correctly, so that the debugging can be arranged in due time. In case the form contents are different from the real situation, causing the experts unlikely to conduct debugging on site, the installer must be liable for labor and travelling expenses incurred to the debugging experts.</p>		
<p>Contents to be Checked and Confirmed by Installer <u>Before installation, ask the installer to carefully read through the manuals and relevant requirements attached to the unit.</u></p>		
1. Check installation position		
a. Whether heat dissipation and ventilation for ODU meets requirements for distance	Yes ()	No ()
b. Whether ODU is installed on a base firmly and with vibration damping measures applied	Yes ()	No ()
c. Whether IDU is provided with vibration damping measures and properly fastened	Yes ()	No ()
d. Whether there is space for maintenance	Yes ()	No ()
2. Check electrical system before installation		
a. Whether air switch capacity and power wire diameter meet unit requirements	Yes ()	No ()
b. Whether correctly wired and whether wiring terminal is pressed and completely connected	Yes ()	No ()
c. Whether neutral line and grounding wire are connected in accordance with electrical codes	Yes ()	No ()
d. Whether the distribution of control wire and power wire meets anti-interference requirements	Yes ()	No ()
e. Whether the length of control wire and power wire is proper	Yes ()	No ()
3. Check refrigerating system before installation		
a. Whether refrigerant duct meets factory requirements in terms of its diameter and thickness	Yes ()	No ()
b. Whether the length of refrigerant duct meets relevant requirements	Yes ()	No ()

c. Whether added nitrogen for welding refrigerant duct to protect air conditioning unit	Yes ()	No ()
d. Whether cleaned refrigerant duct	Yes ()	No ()
e. Whether used nitrogen for holding pressure to test leakage	Yes ()	No ()
f. Whether vacuumized refrigerating system against installation manual	Yes ()	No ()
g. Whether supplemented refrigerant according to standard	Yes ()	No ()

NANJING TICA CLIMATE SOLUTIONS CO., LTD.

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Application Form for Debugging Household Inverter VRF Air Conditioning Unit by Installer

4. Check air duct system before installation		
a. Whether the installation of air duct system is designed by professionals	Yes ()	No ()
b. Whether external residual pressure matched actual resistance of air duct	Yes ()	No ()
c. Whether air duct system is provided with static pressure box for air supply and return	Yes ()	No ()
d. Whether air flow organization of indoor air supply and return is reasonable	Yes ()	No ()
e. Whether air duct is insulated	Yes ()	No ()
f. Whether air valve is reasonably set	Yes ()	No ()
h. Whether return air inlet or IDU is equipped with filter and make sure they are clean	Yes ()	No ()
i. Whether equipped with air return duct in the case of ceiling air return	Yes ()	No ()
j. Whether there is fresh air device	Yes ()	No ()
k. Air supply and return mode: 1 bottom air supply and side air return: 2 side air supply and side air return	Yes ()	No ()
5. Check indoor condensate water system before installation		
a. Pour water into drain pan to check whether condensate water could be discharged smoothly and whether there is leakage	Yes ()	No ()
b. Check whether condensate water pipe is tightly sealed to prevent condensation on the surface of pipe	Yes ()	No ()
c. Whether water trap is designed in accordance with the manual attached to the unit	Yes ()	No ()
6. Preparation before debugging		
a. Whether power voltage is $\pm 10\%$ of the normal range	Yes ()	No ()
b. Ensure the power is not temporary	Yes ()	No ()
c. Whether the clients and Party A's inspection experts are in place in time	Yes ()	No ()
d. Whether there are sufficient facilities (ladder and lifting table etc.) to ensure normal work of operators	Yes ()	No ()
e. Whether the unit is pre-heated for 24 hours before powering on for debugging	Yes ()	No ()
7. Other circumstances		
Date of requiring debugging: _____ Before date _____ month _____ year _____		
Applicant (seal):		
Signature: Date:		

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Safety Precautions



Caution: Read this manual carefully before installation and use of the unit.

The following standard is applied to this product:

GB/T 18837-2015 GB4706.1-2005

This installation manual is applied to TICA TIMS series household R410A inverter VRF air conditioning units. The manual is subject to change based on improvement on air conditioners without further notice.

Preparation before installation

- Installation shall be left to a licensed professional. Users shall not install, repair or displace the air conditioning unit by themselves.
- Be sure to use a dedicated power circuit. Make sure the supply voltage fluctuates within $\pm 10\%$ of rated voltage. Power supply should be separate from welding transformer because the latter may cause large voltage fluctuation.
- Get a licensed electrician to install the unit according to national and local power standard, and to check whether line capacity meets requirements and whether power lines are loose or damaged.
- "Electrical control schematic diagram" is attached to the back side of cover plate of ODU control box. Please keep the manual properly for further reference.

Precautions during installation

- Do not touch heat exchanger fins. Otherwise, it may cause damage to the fins or reduced performance for the unit or finger injury.

- The cover plate for control box must be fastened to prevent incoming of dust and water. The electrical parts must be waterproof and away from water sources, otherwise electric shock or fire may be caused.

- After installation, be sure to make an air tightness check whether there is pipeline leakage.

Precautions for using R410A refrigerant devices

- Please supplement refrigerating system with liquid refrigerant. In the case of gaseous refrigerant, composition of refrigerant in the system may change.
- Do not mix into other refrigerants.
- Do not use the following tools ever used for common refrigerants (such as R22): pipeline pressure test devices, filling hoses, leakage detection devices, refrigerant filling base, and refrigerant recovery devices.
- Make sure to use vacuum pump dedicated for R410A series.

Precautions at trial operation

- When the system is powered on for the first time

or after being left unused for a long time, ODU power must be connected 24 hours before use. Otherwise, the compressor may be burnt (make sure the air conditioner is in standby mode at the seasons they are needed most).

- Do not turn on the air conditioner when the panel or protection screen is removed. The moving parts inside the air conditioner may hurt people or other objects.

- Do not touch refrigerant pipeline during operation or just at the end of operation.

The pipeline of the air conditioner may be very hot or cold during its operation, which may lead to scald or frostbite.

- Do not turn off power immediately after the unit stops. Wait at least for five minutes, otherwise water leakage may occur.

- Please cut off general power supply during seasons the air conditioners are not used, so as to prolong the service life and save energy.

- All the IDUs and ODUs of the same system must be supplied with power simultaneously.

Installation of ODU

Standard model

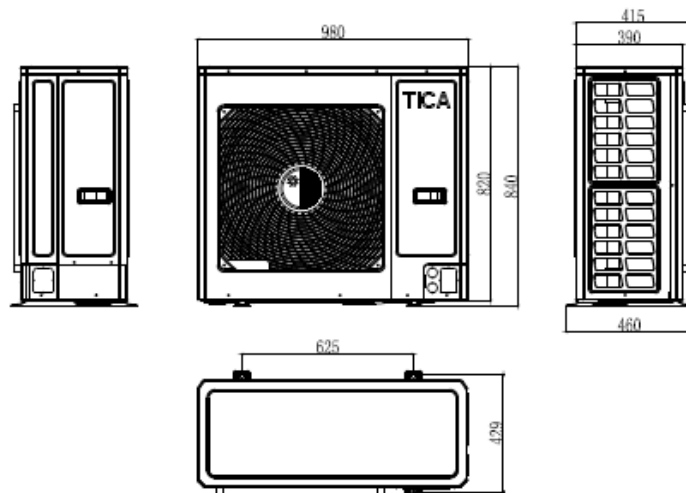
ODU capacity is indicated by its cooling capacity with the unit kW

Model	TIMS100AHT	TIMS125AHT	TIMS140AHT	TIMS160AHT	TIMS180AHT	TIMS180AHT	TIMS200AHTA
Cooling capacity	10.0	12.5	14.0	16.0	18.0	18.0	20.0
Maximum number of IDUs	5	6	7	8	9	9	10

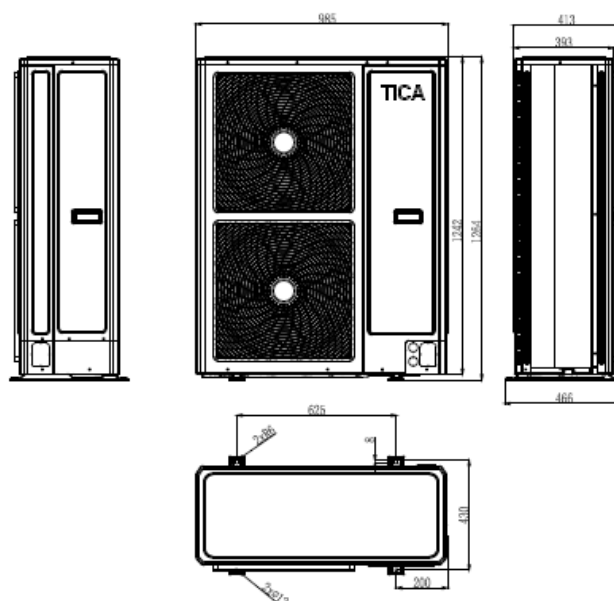
AHTA—The suffix 'A':3N-380V 50Hz

Dimensions

TIMS100/125/140/160AHT



TIMS180AHT/TIMS180/200AHTA



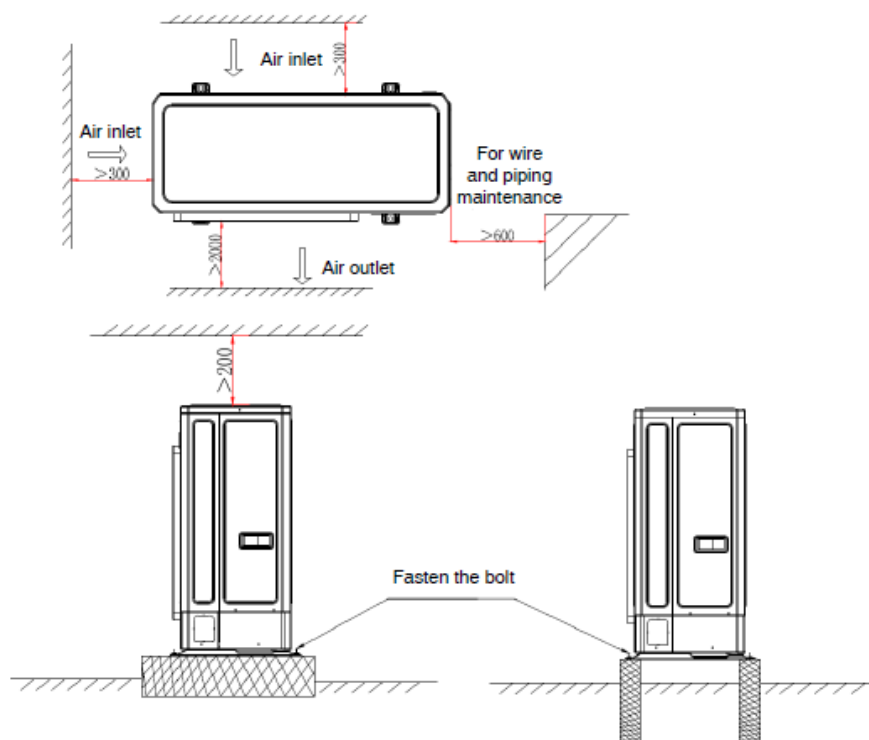
Installation space

Requirements for installation position

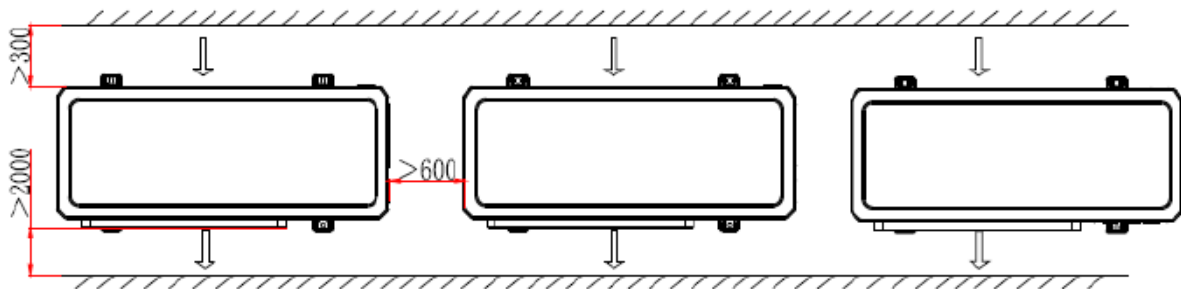
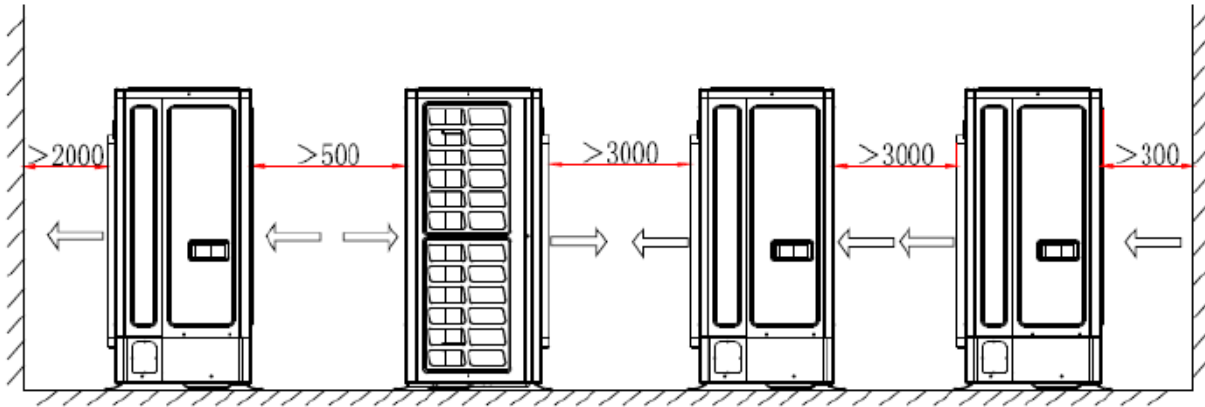
- The installation position shall have sufficient strength to bear the unit weight and its vibration during operation. If the ODU is installed on a roof, make sure the roof is strong enough and water-proof.
- The ODU shall be installed in a well ventilated place to ensure good heat exchange.
- Places unsuitable for installation:
 - ▲ The place where acid or alkaline substance or corrosive gas (e.g., sulfur dioxide and hydrogen sulfide) may be produced, easily corroding the unit and leading to refrigerant leakage.
- Places where air conditioning units must not be installed:
 - ▲ The place where flammable gas or volatile combustibles may be produced. If flammable gas leaks and accumulates around the unit, the unit may explode.
 - ▲ Do not install the ODU where it is exposed directly to strong wind or typhoon. When conditions permit, add auxiliary equipment to prevent water, snow or direct sunshine.

Requirements for ODU installation space:

- Make sure there is enough space above the unit.
- The side with TICA symbol attached shall be the front side of ODU.
- The space required for installing or maintaining an ODU is shown in the following figure.



Installation of ODU

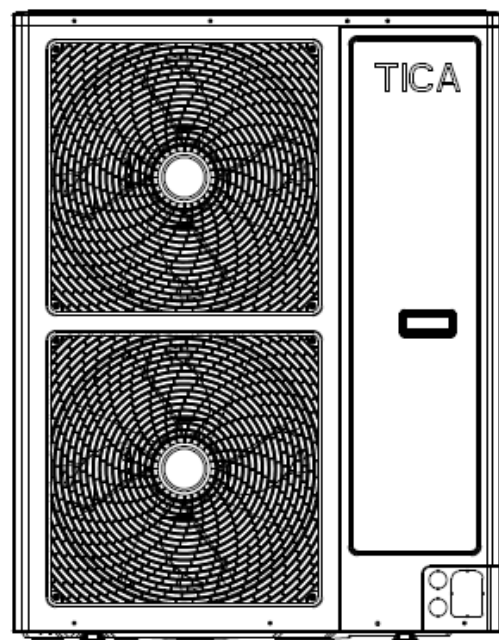
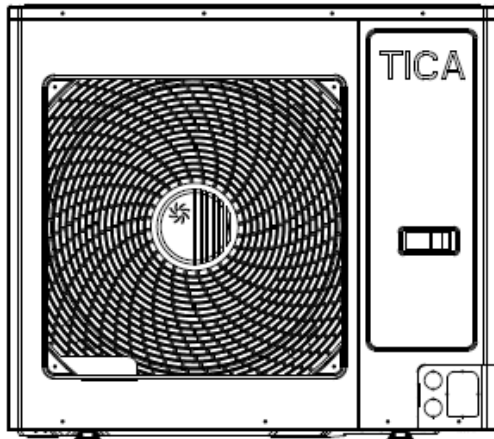


Installation of ODU

Handling

Caution:

- Fragile and handle with care.
- The degree of inclination shall not exceed 30° while handling (do not put the unit on its side).
- Keep heat exchange fins safe while handling and installing the unit. In case of any damages, please use fin comb to fix it up.
- Properly dispose of packaging bags and prevent kids from playing with them.

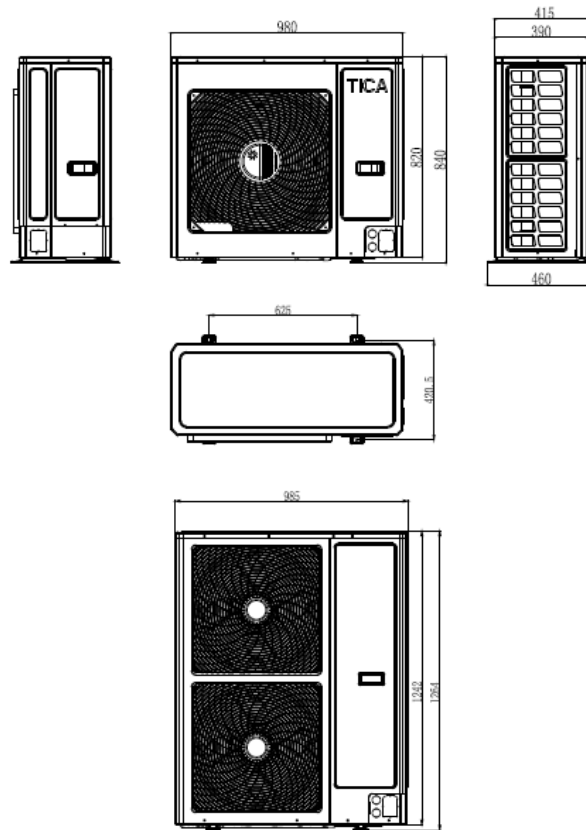


- Use forklift to handle: be careful when inserting the fork into the pocket at the bottom, and prevent fork from damaging the unit or the unit bottom.
- Use crane to handle: tighten hoisting rope according to what is shown in the figure, and keep the unit weight even during hoisting.
- Use two hoisting ropes at least 8 m long and about 20 mm in diameter to support the unit weight. Do not use tying band of the unit for handling.
- After the wooden framework is removed: use paper or cloth as pad between hoisting rope and the unit to prevent damages to the unit body.

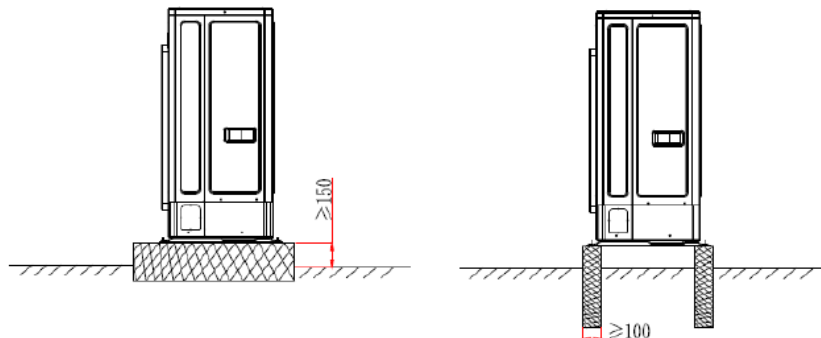
Placement

- Make sure the ODU is placed firmly at a level place to prevent vibration and noises.
- Use a base larger than the width of ODU's support legs (66 mm) to support the unit.
- The shock-absorbing pads shall cover the entire bearing surface of the base.
- The unit base shall be at least 200 mm higher above the ground.
- Around the base there should be drain to ensure that the condensate water generated during operation could flow out.

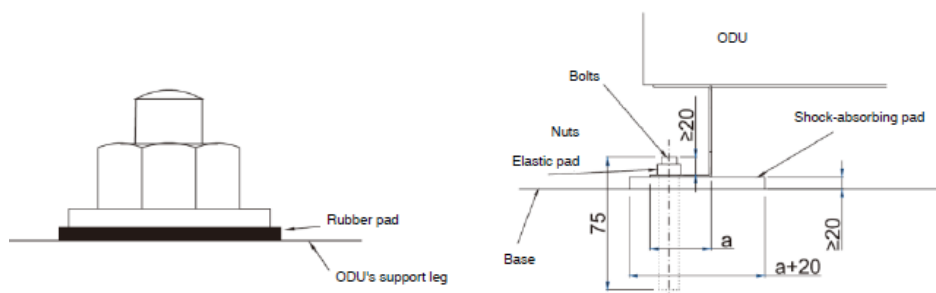
Installation of ODU



- Concrete foundation: the foundation shall be above the ground for at least 150 mm.



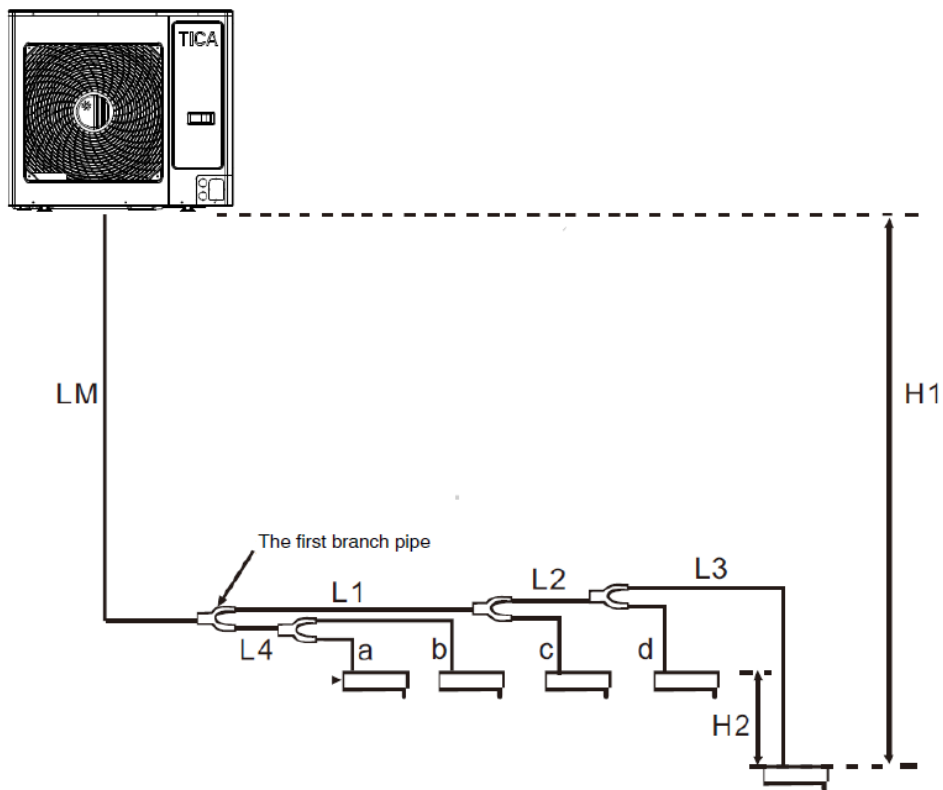
- Use anchor bolts, nuts and pads to fasten the ODU tightly to the base. Caution: shock-absorbing pads need to cover the entire bottom of the unit, and the pad thickness is greater than or equal to 20 mm.
- For anti-corrosive models: use rubber pads. If the nut joints get loose, the unit will not be corrosion proof.



Installation of refrigerant piping

Caution:

- Use clean piping that is free from dust, moisture or any other substances.
- Store all the pipelines needed for installation indoors, and keep two ends of pipelines sealed till welding.
- Pass copper pipes into the holes at wall and seal the holes to prevent dirt coming in.
- Do not do ODU piping work on rainy days, lest that moisture and dirt would enter the pipelines.
- Try to reduce bended piping and use bends with larger radius.
- When connecting refrigerant piping, the stop valve of ODU shall be closed completely after refrigerant piping between ODU and IDU is done, and refrigerant leakage test and vacuumizing process are finished.



Installation of refrigerant piping

	Limits (allowable values)	Remarks
H1*1	When the ODU is at the upper position: ≤ 30 m When the ODU is at the lower position: ≤ 20 m	
H2*1	≤ 8 m	
The longest piping distance from the first branch pipe	≤ 20 m (equivalent)	L1+L2+L3
LM	≤ 50 m (actual)	When the equivalent length of liquid side and gaseous side is greater than or equal to 90 m, increase the length of main pipe at gaseous side
The longest piping distance	≤ 60 m (actual), 70 m (equivalent)	LM+L1+L2+L3
L3	≤ 15 m (equivalent)	L1, a, b, c, d
Total length	Total length ≤ 100 m (actual)	LM+L1+L2+L3+a+b+c+d

*1: Contact TICA's engineers when exceeding the above limits.

*2. The total refrigerant quantity of the unit should not be greater than 6.5 kg, otherwise the unit may fail to operate safely and reliably. Please consult TICA's engineers for details.

Diameters of refrigerant piping

The copper pipe for main pipelines in the figure shall have the sizes chosen from the following table based on the total capacity of ODUs at the upper reaches

ODU Capacity	Air side + liquid side equivalent length < 90 m		Air side + liquid side equivalent length ≥ 90 m	
	Liquid pipe (mm)	Gas pipe (mm)	Liquid pipe (mm)	Gas pipe (mm)
TIMS100AHT	9.52	15.88	9.52	15.88
TIMS125AHT	9.52	15.88	9.52	15.88
TIMS140AHT	9.52	15.88	9.52	19.05
TIMS160AHT	9.52	15.88	9.52	19.05
TIMS180AHT	9.52	19.05	9.52	19.05
TIMS180AHTA	9.52	19.05	9.52	19.05
TIMS200AHTA	9.52	19.05	9.52	19.05

Installation of refrigerant piping

- The piping between the last-level branch pipe and IDU shall have the same sizes with IDU piping.
- The piping between branch pipes shall be based on the total capacity of downstream IDUs connected to the piping.

Total capacity of connected IDUs	Liquid pipe specifications (mm)	Air pipe specifications (mm)
$X < 16.8$	$\phi 9.52$	$\phi 15.88$
$16.8 \leq X < 22.5$	$\phi 9.52$	$\phi 19.05$

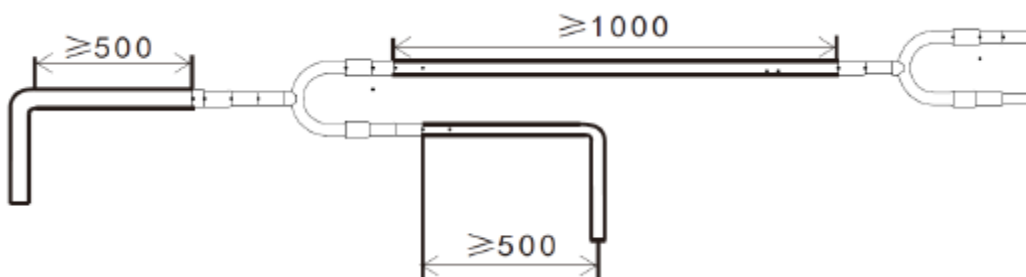
Remarks: The size of the piping between branch pipes shall not be greater than that of cooper pipe at Place A in the figure above.

Installation of branch pipes


- Branch pipes shall be selected based on the total capacity of downstream IDUs connected:

Total capacity of downstream IDUs connected to branch pipes	Model of branch pipes
$X < 16.8$	TBP4022TA
$16.8 \leq X < 22.5$	TBP4022TA

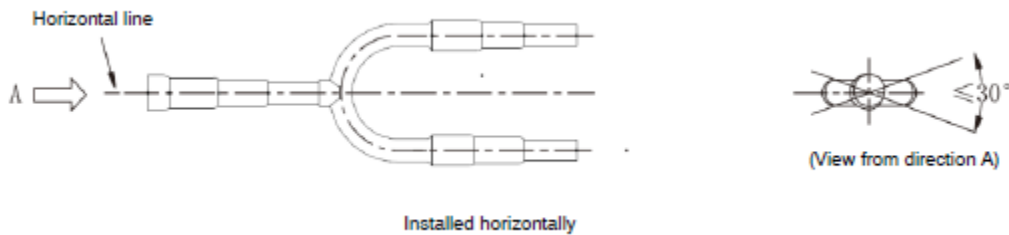
The model of branch pipe components and the diameter of main pipe and branch pipe shall be confirmed against working drawings and installation instructions. There should not be sharp turns (90° angle) or other branch pipe components falling within 500 mm of branch pipe components. The straight pipe distance between two adjacent branch pipes shall not be less than 1000 mm.



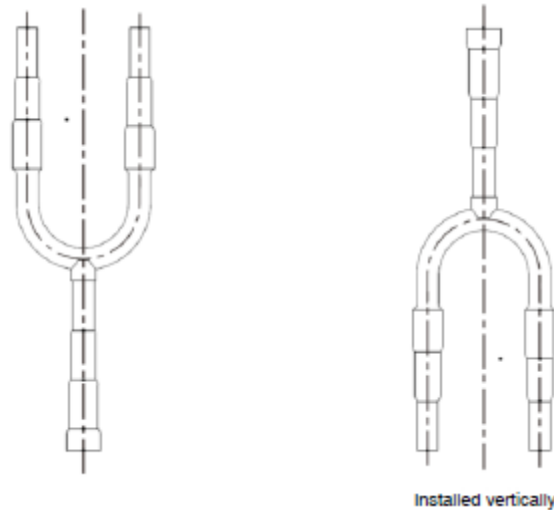
Installation of refrigerant piping

 Branch pipes can be vertically or horizontally installed and as close as possible to the IDU.

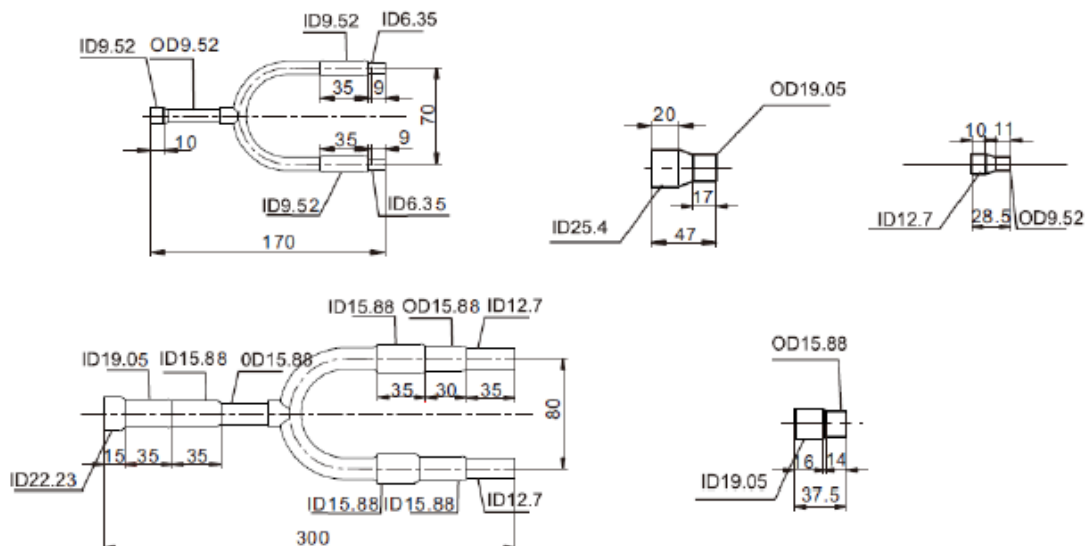
When installed horizontally, the angle shall be between $\pm 15^\circ$.



See the following figure when branch pipes are installed vertically.



- Size of branch pipes:
TBP4022TA



Installation of refrigerant piping

Limits for refrigerant piping

Capacity combination

$$80\% \leq \frac{\Sigma \text{ Rated cooling capacity of IDU}}{\text{Rated cooling capacity of ODU}} \leq 130\%$$

Remarks: It is recommended that the above value shall not be greater than 100% when selecting models. For scenarios with lower simultaneous usage coefficient, the above value may exceed 100%.

Unit capacity		Single unit
Maximum actual (equivalent) piping length		≤ 80 (100) m
Level difference	Level difference between IDU and ODU	H1 ≤ 30 m (when the ODU is at the upper position) H1 ≤ 20 m (when the ODU is at the lower position)
	Level difference among IDUs	H2 ≤ 8 m

Note (1): Equivalent length is the converted length after taking into account of pressure losses at elbows.

Equivalent length = actual pipe length + number of elbows × equivalent length of each elbow

Equivalent length of every place of branch pipe is 0.5 m, and please refer to the following table for equivalent length of elbows.

Pipe diameter	Equivalent length
	Elbow (m)
φ 9.52	0.18
φ 12.7	0.2
φ 15.88	0.25
φ 19.05	0.35

Precautions when breaking through the knockout

- Do not damage the unit shell when trying to break through the knockout.
- Ensure the hole to be trimmed after being broke through with a hammer, and protect it from corrosion by painting.
- When passing the wire through knockout, put grommet in the hole or wrap wires with adhesive tape for protection.

Air tightness test, vacuuming and supplementing refrigerant

For TIMS units, vacuum pump, pressure gauge, compound pressure gauge and charging hose used for R410A refrigerant are different from those used for R22 refrigerant. Make sure to use R410A dedicated tools.

Air tightness test

Caution:

- After piping work is completed, make sure to do air tightness test for IDU and piping.
- Do not use flammable gas or air (oxygen) as pressurized gas, otherwise fire or explosion may be caused; use nitrogen only.

Steps:

Step 1: Increase pressure by 0.3 MPa for three minutes, and check whether there are major leakage points.

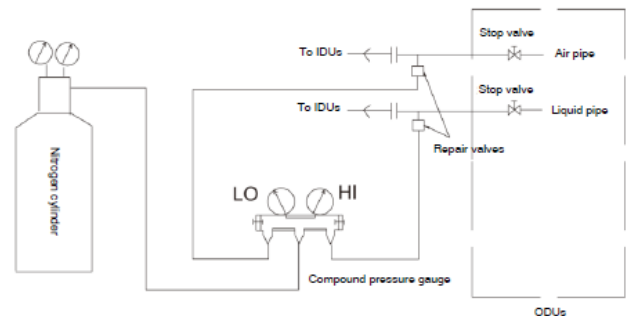
Step 2: Continue to increase pressure to 1.5 MPa for three minutes, and check whether there are minor leakage points.


Step 3: Continue to increase pressure to 4.0 MPa for 24 hours, and check whether there are micro leakage points

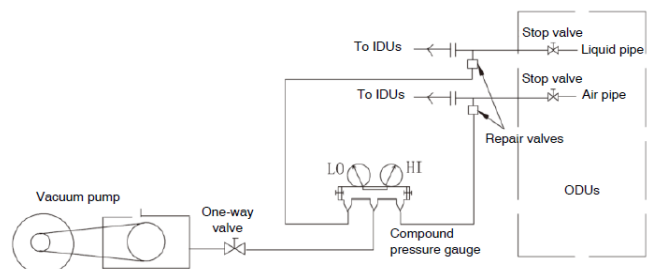
Vacuuming

Caution:

- Use vacuum pump with volume above 4 L/s. The vacuum degree must support -755 mmHg and lower.
- To prevent lubricating oil from flowing in the reverse direction to refrigerant system, use vacuum pump with electronic one-way valve.



 Use nitrogen in air tightness test instead of oxygen, flammable and toxic gas, or water. Use R410A dedicated pressure gauge, with measuring range above 4.5 MPa. Connect high pressure pipe and low pressure pipe and increase pressure for them at the same time, without connecting to ODU. After passing air tightness test, if not used immediately, release system pressure to 0.2-0.3 MPa and then seal it.



Air tightness test, vacuuming and supplementing refrigerant

- Vacuum air pipe and liquid pipe at the same time. Before vacuuming, make sure again that stop valves at air and liquid sides of IDUs are closed.
- Use R410A dedicated tools, such as pressure gauge and liquid supplementing pipe.

Supplementing refrigerant

Principles:

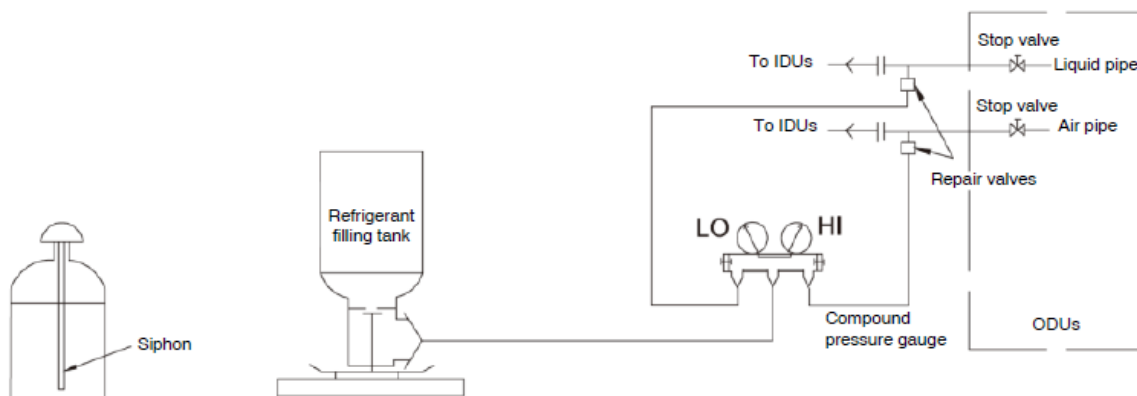
Before delivery, the ODU's have been filled with a certain amount of refrigerant, but which cannot meet the needs of extended pipes. So refrigerant has to be added according to the actual length of refrigerant piping at installation site.

Steps:

- Close compound pressure gauge, replace vacuum pump with filling tank connected with charging pipe. Make sure the air is drained completely, and connect the joints of filling tanks and put the tank mouth down on the platform scale.
- Set the quantity to be filled at the electronic scale, and successively open the valve of filling tank and valve of compound pressure gauge to fill the system with refrigerant. When reaching the limits, immediately close valve of filling tank and disconnect connection pipes.

Caution:

- For refrigerant tank with siphon: the tank needs not to be put upside down because the siphon can reach the tank bottom.
- If using R410A filling tank without siphon, make sure the tank is put upside down in the filling process, which is shown as below



Calculation of amount to be filled (R410A):

Liquid pipe diameter (mm)	6.35	9.52	12.7
Supplemented refrigerant quantity (g/m)	22	54	110

Supplemented refrigerant quantity = Σ liquid pipe length at various diameters \times supplemented refrigerant quantity per meter \times 0.8

Electrical control installation

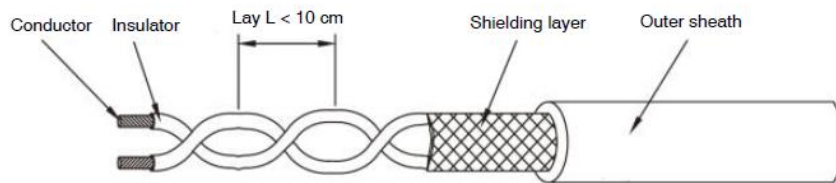
Wiring cautions

Cautions for power wiring

- Use copper wire as power wire and do not make it too tight.
- All the IDUs and ODUs of the same system must be supplied with power simultaneously.
- The distribution box shall be provided with a set of electric leakage protection device and air switch for each module.
- Make sure all the earth lines of the unit are connected to ground securely. Do not connect earth lines to lightning devices, telephone line, gas pipe or tap water pipe. Improper grounding may cause electrical shock or fire.

Cautions for communication line wiring

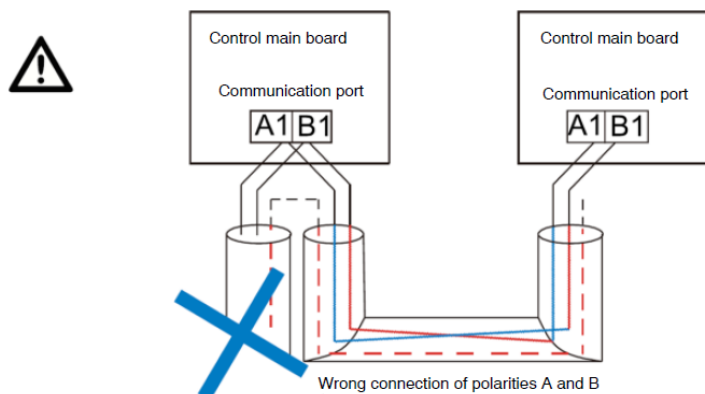
- TICS series household inverter VRF air conditioning unit has both high voltage (power) line and control (communication) line. Do not connect power line to the connecting terminal of communication cables!
- The total length of communication line is less than 1000 m. The shielding layer of communication line must be connected to earth lines of each module and IDUs securely.



Legends of shielded twisted pair

- Communication lines are well connected before power on.
- Do not remove the power plug with power on, lest the communication chips would be damaged. To prevent high voltage signal from disturbing control signal, shielded twisted pair must be used.
- Try to select shielded twisted pair with dense shielding layers and smaller lay. Control signal has two polarities A and B, and different polarities cannot be connected, otherwise communication failures may be caused;

As shown in the figure below.



- When power line is parallel with communication line, they shall be covered by respective conduits and kept at some distance away.

Electrical control installation

Wiring specifications

Notes:

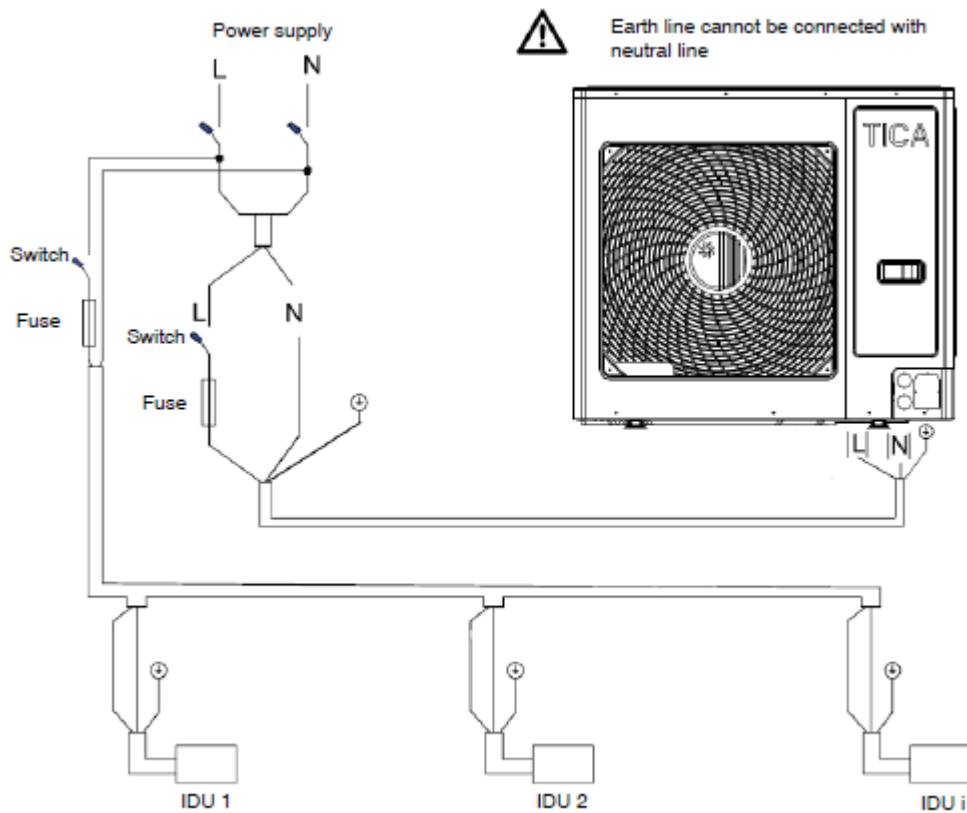
- As wires need to be bent during installation process, it is recommended to use flexible wires, otherwise installation may fail.
- The parameters in the table below are corresponding to multiple strands of flexible copper wires. If other wires are selected, please refer to electrician's manual based on wiring current provided in the table.
- For safety purpose, do not carry out wiring work based on rated current, for the operating conditions may be varied with seasons.

Table of ODU wiring specification

ODU model	Power supply	Voltage range (V)	General power line	Fuse circuit breaker (A)	Communication line
TIMS100AHT	Single phase 220V/50Hz	198/242	3×4 mm ²	32	0.75-1.25 mm ² polyethylene shielded twisted pair
TIMS125AHT		198/242	3×4 mm ²	32	
TIMS140AHT		198/242	3×6 mm ²	40	
TIMS160AHT		198/242	3×6 mm ²	40	
TIMS180AHT		198/242	3×6 mm ²	40	
TIMS180AHTA	Three phase 380V/50Hz	342/418	5×4 mm ²	20	
TIMS200AHTA		342/418	5×4 mm ²	20	

Electrical control installation

Electrical wiring



Communication wiring

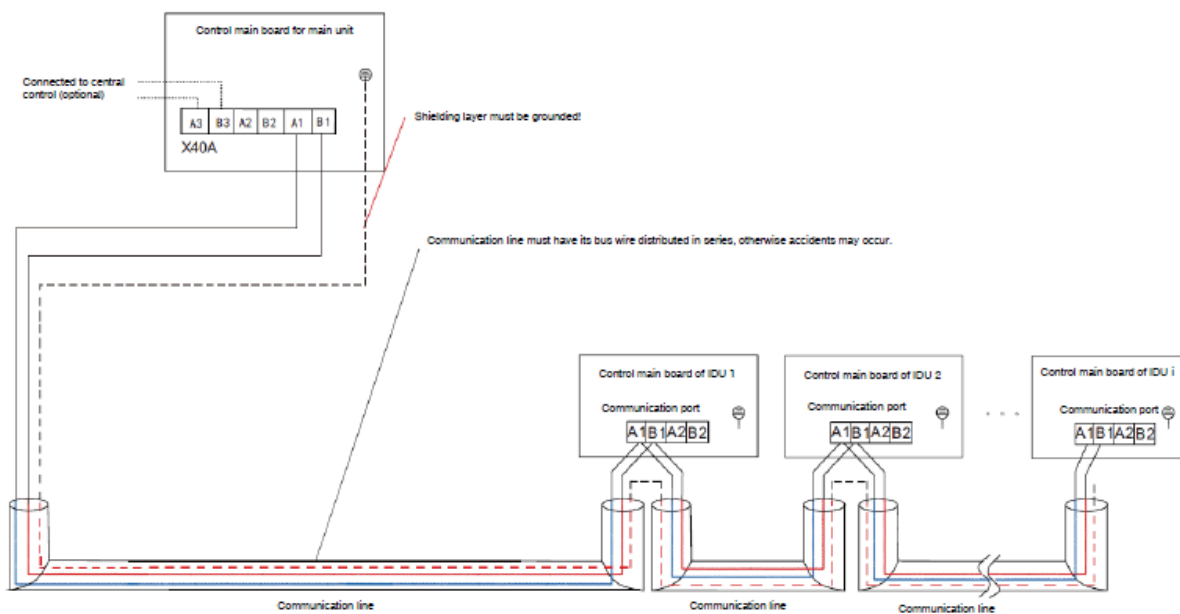
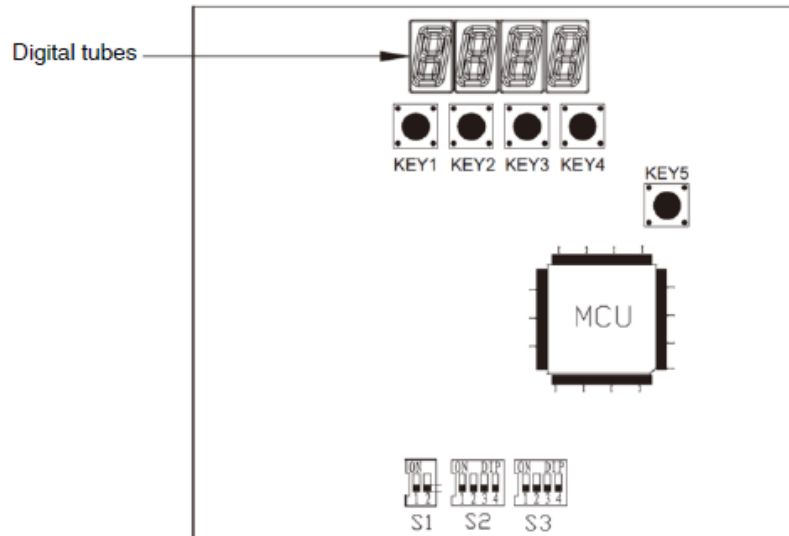


Illustration on control board of ODUs



Code settings

Notes:



- "0" for the status above, and "1" when dialed to the "ON" position.
 - Description on ODU address setting: based on the specific situation after installation is completed.
 - The unit must be powered on again after the DIP switch is reset.
 - ODU capacity code has been set properly before delivery. Please check whether the setting is right.
- S1: ODU capacity code (reserved)

Illustration on control board of ODUs

- S2: System set DIP switch

No.	Function	Dialed to "0"	Dialed to "1"
S2-1	Main unit/ secondary unit	Secondary unit	Main unit

Remarks: When there are not any modules in series, DIP switch must be "1".

- S3: DIP switch of ODU capacity

	S3			
	1	2	3	4
TIMS100AHT	0	0	1	1
TIMS125AHT	0	1	0	0
TIMS140AHT	0	1	0	1
TIMS160AHT	0	1	1	0
TIMS180AHT(A)	0	1	1	1
TIMS200AHTA	1	0	0	0

For example, if ODU capacity is 14 kW, DIP switch of S3 is 0101, please refer to the figure on the right for specific positions of DIP switch:



Illustration on control board of ODUs

Settings of relevant keys

1) Contents

1. SP03: setting of addresses of equipment for centralized monitoring;
2. SP04: setting of centralized monitoring of baud rate;
3. SP05: reserved
4. SP06: reserved
5. SP07: selecting of compressor drive manufacturer;
6. SP08: selecting of fan drive manufacturer;
7. SP09: selecting of silent mode

2) Buttons and corresponding label Buttons: KEY1, KEY2, KEY3, KEY4 and KEY5 Shown icons:

1. dP04 Parameter setting function number
2. SP** Indicates parameter number, ** indicates specific parameter number (01, 02, -07, 08, 09)
3. Ar** Indicates addresses of equipment for centralized monitoring, and ** indicates specific address (01, 02, ...07, 08, 09)
4. b*** Indicates centralized baud rate, and *** indicates specific address (12, 24, 48, 96, 192), which corresponding to the baud rate of 1200, 2400, 4800, 9600 and 19200, respectively.
7. SP07 and SP08 are for system hardware settings, please leave them unchanged (SH-0 for standard configuration).
8. qoFF: silent off mode; qon1: automatic silent mode; qon2: combination of compulsory silent mode and automatic silent mode.

Illustration on control board of ODU

Settings of relevant buttons:

Contents

3. Description of specific operations

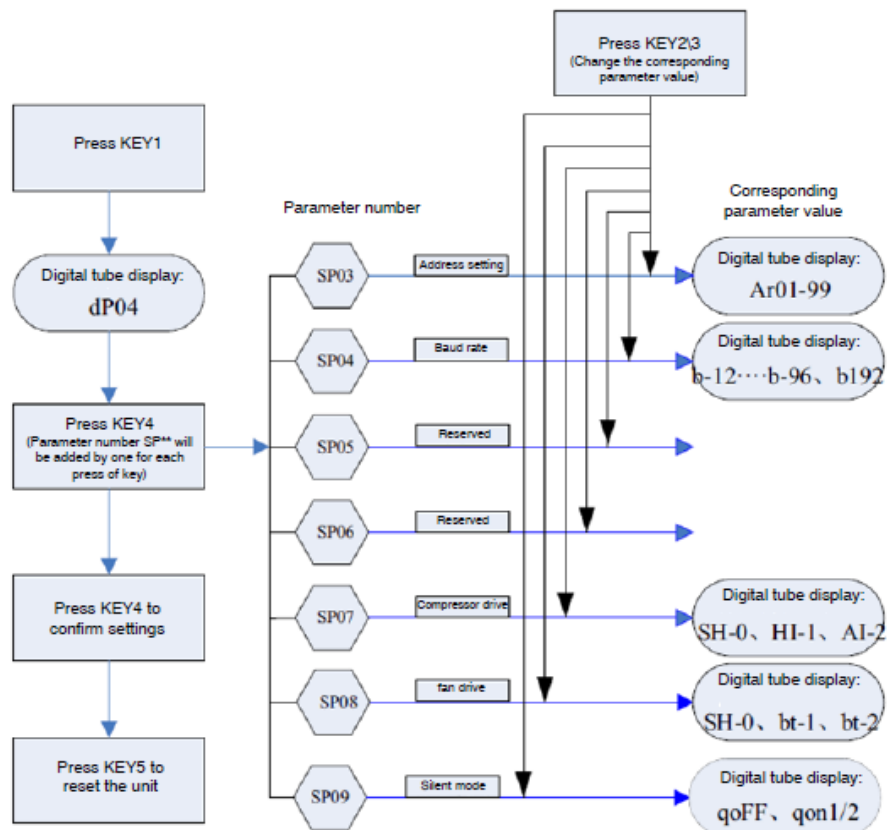


Illustration on control board of ODU_s

Digital tube display

- Description of contents displayed on digital tubes

Note	0	1	2	3	4	5	6	7	8	9
Digital tube display	0	1	2	3	4	5	6	7	8	9
Note	A	B	C	D	E	F	G	H	I	J
Digital tube display	A	B	C	D	E	F	G	H	I	J
Note	L	N	O	P	R	S	T	U	Y	
Digital tube display	L	N	O	P	R	S	T	U	Y	

When operation mode varies, digital tube will display the new mode correspondingly; normally it will display this mode for five seconds before displaying real-time clock; in the case of malfunctions, it will display the current malfunction code.

- Table of fault codes of digital tubes

Code	Content	Handling by the Machine
E000	Disconnection of INV high pressure switch	ODU stops
E001	FAN drive fault	Compressor stops
E002	Reserved	Reserved
E003	Reserved	Reserved
E004	INV drive communication fault	Compressor stops
E005	FAN drive communication fault	Compressor stops
E006	INV drive overheat fault	Compressor stops
E007	INV drive fault	Compressor stops
E008	THo1 fault of ambient temperature sensor	Protection runs
E009	Tho2 fault of compressor exhaust temperature sensor	ODU stops
E010	THo3 fault of temperature sensor at the middle part of outdoor heat exchanger	ODU stops
E011	THo4 fault of inlet temperature sensor at the auxiliary side of plate heat exchanger	Protection runs
E012	THo5 fault of outlet temperature sensor at the auxiliary side of plate heat exchanger	Protection runs
E013	THo6 fault of outlet temperature sensor at the main side of plate heat exchanger	Protection runs
E014	THo7 fault of temperature sensor of defrosting temperature point	ODU stops

Illustration on control board of ODUs

Code	Content	Handling by the Machine
E015	Reserved	/
E016	Reserved	/
E017	Reserved	1
E018	INV compressor overload	ODU stops
E019	Whole unit current overload	ODU stops
E020	Abnormal capacity distribution between IDU and ODU	ODU stops
E021	Disconnection of low pressure switch	ODU stops
E022	Reserved	1
E023	Reserved	l
E024	Reserved	/
E025	Reserved	1
E026	Reserved	1
E027	Reserved	1
E028	Reserved	l
E029	Reserved	l
E030	Reserved	1
E031	Reserved	1
E032	Insufficient pressure difference (abnormal four-way valve)	ODU stops
E033	Insufficient refrigerant	ODU stops
E034	Heat exchanger high temperature protection	ODU stops
E035	Reserved	/
E036	Too high air exhaust temperature	ODU stops
E037	Ambient temperature exceeding limit	ODU stops, and resumes operation when temperature returns to normal
E038	No communication between IDU and ODU	ODU stops
E039	System failure	ODU stops to protect the unit, and the unit must be reset or powered on again if the system failure occurs at 5 times/2h

ECXX indicates communication failure between IDU and ODU, and EC00 indicates IDU 0#, and EC01 indicates IDU 1#, and so on.

Trial Operation

Before trial operation

Make sure to check:

- Installation
 - ◆ Whether the air conditioning unit can be securely fixed at the site.
 - ◆ Whether the place is well ventilated and large enough for maintenance.
 - ◆ Whether the number of IDUs connected to ODU is allowable.
- Wiring
 - ◆ Whether the insulation for the loop of main power supply is intact.

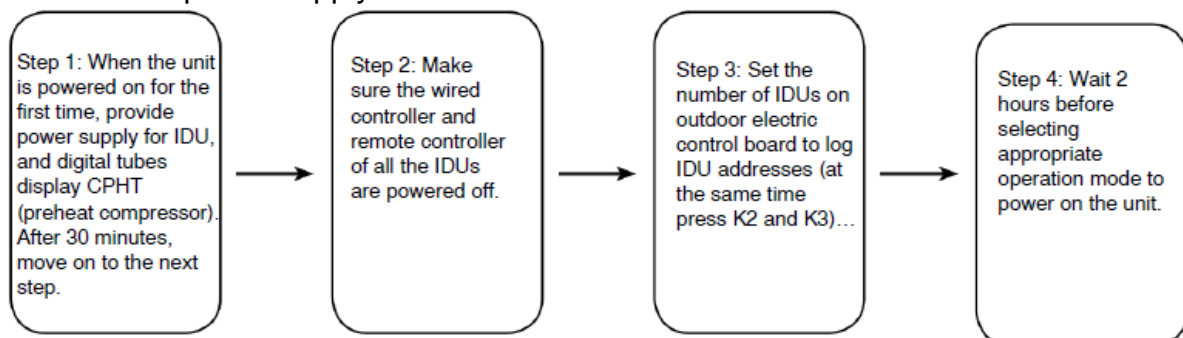
Check insulation status against national regulations.

 - ◆ Whether power cord and communication cable have allowable length.
 - ◆ Whether communication cable and power cord are connected correctly and fastened securely.
- Piping
 - ◆ Whether refrigerant piping is dimensionally correct.
 - ◆ Whether refrigerant piping is correctly connected and has reasonable length.
 - ◆ Whether refrigerant piping and drainage pipe are insulated correctly.
- Code

Whether the codes for capacity of control panel for IDU and ODU, and for addresses are correct and set with corresponding numbers (S1, S2 and S3 and so on).

Trial Operation

- Open all the stop valves completely.
- Connect the power supply:



- Communication check: Observe whether ODU communication indicator light blinks regularly and 4-digit 8-seg digital tubes display clock. If the tubes display malfunction, please check whether IDU and ODU circuit board codes are right and communication line is correctly connected...

Trial Operation

Trial operation check

Start cooling or heating operation using a wired controller or remote controller.

- After 5 minutes, check whether there is cold (hot) air from IDU.
- Check all the IDUs in the same way.
- If any wiring or piping errors are found, please correct the errors and start trial operation again.

Note

- Start another IDU one minute before the current IDU stops, which could save trial operation time.
- Please refer to the following allowable operation range under various operation modes. The system cannot operate normally if exceeding limits.

Mode	Outdoor ambient temperature
Cooling	-5°C-50°C (dry bulb)
Heating	-25°C-27°C (wet bulb)



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