



Service Manual

Duct Type Split Air Conditioner Inverter Series

Capacity: 20kW~40kW

Rated Frequency: 50/60Hz

Operation Range: -7℃~48℃

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PRODUCT

1 Product List

Model	Cooling Capacity	Heating Capacity	Power Supply	Refrigerant	Appearance	
	kW	kW			Outdoor	Indoor
FGR20Pd/DNa-X	20	22	3N/380-41 5V/50Hz/ 60Hz	R410a		
FGR25Pd/DNa-X	25	27.5				
FGR30Pd/DNa-X	30	33				
FGR40Pd/D(2)Na-X	40	43				

2 Nomenclature

FG	R	40	Pd	/	D	Na	-	X	(I)
1	2	3	4		5	6		7	8

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NO.	Description	Options
1	Ducted Type Air Conditioner	-
2	Unit type	Cooling only type-omitted
		Heat pump
		Auxiliary hot water plate and pipe type-W
3	Cooling capacity	Nominal cooling capacity (kW)
4	Frequency conversion system	Fixed frequency-omitted
		Frequency conversion-Pd
5	Design No.	Arranged based on A, B, C, D, and so on
6	Refrigerant	R22-omitted
		R407-N
		R410a-Na
		Others to be applied for when they are used
7	Power type	380-415V 3Ph~,50/60Hz-X
		(The unit to be exported must be expressed)
8	Indoor and outdoor unit code	Outdoor unit-(O)
		Indoor unit-(I)
		The entire unit is not expressed.

3 Specifications

Model	Heat pump		FGR20Pd/DNa-X	FGR25Pd/DNa-X	
Capacity	Cooling		kW	20	25
	Heating		kW	22	27.5
EER/COP			W/W	2.55/3.25	2.65/3.10
Power supply			Ph/V/Hz	3N/380-415/(50/60)	3N/380-415/(50/60)
Power input	Cooling		kW	7.8	9.4
	Heating		kW	6.8	8.9
Current input	Cooling		A	16.5	18.9
	Heating		A	14.4	17.2
Refrigerant charge volume			kg	6.4	8.0
Indoor unit	Airflow volume		CFM	2178	2472
			m ³ /h	3700	4200
	ESP	Rated	Pa	120	120
		Range	Pa	0-250	0-250
	Sound pressure level		dB(A)	52	53
	Dimension (W×D×H)	Outline	mm	1460×790×365	1690×870×440
		Package	mm	1575×880×385	1785×985×450
Net Weight/Gross weight		kg	82/104	99/134	
Outdoor unit	Sound pressure level		dB(A)	62	63
	Dimension (W×D×H)	Outline	mm	940×320×1430	940×460×1615
		Package	mm	1020×420×1460	1020×560×1645
	Net Weight/Gross weight		kg	120/130	146/162
Connection pipe	Outer diameter	Liquid	Inch(mm)	Φ3/8	Φ3/8
		Gas	Inch(mm)	Φ3/4	Φ7/8
	Max. distance	Height	mm	30	30
		Length	mm	50	50
Loading quantity	20'GP/40'GP/40'HQ		set	12/24/24	10/20/22

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Model	Heat pump		FGR30Pd/DNa-X	FGR40Pd/D(2)Na-X	
Capacity	Cooling		kW	30	40
	Heating		kW	33	43
EER/COP			W/W	2.65/3.20	2.60/3.10
Power supply			Ph/V/Hz	3N/380-415/(50/60)	3N/380-415/(50/60)
Power input	Cooling		kW	11.3	15.4
	Heating		kW	10.3	13.9
Current input	Cooling		A	22.7	27.8
	Heating		A	20.7	26.4
Refrigerant charge volume			kg	9.5	6.4×2
Indoor unit	Airflow volume		CFM	3060	4120
			m ³ /h	5200	7000
	ESP	Rated	Pa	120	120
		Range	Pa	0-250	0-250
	Sound pressure level		dB(A)	55	56
	Dimension (W×D×H)	Outline	mm	1690×870×440	1680×900×650
		Package	mm	1785×985×450	1800×1020×670
Net Weight/Gross weight		kg	105/145	165/210	
Outdoor unit	Sound pressure level		dB(A)	65	66
	Dimension (W×D×H)	Outline	mm	940×460×1615	940×320×1430
		Package	mm	1020×560×1645	1020×420×1460
	Net Weight/Gross weight		kg	175/190	(120/130) X2
Connection pipe	Outer diameter	Liquid	Inch(mm)	Φ1/2	Φ3/8
		Gas	Inch(mm)	Φ1	Φ3/4
	Max. distance	Height	mm	30	30
		Length	mm	50	50
Loading quantity	20'GP/40'GP/40'HQ		set	10/20/22	7/18/18

Note:

- ◆ Specifications may be changed due to product improvement. Please refer to nameplates of the units.
- ◆ Noise data are collected from a semi-anechoic room. Decibels may be slightly higher in actual operation due to environmental change.
- ◆ Above parameters are tested under the condition: high fan speed
- ◆ Cooling : Indoor air temperature 27°C DB/19°C WB, Outdoor air temperature 35°C DB/24°C WB;
- ◆ Heating : Indoor air temperature 20°C DB/15°C WB, Outdoor air temperature 7°C DB/6°C WB.

CONTROL

1 Wired Controller

1.1 Control panel



Fig1.1 Appearance of wired controller

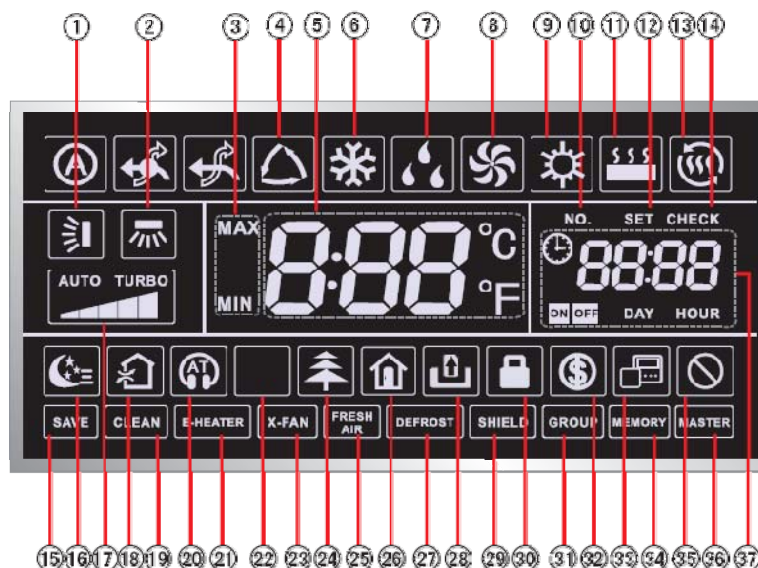
























Fig1.2 LED graphics of wired controller

Table 1.1 LED display instruction

No.	Symbols	Instructions
1		Up and down swing function
2	*	Left and right swing function
3		It's valid under Save mode and displays during setting process. Temperature lower limit for Cooling: Limit the minimum temperature value under Cooling or Dry mode. Temperature upper limit for Heating: Limit the maximum temperature value under Heating, Space Heating or 3D Heating mode.
4	*	Auto mode (Under Auto mode, the indoor units will automatically select their operating mode as per the temperature change so as to make the ambient comfortable.)
5		It shows the setting temperature value(In case the wired controller is controlling a Fresh Air Indoor Unit, then the temperature zone will display FAP)
6		Cooling mode
7		Dry mode
8		Fan mode

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No.	Symbols	Instructions
9		Heating mode
10		When inquiring or setting project number of indoor unit, it displays "NO." icon
11		Floor Heating mode (When Heating and Floor Heating simultaneously shows up, it indicates 3D Heating is activated.)
12		Display "SET" icon under parameter setting interface
13		Space Heating mode
14		Display "CHECK" icon under parameter view interface
15		Outdoor unit operates under Save mode/upper limit of system capacitor less 100%/remote Save status
16		Sleep status
17		Current set fan speed (including auto, low speed, medium-low speed, medium speed, medium-high speed, high speed and turbo seven status)
18		Air status, Indoor unit optional function
19		Remind to clean the filter
20		Quiet status (including Quiet and Auto Quiet two status)
21		Allow auxiliary electric heating On icon
22		Light On/Off function
23		X-fan function
24		Health function, Indoor unit optional function
25		Reserved function
26		Out function
27		Outdoor unit defrosting status
28		Gate-control function
29		Shielding status
30		Child Lock status
31		One wired controller controls multiple indoor units
32		Save status of indoor unit
33		It indicates the current wired controller is the slave wired controller (address of wired controller is 02)
34		Memory status (The indoor unit resumes the original setting state after power failure and then power recovery)
35		Invalid operation
36		Current wired controller connects master indoor unit
37		Timer zone:Display system clock and timer status

Note: When wired controller is connected with different indoor units, some functions will be different

1.2 Installation and removal

1.2.1 Installation dimensions

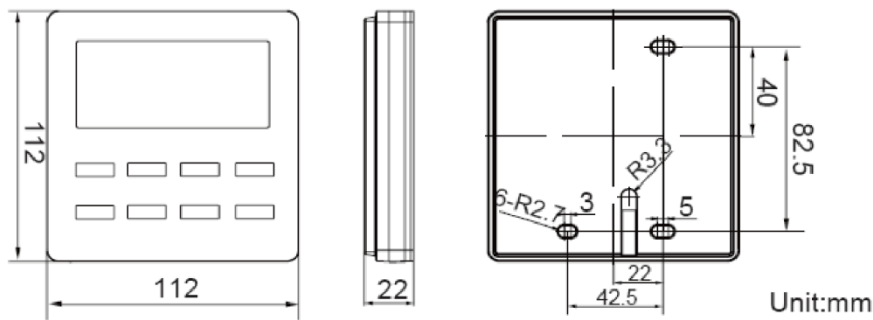


Fig1.3 Installation dimensions

1.2.2 Installation method

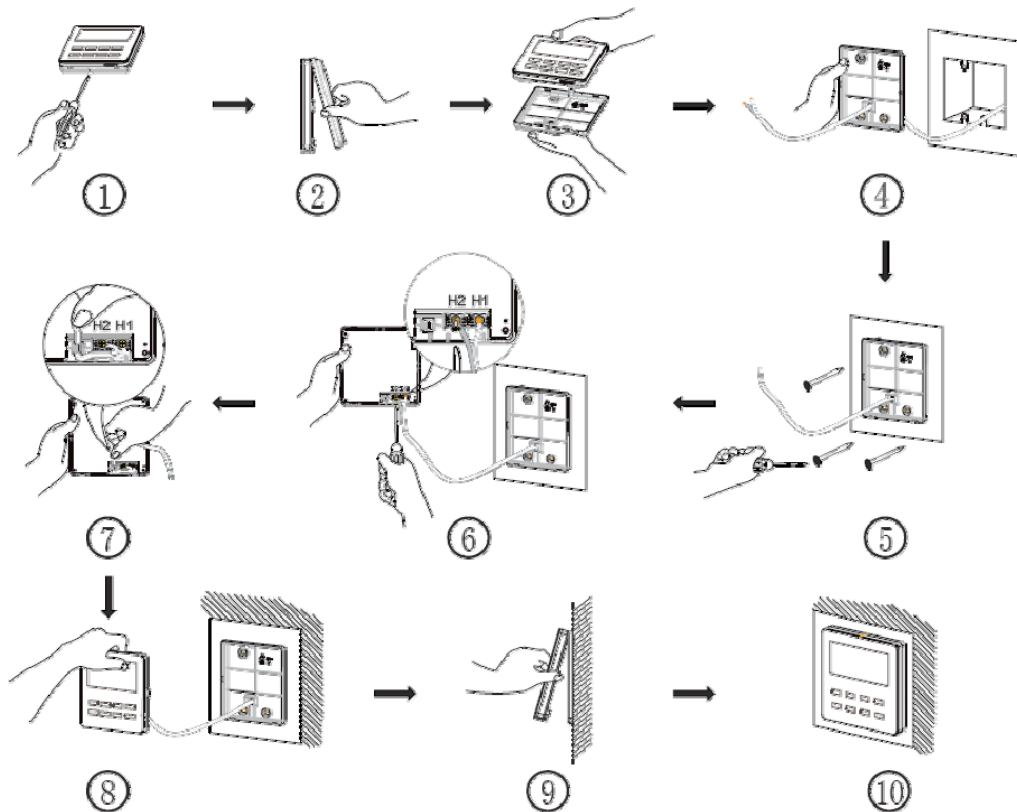



Fig1.4 Installation of Wired Controller

Above is a simple installation method of wired controller. Please pay attention to the following:

- ◆ Before installation, disconnect power of the indoor unit. Do not operate when power is connected.
- ◆ Pull out the 2-core twisted pair cable from the installation hole on the wall and lead it through the hole  on the back plate of wired controller.
- ◆ Place the wired controller on wall and secure its back plate on wall with screw M4X25.
- ◆ Connect the 2-core twisted pair cable to terminal H1 and terminal H2. Tighten up the screws.
- ◆ Stick the cable in the slot that is left of the terminals and buckle the wired controller's panel with its back plate.

Note:

If caliber of the communication cord is too large, which causes difficulty in leading or sticking the cord according to above point 2 and point 5, strip some of the sheath of the communication cable to meet the installation requirement.

1.2.3 Removal method

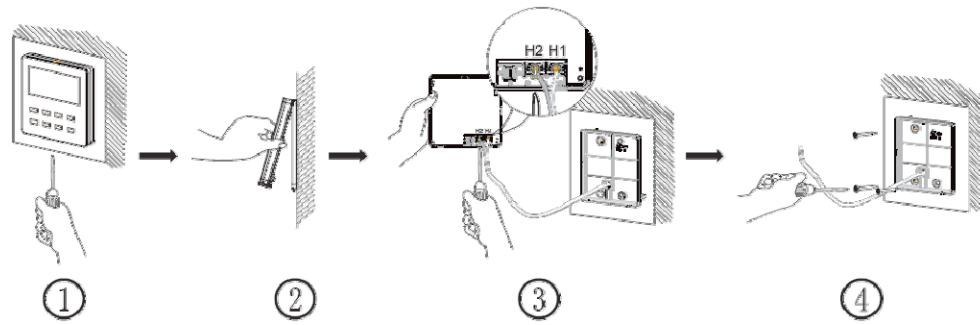


Fig1.5 Removal of Wired Controller

1.2.4 Connection of communication cord

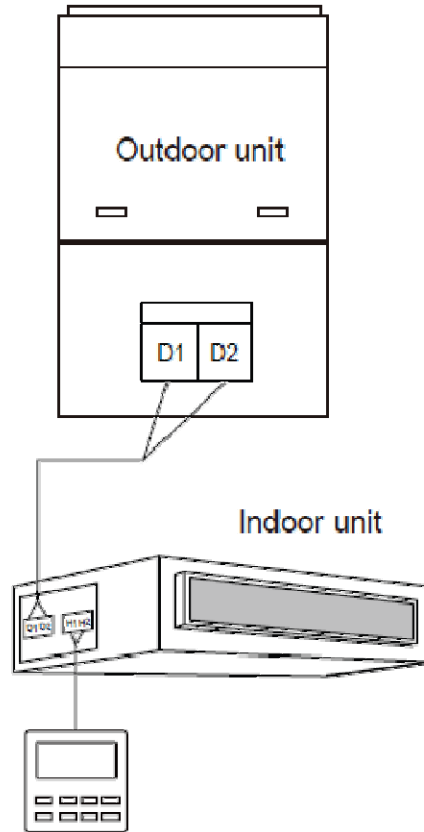
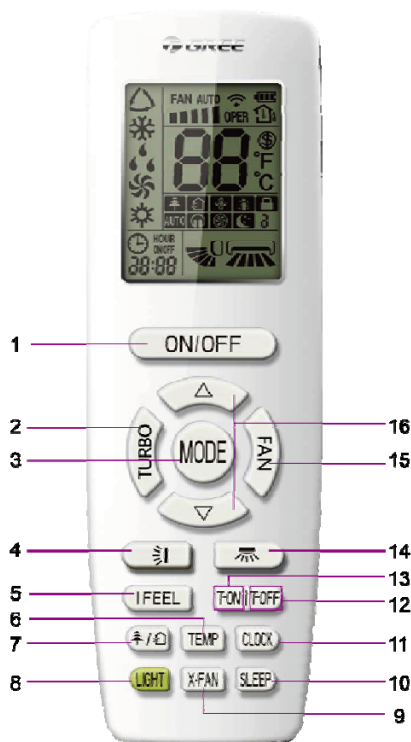




Fig1.6 One wired controller controls one indoor unit

2 Remote Controller YAP1F



Button name and function introduction

No.	Button name	Function
1	ON/OFF	Turn on or turn off the unit
2	TURBO	Set turbo function
3	MODE	Set operation mode
4		Set up&down swing status
5	I FEEL	Set I FEEL function
6	TEMP	Switch temperature displaying type on the unit's display
7		Set health function and air function
8	LIGHT	Set light function
9	X-FAN	Set X-FAN function
10	SLEEP	Set sleep function
11	CLOCK	Set clock of the system
12	TOFF	Set timer off function
13	TON	Set timer on function
14		Set left&right swing status
15	FAN	Set fan speed

3 Introduction to IDU Functions

Indoor unit functions cover user operation functions and engineering application functions. For user operation functions, refer to wired controller and remote controller.

Engineering application functions include:

SN	Function Name
1	User parameter query

2	User parameter settings
3	Engineering parameter query
4	Engineering parameter settings

Engineering application functions can be operated through the IDU wired controller(XK46).

3.1 User Parameter Query

User parameters can be queried in power-on or power-off status.

- (1) Press and hold the “FUNCTION” button for five seconds to enter the user parameter query interface.

The temperature area displays “C00” and “View” is on.

- (2) Select a parameter code by pressing “▲” or “▼”.
- (3) Press the “ENTER/CANCEL” button to return to the upper-level menu till quitting parameter query.

The user parameter query list is as follows:

Parameter Code	Parameter Name	Parameter Range	View Method
C00	Parameter setting ingress	-	Display mode: ● Timer area: displays the project number of the current IDU. Note: If the current HBS network consists of multiple IDUs, only the IDU that has the minimum project number is displayed.
C06	Preferential operation query	00: common operation 01: preferential operation	Operation method: In “C06” status, press the “MODE” button to enter the preferential operation query interface. Press “▲” or “▼” to switch the IDU SN. Display mode: Temperature area: displays the project number of the current IDU. Timer area: displays the preferential operation setting value of the current IDU.
C07	Indoor environment temperature query	-9 to 99	Operation method: In “C07” status, press the “MODE” button to enter the indoor environment temperature query interface. Press “▲” or “▼” to switch the IDU SN. Display mode: Temperature area: displays the project number of the current IDU. Timer area: displays the temperature value of the indoor environment temperature sensor after replenishment.
C08	Prompt time query for air filter cleaning	4-416: days	Timer area: displays the prompt time for air filter cleaning.
C09	Wired controller adress query	01, 02	Timer area: displays the adress of the current wired controller.
C12	Outdoor environment temperature query	-9 to 99	Timer area: displays the temperature value of the environment temperature sensor of the master ODU.
C17	Indoor relative humidity query	20-90	Operation method: In “C17” status, press the “MODE” button to enter the indoor relative humidity query interface. Press “▲” or “▼” to switch the IDU SN. Display mode: Temperature area: displays the relative humidity value. Timer area: displays the project number of IDU (project numbers are arranged from small to large). If the HBS network consists of only one IDU, the timer area directly displays the IDU relative humidity value in the “C17” interface.

Note:

In parameter query status, "FAN", "TIMER", "SLEEP", and "SWING" are invalid. By pressing the "ON/OFF" button, users can return to the main interface but not power on/off the unit.

3.2 User Parameter Settings

User parameters can be set in power-on or power-off status.

- (1) Press and hold the "FUNCTION" button for five seconds. The temperature area displays "C00". Press and hold the "FUNCTION" button for another five seconds to enter the wired controller parameter setting interface. The temperature area displays "P00".
- (2) Select a parameter code by pressing "▲" or "▼". Press the "MODE" button to switch to parameter value settings. The parameter value blinks. Adjust the parameter value by pressing "▲" or "▼" and then press the "ENTER/CANCEL" button to complete settings.
- (3) Press the "ENTER/CANCEL" button to return to the upper-level menu till quitting parameter settings.
- (4) The user parameter setting list is as follows:

Parameter Code	Parameter Name	Parameter Range	Default Value	Remark
P10	Master IDU settings	00: does not change the master/slave status of the current IDU 01: sets the current IDU to master IDU	00	After the IDU connected with the current wired controller is successfully set to master IDU, "MASTER" on the wired controller is on.
P11	Infrared connection settings of wired controller	00: disabled 01: enabled	01	This setting can only be enabled through the master wired controller. When the infrared remote receiving function of the wired controller is disabled, neither the master nor slave wired controller can receive remote signals. The wired controllers can only be operated by pressing.
P13	Wired controller address settings	01: master wired controller 02: slave wired controller	01	When two wired controllers simultaneously control one IDU, the two wired controllers should use different addresses. The slave wired controller (address: 02) does not have the unit parameter setting function except its own address settings.
P30	Static pressure settings for indoor fan	Type 1: 03.04.05.06.07 Type 2: 01.02.03.04.05.06.07.08. 09	05	After identifying the IDU type, the wired controller only displays the available static pressure levels. 1) The static pressure levels fall into five levels and nine levels for VRF IDUs. The wired controller only displays the static pressure levels matched with the identified IDU type. 2) When the HBS network consists of IDUs with both five and nine static pressure levels, the wired controller displays nine adjustable static pressure levels according to the maximum control principle. If the static pressure levels received by the IDU from the wired controller, remote controller, or remote monitoring system exceed the setting range, the limit value prevails. 3) During power-on and synchronization, the setting value of static pressure levels is

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Parameter Code	Parameter Name	Parameter Range	Default Value	Remark
				determined by settings of the IDU.
P31	High-ceiling installation	00: standard-ceiling installation height 01: high-ceiling installation height	00	
P33	Timer function settings	00: common timing 01: time-point timing	00	
P34	Repeating validity for time-point timing	00: single timing 01: repeated everyday	00	This setting is valid only when the timer function is set to time-point timing.
P37	Cooling setting temperature in automatic mode	17°C -30°C	25	Cooling setting temperature – heating setting temperature ≥ 1. Note: The two settings are still valid in remote shielding status.
P38	Heating setting temperature in automatic mode	16°C -29°C	20	
P43	Preferential operation settings	00: common operation 01: preferential operation	00	When power supply is insufficient, users are allowed to power on/off the IDU set with preferential operation and other IDUs are forcibly powered off. A fault code is displayed on the IDU that is forcibly powered off.
P46	Accumulated time clearing for air filter cleaning	00: not cleared 01: cleared	00	

Note:

In parameter setting status, "FAN", "TIMER", "SLEEP", and "SWING" are invalid. By pressing the "ON/OFF" button, users can return to the main interface but not power on/off the unit.

3.3 Engineering Parameter Query

Engineering parameters can be queried in power-on or power-off status.

Press and hold the "FUNCTION" button for five seconds to enter the engineering parameter query interface. The temperature area displays "C00" and "View" is on.

- (1) Within five seconds after "C00" is displayed, continuously press the "MODE" button for three times in an interval less than one second to enter engineering parameter query.
- (2) Select a parameter code by pressing "▲" or "▼".
- (3) Press the "ENTER/CANCEL" button to return to the upper-level menu till quitting parameter query.

In the engineering parameter query interface, users can also query user parameters listed in Table 3.1.

The engineering parameter query list is as follows:

Parameter Code	Parameter Name	Parameter Range	View Method
C00	Parameter setting ingress (default)	-	Display mode: Timer area: displays the project number of the current IDU. Note: If the current HBS network consists of multiple IDUs, only the IDU that has the minimum project number is displayed.
C02	Indoor unit capacity query	-	Operation method: In "C02" status, press the "MODE" button to enter the preferential operation query interface. Press "▲" or "▼" to switch the project number of IDU.

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Parameter Code	Parameter Name	Parameter Range	View Method
			<p>Display mode:</p> <p>Temperature area: displays the project number of the current IDU.</p> <p>Timer area: displays the current IDU capacity/IDU capacity after adjustment.</p>
C05	Historical fault query ingress of IDU	Five historical faults	<p>Operation method:</p> <p>1. In "C05" status, press the "MODE" button to enter the historical fault query interface. Press "▲" or "▼" to switch the project number of IDU. Press the "MODE" button to enter fault code query of the current IDU. Press "▲" or "▼" to switch the fault SN. Press the "ENTER/CANCEL" button to return to the upper-level menu.</p> <p>Display mode:</p> <p>Temperature area: displays the fault SN and fault code.</p> <p>Timer area: displays the project number of IDU.</p>
C10	Static pressure setting query of ODU	<p>00: 0 Pa</p> <p>20: 20 Pa</p> <p>50: 50 Pa</p> <p>82: 82 Pa</p>	<p>Operation method:</p> <p>In "C10" status, press the "MODE" button to enter static pressure setting query of ODU. Press "▲" or "▼" to switch the ODU address.</p> <p>Display mode:</p> <p>Temperature area: displays the address of the current ODU.</p> <p>Timer area: displays the static pressure setting value.</p>
C13	Outdoor unit network number query	1-255	<p>Timer area: displays the network number of the current ODU.</p>
C14	Temperature query for inlet-tube temperature sensor of IDU	-9 to 99	<p>Operation method:</p> <p>In "C14" status, press the "MODE" button to enter inlet-tube temperature sensor query of IDU. Press "▲" or "▼" to switch the IDU SN.</p> <p>Display mode:</p> <p>Temperature area: displays the project number of the current IDU.</p> <p>Timer area: displays the temperature value.</p> <p>If the HBS network consists of only one IDU, the timer area directly displays the temperature value in the "C14" interface.</p> <p>No matter Fahrenheit or Centigrade remote signals are received, the temperature is displayed in Centigrade.</p> <p>When the wired controller displays the inlet-tube temperature after receiving signals from the remote controller, the inlet-tube temperature of the IDU that has the minimum project number in the HBS network is displayed by default.</p>

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Parameter Code	Parameter Name	Parameter Range	View Method
C15	Temperature query for outlet temperature sensor of IDU	-9 to 99	<p>Operation method: In "C15" status, press the "MODE" button to enter outlet temperature sensor query of IDU. Press "▲" or "▼" to switch the IDU SN.</p> <p>Display mode: Temperature area: displays the project number of the current IDU. Timer area: displays the temperature value. If the HBS network consists of only one IDU, the timer area directly displays the temperature value in the "C14" interface. No matter Fahrenheit or Centigrade remote signals are received, the temperature is displayed in Centigrade. When the wired controller displays the inlet-tube temperature after receiving signals from the remote controller, the inlet-tube temperature of the IDU that has the minimum project number in the HBS network is displayed by default.</p>
C16	Opening degrees query of electronic expansion valve of IDU	0-20	<p>Operation method: In "C16" status, press the "MODE" button to enter electronic expansion valve opening degree query of IDU. Press "▲" or "▼" to switch the IDU SN.</p> <p>Display mode: Temperature area: displays the project number of the current IDU. Timer area: displays the opening degree value. If the HBS network consists of only one IDU, the timer area directly displays the opening degree value of electronic expansion valve in the "C16" interface. When the wired controller displays the opening degree of electronic expansion valve after receiving signals from the remote controller, the opening degree of electronic expansion valve of the IDU that has the minimum project number in the HBS network is displayed by default.</p>
n2	Capacity configuration ratio upper-limit of outdoor/IDU	35: 135% 50: 150%	<p>Temperature area: displays the parameter code. Timer area: displays the setting value of capacity configuration ratio of the current outdoor/IDU.</p>
n6	Historical fault query ingress of ODU	Five historical faults	<p>Operation method: In "n6" status, press the "MODE" button to enter fault code query of ODU (when a wired controller controls multiple IDUs, only the faults memorized by the IDU that has the minimum project number can be queried). Press "▲" or "▼" to switch the fault SN. Press the "ENTER/CANCEL" button to return to the upper-level menu.</p> <p>Display mode: Temperature area: displays the fault SN and fault code from left to right (1-5, faults are arranged from the earliest to the latest). Timer area: displays the project number of the ODU.</p>
n7	Parameter query ingress of ODU	01-13 25-29	<p>Operation method (n7 query is not supported for the slave wired controller): In "n7" status, the timer area is not displayed. Press the "MODE" button to enter parameter query of ODU. The first bit in the temperature area (display bit of the ODU module ID) blinks. Press "▲" or "▼" to switch the ODU module ID. Press the "MODE" button to select an ODU module. In this case, the first bit in the temperature area stops blinking, and the second and third bits in the temperature area display the parameter code. The timer area</p>

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Parameter Code	Parameter Name	Parameter Range	View Method																																																																					
			<p>displays a corresponding parameter value. Press “▲” or “▼” to switch the parameter code and press the “ENTER/CANCEL” button to return to the upper-level menu.</p> <p>Display mode: Temperature area: displays the ODU module ID and parameter code from left to right. Timer area: displays a corresponding parameter value to the right.</p> <table border="1"> <thead> <tr> <th>Parameter Code</th> <th>Parameter Name</th> <th>Unit</th> </tr> </thead> <tbody> <tr><td>01</td><td>Outdoor environment temperature</td><td>°C</td></tr> <tr><td>02</td><td>Operation frequency of compressor 1</td><td>Hz</td></tr> <tr><td>03</td><td>Operation frequency of compressor 2</td><td>Hz</td></tr> <tr><td>04</td><td>Operation frequency of outdoor fan</td><td>Hz</td></tr> <tr><td>05</td><td>Module high-pressure</td><td>°C</td></tr> <tr><td>06</td><td>Module low-pressure</td><td>°C</td></tr> <tr><td>07</td><td>Discharge temperature of compressor 1</td><td>°C</td></tr> <tr><td>08</td><td>Discharge temperature of compressor 2</td><td>°C</td></tr> <tr><td>09</td><td>Discharge temperature of compressor 3</td><td>°C</td></tr> <tr><td>10</td><td>Discharge temperature of compressor 4</td><td>°C</td></tr> <tr><td>11</td><td>Discharge temperature of compressor 5</td><td>°C</td></tr> <tr><td>12</td><td>Discharge temperature of compressor 6</td><td>°C</td></tr> <tr><td>13</td><td>Operation frequency of compressor 3</td><td>Hz</td></tr> <tr><td>25</td><td>Outdoor unit heating EXV1 (Actual value = Displayed value * 10)</td><td>PLS</td></tr> <tr><td>26</td><td>Outdoor unit heating EXV2 (Actual value = Displayed value * 10)</td><td>PLS</td></tr> <tr><td>27</td><td>Subcooler EXV (Actual value = Displayed value * 10)</td><td>PLS</td></tr> <tr><td>28</td><td>Defrosting temperature</td><td>°C</td></tr> <tr><td>29</td><td>Liquid-extracting temperature of subcooler</td><td>°C</td></tr> <tr><td>30</td><td>Outlet temperature of accumulator</td><td>°C</td></tr> <tr><td>31</td><td>Oil return temperature</td><td>°C</td></tr> <tr><td>32</td><td>Inlet-tube temperature of condenser</td><td>°C</td></tr> <tr><td>33</td><td>Outlet temperature of condenser</td><td>°C</td></tr> </tbody> </table>	Parameter Code	Parameter Name	Unit	01	Outdoor environment temperature	°C	02	Operation frequency of compressor 1	Hz	03	Operation frequency of compressor 2	Hz	04	Operation frequency of outdoor fan	Hz	05	Module high-pressure	°C	06	Module low-pressure	°C	07	Discharge temperature of compressor 1	°C	08	Discharge temperature of compressor 2	°C	09	Discharge temperature of compressor 3	°C	10	Discharge temperature of compressor 4	°C	11	Discharge temperature of compressor 5	°C	12	Discharge temperature of compressor 6	°C	13	Operation frequency of compressor 3	Hz	25	Outdoor unit heating EXV1 (Actual value = Displayed value * 10)	PLS	26	Outdoor unit heating EXV2 (Actual value = Displayed value * 10)	PLS	27	Subcooler EXV (Actual value = Displayed value * 10)	PLS	28	Defrosting temperature	°C	29	Liquid-extracting temperature of subcooler	°C	30	Outlet temperature of accumulator	°C	31	Oil return temperature	°C	32	Inlet-tube temperature of condenser	°C	33	Outlet temperature of condenser	°C
Parameter Code	Parameter Name	Unit																																																																						
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06	Module low-pressure	°C																																																																						
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A6	Unit cooling/heating function	nA: cooling/heating nC: single-cooling nH: single-heating nF: air supply	<p>Temperature area: displays the parameter code.</p> <p>Timer area: displays the cooling/heating function setting value of the current unit.</p>																																																																					
nb	Bar code query of IDU	0-9, A-Z, a-z, -	<p>Operation method (nb query is not supported for the slave wired controller):</p> <p>In “nb” status, the timer area is not displayed. Press the “MODE” button to enter bar code query. The temperature area displays “nb” and the project number in the timer area blinks. Press “▲” or</p>																																																																					

Parameter Code	Parameter Name	Parameter Range	View Method																										
			<p>“▼” to switch the project number of IDU. Press the “MODE” button to select an IDU. The temperature area displays “Un” and the timer area displays “-n”. Press “▲” or “▼” to display the entire-unit bar code and controller bar code of IDU. Press the “ENTER/CANCEL” button to return to the upper-level menu. The temperature area displays “nb” and the timer area displays the project number of the queried IDU. Press the “ENTER/CANCEL” button again to return to the upper-level menu.</p> <p>Display mode: Temperature area: displays nb/Un/Pc/bar code. Timer area: displays -n/project number/bar code.</p> <p>The following is an example:</p> <table border="1"> <thead> <tr> <th>Example</th> <th>Temperature Area</th> <th>Timer Area</th> <th>Remark 1</th> <th>Remark 2</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Entire-unit bar code of IDU N1r0128150066</td> <td>Un (to the right)</td> <td>-n (in the middle)</td> <td>It indicates that the following is the entire-unit bar code of IDU.</td> <td rowspan="6">Press “▼” to display downward and press “▲” to display upward.</td> </tr> <tr> <td>N1r</td> <td>0128</td> <td>It indicates the former seven bits of the bar code.</td> </tr> <tr> <td>150</td> <td>066</td> <td>It indicates the latter six bits of the bar code.</td> </tr> <tr> <td rowspan="3">Controller bar code of IDU N1r0128150067</td> <td>Pc</td> <td>-n</td> <td>It indicates that the following is the controller bar code of IDU.</td> </tr> <tr> <td>N1r</td> <td>0128</td> <td>It indicates the former seven bits of the bar code.</td> </tr> <tr> <td>150</td> <td>067</td> <td>It indicates the latter six bits of the bar code.</td> </tr> </tbody> </table> <p>Note: 1. Un indicates the entire-unit bar code of IDU and Pc indicates the controller bar code of IDU. 2. When there is only one IDU, press the “MODE” button in “nb” status to enter bar code query without selecting the project number of IDU. 3. The system quits the query status if no operations are performed in 60 seconds. 4. The bar code query starts from the entire-unit bar code of IDU and ends at the controller bar code of IDU without circulation. That is, the query does not start again even if users press “▼”.</p>	Example	Temperature Area	Timer Area	Remark 1	Remark 2	Entire-unit bar code of IDU N1r0128150066	Un (to the right)	-n (in the middle)	It indicates that the following is the entire-unit bar code of IDU.	Press “▼” to display downward and press “▲” to display upward.	N1r	0128	It indicates the former seven bits of the bar code.	150	066	It indicates the latter six bits of the bar code.	Controller bar code of IDU N1r0128150067	Pc	-n	It indicates that the following is the controller bar code of IDU.	N1r	0128	It indicates the former seven bits of the bar code.	150	067	It indicates the latter six bits of the bar code.
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	150	067	It indicates the latter six bits of the bar code.																										

Note:

In parameter query status, "FAN", "TIMER", "SLEEP", and "SWING" are invalid. By pressing the "ON/OFF" button, users can return to the main interface but not power on/off the unit.

3.4 Engineering Parameter Settings

Engineering parameters can be set in power-on or power-off status.

- (1) Press and hold the “FUNCTION” button for five seconds. The temperature area displays “C00”. **Continuously press the “MODE” button for three times, and then press and hold the “FUNCTION” button for five seconds** to enter the engineering parameter setting interface. The temperature area displays “P00”.
- (2) Select a parameter code by pressing “▲” or “▼”. Press the “MODE” button to switch to parameter value settings. The parameter value blinks. Adjust the parameter value by pressing “▲” or “▼” and then press the “ENTER/CANCEL” button to complete settings.
- (3) Press the “ENTER/CANCEL” button to return to the upper-level menu till quitting parameter settings.

In the engineering parameter setting interface, users can also set user parameters. The engineering parameter setting list is as follows:

Parameter Code	Parameter Name	Parameter Range	Default Value	Remark
P15	Power-down memory mode	00: standby after power-down recovery 01: restoring the original status after power-down recovery	00	--
P17	Historical fault clearing for IDU	00: not cleared 01: cleared	00	Historical faults of all IDUs controlled by the current wired controller are cleared.
P20	Environment temperature sensor settings for IDU	01: temperature sensor of air return vent 02: temperature sensor of wired controller 03: temperature sensor of air return vent for cooling, dehumidifying, and air supply; temperature sensor of wired controller for heating 04: temperature sensor of wired controller for cooling, dehumidifying, and air supply; temperature sensor of air return vent for heating	03	When there are master and slave wired controllers and the temperature sensor of wired controller is used, only the temperature sensor of the master wired controller is used by default. Note: 1) In automatic mode, the environment temperature sensor settings are invalid for a common IDU but the setting value is memorized. 2)The environment temperature sensor settings are invalid for a fresh-air IDU. The temperature sensor of air return vent is used by default.
P21	Corrected value of environment temperature sensor of IDU (for cooling, dehumidifying, and air supply)	-15 to +15	Temperature sensor of unit: 0°C; temperature sensor of wired controller: 0°C	Press “▲” or “▼” to add or reduce by 1°C.
P22	Corrected value of environment temperature sensor of IDU (for heating, fast heating, and air warming)	-15 to +15	Temperature sensor of unit: -2°C; temperature sensor of wired controller: 0°C	Press “▲” or “▼” to add or reduce by 1°C. The temperature sensor of unit and the temperature sensor of wired controller share the same corrected value. In heating mode, corrected value of temperature sensor of unit = corrected value of temperature sensor of wired controller - 2°C.
P32	Capacity	-40% to +40%	00	Press “▲” or “▼” to add or reduce

Duct type split Air conditioner Inverter Series

Parameter Code	Parameter Name	Parameter Range	Default Value	Remark
	adjustment function of IDU			by 10%.
P35	Factory setting recovery for user functions	00: invalid 01: valid	00	Select "01" and then press and hold the "ENTER/CANCEL" button to restore the factory settings for user functions (factory setting recovery fails if remote shielding is valid).
P36	Factory setting recovery for engineering settings	00: invalid 01: valid	00	Select "01" and then press and hold the "ENTER/CANCEL" button to restore the factory status for engineering settings (factory setting recovery fails if remote shielding is valid).
P40	Prevention for heat collection	00: disabled 10: 10 seconds 20: 20 seconds 30: 30 seconds 40: 40 seconds 50: 50 seconds 60: 60 seconds	00	It indicates the number of seconds for enabling the low-level fan every 15 minutes.
P52	Setting of indoor rotate speed in efficiency testing mode	100~1800		In P52, timer area show the actual rotate speed of AHRI indoor fan motor. Quick press "MODE", enter into setting interface, timer area show the rotate speed of indoor fan motor and twinkle, press "▲" and "▼" to select the rotate speed, Press "Mode" and hold for 0~5s, the rotate speed of indoor fan motor will increase or decrease by single digits; Press "MODE" and hold for 5~10s, the rotate speed of indoor fan motor will increase or decrease by ten digits, within its maximum and minimum value (100~1800). Quick press "Confirm/Cancel" to confirm and return to last status, Present Way: Temperature area: P52 Timer arer: Indoor fan motor rotate speed.
P67	Select the way of adjusting static pressure	00: manually 01: automatically	00	-
n0	System conservation operation settings	00: comfortability preferred 01: conservation preferred	00	
n1	Defrosting period settings	40: 40 minutes 50: 50 minutes 60: 60 minutes	50	
n3	Forcible defrosting	00: common 01: forcible defrosting	-	After settings, it automatically restores to "00".
n4	Highest capacity output limitation settings for ODU	08: 80% 09: 90% 10: 100%	10	Enter query in "n4" status. The temperature area displays the function code and the timer area displays the corresponding function setting value.
A7	Silent function of ODU	00: no silent function 01-09: intelligent	00	Enter query in "A7" status. The temperature area displays the function code and the timer area

Parameter Code	Parameter Name	Parameter Range	Default Value	Remark
		nighttime silent mode 10-12: forcible silent mode		displays the corresponding function setting value.

Note:

In parameter setting status, "FAN", "TIMER", "SLEEP", and "SWING" are invalid. By pressing the "ON/OFF" button, users can return to the main interface but not power on/off the unit.

3.5 Failure Display

When a fault occurs during the system operation, the temperature area of wired controller displays the fault code. When multiple faults occur, fault codes are circularly displayed.

❖ When a fault occurs, power off the unit and ask for professional maintenance personnel for help.

The following figure shows the power-on high-pressure protection fault interface.



Power-on High-pressure Protection Fault Interface

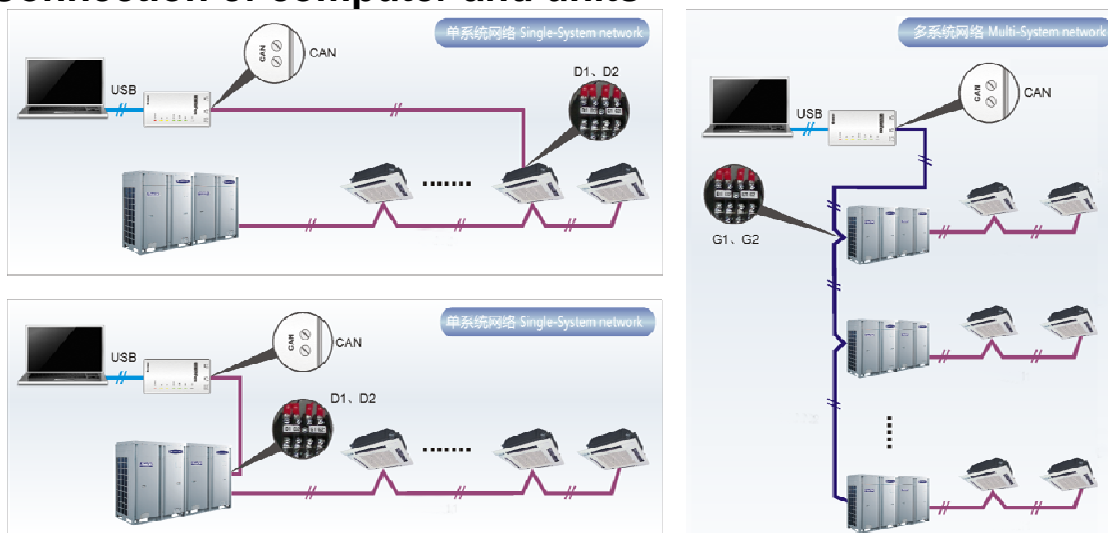
4 Monitoring Software

4.1 Function introduction

Integrating with telecommunication technology and computing software, Gree Commissioning Tool Kits can realize the comprehensive monitor, control and commissioning on central air conditioners. It is an efficient solution for the management of central air conditioners that are separated in different parts of a building. Administrator doesn't need to control every unit on site, but rather controls the units by just sitting in front of a computer. This will not only improve the productivity, but also reduce cost on human resources, property and management.

Gree Commissioning Tool Kits can monitor and control the duct type split air conditioner inverter series. User can monitor and control units by monitoring the computer. This software is an efficient tool for the intelligent air conditioning management as well as installation and after-sales service and commissioning. It can debug units and control units' operation status quickly and conveniently. It will not only improve the productivity but also reduce the difficulty and cost of commissioning and maintenance, providing better and faster service to customers.

4.2 Connection of computer and units



It can be connected with single-system network or multi-system network. In the single-system network, indoor units or outdoor units are connectable, while in the multi-system network, only the master outdoor unit can be connected.

Seen from the diagram, Gree commissioning network is made up of 3 parts:

The 1st part is the monitoring computer, including Gree debugger and Gree USB converter driver that are installed in the computer.

The 2nd part is Gree USB converter, which is to convert the air conditioning communication into computing communication. This part is made up of Gree USB data converter and USB data wire.

The 3rd part is air conditioners, including outdoor units, indoor units and the connection wires. If connection wire is not long enough, it's OK to connect via the patching board of the commissioning tool kits. In a single-system network, both indoor units and outdoor units can be connected, while in a multi-system network, only the master outdoor unit can be connected.

4.3 Parts introduction

4.3.1 List of parts

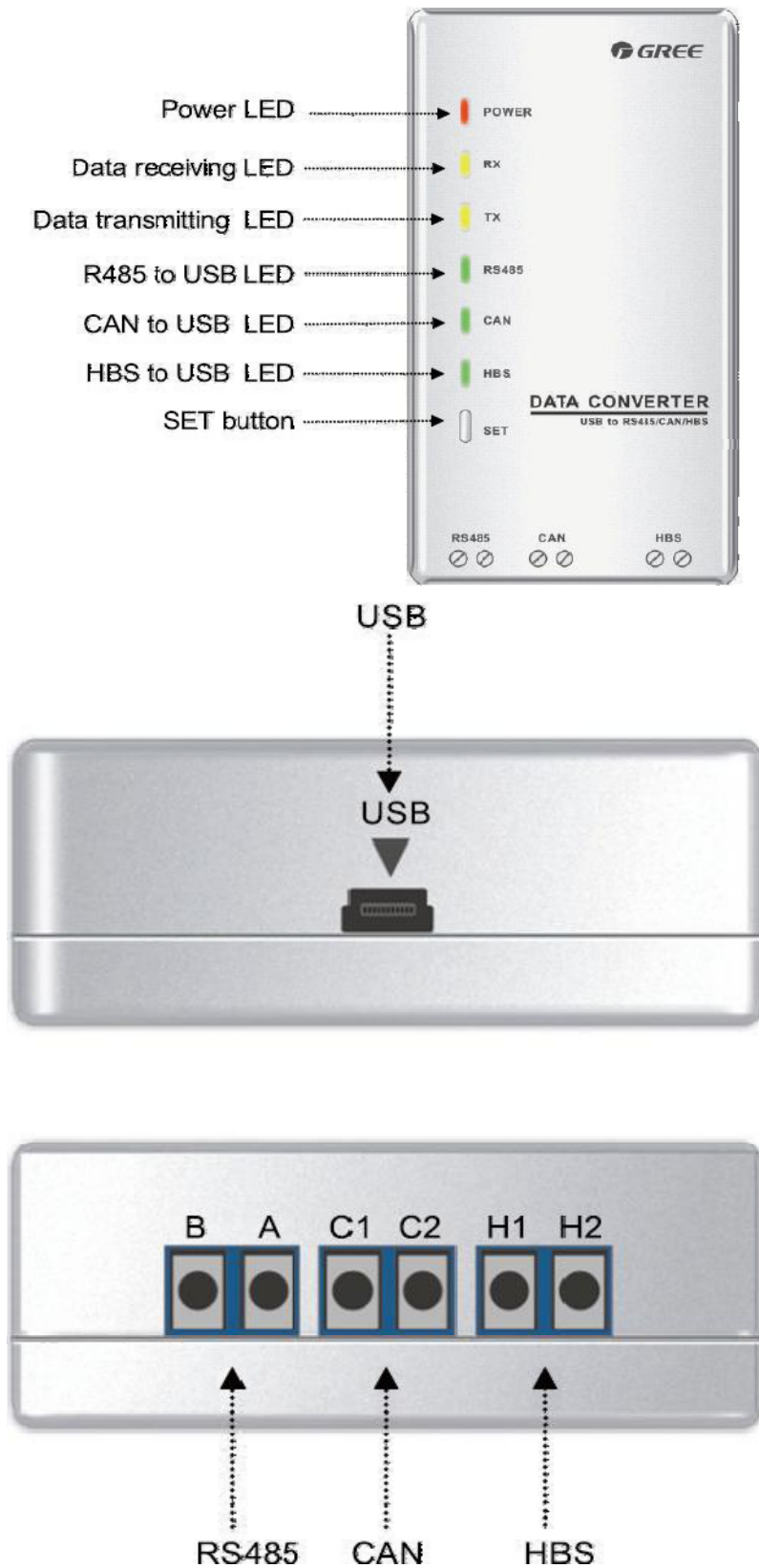
Name	Model	Material no.	Remark
Gree USB data converter	MC40-00/B	30118027	Convert the air conditioning communication into computing communication
Gree Commissioning Tool Kits (CD-ROM)	DG40-33/A(C)	3640000003	Include Gree debugger, monitoring software, USB driver and USB converter configuring software.
USB wire	\	40020082	Wire connecting computer's USB interface and converter
Communication board	\	30118015	This board can be used when units are far from the computer.
Board connection wire (1m)	\	4001023229	4-core wire connecting units and converter
Board connection wire (5.5m)	\	4001023214	4-core wire connecting units and converter
Instruction manual	\	66174100018	Instruction manual

4.3.2 Gree USB data converter

4.3.2.1 Functions introduction

Gree USB data converter will convert the RS485, HBS and CAN communication within the air conditioners into the communication that is recognizable by computer's USB interface.

4.3.2.2 Appearance



4.3.2.3 Operation instruction

- Power LED: a red light. If the red light is on, it indicates normal power supply. If the red light is off, it indicates the power supply of converter is not normal.
- Communication LEDs: yellow lights. When converter is working and the computer is transmitting data, the TX data transmitting light will be flickering. When units are uploading data to the

computer, the RX data receiving light will be flickering.

- When converter is under RS485 data transferring mode, the function LED of RS485 to USB will be on.
- When converter is under CAN data transferring mode, the function LED of CAN to USB will be on.
- When converter is under HBS data transferring mode, the function LED of HBS to USB will be on.
- USB interface: connect USB data wire.
- CAN interface: When converter is under CAN communication mode, connect air conditioner's CAN data interface. CAN interface exhibits no polarity (A and B are equal).
- HBS interface: When HBS converter is under HBS communication mode, connect air conditioner's HBS data interface. HBS interface exhibits no polarity (This interface is not yet available for Gree debugger and the monitoring software).
- RS485 interface: When RS485 converter is under RS485 communication mode, connect air conditioner's RS485 data interface. RS485 interface exhibits polarity and terminal A and B are different.

4.3.2.4 Installation notice

- Install indoors. To avoid collision, it is suggested to place it in the monitoring room together with the computer.
- No need of power supply. Power is supplied through computer's USB interface.

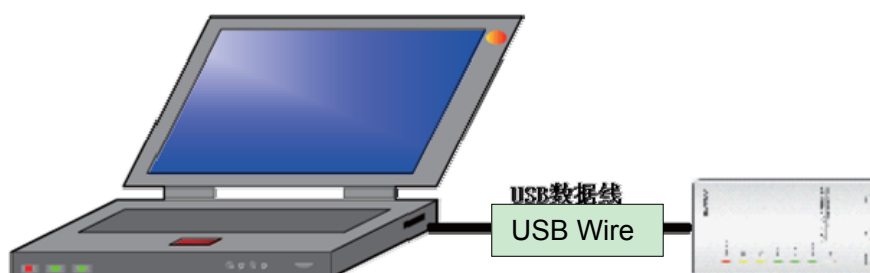
4.3.3 Communication board

Communication board is mainly used for transferring data. It functions similar with a patching board. Provided that units are far away from the monitoring computer, communication board can be used for connection.

4.3.4 Communication cord

4.3.4.1 USB wire

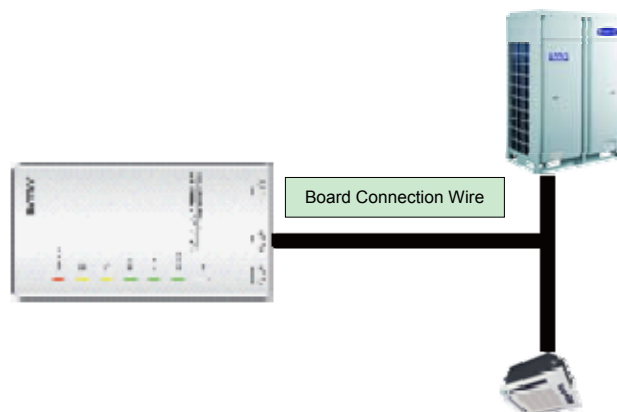
- Connect USB wire with computer's USB interface at one end and with the USB interface of USB data converter at the other end, as indicated below:



4.3.4.2 Board Connection Wire

- There are 2 board connection wires supplied for the commissioning tool kits. One is 1 meter's long and the other is 5.5 meters' long. They are only different in length. One end of the wire shall

connect with air conditioner's communication interface and the other end shall connect with CAN interface of Gree USB converter. As shown below, the wire can be connected to the communication interface of outdoor unit or the communication interface of indoor unit:



4.4 Software introduction

(1) One-button commissioning

Personnel responsible for the commissioning of air conditioners can start commissioning by pressing one button according to the commissioning logic of software, which will give the commissioning order to units. Then commissioning will be started up automatically step by step. During the commissioning, the corresponding process will be ticked in green on the software interface. If any commissioning process is not normal, it will be displayed in red.

(2) Comprehensive monitoring

The software can monitor every part of the air conditioning system, including functions, equipment and components operating status. The monitoring results will be displayed in text or curve so that user can acquire the operating status of the entire system conveniently and straightforwardly.

(3) Real-time control

Air conditioner's operating time and requirements may be different based on areas and functions. User can set units' parameters on computer according to actual needs, such as the on/off, temperature, fan speed, mode, etc. Meanwhile, the software can also set or view the function parameters of outdoor units, gateway and other equipment. In this way, the management of central air conditioners is realized.

(4) Replay history

Software can replay and save the historical monitoring information in the data base. The replay speed can be selected and the information will be shown in text or curve. This function has greatly saved the time to track problem cause and resolved the difficulty of problem reproduction.

(5) Applicable to multiple series, models and users

Gree Commissioning Tool Kits is applicable to air conditioning system that consists of multiple series and models. Later, it will be developed to cover all series of Gree central air conditioners, such as multi VRF, centrifugal chiller, screw type chiller, ground source heat pump units, modular

units, fan coiled units, close control units, etc. It can be used by system and controller designers to develop and monitor units, or used for maintenance and commissioning.

(6) Other functions

For the convenience of users, the software has added functions like connection guide, printing screen, opening database folder, rebuilding database, changing database saving path, etc.

4.4.1 Software installation

4.4.1.1 Installation requirements

(1) Computer Configuration

Memory	1 GB at least 2 GB or above is preferred
Hard Disc	10 GB available
CPU	Core 2 or higher 1 GHz at least 2 GHz or above is preferred
Operation System	Windows Server 2003 SP3 or higher Windows XP SP3 or higher Windows Vista Windows 7

(2) CD Playing

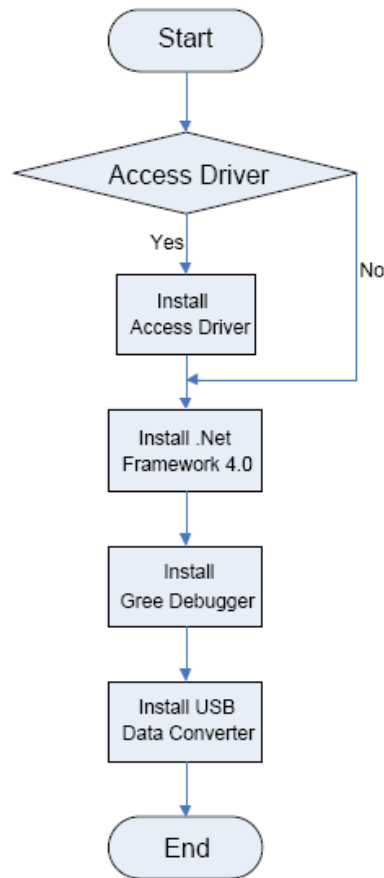
Make sure you have administrator access to the computer and there is a CD-ROM in the computer. Put the CD into the CD-ROM. If it's automatically running, then the following display will be shown. Or double-click the file "Launcher.exe".



For the first time to use Gree Commissioning Tool Kits, install these programmes: .Net Framework 4.0, USB Data Converter, Access Driver (necessary for versions below OFFICE 2007), Gree Debugger.

4.4.1.1 Installation flowchart

Button Graphics



This flowchart describes basically the software installation process. See below for details.

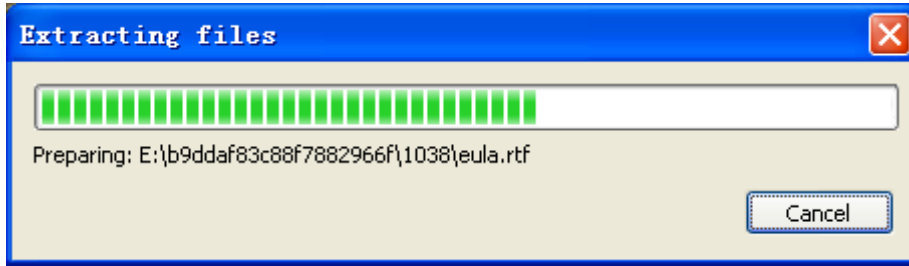
4.4.1.2 Installation process

(1) Install .Net Framework 4.0

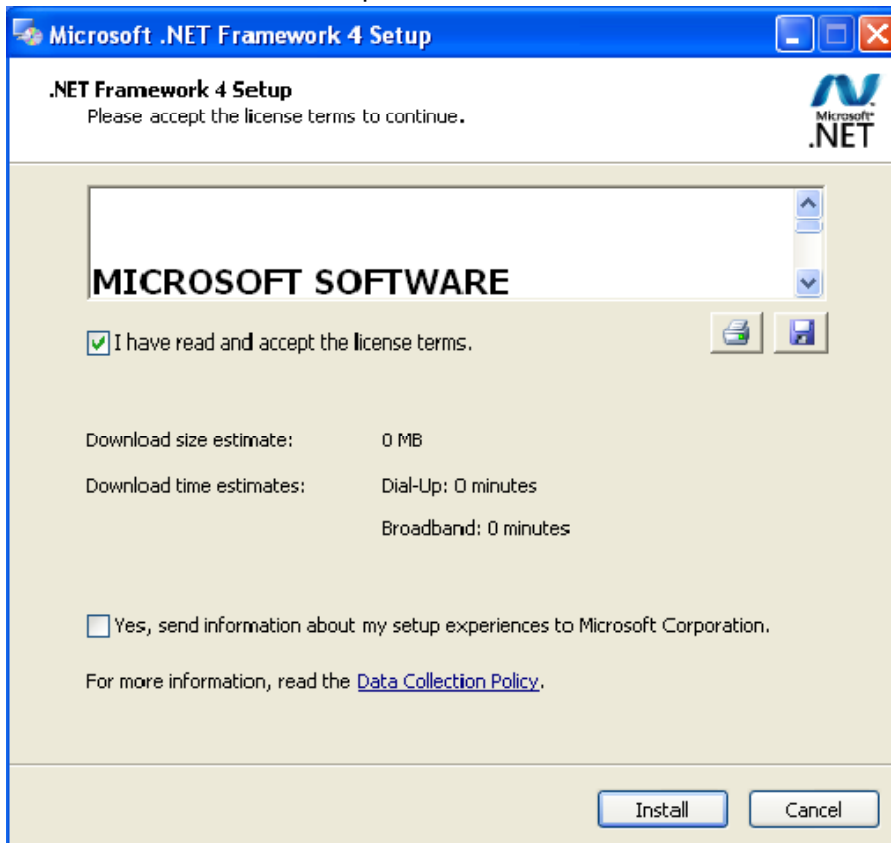
- If your computer has installed .Net Framework 4.0 or versions above, there's no need to install again. Otherwise, click "Install .Net Framework 4.0".



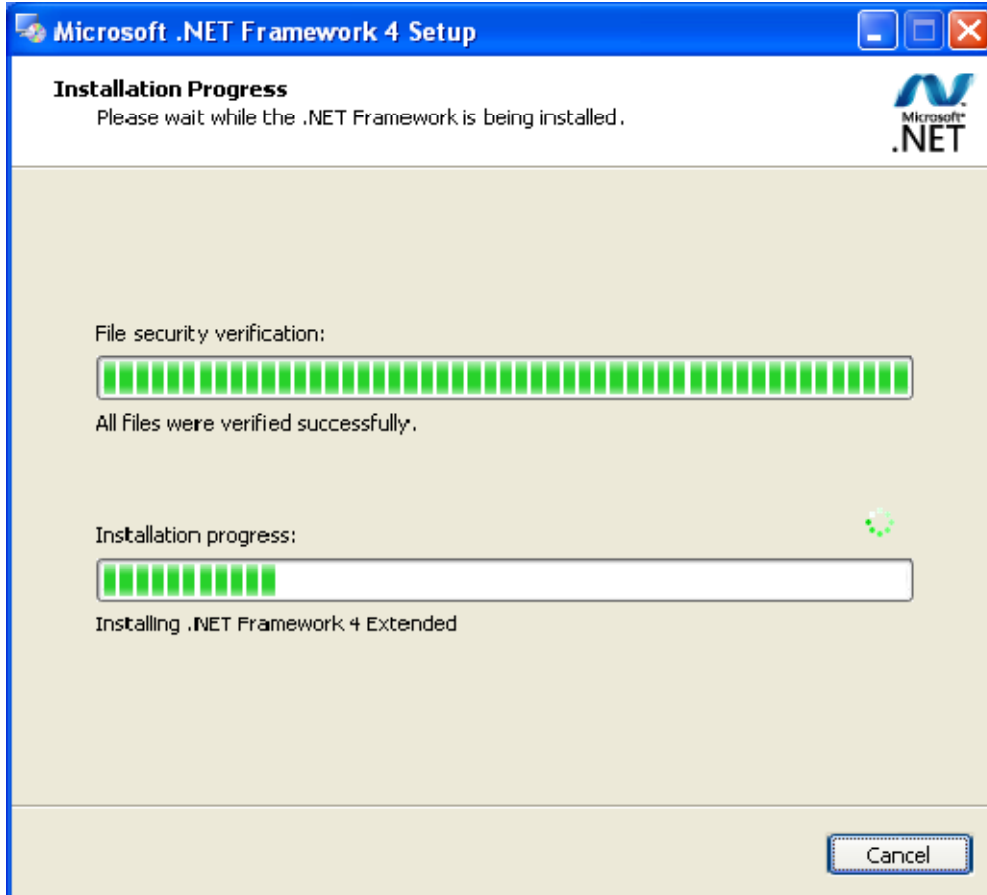
- Extracting files



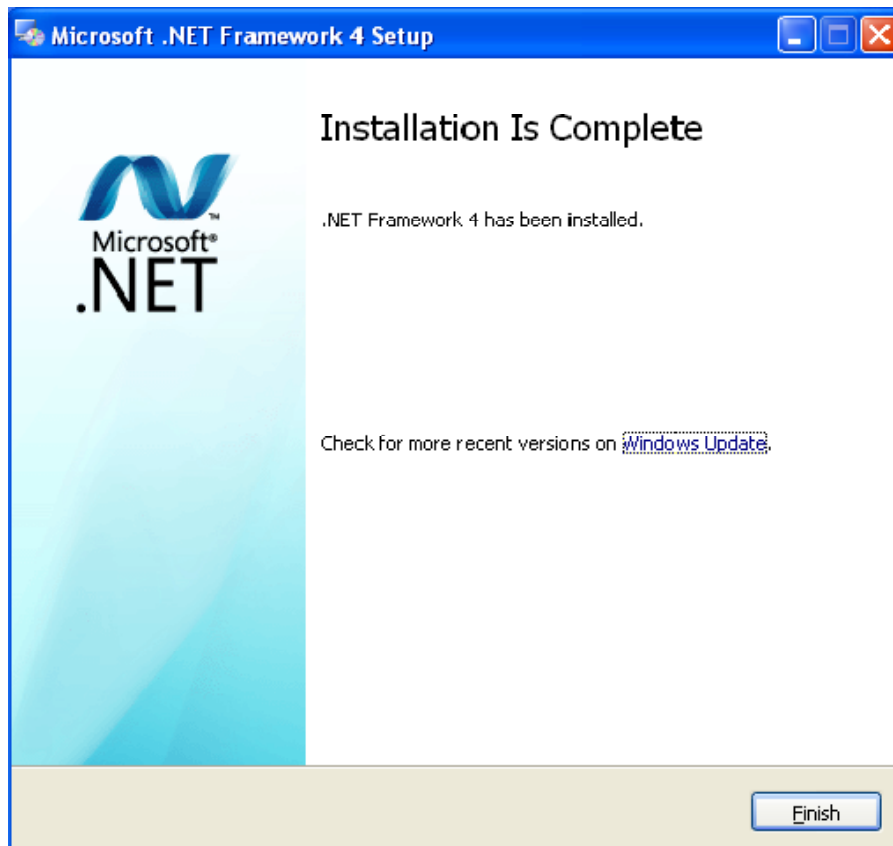
- Click and select "I have read and accept the license terms". Then click "Install".



- Installation is in progress.



- Click "Finish" to complete the installation.

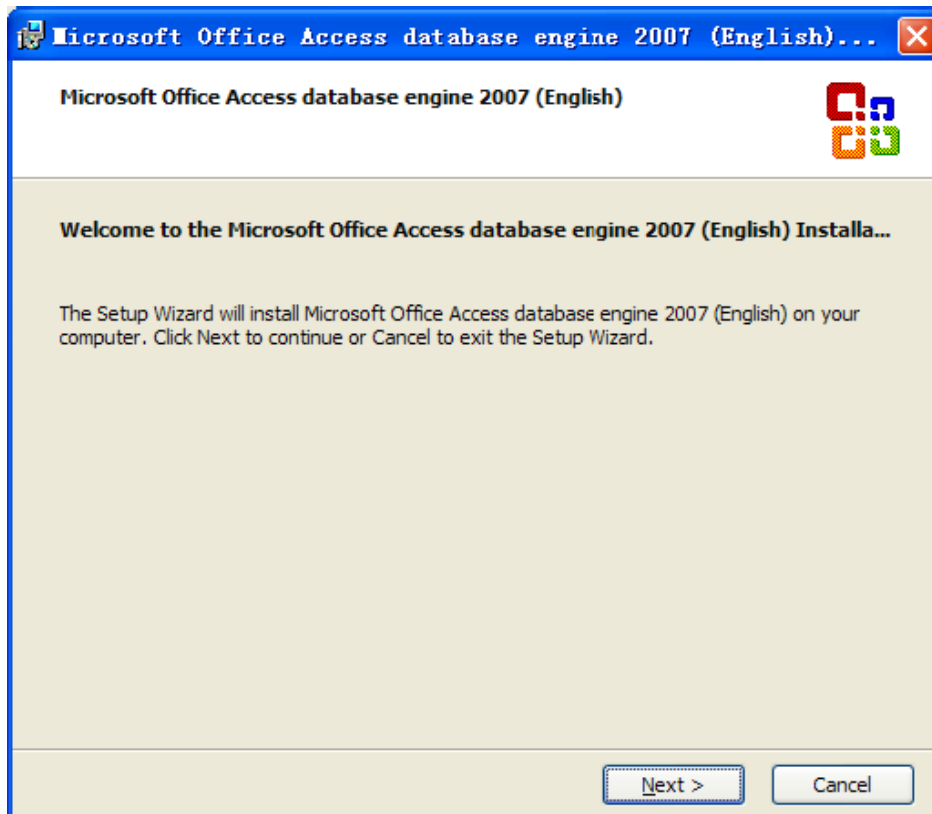


(2) Install Access Driver

- Before operating Gree commissioning software, please first install Access Driver (necessary for versions below OFFICE 2007). Click "Install Access Driver".



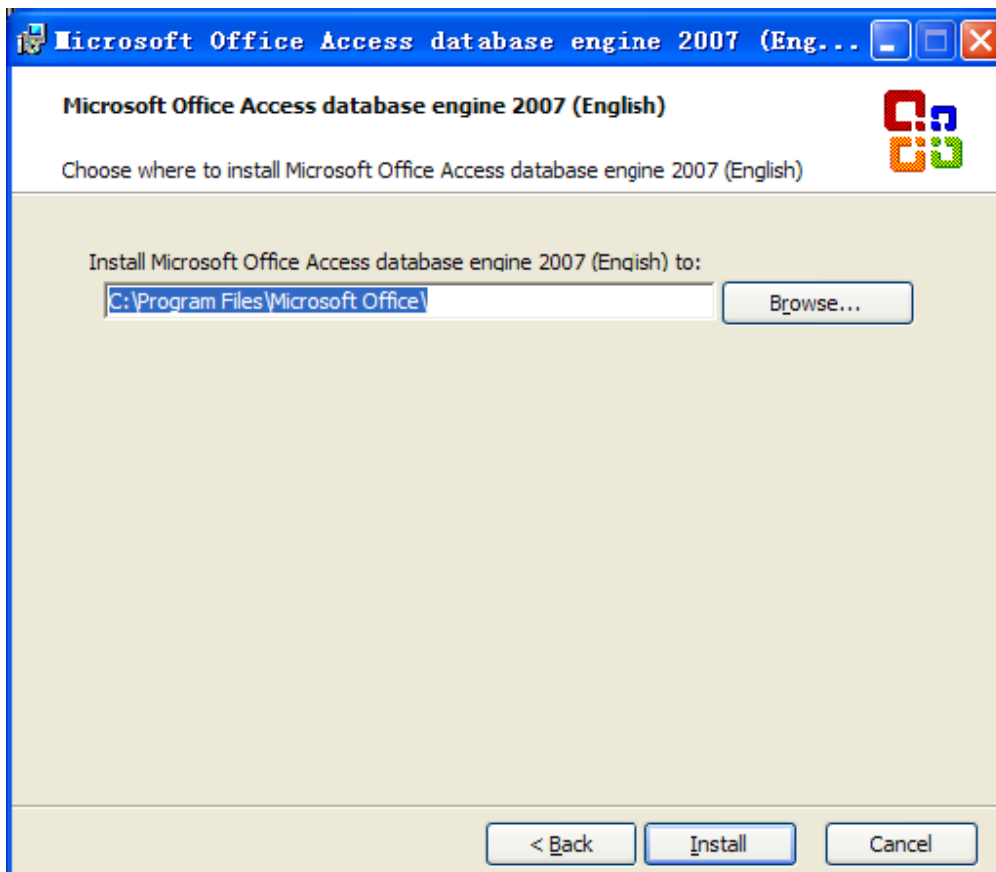
- Click "Next".



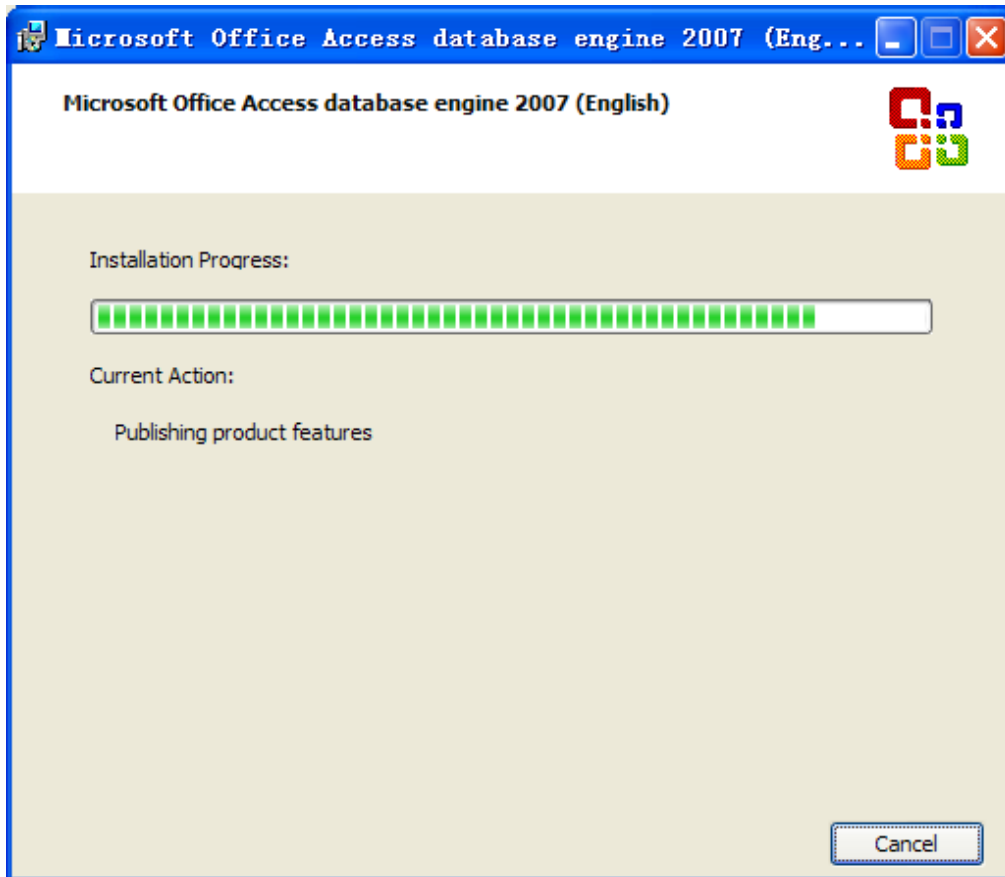
- Tick “I accept the terms in the License Agreement” and then click “Next”



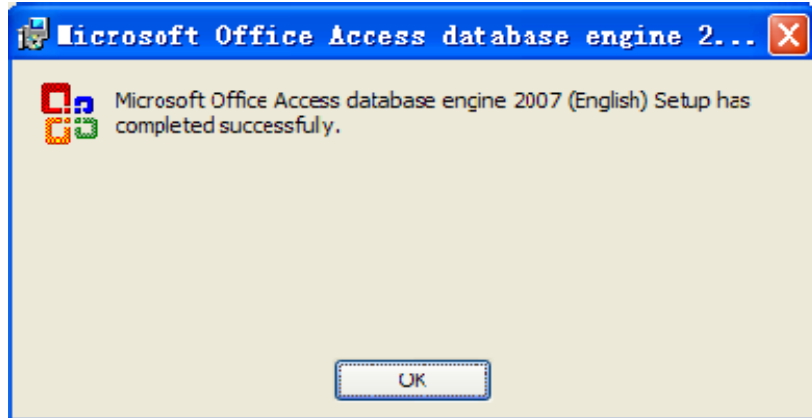
- Click “Browse” to change the default folder to the expected one, or click “Install” to continue the installation.



- Installation is in progress.



- Click "OK" to complete the installation.

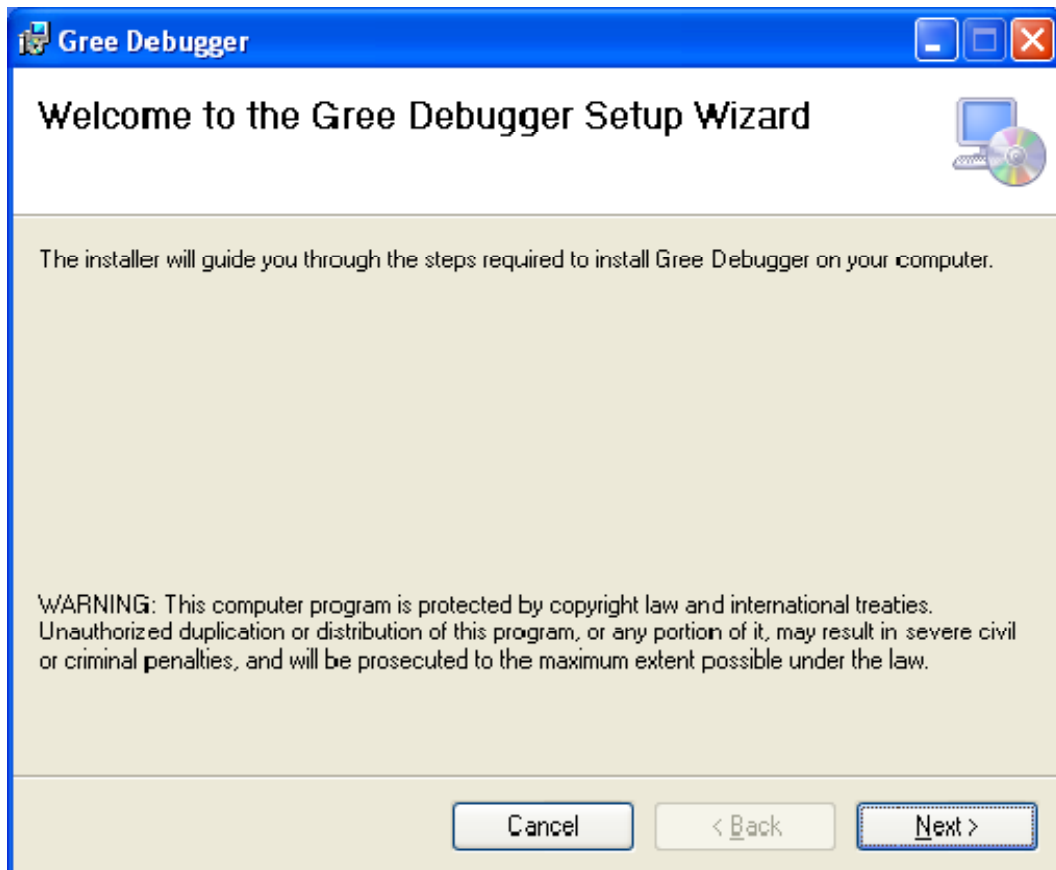


(3) Install Gree Debugger

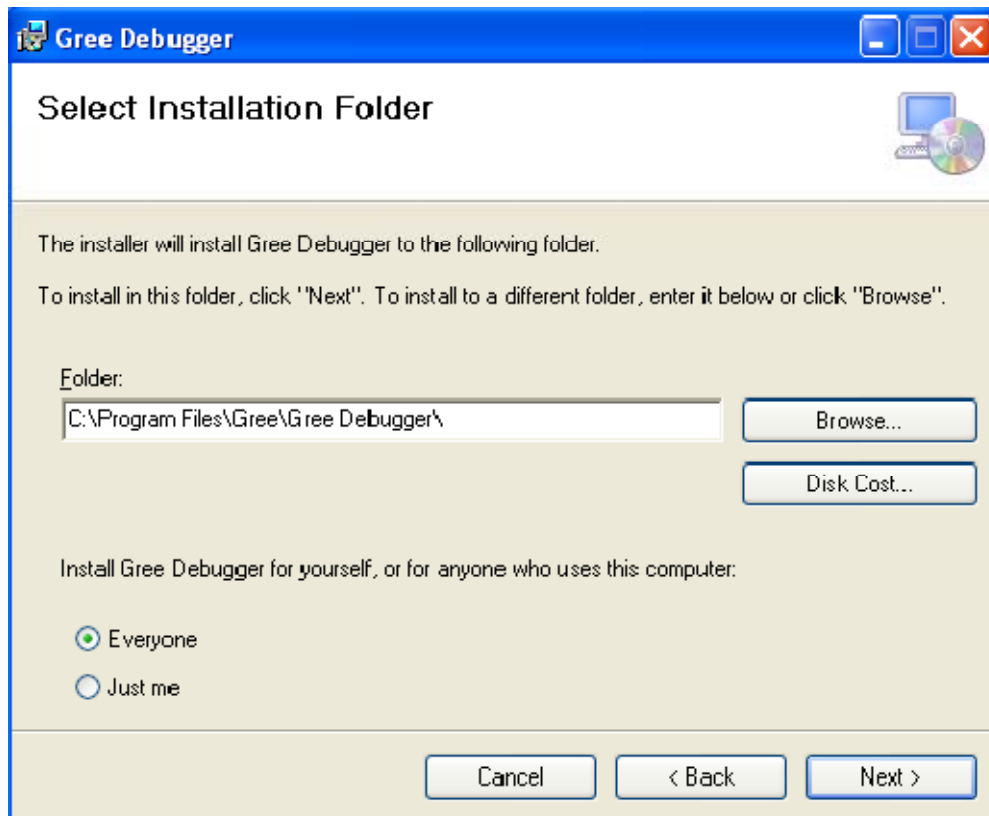
- Before installing Gree debugger, make sure that your computer is installed with .Net Framework 4.0 or versions above. Then click "Install Gree Debugger".



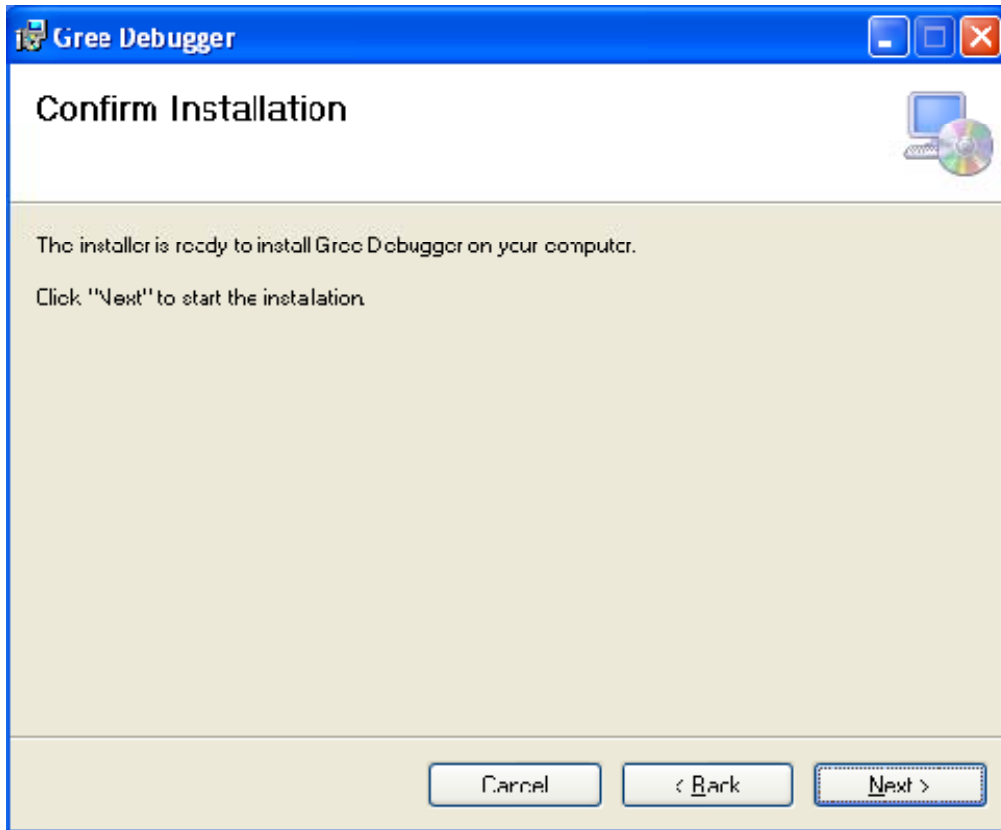
- Click "Next".



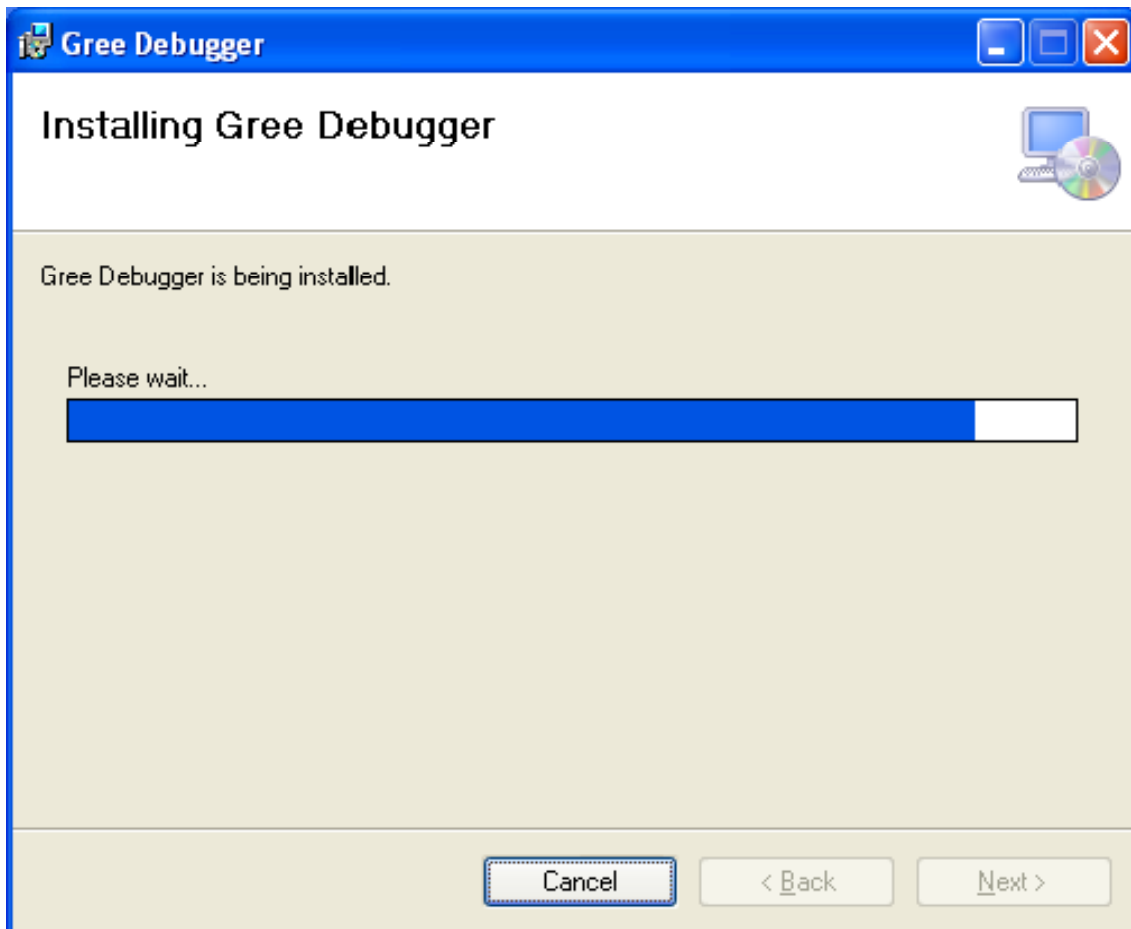
- Click "Browse" to select installation folder. If no change is needed for the folder, click "Next" to continue the installation.



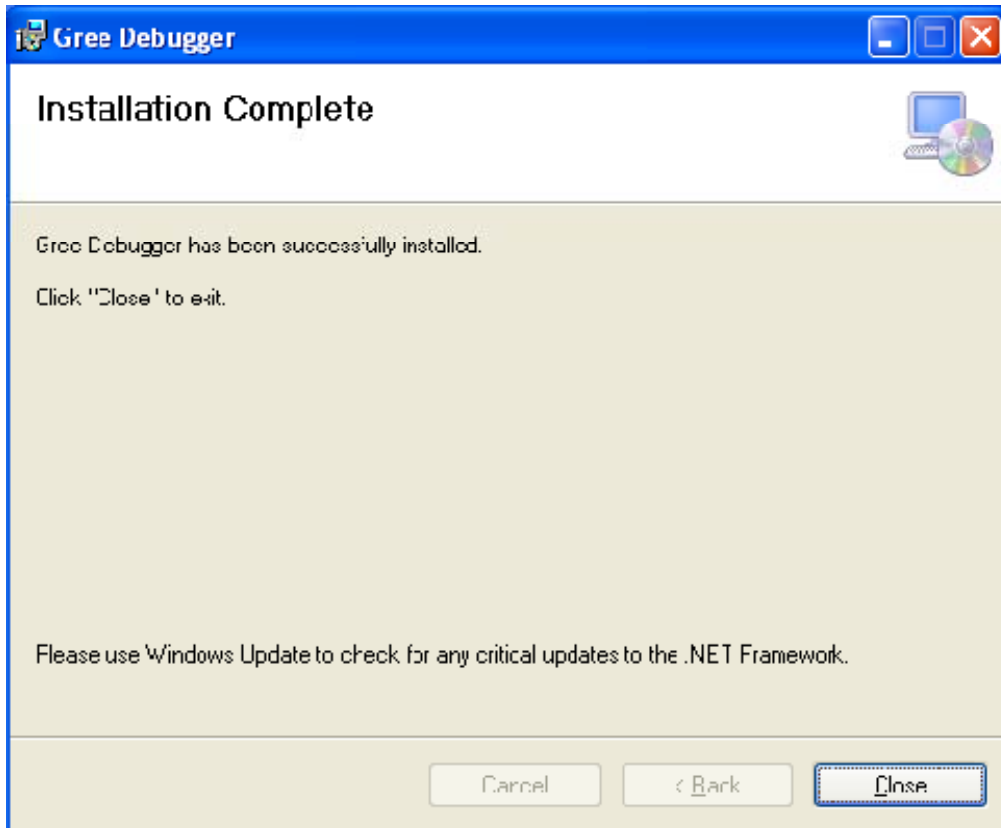
- Click "Next".



- Installation is in progress.



- Click “Close” to complete the installation.

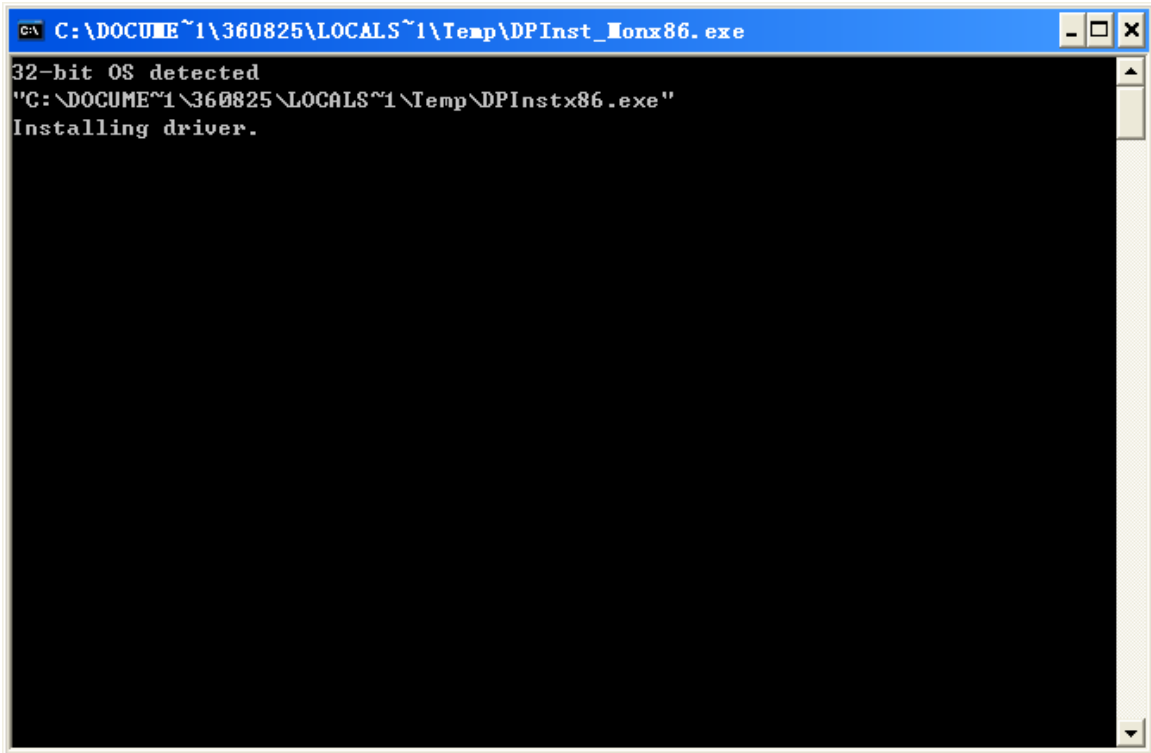


(4) Install USB Converter Driver

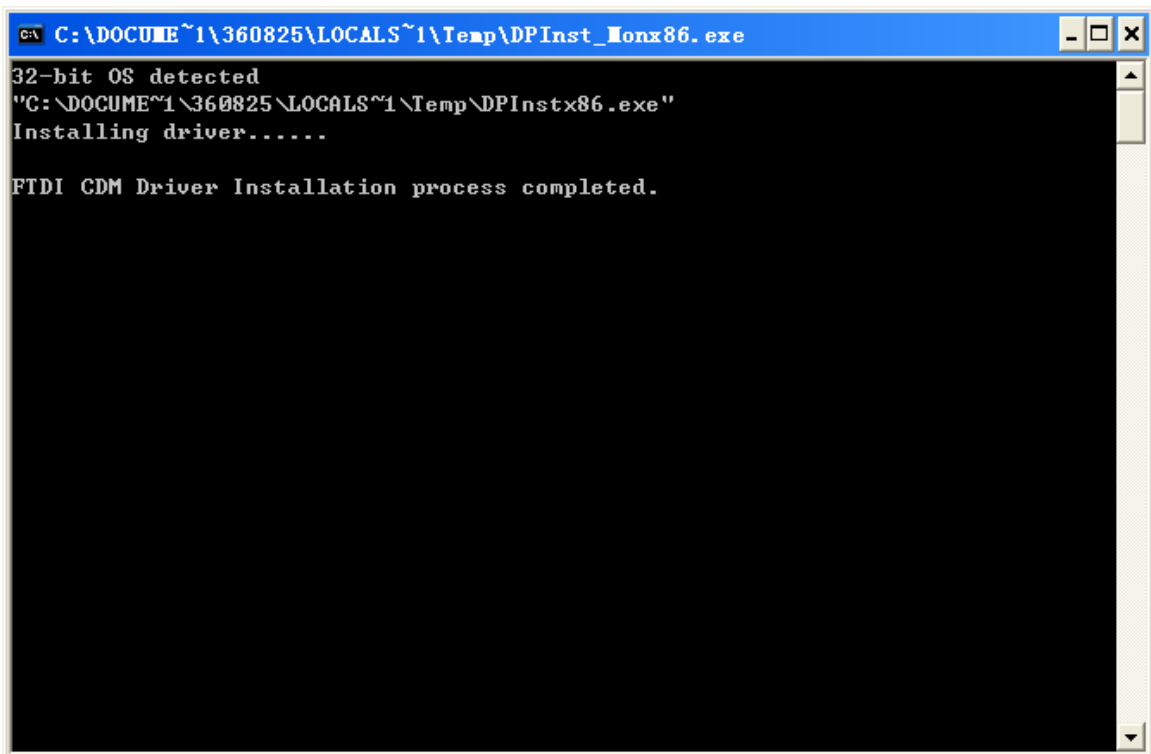
- If USB converter driver is already installed in your computer, this part can be skipped. Otherwise, click “Install USB Converter Driver”.



- Then the following installation window will be shown.



- This window will exit after installation is finished.

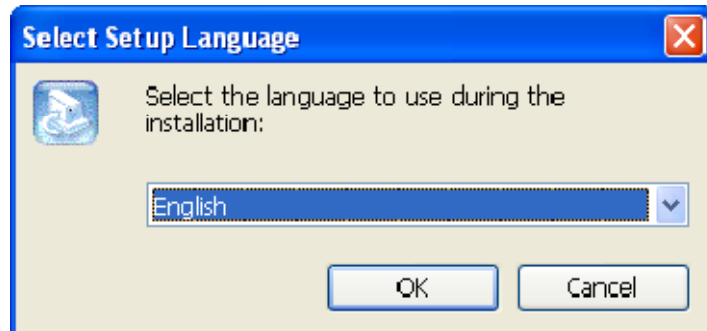


(5) Install Gree USB Data Converter

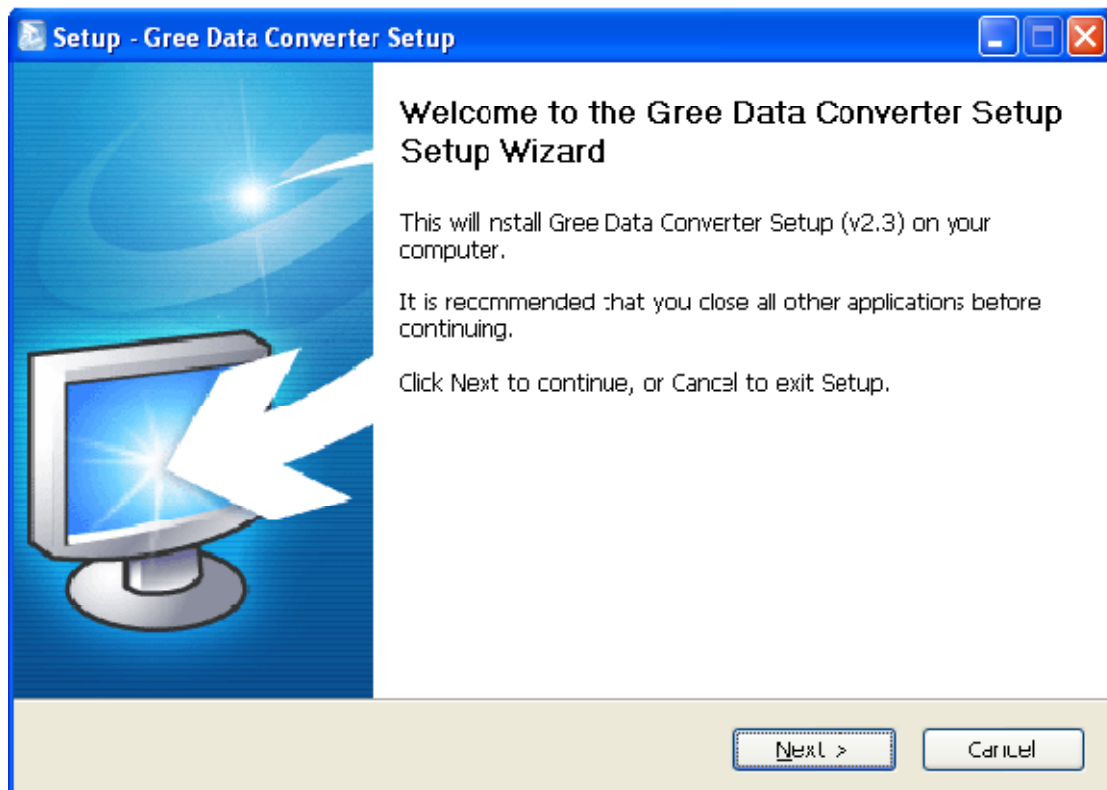
- If converter baud rate is needed to be set, then converter configuring software must be installed. Click “Install Gree USB Data Converter”.



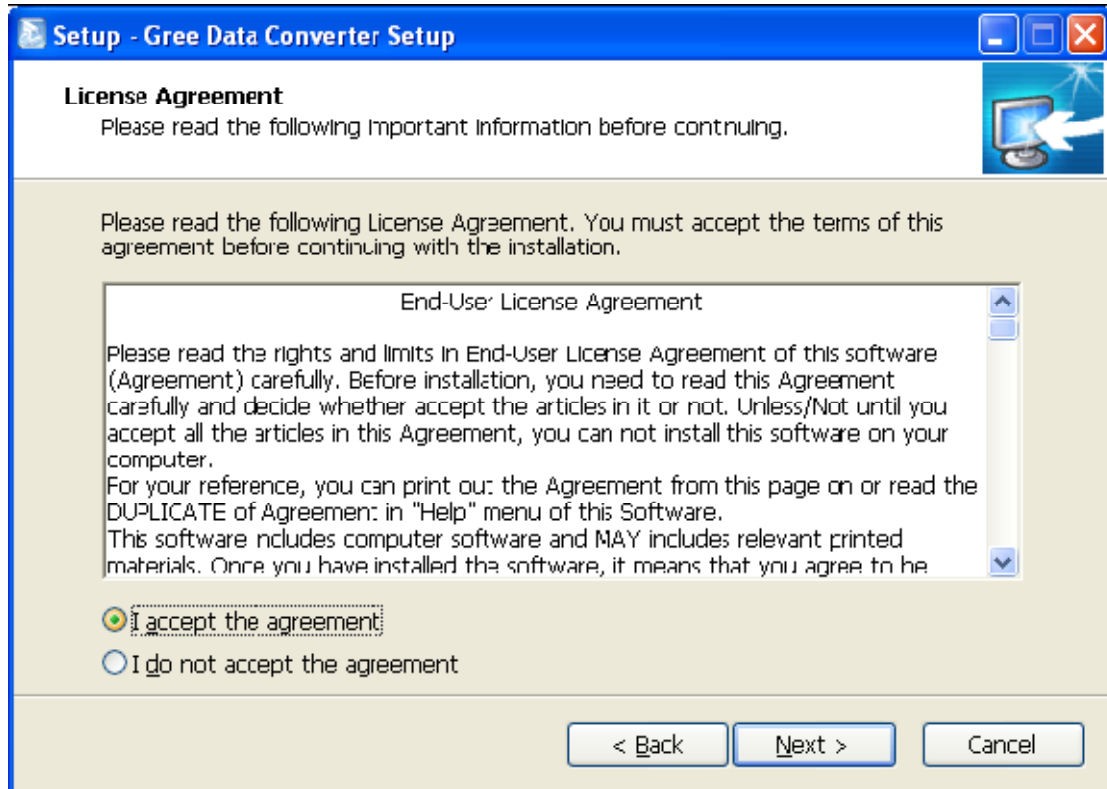
- Then select the setup language. You can choose Chinese “simplified”, Chinese “traditional” or English. Then click “OK”.



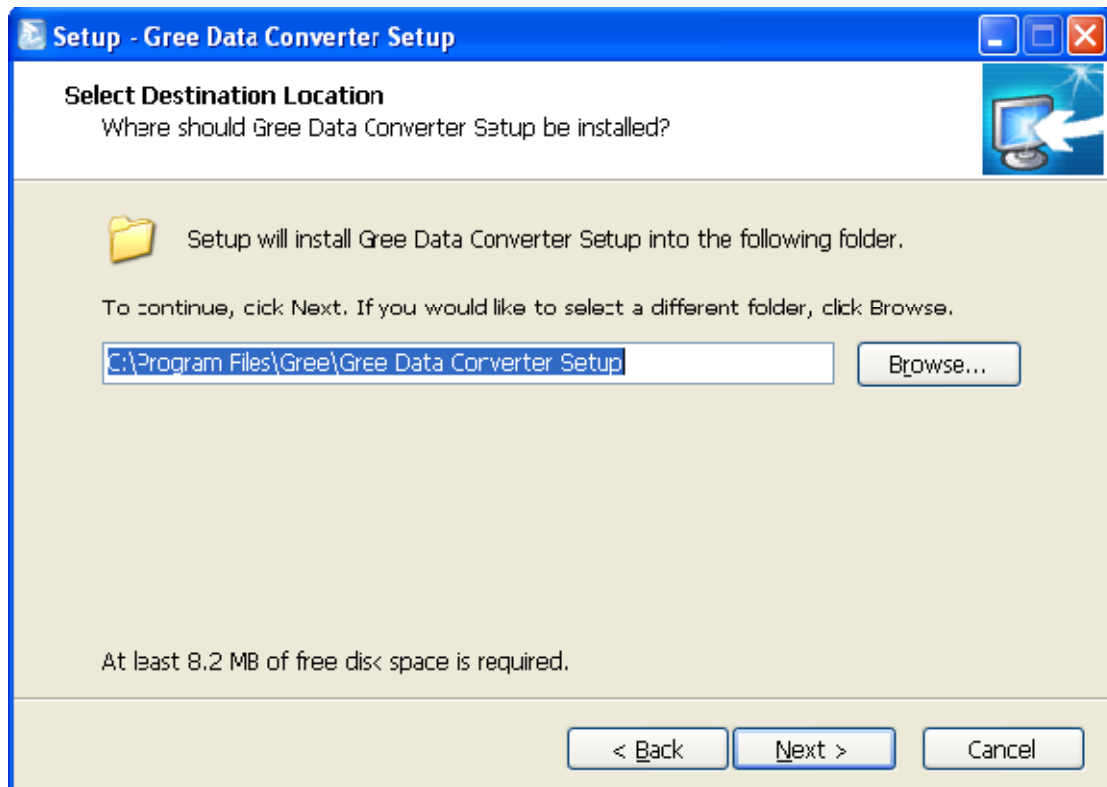
- Click “Next”.



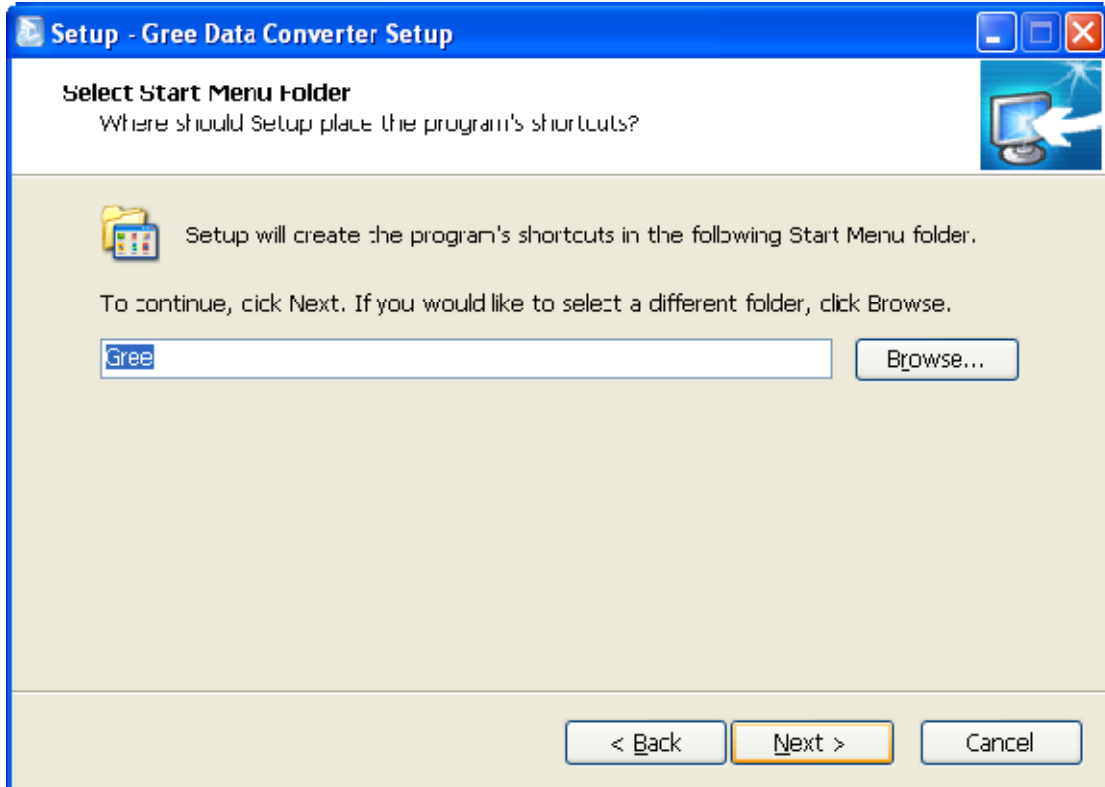
- Tick "I accept the agreement". Then click "Next" to continue installation.



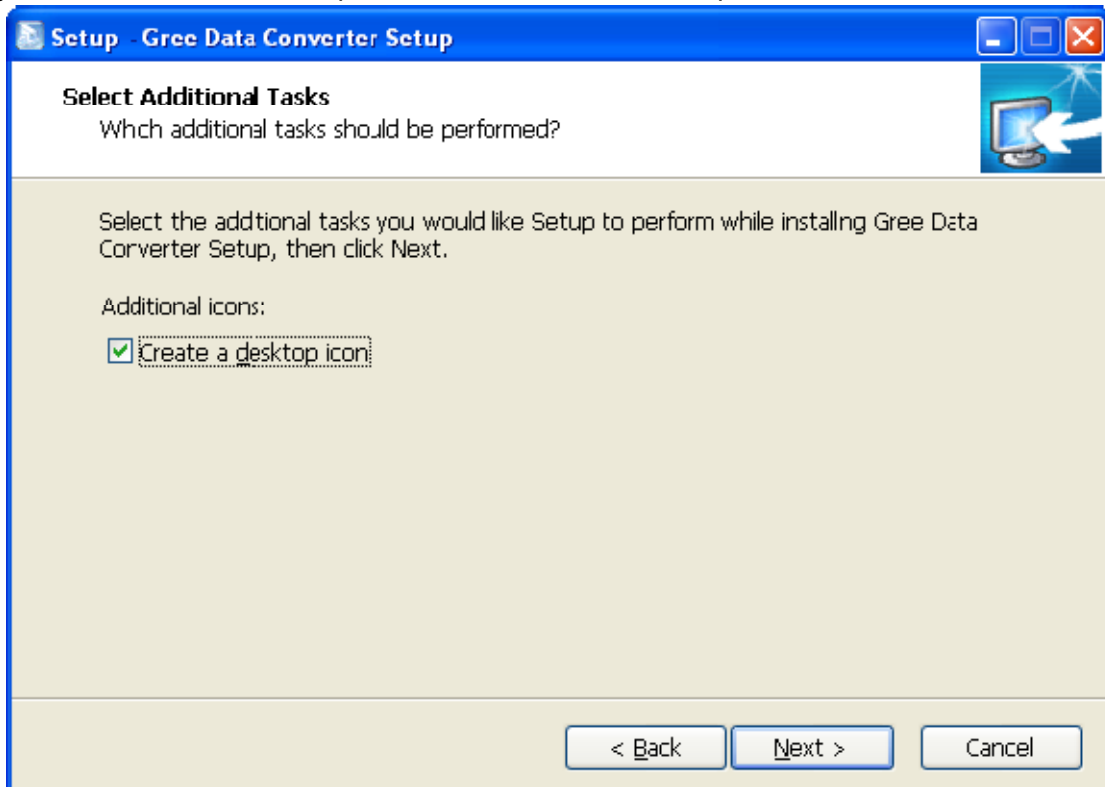
- Click "Browse" to select your expected installation folder. Click "Next" to continue.



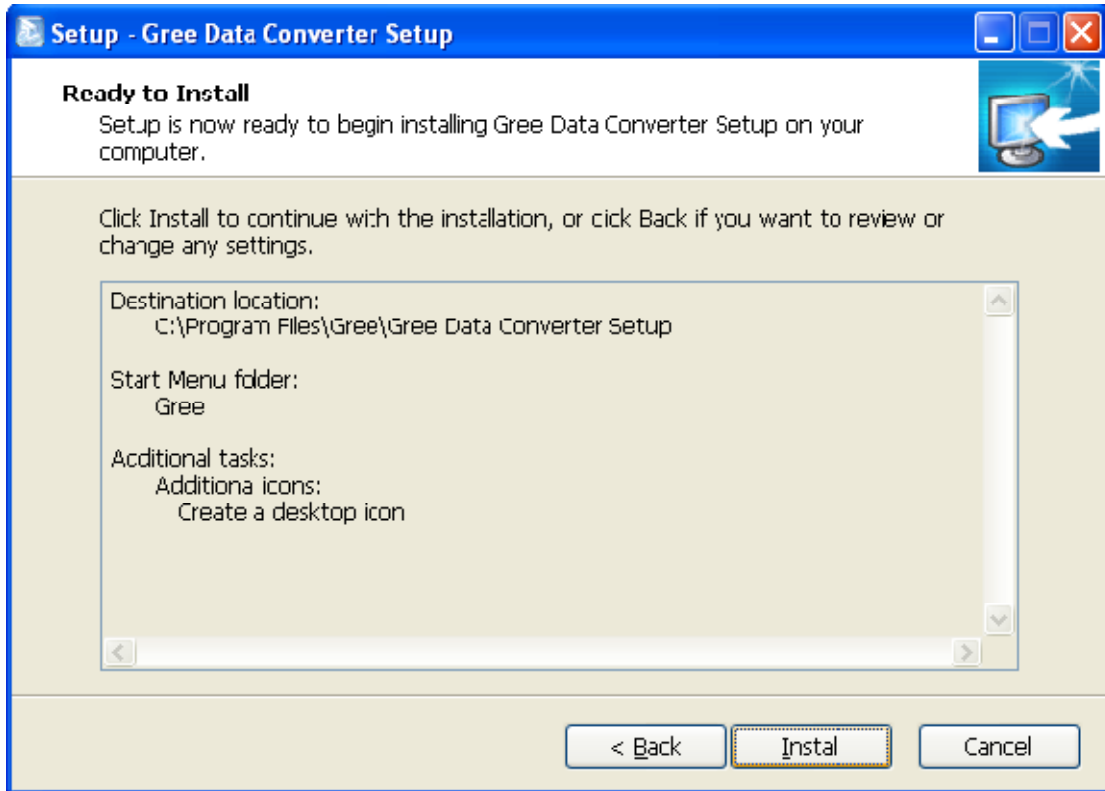
- Click “Browse” to change folder. Click “Next” to continue.



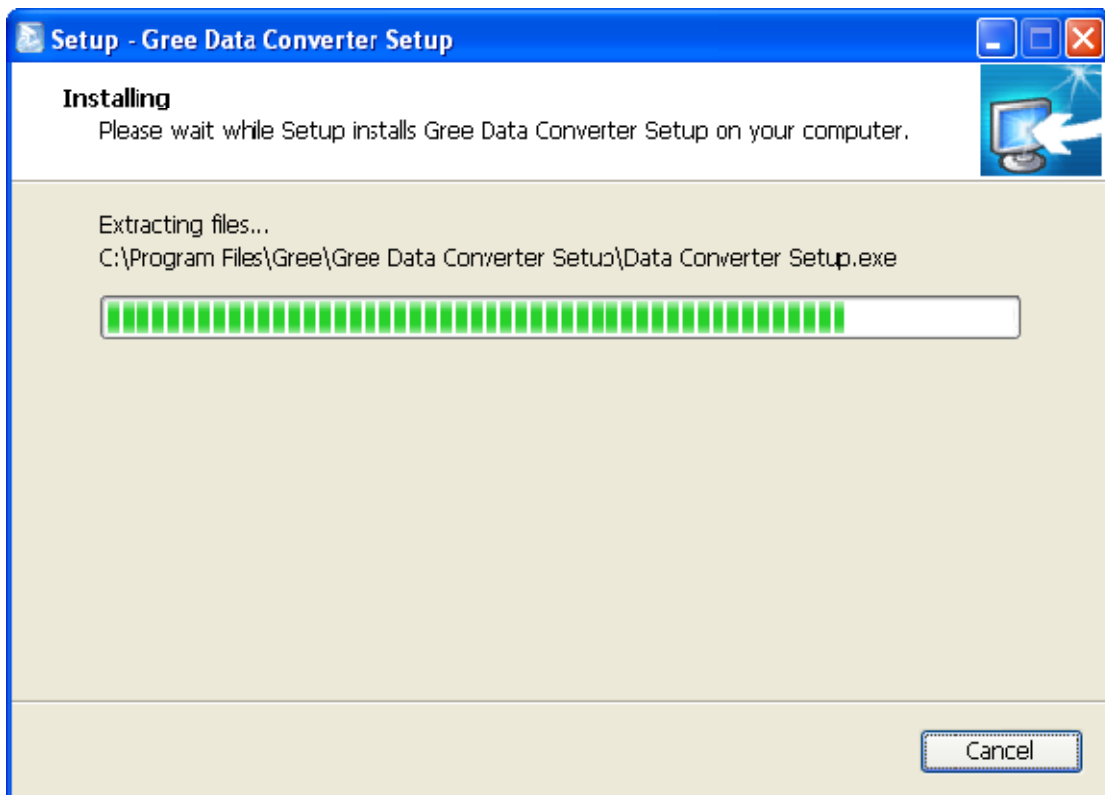
- If you want to create a desktop shortcut, tick “Create a desktop icon”. Then click “Next” to continue.



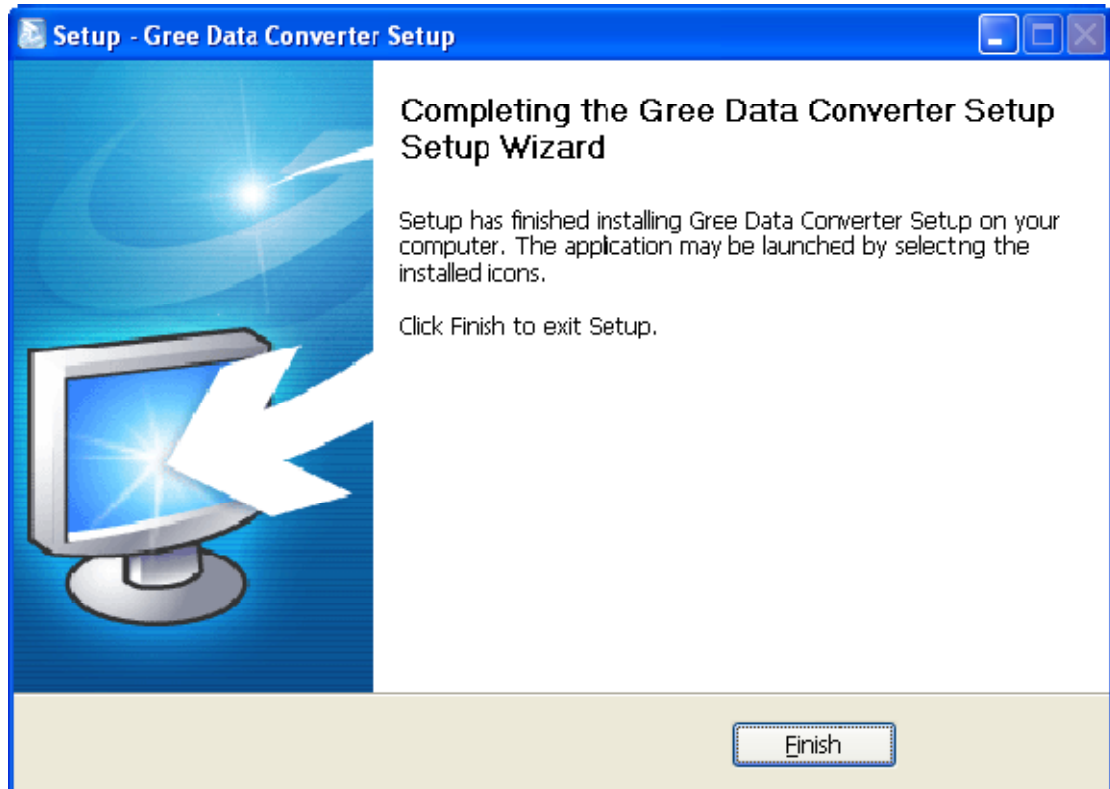
- Destination location, folder and additional task will be shown in the next step. If you need to change any of it, please click “Back”. If not, click “Install” to start installation.



- Installation is in progress.



- Click “Finish” to complete the installation.

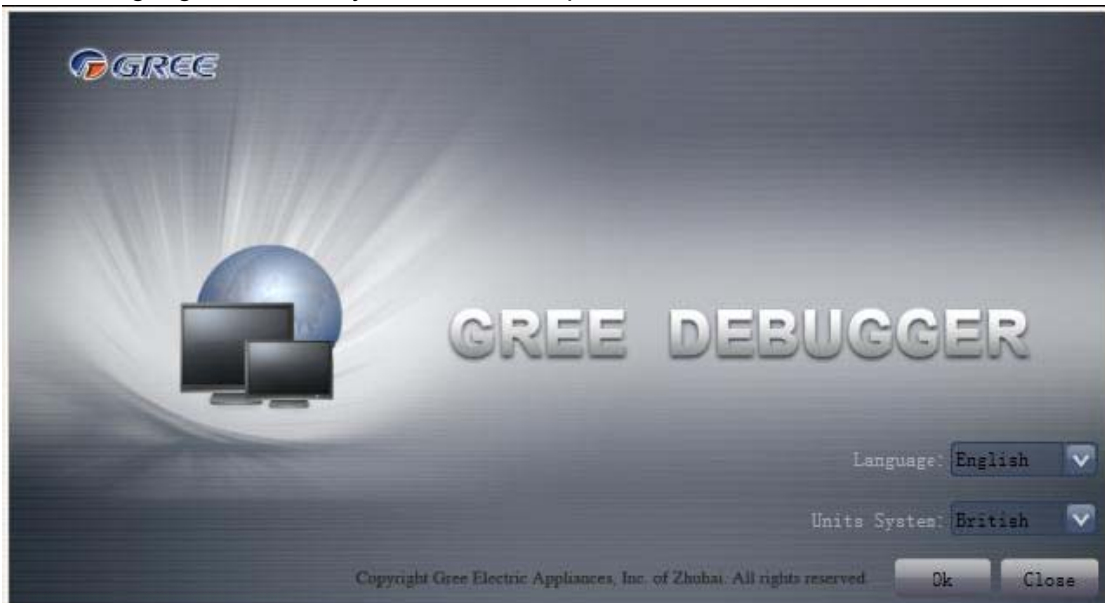


4.4.2 Data monitoring

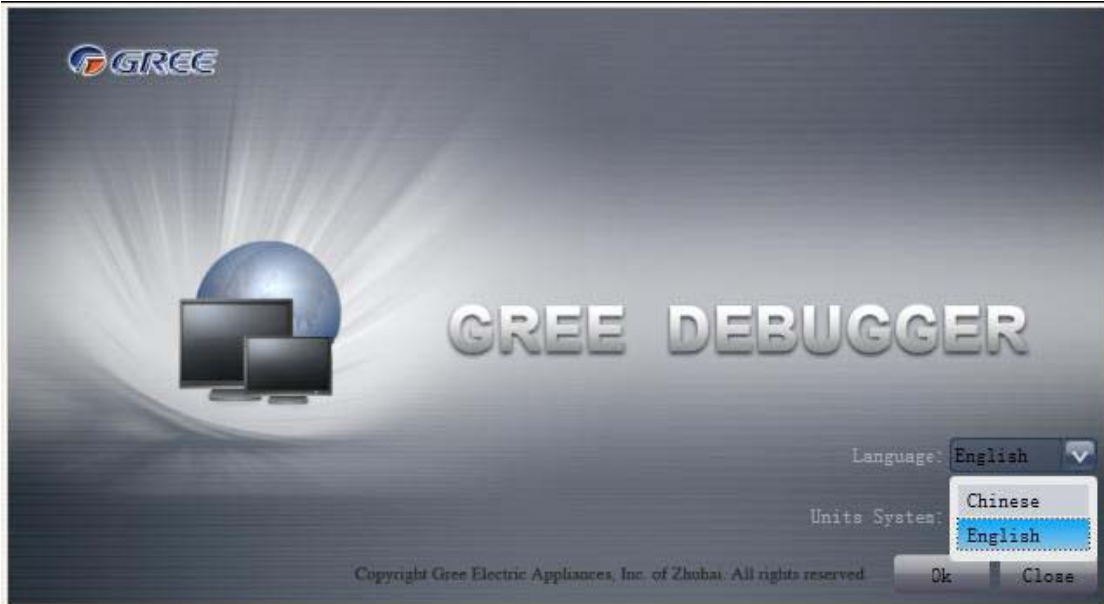
- Start up Gree Debugger.



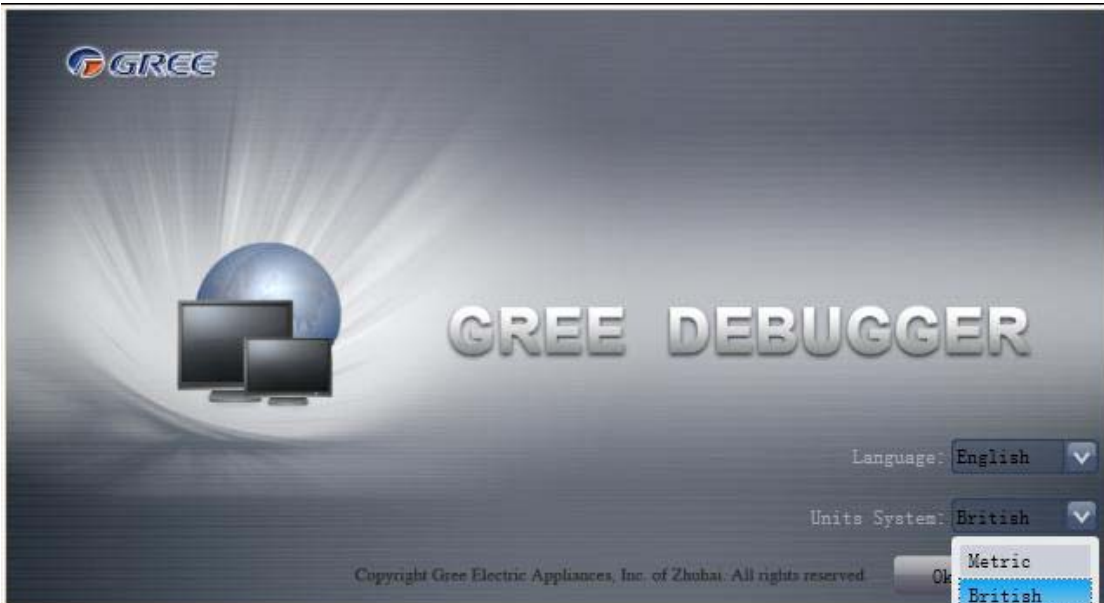
- On the original interface, user can select language and units system. Click “OK” to confirm the defaulted language and units system and start up the software.



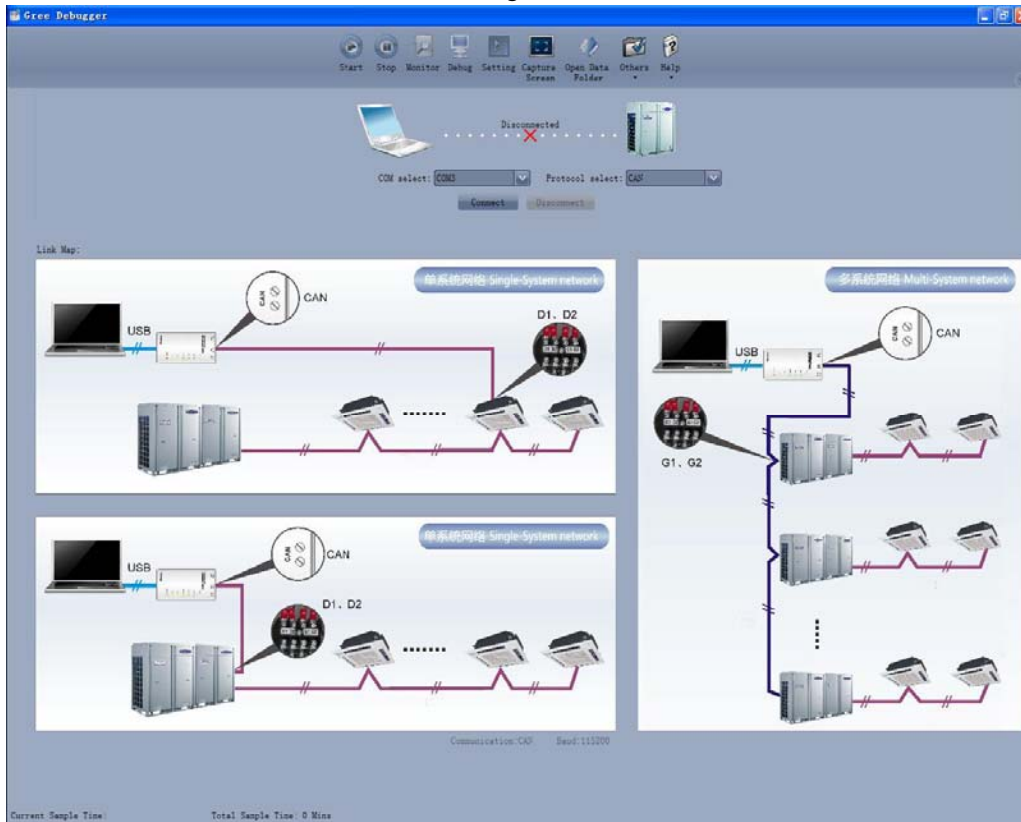
- Select language.



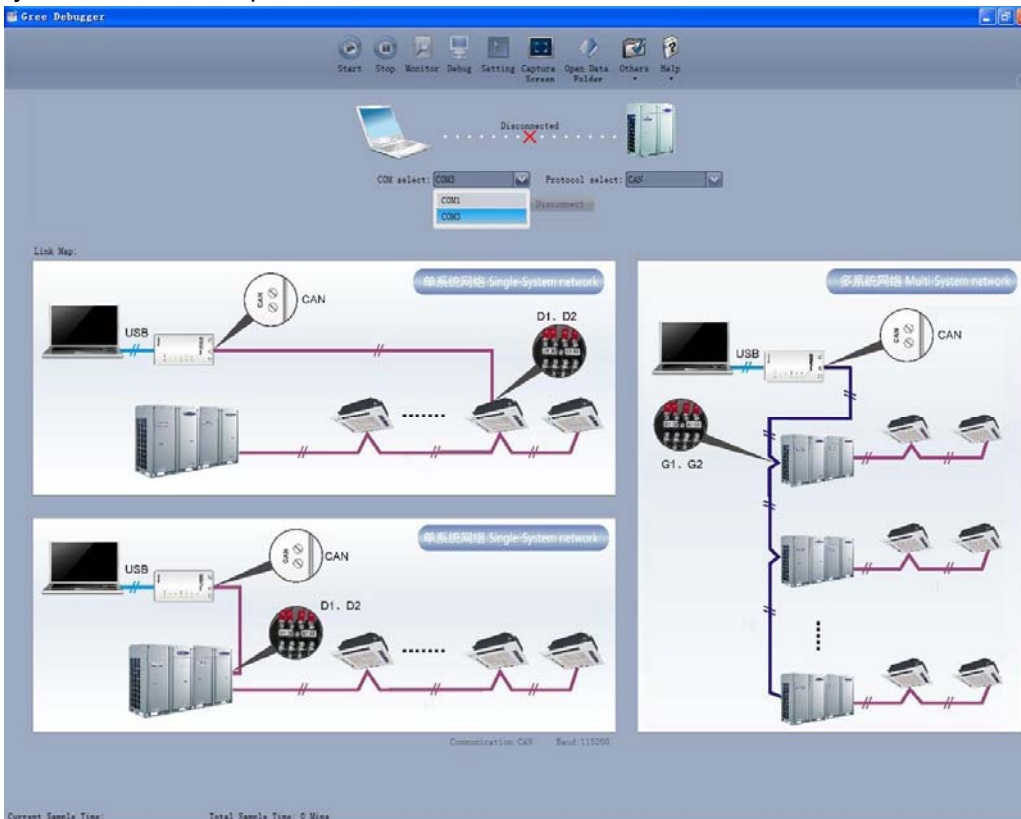
- Select system of units.



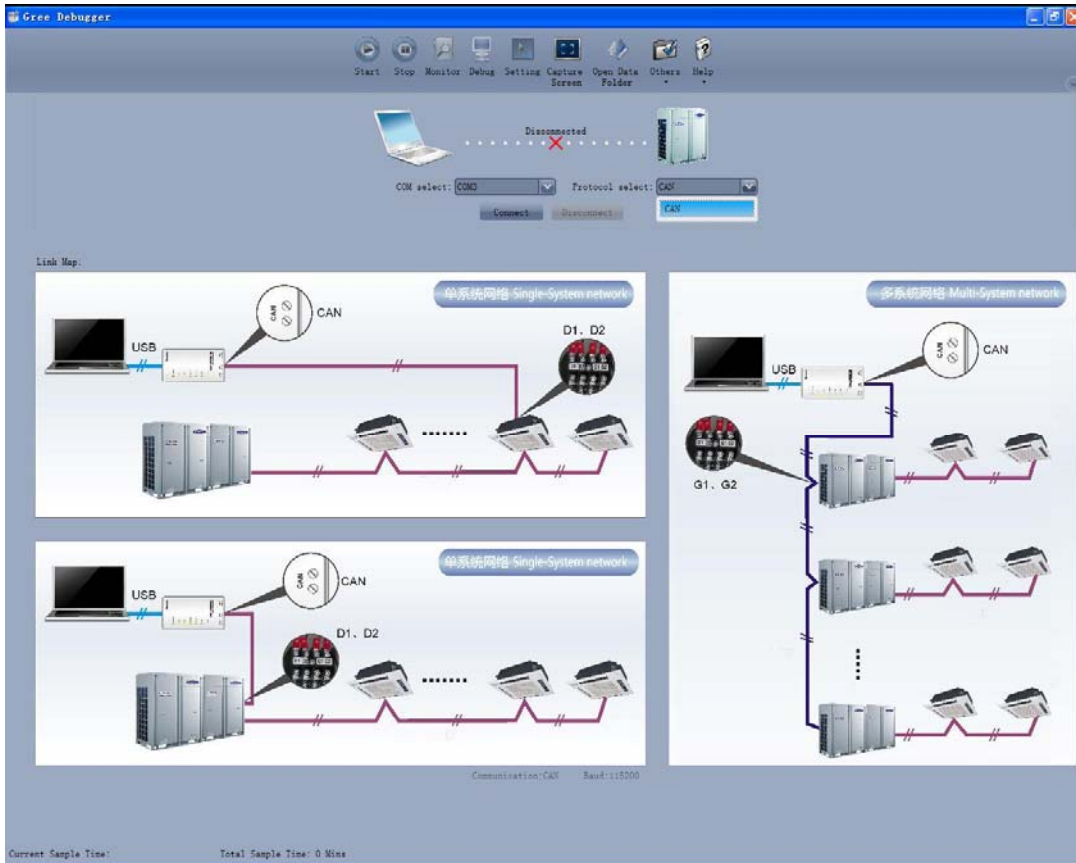
- If units you want to monitor are already connected, and able to communicate normally, with correct COM and protocol, then you may click “Connect” to enter the interface of numbers. Otherwise, connect in accordance with the connection diagram shown below.



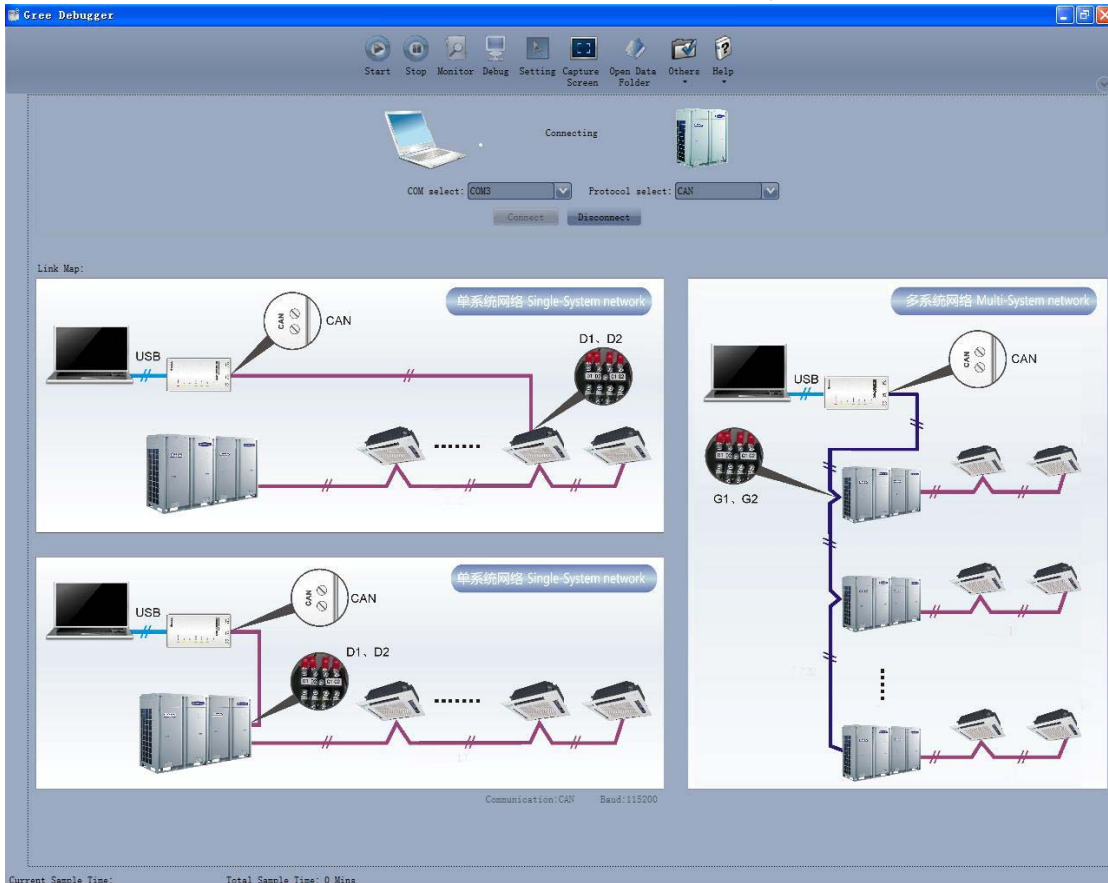
- COM selection: the serial port in your computer can be detected automatically. You just need to select your desired serial port.



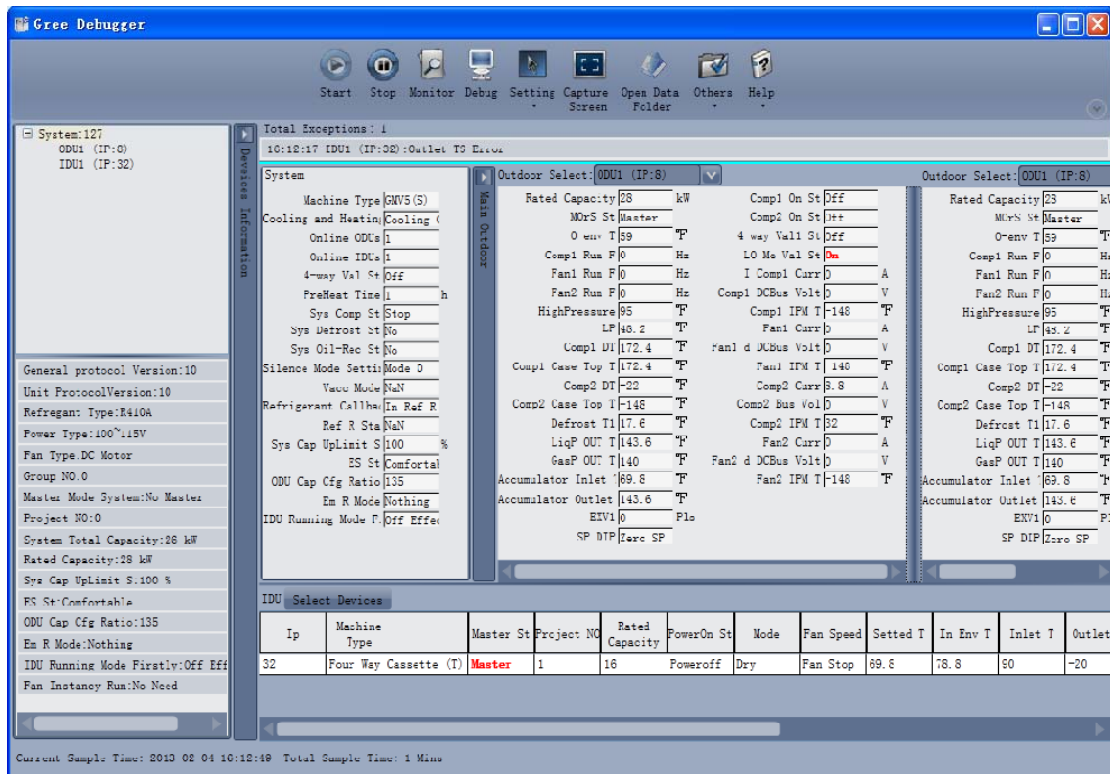
- Protocol selection: This is to select the communication method of your units. Currently, CAN is applicable to the units.



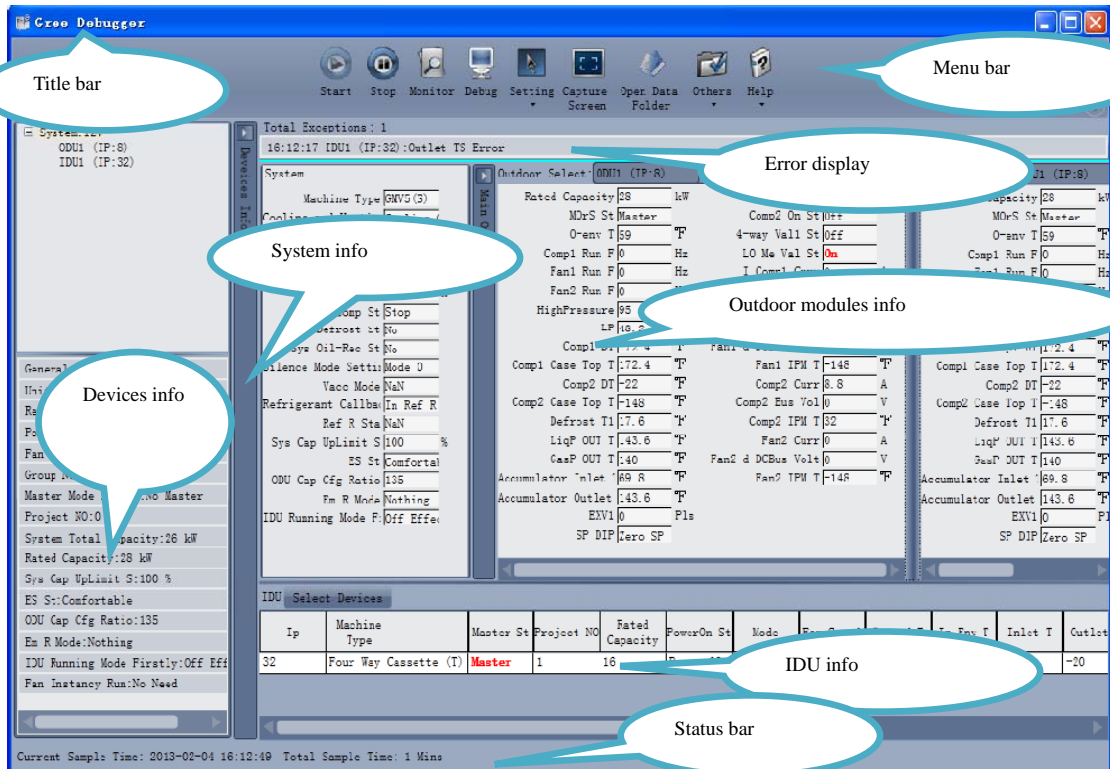
- After the selection, click “Connect”. If units can communicate normally with computer, then the interface of numbers will be shown soon. Otherwise, “Connecting” will be shown.



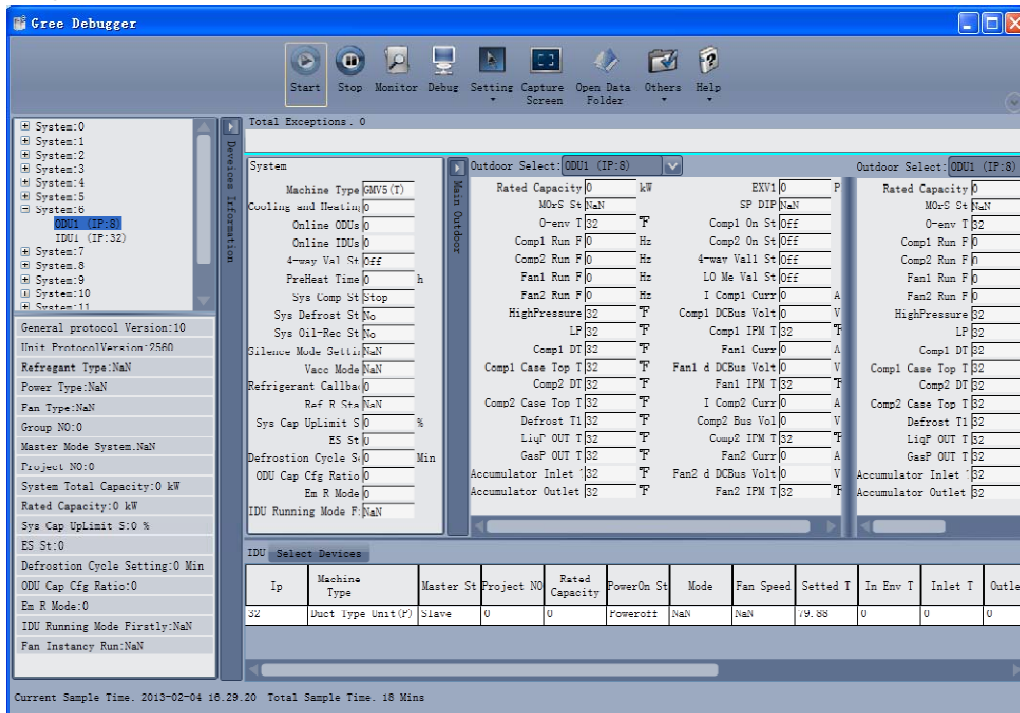
Duct type split Air conditioner Inverter Series



- There are several display zones on this interface. You can hide devices information and system information by clicking devices information icon and system icon . Display zones of indoor unit information and errors can be dragged up and down at the dividing lines. As to the display zone of outdoor modules information, it can show information of only one module and hide information of others (two modules are defaulted to be shown). Menu bar can be hidden by clicking icon . Status bar shows the current time and period for data collection.

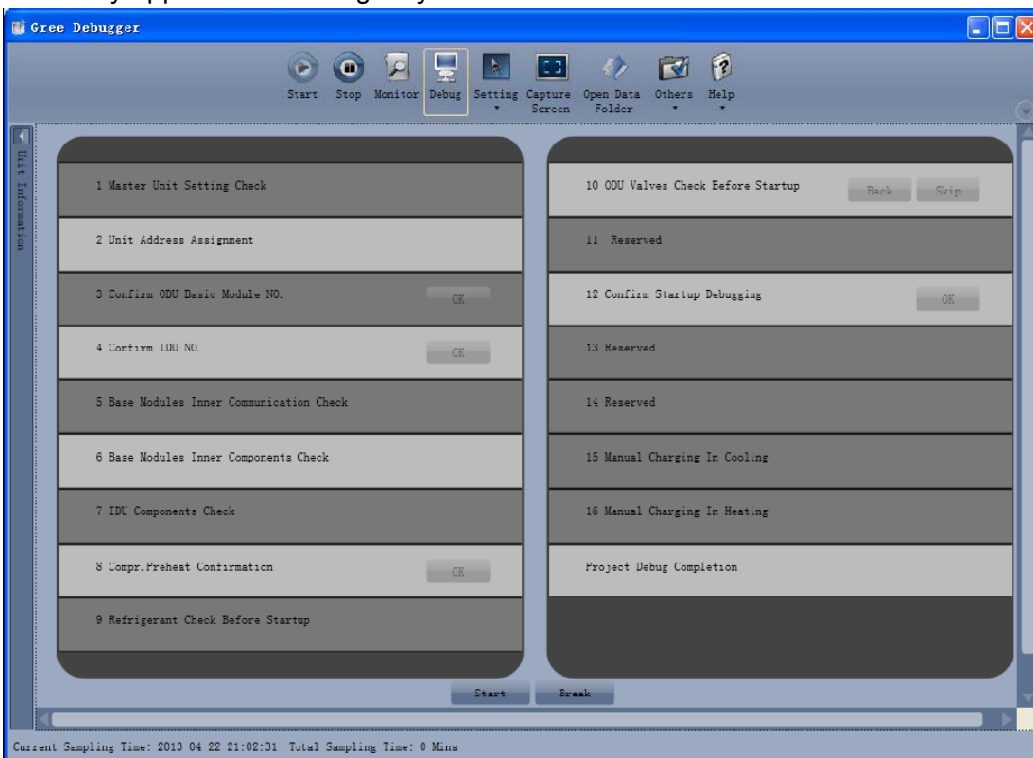




- On the display zone of devices information, you may click to select and view units that need monitoring.

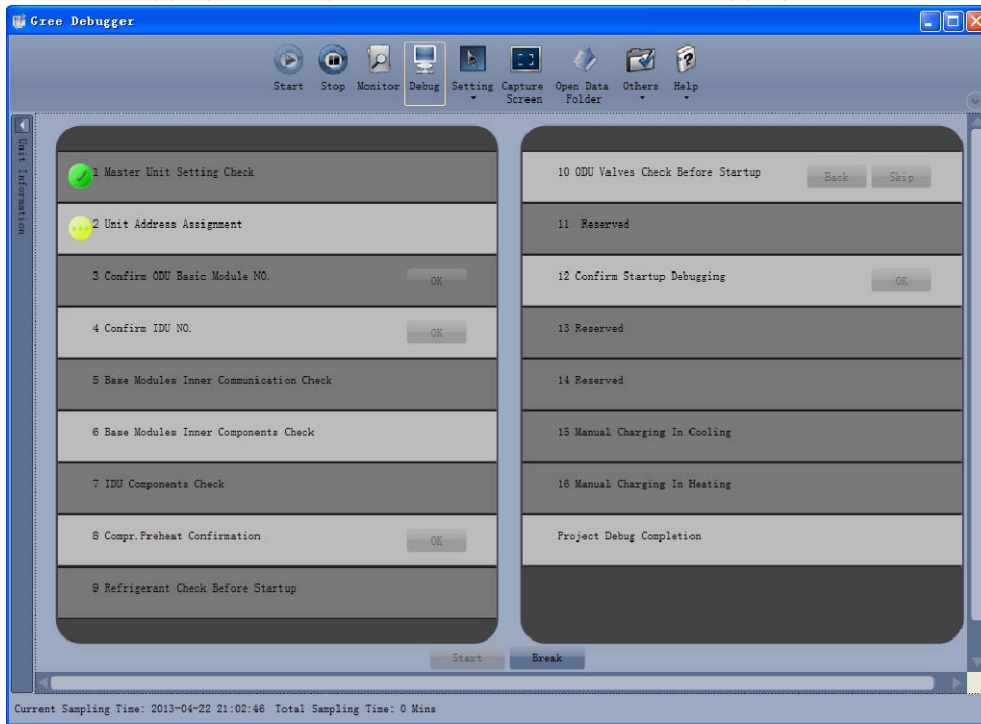



4.4.3 Project debugging

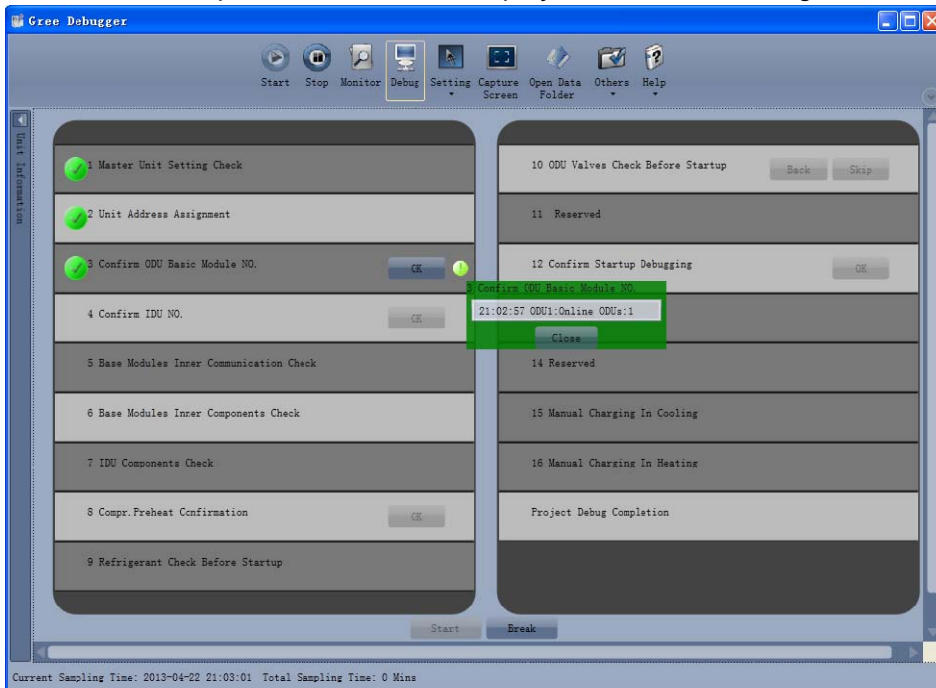
- Click icon of “Debug” on the menu bar and the interface will be switched to project debugging, where auto debugging will be started from up to down and from left to right. Note: Debugging function is only applicable to a single-system network.





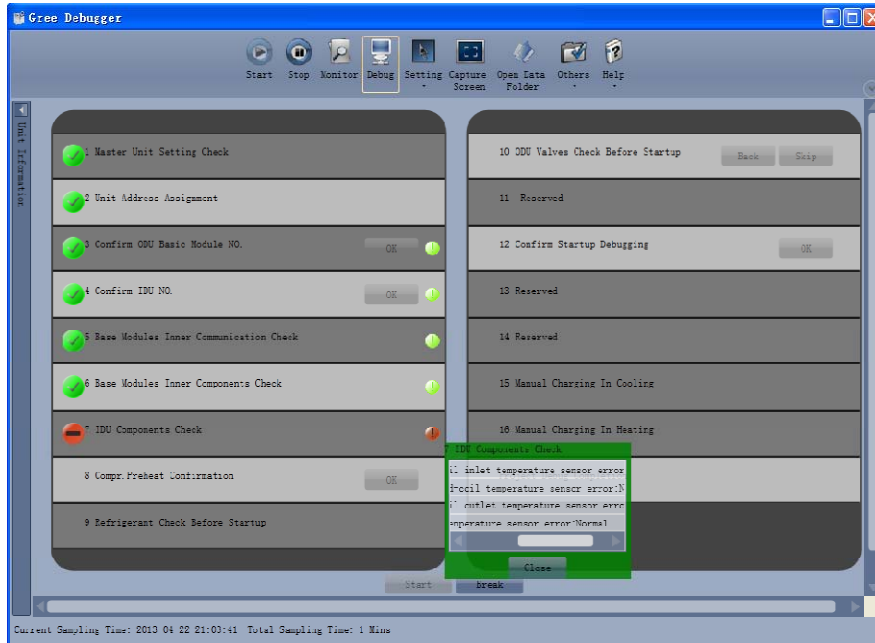
- Click “Start” to enable the debugging function. Then debugging will be started up automatically.  indicates that debugging is in progress while  indicates debugging is completed.



- If “OK” button is displayed, it means user needs to judge whether to continue debugging or not. Click icon  and relevant information will be shown for your reference. Click “Close” to close the pop-up (For No.3 Confirm ODU Basic Module NO. and No.4 Confirm IDU NO., the current number of units under debugging will be displayed. See the following marked with circle. For No.8 Compr. Preheat Confirmation, the preheat time will be displayed. See the following marked with circle).



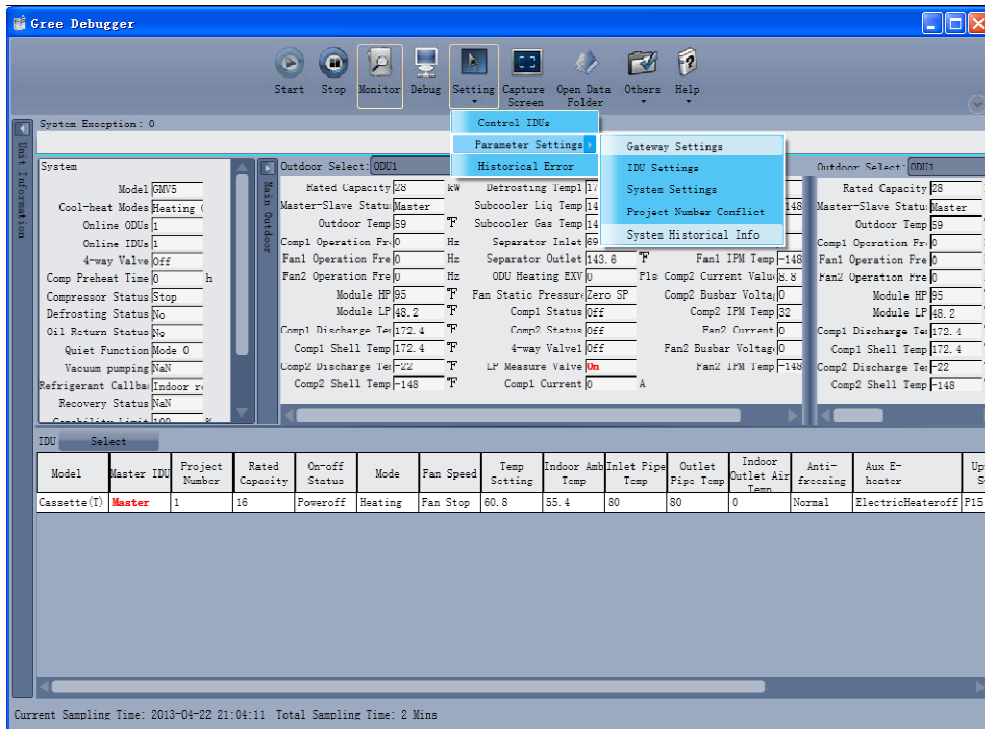
- Icon  indicates that there is problem found during debugging. Debugging will not be completed unless problem is solved (after problem is solved, step without “OK” button will switch to the next step automatically, otherwise user needs to click “OK” to continue). Click icon  and relevant information detected in this step will be displayed for your reference in order to solve problems. Click “Close” to close the pop-up.



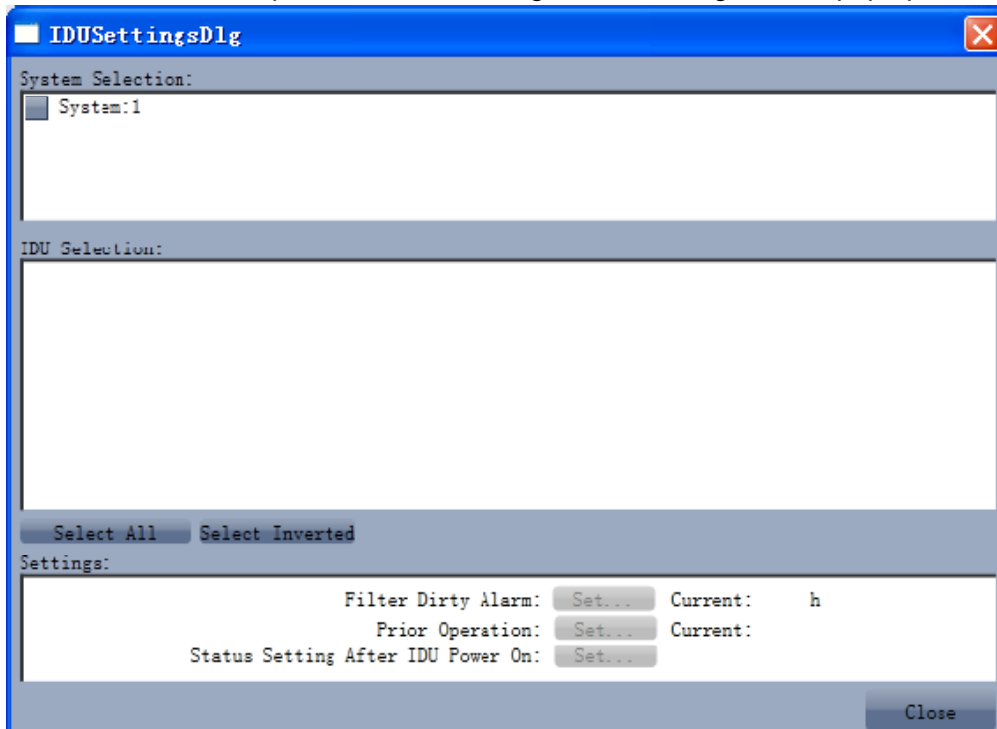
- During debugging, a click on “Break” can stop debugging. Click “Start” to resume debugging and then debugging will be finished step by step. For No.10 ODU Valves Check Before Startup, there are “Back” and “Skip” buttons. If there is error in this step, you can back to step No.9 and click “OK” to restart debugging on step No.10. If the error in step No.10 is U6 error (valve error alarm), you can click “Skip”. In other cases, “Skip” button is null.
- Step 11, 13 and 14 are reserved steps. And step 13, 14, 15 and 16 are steps in parallel (only one of the four will be selected according to actual needs).


4.4.4 Control units

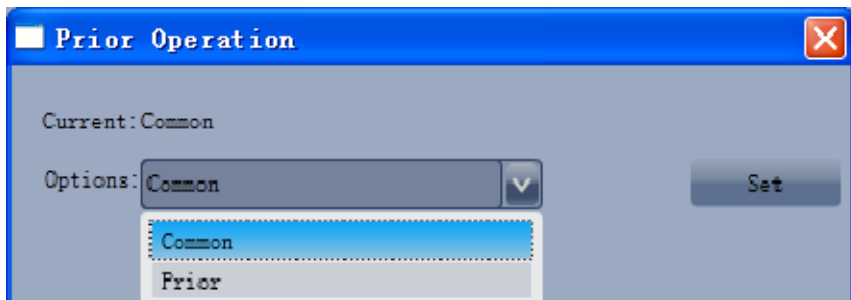
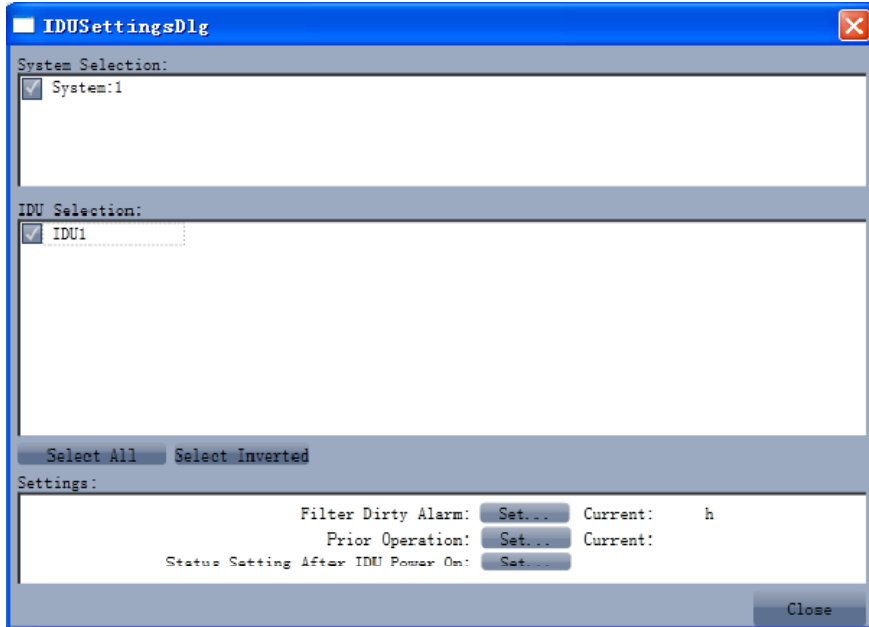
- Click icon of “Setting” on menu bar and select parameter settings, which include “Gateway Settings”, “IDU Settings”, “System Settings”, “Project Number Conflict (In case there is project number conflict in indoor units, other functions will be shielded. Then this parameter needs to be set in order to eliminate the conflict)” and “System Historical Info”. Click the corresponding set and adjust the parameters.



- Take indoor unit as an example. Click “IDU Settings” and a dialog box will pop up.



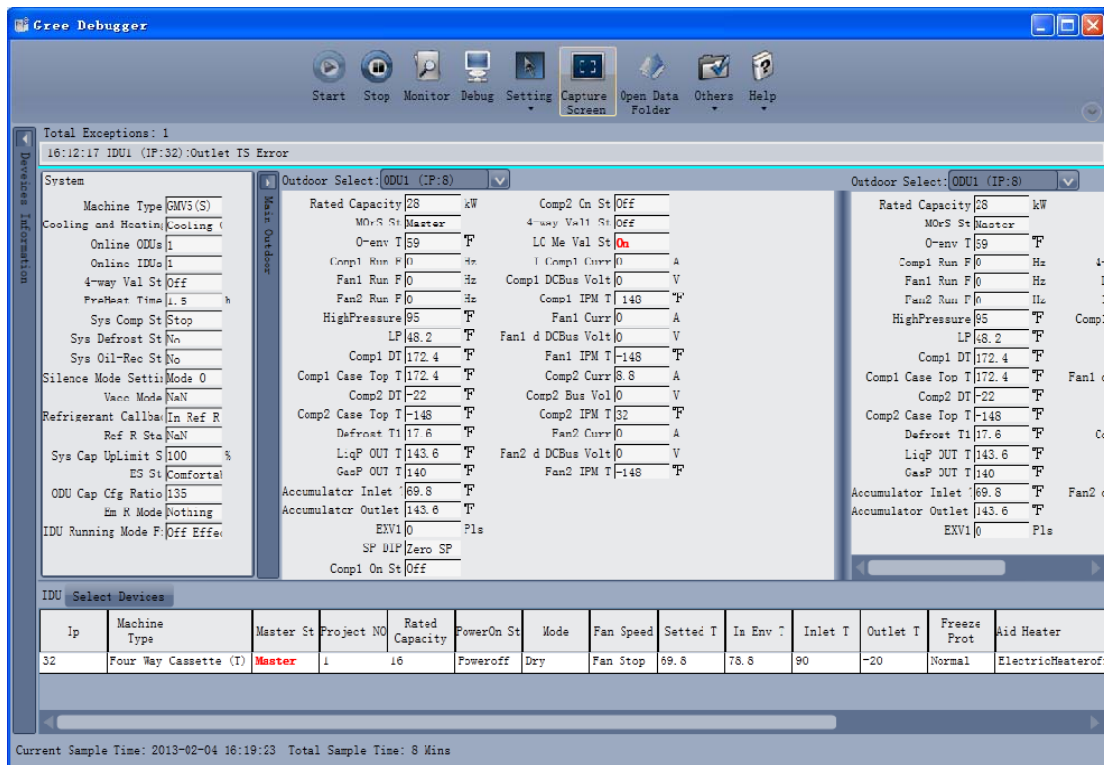
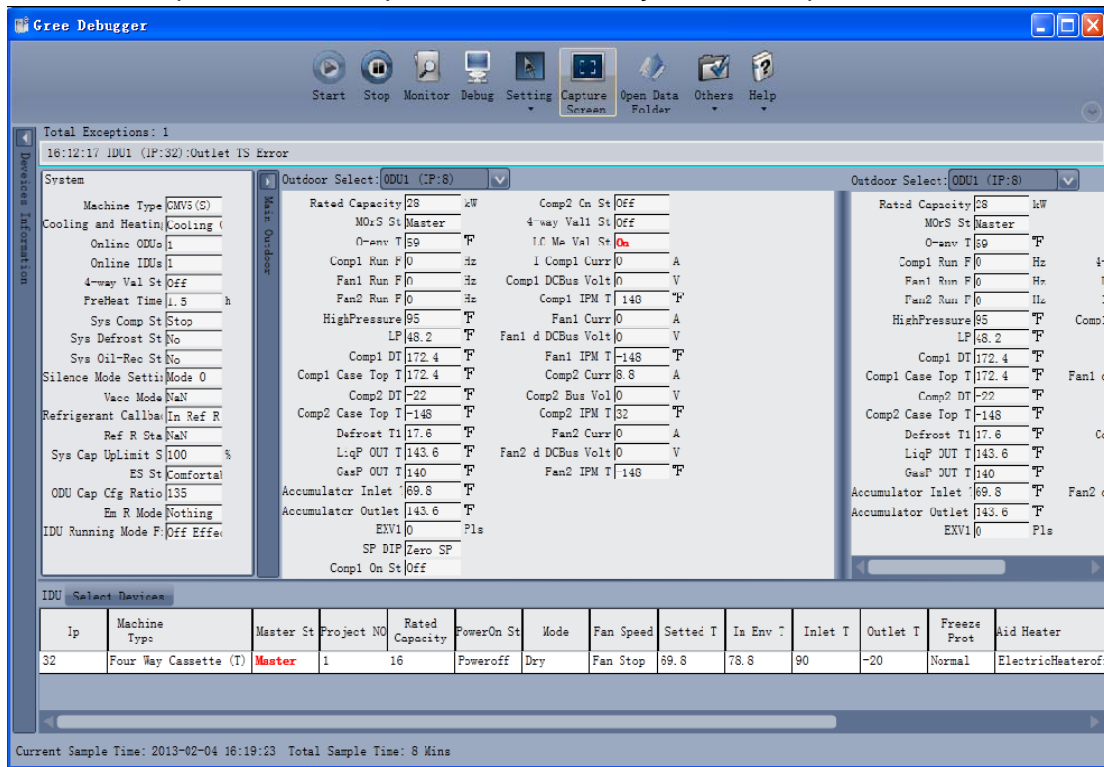
- Tick the indoor units that need setting in the IDU selection zone or you may click “Select All” to select all of them or “Select Inverted” to select none of them. After selection, the current values of the corresponding parameters will be displayed in the zone of settings. Click “Set” and then click  in the pop-up dialog box to select values. Click “Set” and then the corresponding order will be sent to units. If setting is successful, it will be displayed at the current values.



4.4.5 Other functions

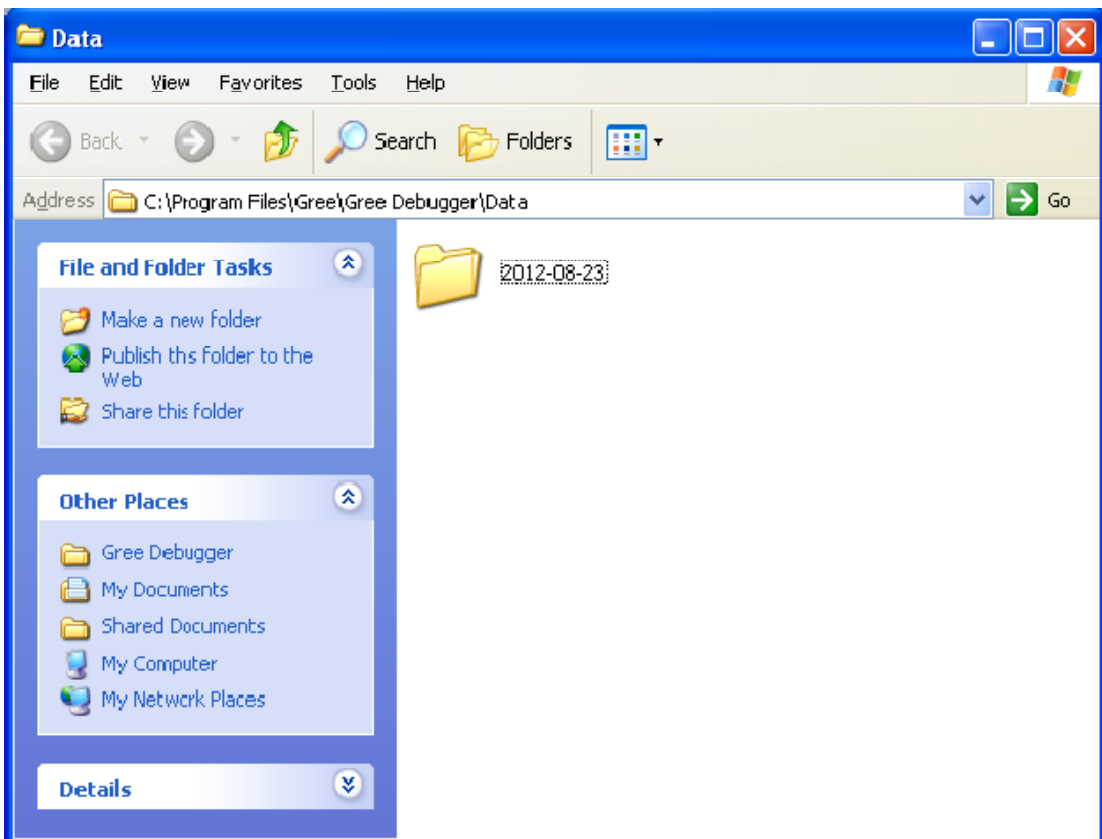
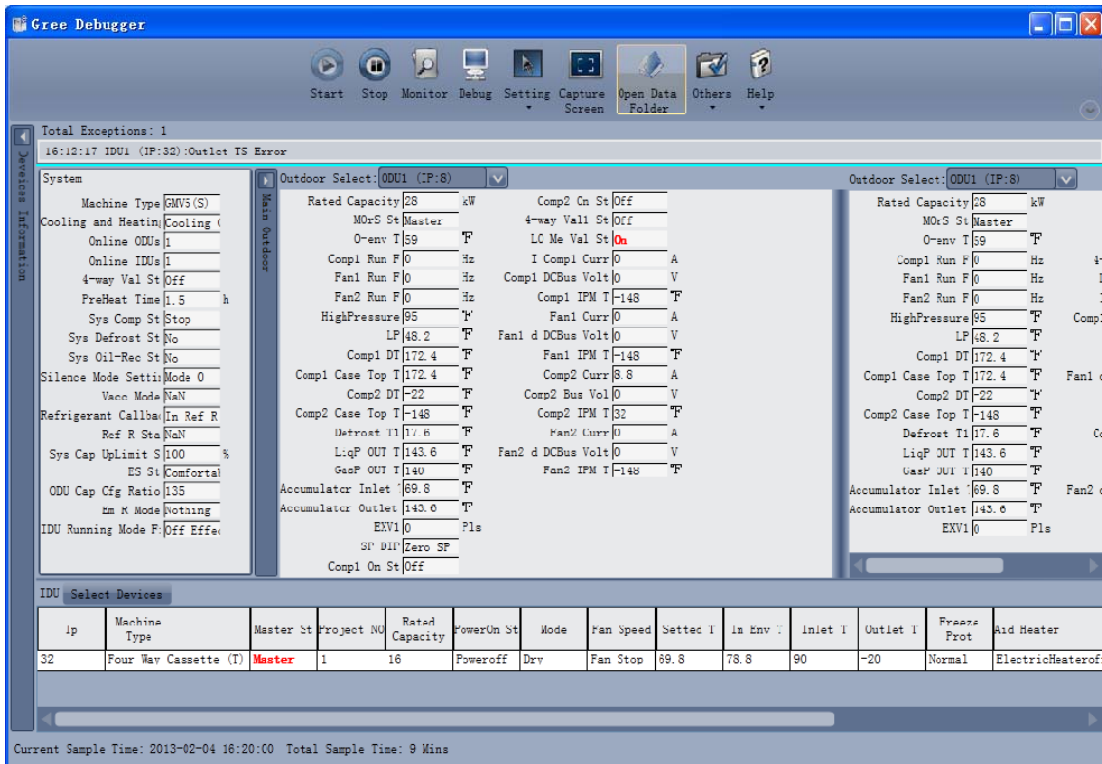
Capture screen

- Click icon of “Capture Screen” to print the interface. If you want to open the interface, click “Open”.



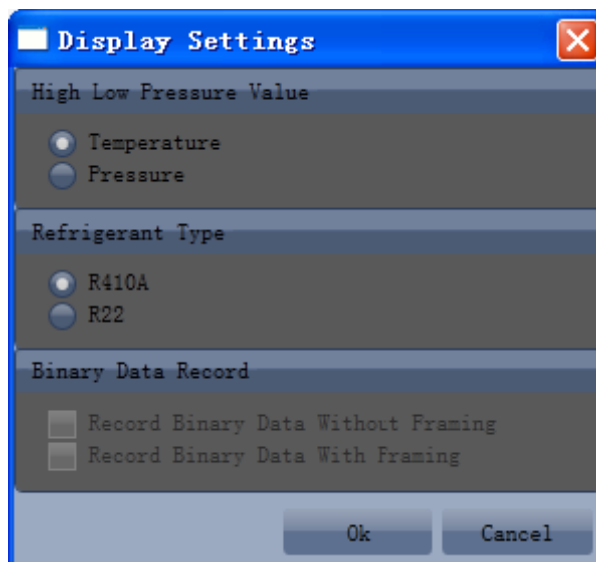
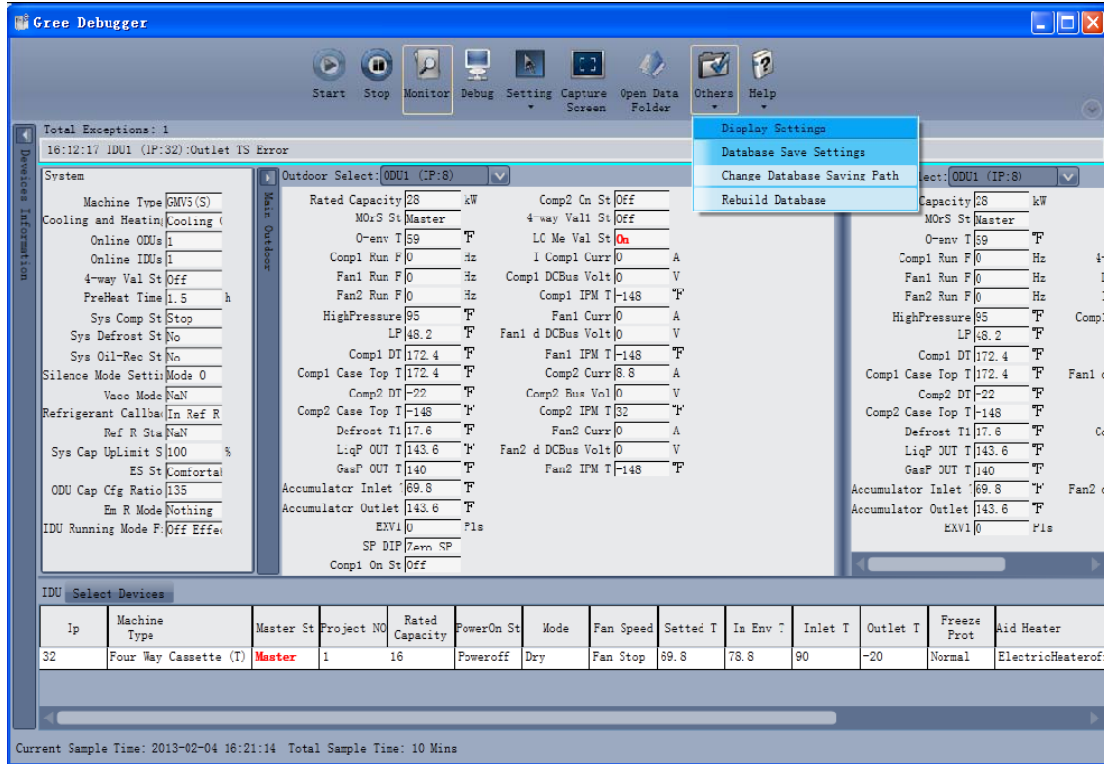
Search for database folder

- Click icon of “Open Data Folder” on the menu bar to open database folder.



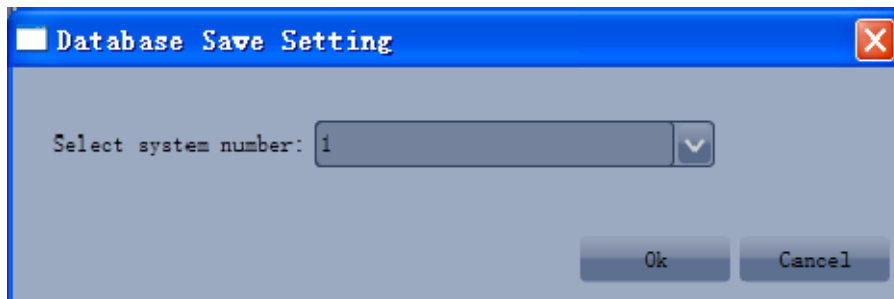
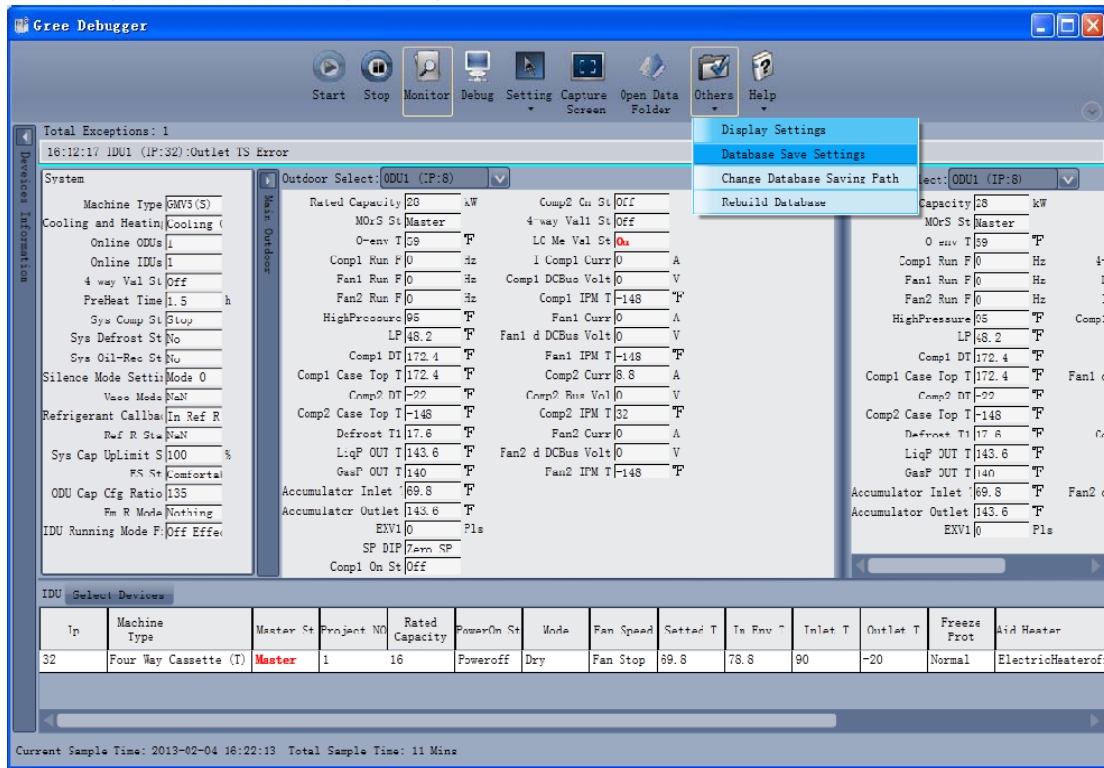
Conversion of pressure value

- Click icon of “Others” on the menu bar and then click “Display Settings” to select “High Low Pressure Value” and “Refrigerant Type”. Select “Temperature” and the pressure parameter displayed on the interface will be temperature. Select “Pressure” and the pressure parameter displayed on the pressure interface will be pressure. Refrigerant type will affect the pressure parameter displayed on the interface.



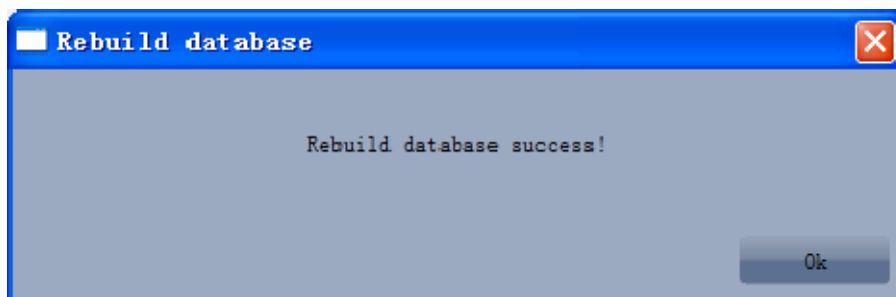
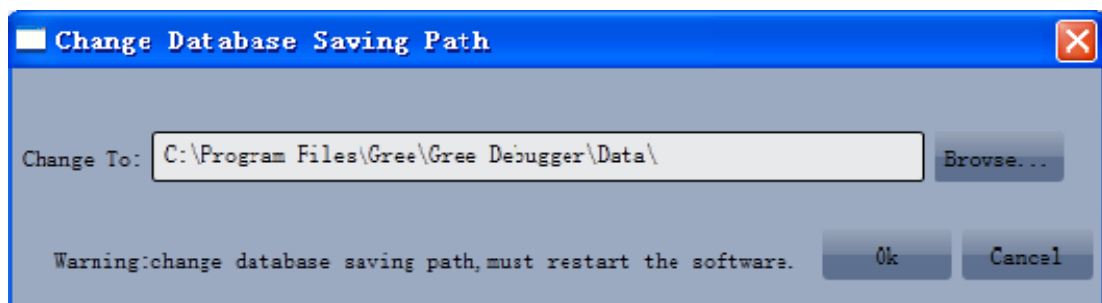
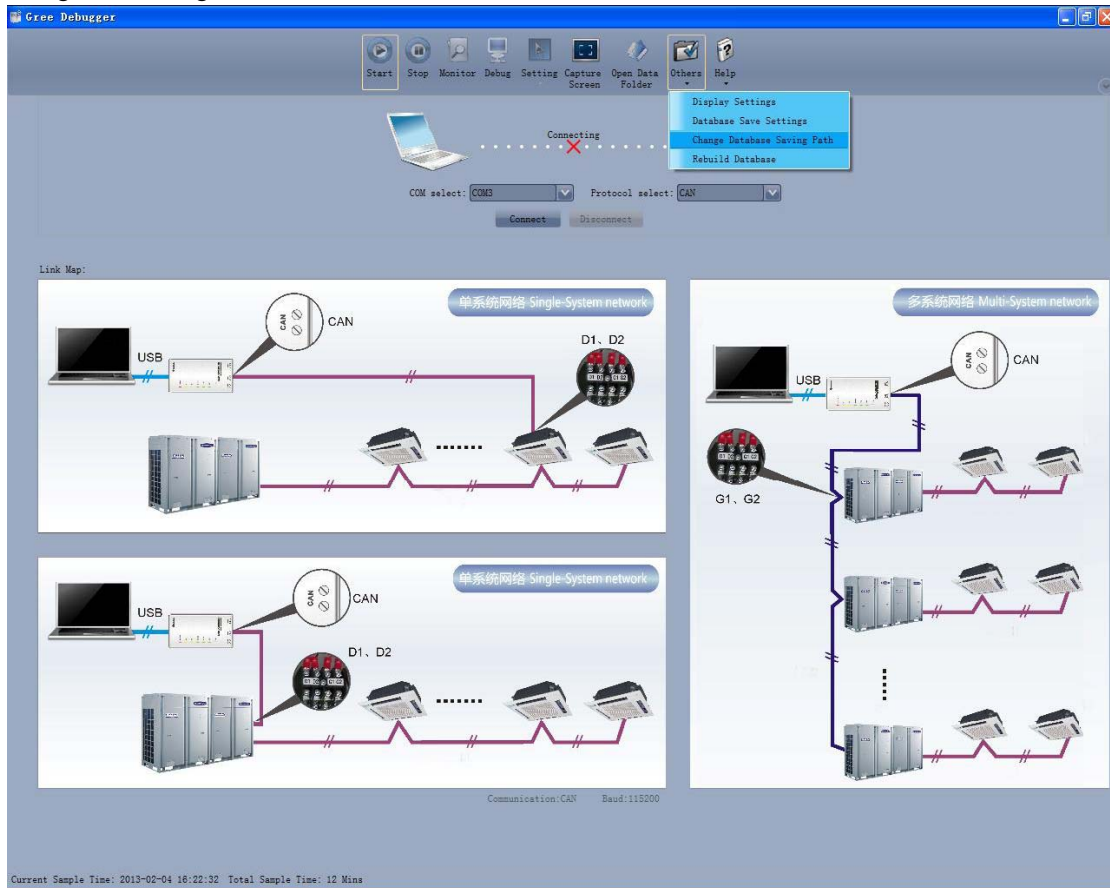
Database saving of multiple systems

- Click icon of “Others” on the menu bar and click “Database Save Settings” to select which system that needs to save database. Because there is a large quantity of data in a network that contains multiple systems, data of only one system can be saved.



Change database saving path and rebuild database

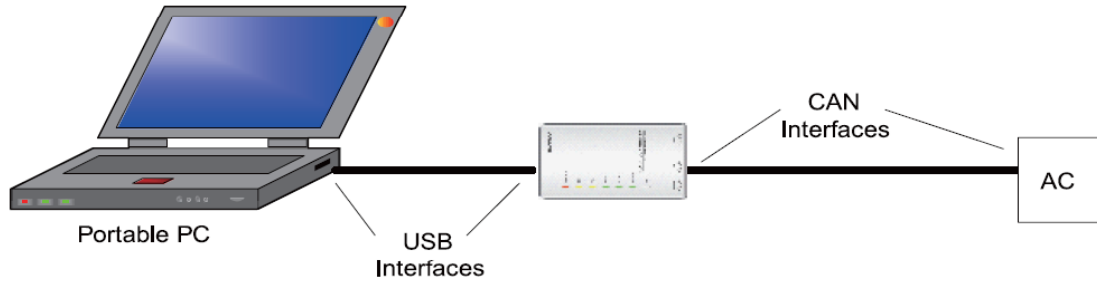
- Change of database saving path and rebuilding of database should be set before the software starts monitoring (see below interface). Click “Change database saving path” and click “Browse” to change the saving path. Click “Rebuild Database” to rebuild the database folder. You can also stop monitoring and turn back to the connection interface to change saving path or rebuild database during monitoring.



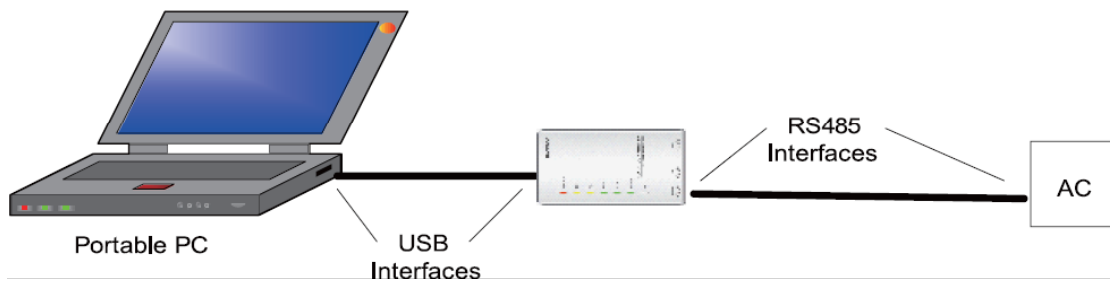
4.4.6 Usage of USB Converter

Usage of converter

- Gree commissioning software should be connected with CAN interface when converter is used. For air conditioners with a single system, connect D1 and D2 interfaces of the wiring board. For air conditioners with multiple systems, connect G1 and G2 interfaces of the wiring board.



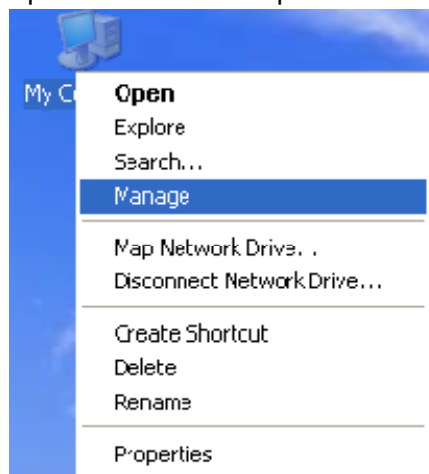
- Gree monitoring software should be connected with RS485 interface when converter is used. Connect outdoor or indoor units or the mainboard of wired controller according to actual needs.




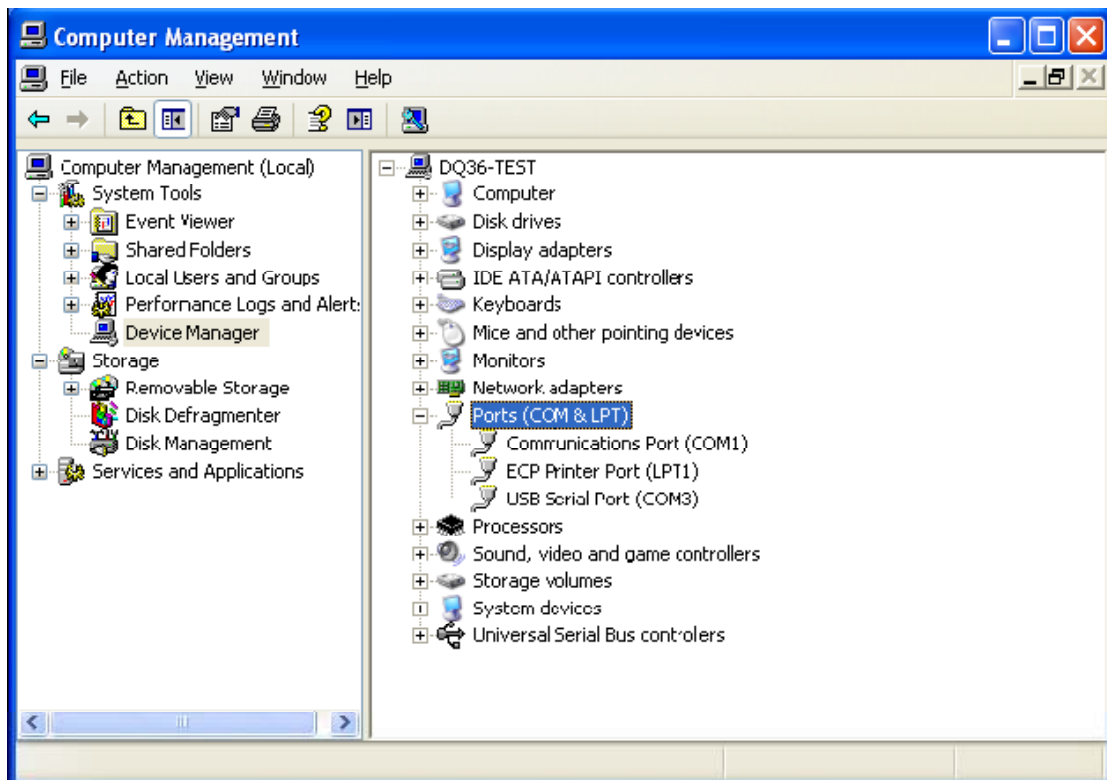
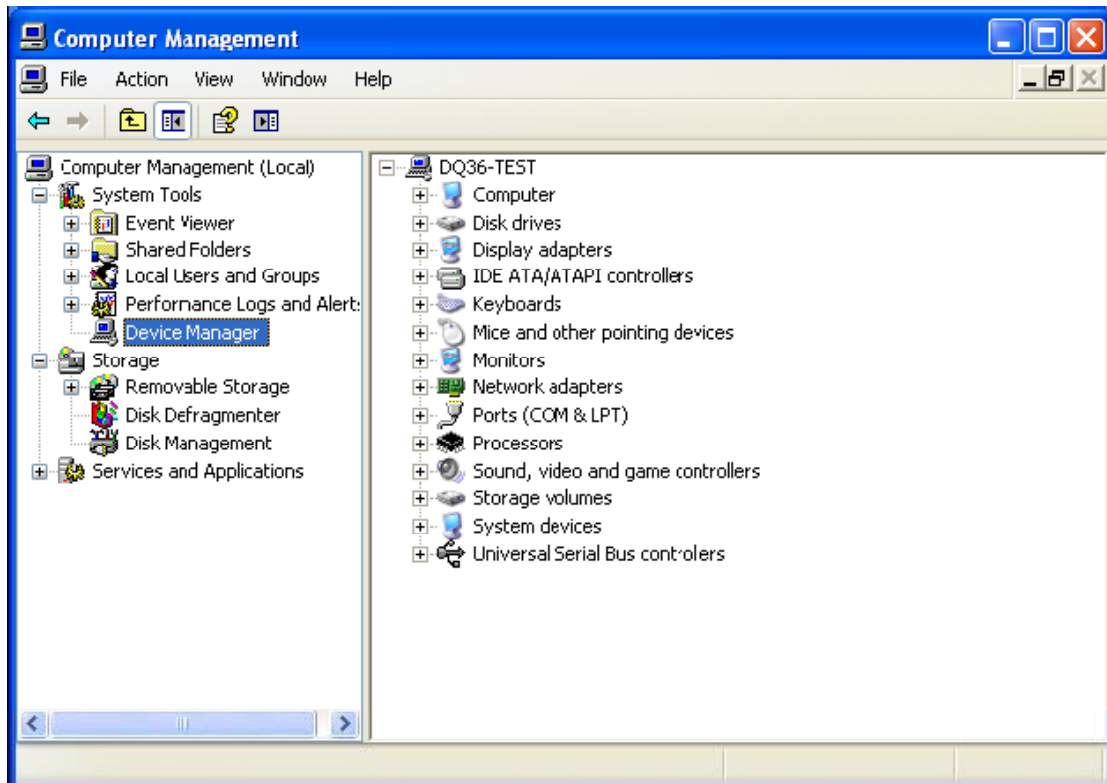
- HBS, CAN and RS485 of the converter can be switched by buttons. Press the button “SET” on the converter to realize the conversion among HBS, CAN and RS485 interfaces. You can check the setting through the function LEDs.

Notice: If it's the first time your PC uses Gree USB data converter, in order to prevent Gree USB data converter from being mistaken by your computer as other devices and make sure your mouse can work well, it is necessary to turn off the Serail Enumerator of computer after Gree USB data converter is connected. Below are the steps:

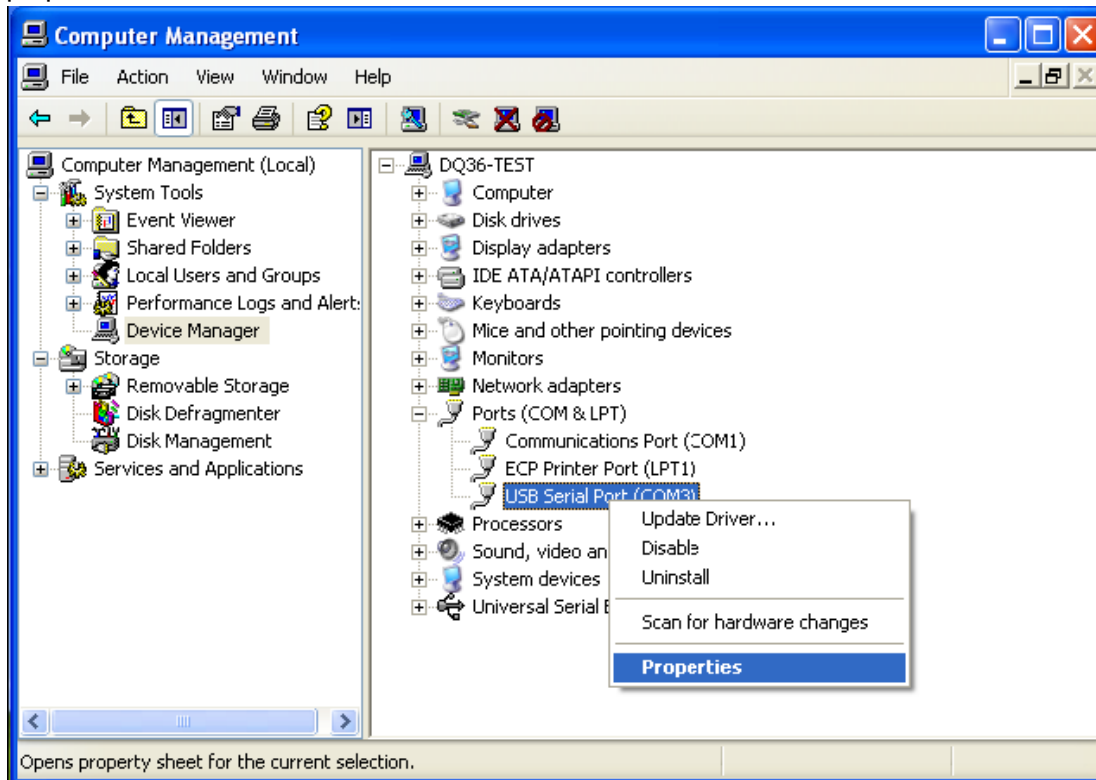
Step 1: Right-click "My Computer" on the desktop and click "Manage".



Step 2: In the pop-up window, select “Device Manager” in the left column and then find “Port (COM and LPT)” in the right column. Click its .

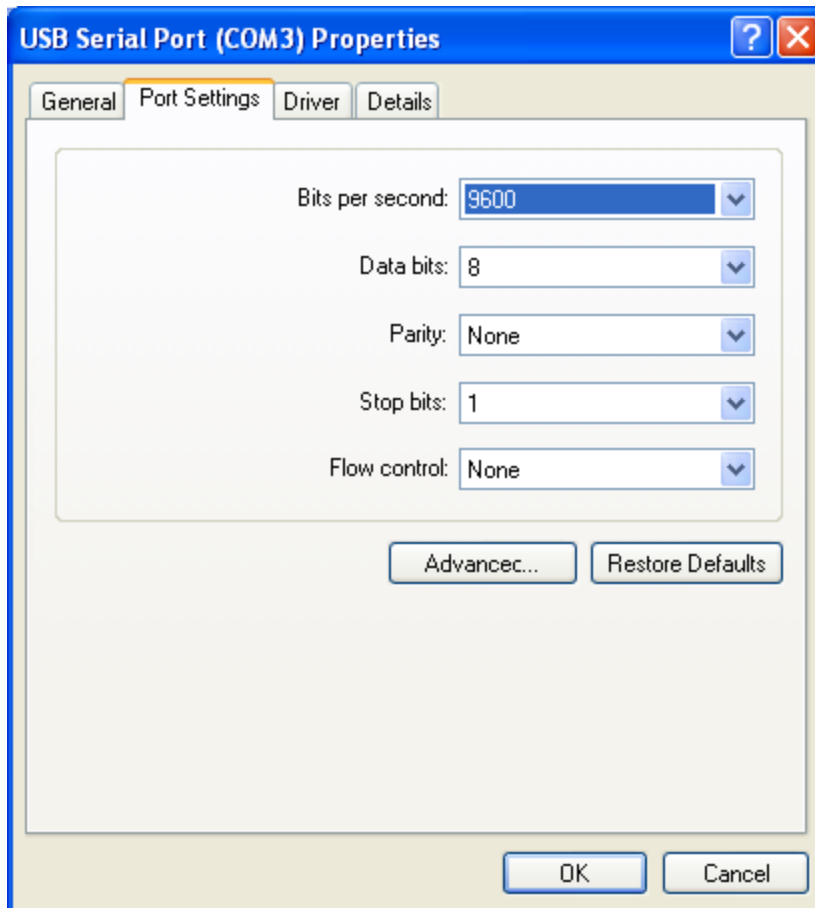


Step 4: Right-click "USB Serial Port (COM6)" and then click "Properties". The dialog box of properties will then pop up.

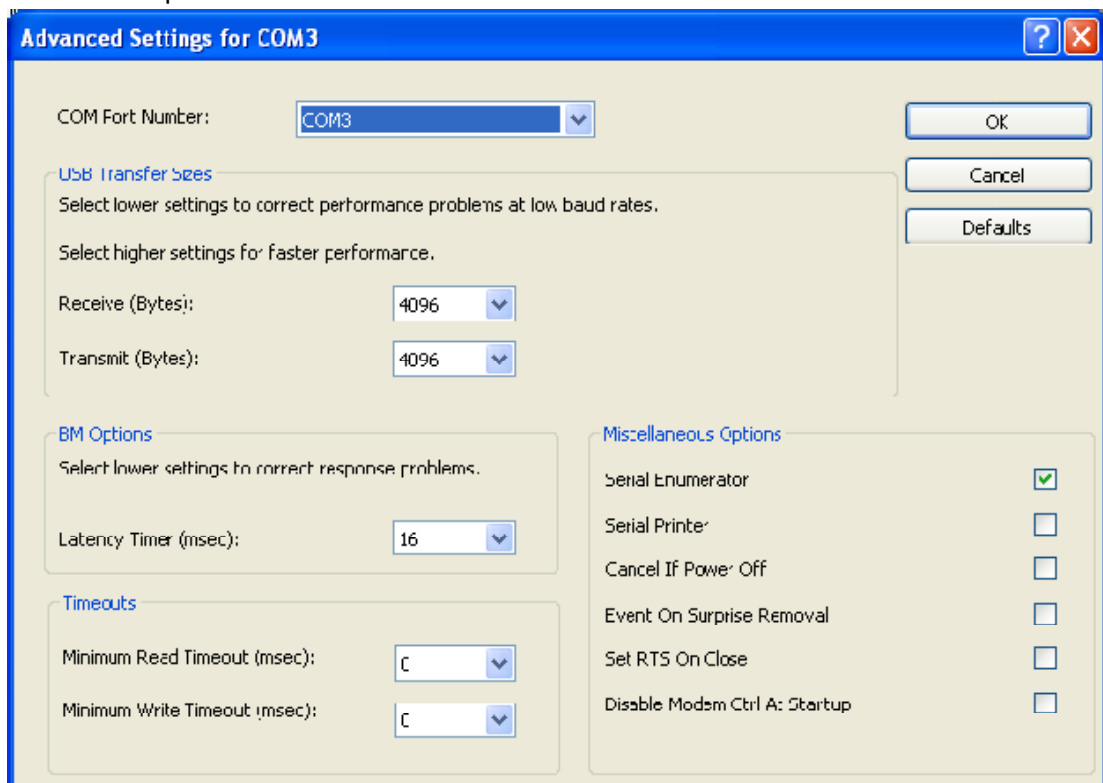


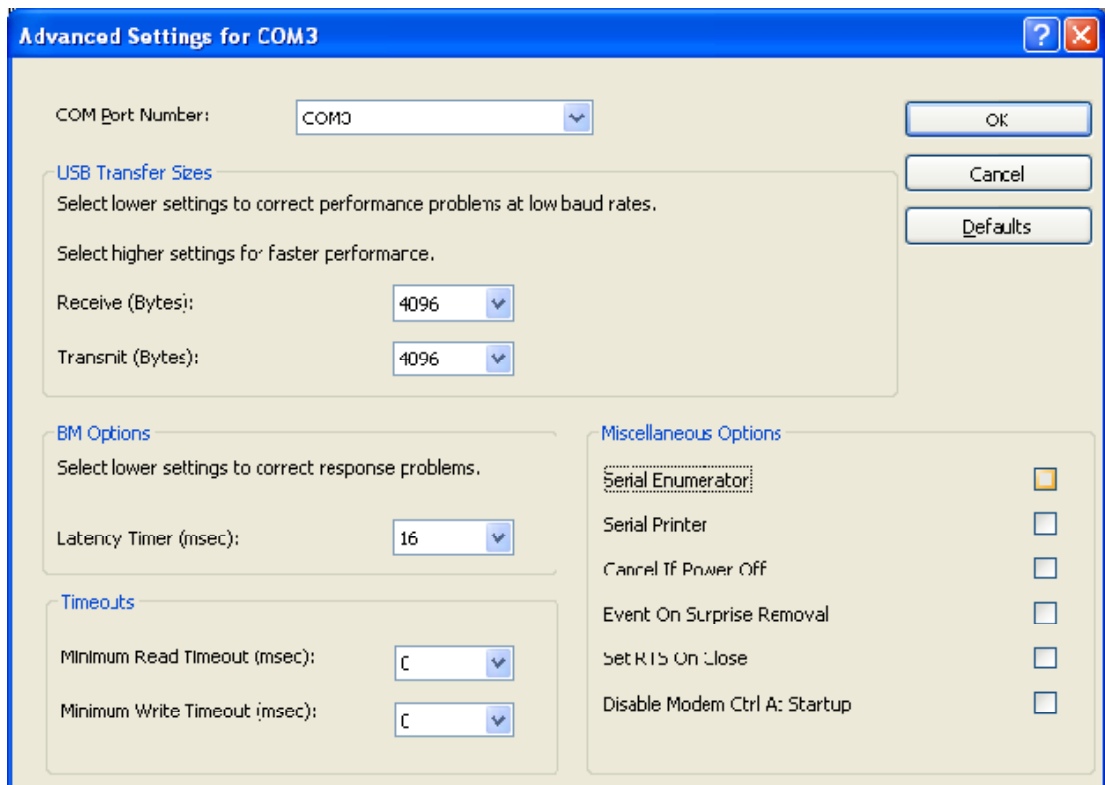
Step 5: Then click "Port Settings" in the dialog box.





Step 6: Click "Advanced" and then a new dialog box will pop up. Find the "Serial Enumerator" in the miscellaneous options and cancel the tick. Click "OK" to exit.





Usage of converter configuring software:

- When the converter is working, hold the button "SET" for 5 sec. Function LED will be flickering, indicating that the converter has enter the baud rate setting mode. Then you can use the converter configuring software to set the baud rate of converter. Baud rate supported by the converter (baud rate of air conditioner's communication interface matches with the baud rate of USB interface automatically):

Ex-factory defaulted baud rate: (unit: bps)

AC is connected with	Baud rate of air conditioner interface	Baud rate of USB interface
CAN	20000/50000 self-adaptive	115200
HBS	57600	38400
RS485	9600	9600

Baud rate look-up table for RS485 interface (unit: bps)

RS485 interface	4800	9600	19200	38400	57600	115200
USB interface	4800	9600	19200	38400	57600	115200

Baud rate look-up table for HBS interface (unit: bps)

HBS interface	9600	19200	38400	57600
USB interface	4800	9600	19200	38400

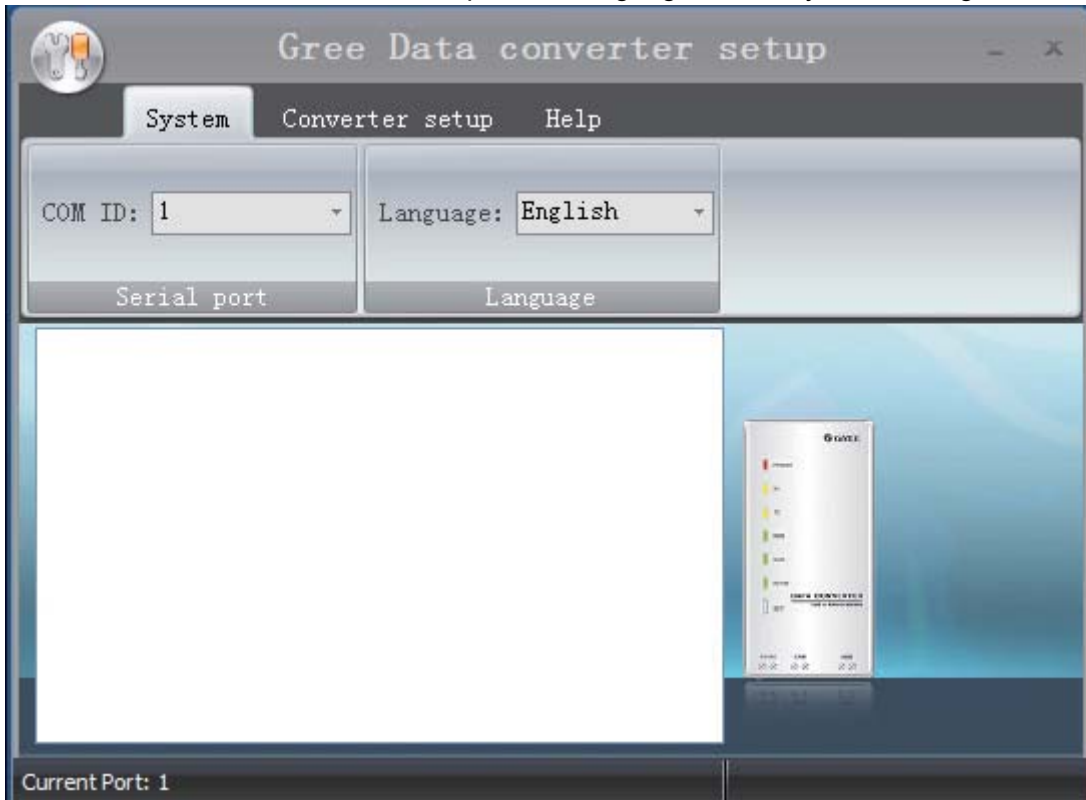
Baud rate look-up table of CAN interface (unit: bps)

CAN interface	20000	50000	100000	125000
USB interface	115200	115200	256000	256000

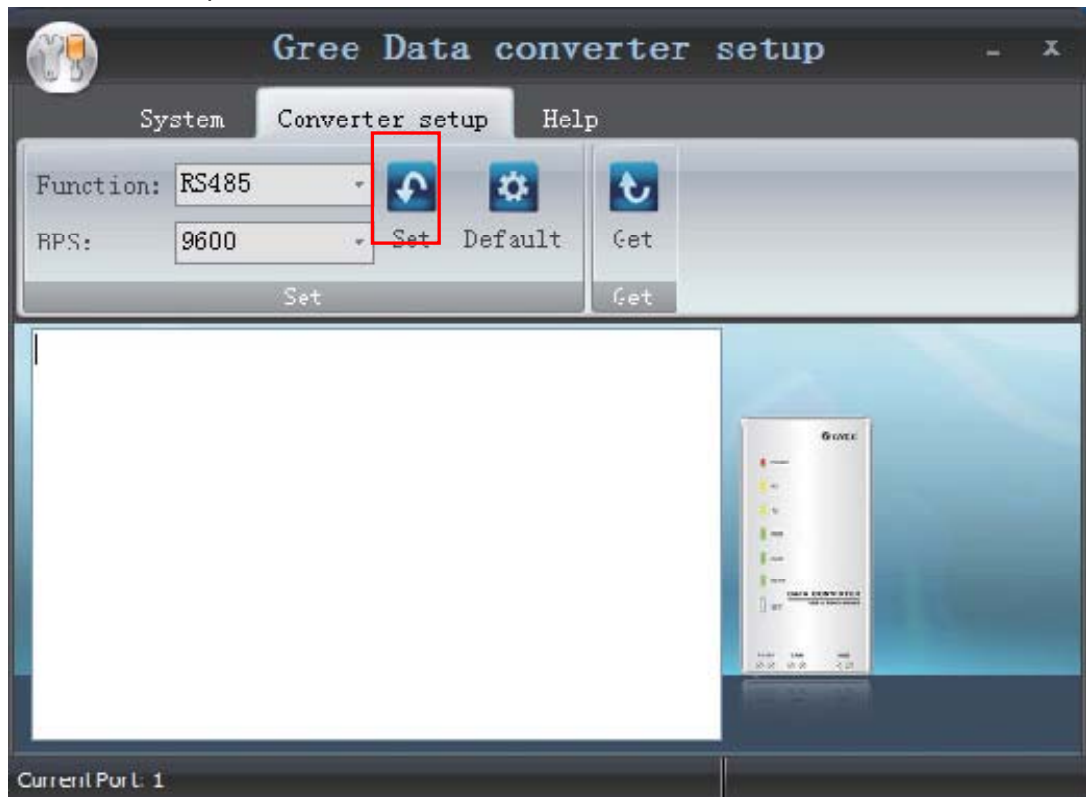
- Double-click the desktop shortcut.



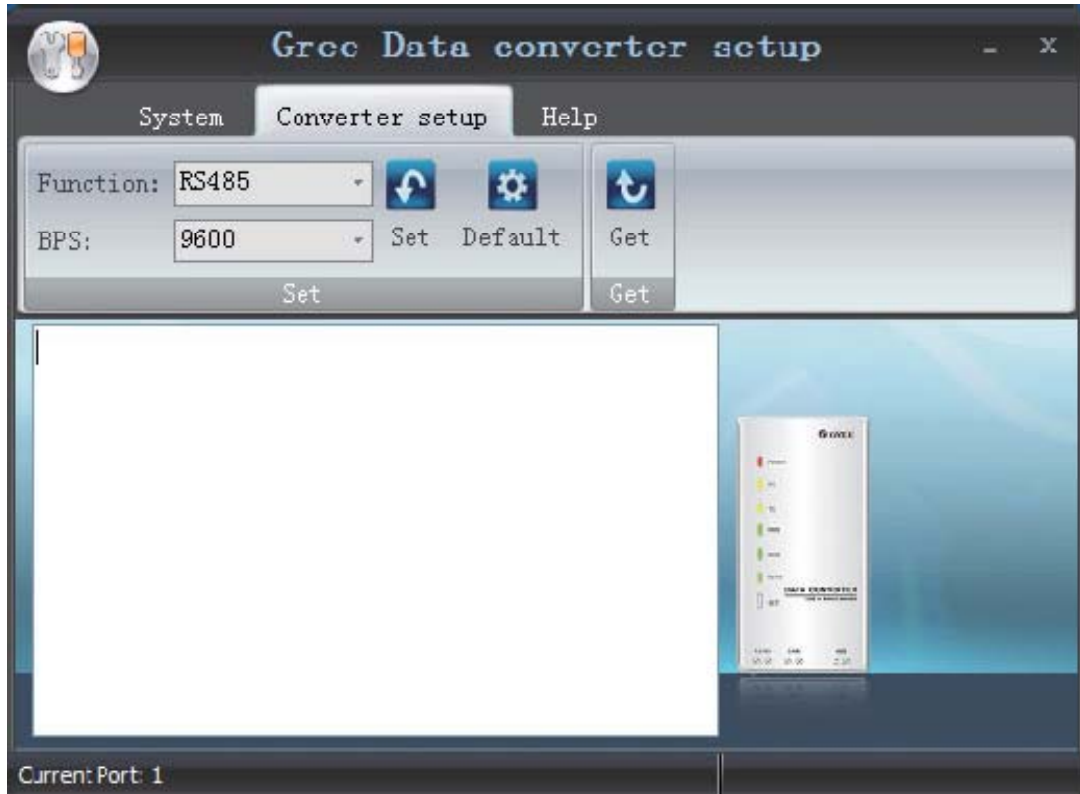
- Select the needed communication serial port and language in the “System Settings”.



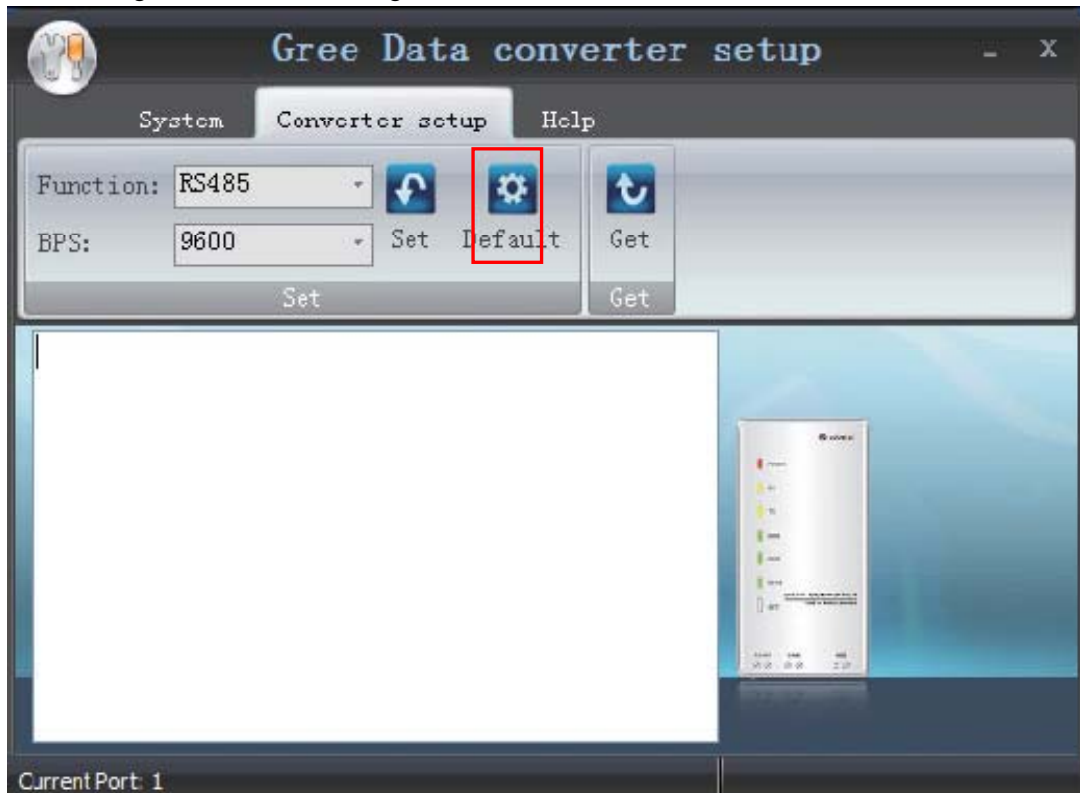
- Select the function that is to be set and the corresponding baud rate (refer to the look-up table) in the “Converter Setup”. Then click “Set”.



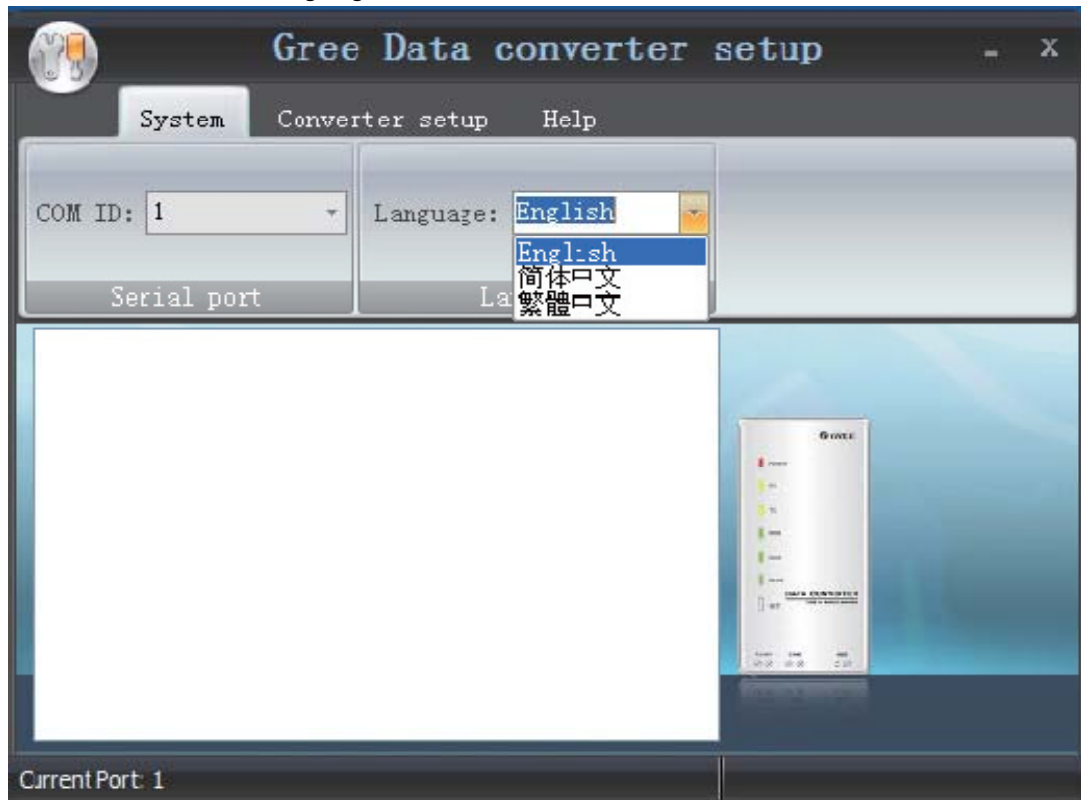
- If you want to restore ex-factory settings, click “Default” to restore the default settings.



- Click “Get” to get the current setting details of converter.



- Switchover of Software Languages



INSTALLATION

1 Engineering Installation Preparation and Notice

1.1 Installation notice

Personnel and property safety are highly concerned during the entire installation process. Installation implementation must abide by relevant national safety regulations to ensure personnel and property safety.

All personnel involved in the installation must attend safety education courses and pass corresponding safety examinations before installation. Only qualified personnel can attend the installation. Relevant personnel must be held responsible for any violation of the regulation.

1.2 Installation key points and importance

The system use refrigerant, instead of other agent, to directly evaporate to carry out the system heat. High level of pipe cleanness and dryness is required in the system. Since various pipes need to be prepared and laid out onsite, carelessness or maloperation during installation may leave impurities, water, or dust inside refrigerant pipes. If the design fails to meet the requirement, various problems may occur in the system or even lead to system breakdown.

Problems that usually occur during installation are as follows:

No.	Installation Problem	Possible Consequence
1	Dust or impurities enter into the refrigeration system.	Pipes are more likely to be blocked; air conditioning performance is reduced; compressor wear is increased or even hinder the normal operation of the system and burn the compressor.
2	Nitrogen is not filled into the refrigerant pipe or insufficient Nitrogen is filled before welding.	Pipes are more likely to be blocked; air conditioning performance is reduced; compressor wear is increased or even hinder the normal operation of the system and burn the compressor.
3	The vacuum degree in the refrigerant pipe is insufficient.	The refrigeration performance is reduced. The system fails to keep normal operation due to frequent protection measures. When the problem getting serious, compressor and other major components can be damaged.
4	Water enters into the refrigeration system.	Copper plating may appear on the compressor and reduce the compressor efficiency with abnormal noise generated; failures may occur in the system due to ice plug.
5	The refrigerant pipe specifications do not meet the configuration requirements.	Smaller configuration specifications can increase the system pipe resistance and affect the cooling performance; larger configuration specifications are waste of materials and can also reduce the cooling performance.
6	Refrigerant pipe is blocked.	The cooling performance is reduced; in certain cases, it may cause long-term compressor operating under overheat conditions; the lubricating effect can be affected and the compressor may be burnt if impurities were mixed with the lubricating oil.
7	Refrigerant pipe exceeds the limit.	The loss in pipe is considerable and the unit energy efficiency decreases, which are harmful for long-term running of the system.
8	Incorrect amount of refrigerant is filled.	The system cannot correctly control the flow allocation; the compressor may be operating under over-heating environment or running when the refrigerant flows back to the compressor.
9	The refrigerant pipe leaks.	Insufficient refrigerant circulating in the system decreases the cooling performance of the air conditioner. Long-term operation under such circumstance may cause an overheating compressor or even damage the compressor.
10	Water drainage from the condensate water pipe is not smooth.	Residual water in IDUs can affect the normal operation of the system. The possible water leakage can damage the IDU's decoration.
11	The ratio of slop for condensate water pipe is insufficient or the condensate water pipe is incorrectly connected.	Reverse slop or inconsistent connection of condensate water pipe can hinder the smooth drainage and cause leakage of the IDU.
12	The air channel is improperly fixed.	The air channel will deform; vibration and noise occur during unit operating.
13	The guide vane of air channel is not reasonably manufactured.	Uneven air quantity allocation reduces the overall performance of the air conditioner.

No.	Installation Problem	Possible Consequence
14	The refrigerant pipe or condensate water pipe does not meet the insulation requirement.	Water can easily condensate and drip to damage the indoor decoration, or even trigger the protection mode of system due to overheating operation.
15	The installation space for IDU is insufficient.	Since there is a lack of space for maintenance and checking, indoor decoration might need to be damaged during such operation.
16	The IDU or the location of the air outlet or return air inlet is not designed reasonably.	The air outlet or return air inlet may be short-circuited, thus affecting the air conditioning performance.
17	The ODU is improperly installed.	The ODU is difficult to be maintained; unit exhaust is not smooth, which reduces the heat exchanging performance or even prevent the system from normal operation; in addition, the cold and hot air for heat exchange and the noise may annoy people in surrounding areas.
18	Power cables are incorrectly provided.	Unit components may be damaged and potential safety hazard may occur.
19	Control communication cables are incorrectly provided or improperly connected.	The normal communication in the system fails or the control over IDUs and ODUs turn in a mess.
20	Control communication cables are not properly protected.	The communication cables are short-circuited or disconnected, and the unit cannot be started up due to communication failure.

Understand the special requirement (if any) for unit installation before implementation to ensure installation quality. Relevant installers must have corresponding engineering construction qualifications.

Special type operators involved in the engineering implementation, such as welders, electricians, and refrigeration mechanics must have relevant operating licenses and are accredited with vocational qualification certification.

2 Installation Materials Selection

The materials, equipment and instruments used during air conditioning engineering construction must have certifications and test reports. Products with fireproof requirements must be provided with fireproof inspection certificates and must meet national and relevant compulsory standards. If environmentally-friendly materials are to be used as required by customers, all such materials must meet national environmental protection requirement and be provided with relevant certificates.

2.1 Refrigerant piping

- a. Material requirement: Dephosphorization drawing copper pipe for air conditioners;
- b. Appearance requirement: The inner and outer surface of pipe should be smooth without pinhole, crack, peeling, blister, inclusion, copper powder, carbon deposition, rust, dirt or severe oxide film, and without obvious scratch, pit, spot and other defects.
- c. Test report: Certifications and quality test reports must be provided.
- d. The tensile strength must be at least 240 kgf/mm².
- e. Specifications requirement

R410A Refrigerant System		
OD (mm/inch)	Wall Thickness (mm)	Model
Φ6.35(1/4)	≥0.8	0
Φ9.52(3/8)	≥0.8	0

Φ12.70(1/2)	≥0.8	0
Φ15.9(5/8)	≥1.0	0
Φ19.05(3/4)	≥1.0	0
Φ22.20(7/8)	≥1.2	0
Φ25.40(8/8)	≥1.2	0

f. After the inner part of the copper pipe is cleaned and dried, the inlet and outlet must be sealed tightly by using pipe caps, plugs or adhesive tapes.

2.2 Condensate water pipe

a. Pipes that can be used for air conditioner drainage include: water supplying UPVC pipe, PP-R pipe, PP-C pipe, and HDG steel pipe;

b. All relevant certificates and quality test reports are provided.

c. Requirements for specifications and wall thickness

Water supplying UPVC pipe: Φ32mm×2mm, Φ40mm×2mm, Φ50mm×2.5mm;

HDG steel pipe: Φ25mm×3.25mm, Φ32mm×3.25mm, Φ40mm×3.5mm, Φ50mm×3.5mm.

2.3 Insulation material

a. Rubber foam insulation material;

b. Flame retardancy level: B1 or higher;

c. Refractoriness: at least 120℃;

d. The insulation thickness of condensate water pipe: at least 10 mm;

e. When the diameter of copper pipe is equal to or greater than Φ15.9 mm, the thickness of insulation material should be at least 20 mm; when the diameter of copper pipe is less than 15.9 mm, the thickness of insulation material should be at least 15 mm.

2.4 Communication cable and control cable

Note: For air conditioning units installed in places with strong electromagnetic interference, shielded wire must be used as the communication cables of the IDU and wired controller, and shielded twisted pairs must be used as the communication cables between the IDU and ODU.

Communication cable selection for ODU and IDUs:

Material Type	Total Length L (m/feet) of Communication Cable between Indoor Unit and Indoor (Outdoor) Unit	Wire size (mm ² /AWG)	Material Standard	Remarks
Light/Ordinary polyvinyl chloride sheathed cord. (60227 IEC 52 /60227 IEC 53)	L ≤ 1000m (L ≤ 3280-5/6feet)	≥ 2×0.75 (≥ 2×AWG18)	IEC 60227-5:2007	<ol style="list-style-type: none"> 1. If the wire diameter is enlarged to 2×1 mm² (2×AWG16), the total communication line length can reach 1500 m (4921-1/4feet). 2. The cord shall be Circular cord (the cores shall be twisted together). 3. If unit is installed in places with intense magnetic field or strong interference, it is necessary to use shielded wire.

Communication cable selection for IDU and wired controller:

Material type	Total length of communication line between indoor unit and wired controller L (m/feet)	Wire size (mm ² /AWG)	Material Standard	Remarks
Light/Ordinary polyvinyl chloride sheathed cord. (60227 IEC 52 /60227 IEC 53)	L ≤ 250m (L ≤ 820-1/5feet)	2×0.75~2×1.25 (2×AWG18~2×AWG16)	IEC 60227-5:2007	1.Total length of communication line can't exceed 250m (820-1/5feet). 2.The cord shall be Circular cord (the cores shall be twisted together). 3.If unit is installed in places with intense magnetic field or strong interference, it is necessary to use shielded wire.

2.5 Power cable

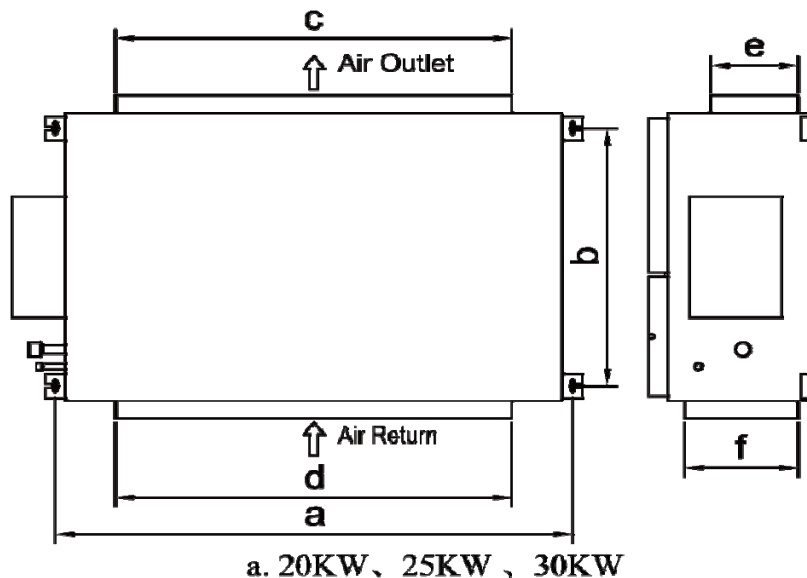
Only copper conductors can be used as power cables. The copper conductors must meet relevant national standard and satisfy the carrying capacity of unit.

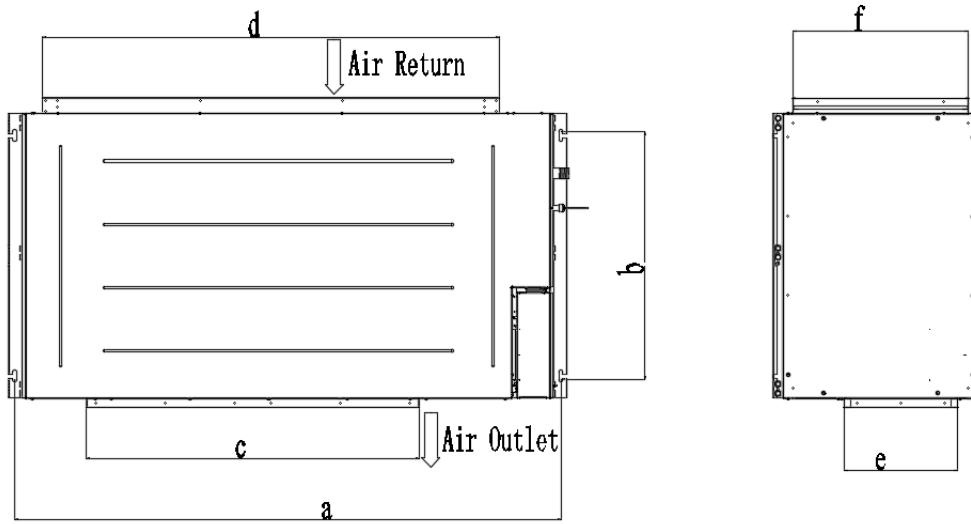
2.6 Hanger rod and support

- a. Hanger rod: M8 or M10;
- b. U-steel: 14# or above;
- c. Angle steel: 30mm×30mm×3mm or above;
- d. Round steel: Φ10mm or above

3 Installation of Indoor Unit

3.1 Outline and installation dimension





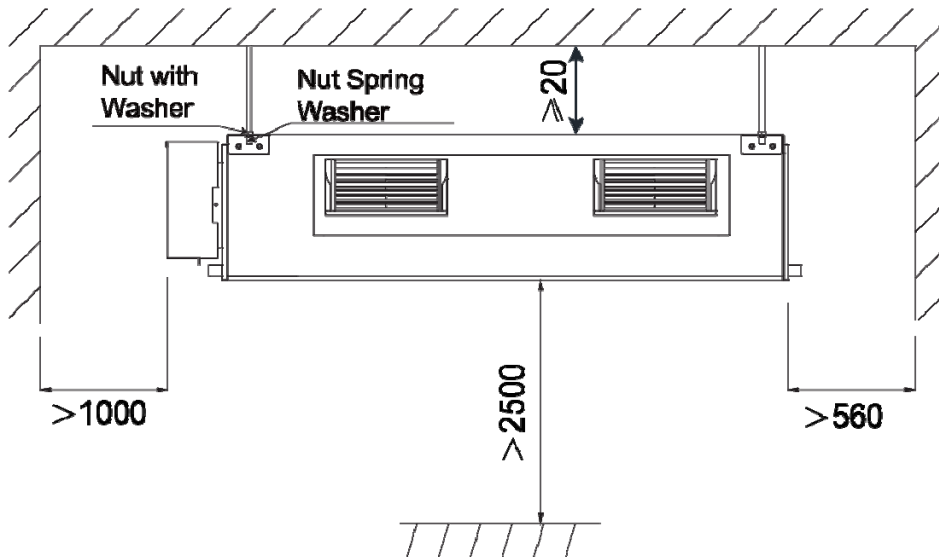
b. 40kW

Below are dimensions of A, B, C, etc. for different models:

Unit: mm

Model	a	b	c	d	e	f
FGR20Pd/DNa-X(I)	1334	632	990	1150	192	363
FGR25Pd/DNa-X(I)	1541	705	980	1350	270	420
FGR30Pd/DNa-X(I)	1541	705	980	1350	270	420
FGR40Pd/D(2)Na-X(I)	1730	760	1054	1450	360	560

3.2 Installation space



3.3 External static pressure setting and reading

3.3.1 External static pressure setting

You can enter P67 select the way of adjusting static pressure for the blast pipe manually or automatically. The default value is 00, which means adjusting manually.

(1) If you choose 00, you can select the suitable level for any blast pipes. It can reach to 250Pa

.You can enter P30 to set the value.

- ① Long press FUNCTION button for 5s and the temperature zone displays “C00”; long press FUNCTION button for another 5s to enter the interface of setting wired controller parameters. “P00” is displayed in temperature zone.
- ② Press “▲” or “▼” button to select parameter code. Press MODE button to enter parameter setting. At that time, parameter value is blinking. Press “▲” or “▼” button to adjust the parameter value and press ENTER/CANCEL button to finish setting.
- ③ Press ENTER/CANCEL button to return to last step until exists setting parameters.

The parameter setting list is as following

Parameter code	Parameter name	Parameter range	Default value	Note
P30	Set static pressure of indoor fan motor	01-09: static pressure level of indoor fan motor	05	There are 9 static pressure level: 01, 02, 03, 04, 05, 06, 07, 08, 09

Note:

- ① Under parameter setting status, FAN, TIMER, SLEEP and SWING button are invalid. Press ON/OFF button to go back to home page, but not turning on/off the unit.
- ② If the power cord is more than 15 m (49-1/4 ft.) long, please increase properly the sectional area of power cord to avoid overload, which may cause accident.

External Static Pressure	static pressure level of indoor fan motor
0 inWG(0 Pa)	01
0.12 inWG(30 Pa)	02
0.24 inWG(60 Pa)	03
0.36 inWG(90 Pa)	04
0.48 inWG(120 Pa)	05
0.60 inWG(150 Pa)	06
0.72 inWG(180 Pa)	07
0.84 inWG(210 Pa)	08
1.00 inWG(250 Pa)	09

Note:

Keep in mind that a shortage of airflow quantity or water leakage will result because the air conditioner will be operated outside the rated range of airflow quantity if the external static pressure is wrongly set.

(2) If you choose 01,the indoor motor will adjust static pressure of the blast pipe automatically when start-up every time.So how to enter P67?

- ① Long press FUNCTION button for 5s and the temperature zone displays “C00”; press MODE button for three times in 3s;long press FUNCTION button for another 5s to enter the interface of setting wired controller parameters. “P00” is displayed in temperature zone.
- ② Press “▲” or “▼” button to select parameter code. Press MODE button to enter parameter setting. At

that time, parameter value is blinking. Press “▲” or “▼” button to adjust the parameter value and press ENTER/CANCEL button to finish setting.

(3) Press ENTER/CANCEL button to return to last step until exists setting parameters.

The parameter setting list is as following

Parameter code	Parameter name	Parameter range	Default value
P67	Select the way of adjusting static pressure	00: manually 01:automatically	00

3.3.3 External static pressure reading

If you want to know the exact external static pressure,you can set P67 to 01,restart the machine,after about 2 minutes,enter C24 to read the exact ESP.

① Long press FUNCTION button for 5s and the temperature zone displays “C00”; press MODE button for three times in 3s.

② Press “▲” or “▼” button to C24,there you can read the exact ESP.

3.4 Installation notice

◆The unit shall be installed by the professional personnel according to this installation instruction to ensure proper use.

◆ Please contact the local Gree appointed service center before installation. Any malfunctioncaused by the unit that is not installed by the Gree appointed service center would probably not be dealt with on time because of the inconvenience of the business contact.

◆It should be guided under the professional personnel when the air conditioner unit is moved to other place.

◆Installation of the unit must be in accordance with National Electric Codes and local regulations.

◆Improper installation will affect unit’s performance, so do not inst# the unit by yourself. Please contact local dealer to arrange professional technicians for the installation.

◆Do not connect power until all installation work is finished.

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

3.5 Selection of air switch and power cord

Model	Power supply	Circuit breaker capacity (A)	(mm ²) Number of ground wire * Min sectional area (mm ²)	(mm ²) Number of power cord * Min sectional area (mm ²)
FGR20Pd/DNa-X(I)	220V~50/60HZ	10	1×1.5	2×1.5

FGR25Pd/DNa-X(I)	220V~50/60HZ	10	1×1.5	2×1.5
FGR30Pd/DNa-X(I)	220V~50/60HZ	10	1×1.5	2×1.5
FGR40Pd/D(2)Na-X(I)	3N~ 380V 50/60HZ	10	1×1.5	4×1.5

4 Installation of outdoor unit

4.1 Check before installation

- a. Before installation, please check the power cord if it complies with the power supply requirement on the nameplate. Make sure the power supply is safe.
- b. This air conditioner must be properly grounded through the receptacle to avoid electric shock. The ground wire shouldn't be connected with gas pipe, water pipe, lightning arrester or telephone line.
- c. Maintain good air circulation to avoid lacking oxygen.
- d. Read this manual carefully before installation.

4.2 Selection of installation site

- a. Select a location which is strong enough to hold unit's weight so that unit can stand still and erect.
- b. Make sure the unit is not exposed to sun and rain. And the location can resist dust, typhoon and earthquake.
- c. Please keep the unit away from inflammable, explosive and corrosive gas or waste gas.
- d. Make sure the location has space for heat exchange and maintenance so that unit can operate reliably with good ventilation.
- e. ODU and IDU should stay as close as possible to shorten the length of refrigerant pipe and reduce bend angles.
- f. Select a location which is out of children's reach. Keep the unit away from children.

4.3 Carrying and installing outdoor unit

When carrying the outdoor unit, hang the unit in four directions with two sufficient ropes. In order to avoid excursion from the center, the angel of ropes must be smaller than 40° during hanging and moving.

4.4 Installation notices

In order to ensure proper operation, the selection of installation site must conform to the following principle:

- The discharged air of outdoor unit will not flow back and there is sufficient space around the unit for maintenance;
- The installation site must be well ventilated to ensure sufficient air intake and discharge. Make sure there is no obstacle at the air inlet and air outlet. If there is any obstacle, please remove it;
- The installation site shall be able to withstand the weight of outdoor unit and capable for soundproof and vibration. The air outlet and noise of unit will not affect neighbors;
- The hanging of outdoor unit must use appointed hanging hole. Pay attention to protect the unit during hanging and installation. Prohibit hitting the sheet metal to avoid rust in the future.
- Avoid direct sunlight;

- The rain and condensation water can be drained out smoothly;
- The outdoor unit will not be embedded by the snow and not affected by garbage and oil smog;
- The installation of outdoor unit shall adopt rubber damping pad or spring damper to reduce noise and vibration;
- The installation dimension shall accord with the installation requirement of this manual and the outdoor unit must be fixed at the installation site;
- The installation shall be done by professional technicians.

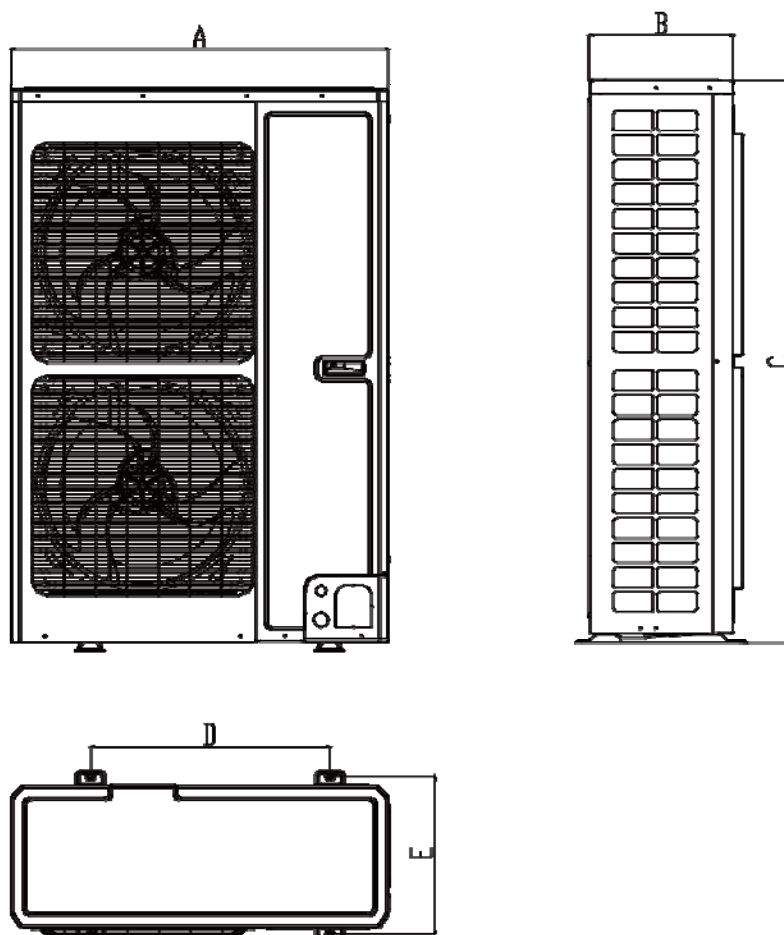
4.5 Fixing and damping of unit

The outdoor unit shall be fixed with 4 M12 bolts and closely contacted with the foundation. Otherwise, big vibration and noise will be caused.

The outdoor unit shall be fixed firmly. The rubber board with thickness over 20mm or corrugated rubber damping pad shall be applied between the unit and foundation.

4.6 Outline dimension and position of installation hole

When carrying the outdoor unit, hang the unit in four directions with two sufficient ropes. In order to avoid excursion from the center, the angel of ropes must be smaller than 40° during hanging and moving.



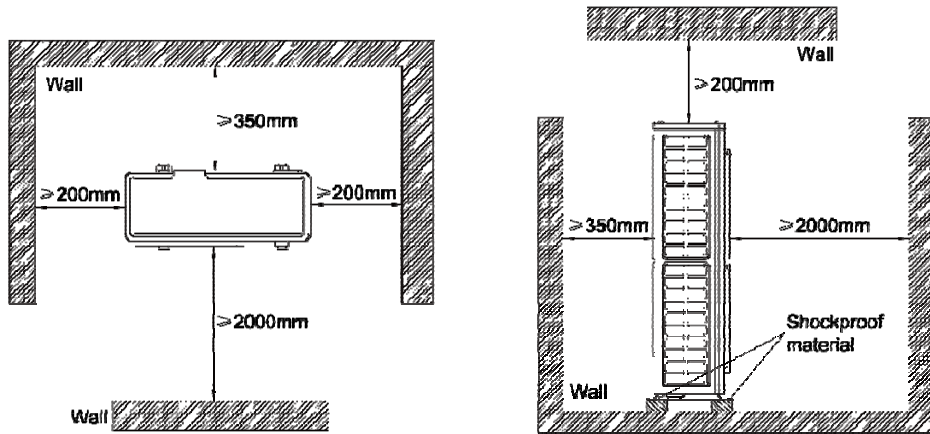
Unit: mm

Model	A	B	C	D	E
FGR20Pd/DNa-X(O)	940	320	1430	632	350
FGR25Pd/DNa-X(O)	940	460	1615	610	486

FGR30Pd/DNa-X(O)	940	460	1615	610	486
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4.7 Installation space requirement

If all sides of the ODU (including the top) are surrounded by walls, process according to the following requirements for installation space:

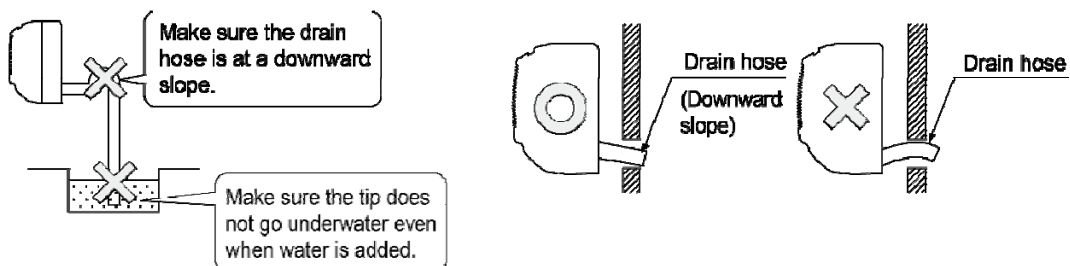


5 Installation of drain pipe

5.1 Precautions When Doing the Piping Work

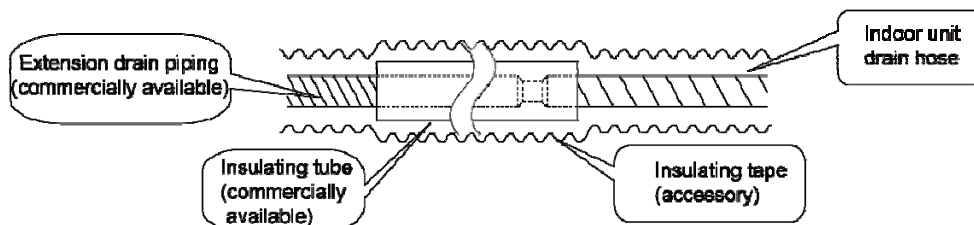
◆ Keep piping as short as possible and slope it downwards at a gradient of at least 1/100 so that air may not remain trapped inside the pipe.

For example:

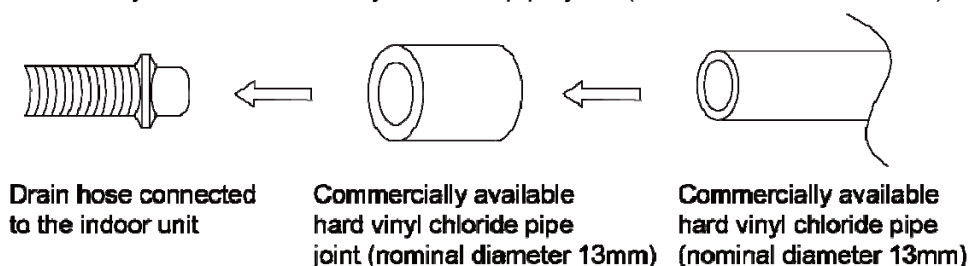


◆ Keep pipe size equal to or greater than that of the connecting pipe.

◆ Install the drain piping as shown and take measures against condensation. Improperly rigged piping could lead to leaks and eventually wet furniture and belongings.



◆ When directly connecting a hard vinyl chloride pipe joint to the drain hose connected to the indoor unit, use a commercially available hard vinyl chloride pipe joint (nominal diameter 13mm).



◆ Drain hose connected to the indoor unit Commercially available hard vinyl chloride pipe joint (nominal diameter 13mm) Commercially available hard vinyl chloride pipe (nominal diameter 13mm)

◆ Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.

5.2 Installing the Drain Pipes

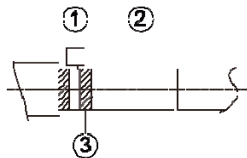
◆ Insert the drain hose into the drain outlet, and tighten the clamp securely with tape.

◆ Tighten the clamp until the screw head is less than 4 mm from the hose.

①. Metal clamp (accessory)

②. Drain hose (accessory)

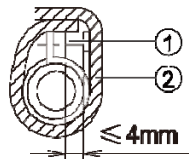
③. Grey tape (accessory)



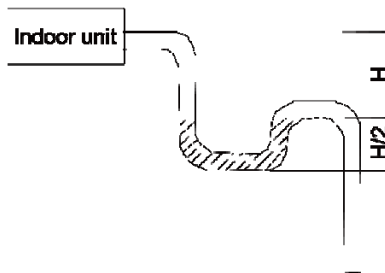
◆ Insulate the pipe clamp and the drain hose using heat insulation sponge.

①. Metal clamp (accessory)

②. Insulation sponge (accessory)



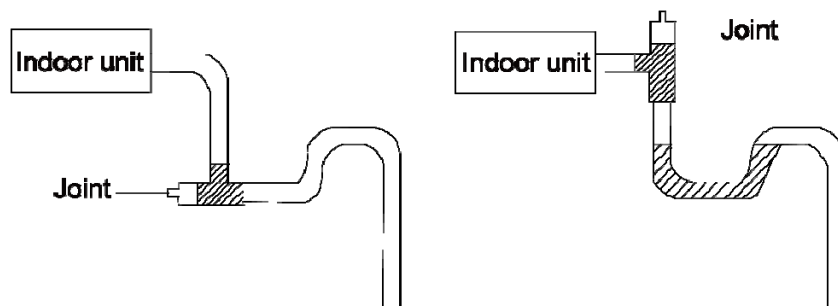
◆ If the air flow of indoor unit is high, this might cause negative pressure and result in return suction of outdoor air. Therefore, U-type water trap shall be designed on the drainage side of each indoor unit.



◆ Install water trap as shown below

◆ Install one water trap for each unit

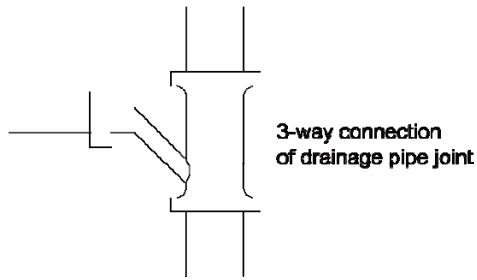
◆ Installation of water trap shall consider easy cleaning in the future.



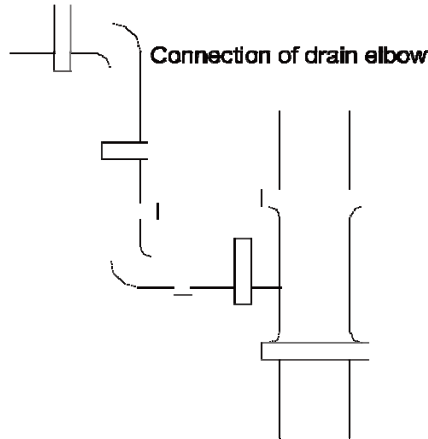
◆ Connection of drainage branch pipe to the standpipe or horizontal pipe of drainage main pipe

◆ The horizontal pipe cannot be connected to the vertical pipe at a same height. It can be connected in a manner as shown below:

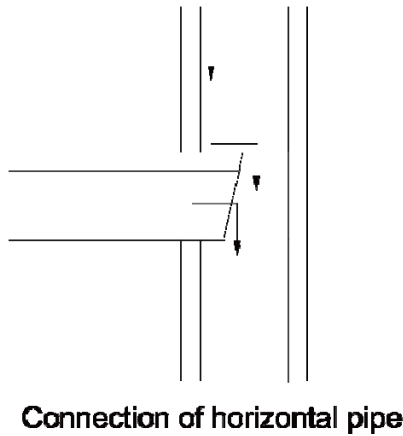
N01:3-way connection of drainage pipe joint



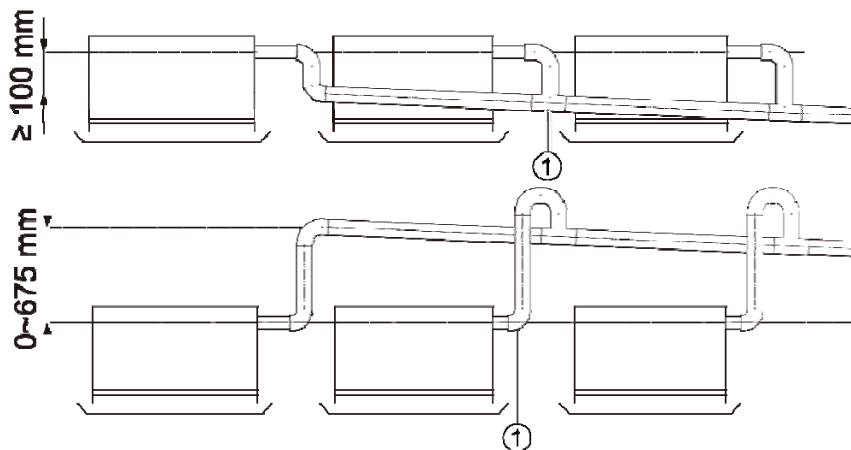
NO2: Connection of drain elbow



NO3: Connection of horizontal pipe



◆ When unifying multiple drain pipes, install the pipes as shown below. Select converging drain pipes whose gauge is suitable for the operating capacity of the unit.(take the cassette type unit for example)

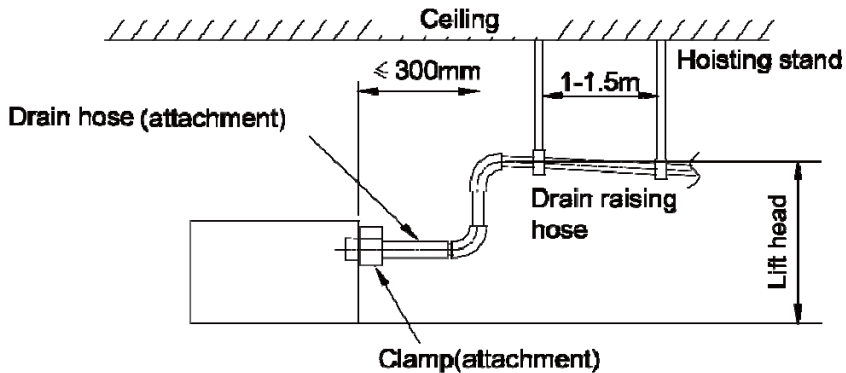


5.3 Precautions when doing riser piping work

◆ Make sure that heat insulation work is executed on the following 2 spots to prevent any possible

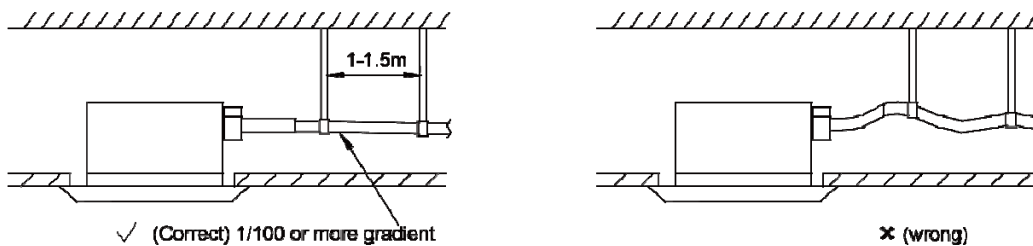
water leakage due to dew condensation.

- a) Connect the drain hose to the drain raiser pipe, and insulate them.
- b) Connect the drain hose to the drain outlet on the indoor unit, and tighten it with the clamp.

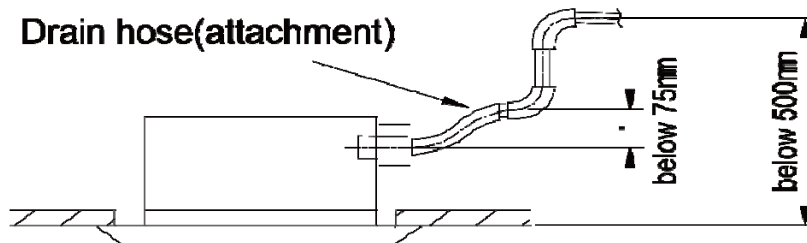


◆ Stand the raiser piping horizontally, and make sure it is not further than 300 mm from the base of the drain outlet.

◆ Secure a downward gradient of 1/100 or more for the drain pipe. To accomplish this, mount supporting brackets at an interval of 1 - 1.5 m.(take the cassette type unit for example)

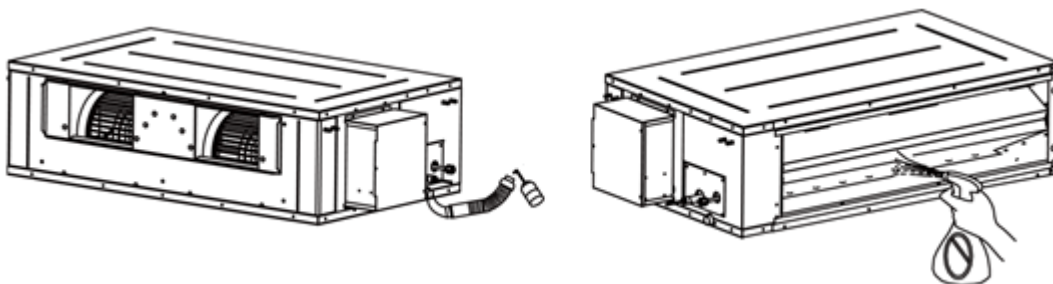


◆ The incline of attached drain hose should be 75 mm or less so that the drain outlet does not have to withstand additional force.(take the cassette type unit for example)



5.4 Testing of Drain Piping

- ◆ After piping work is finished, check if drainage flows smoothly.
- ◆ Shown in the figure, Add approximately 1liter of water slowly into the drain pan and check drainage flow during COOL running.



6 Electrical Installation

- ◆The wiring must be in accordance with the local rules.

- ◆Rated supply voltage and special circuit for air conditioner must be used.

- ◆Do not pull the power cord forcefully.

- ◆All the electric installations must be carried out by specialist technicians in accordance with the local laws, rules and these instructions.

- ◆The diameter of flexible wire should be wide enough. Replace the damaged power cord and connecting wire with special flexible wire.

- ◆The earthing shall be reliable and connected to the special earthing device on the construction. The installation must be done by specialist technicians. The leak protection switch and air switch with enough capacity must be installed. The air switch shall have both the magnetic tripping and thermal tripping functions to ensure protection against the short circuit and overload.

- Earthed Requirements

- ◆The air conditioner belongs to I type electric appliances. The reliable earthed action is a must.

- ◆The yellow and green wire inside the air conditioner is the earthed wire. Do not use it for other purpose or even cut off it. Do not fix it with tapping screw,. Otherwise, it may cause electric shock.

- ◆The earthed resistance must meet the requirements of national standard GB17790.

- ◆There should be reliable earthed terminal for the power supply. Never connect the earth lead to the following articles:

- ①water pipe; ②gas pipe; ③drain pipe; ④unreliable place considered by professionals.

DEBUGGING & MAINTENANCE

1 Debugging of Unit

Caution:

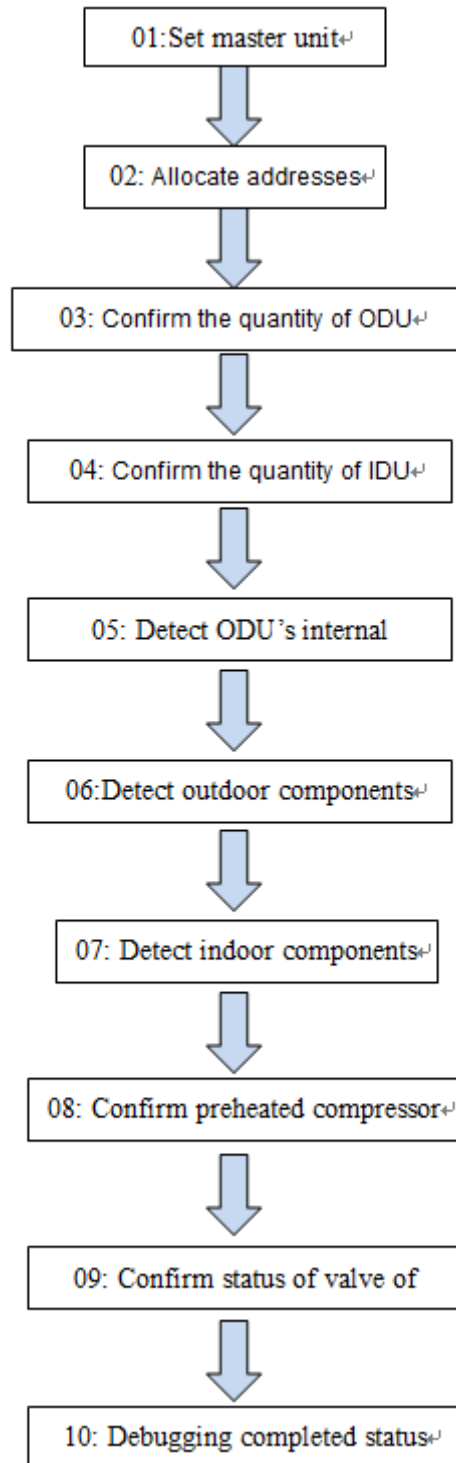
1. After the initial installation is finished and the main board of outdoor unit is replaced, it must perform debugging. Otherwise, the unit can't operate.
2. The debugging must be performed by professional person or under the the guide of professional person.

1.1 Preparation for debugging

- (1) Do not disconnect the power before the installation is finished,
- (2) All wires for controller and electric wires must be connected correctly and reliably.
- (3) Check the the fixing ring of the foot of compressor for transportaion is removed.
- (4) Remove all sundries from the unit, such as metal chips, joint, forceps holder, and so on.
- (5) Check whether the appearance and pipeline system are damaged during carry or transportation process.
- (6) Calculate the required added refrigerant-charging volume according to the length of pipe of system and pre-charge the refrigerant. If refrigerant can't be added any more when the required refrigerant-charging volume hasn't been reached, record to refrigerant volume which still needs to be added and continue to add refrigerant during run test operation process. Please refer to below run test for the refrigerant-adding stage during run test process.
- (7) After adding refrigerant, please make sure the valve for outdoor is opened completely.
- (8) For the convenient of troubleshooting, the unit can't be connected to the PC which installed with related debugging software and make sure that the the datas in real time of this unit can be inspected by this computer. Please refer to Service Manual for the installation and connection of the bebugging software.
- (9) Before turn test, please do make sure that the preheat time for compressor is 8h above and touch the compressor to see whether preheat is normal. You can perform run test only after normal preheat. Otherwise, it may damage the compressor.

1.2 Debugging of unit

1.2.1 flow-process diagram of debugging



1.2.2 Test Operation and Debugging

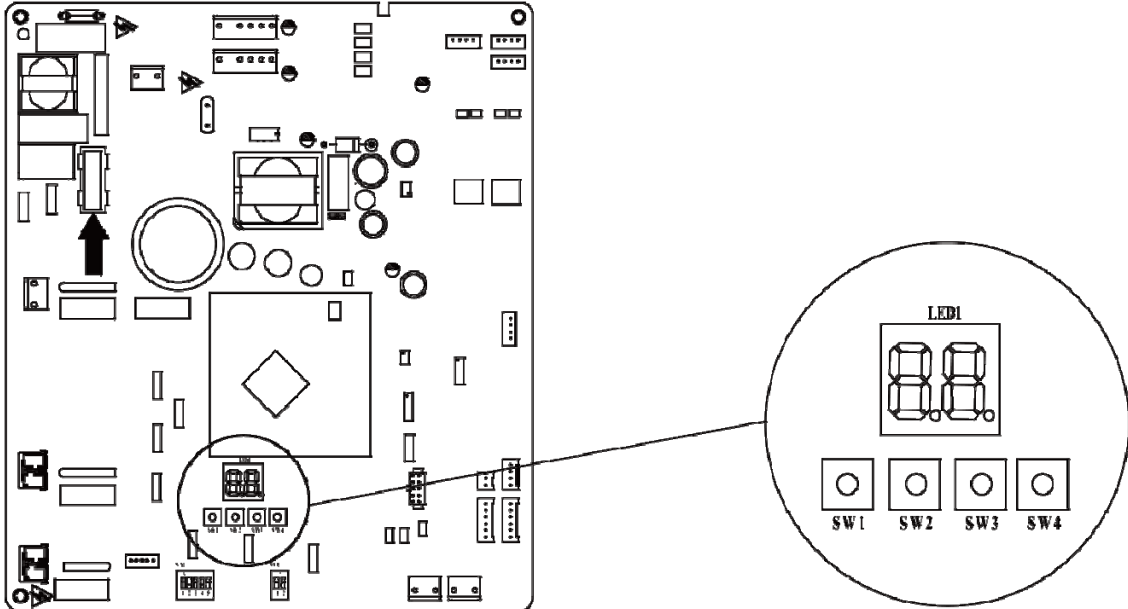
Once the unit is energized and turned on for the first time, the display tube of outdoor unit displays “A0”, which indicates debugging standby status. At this time, hold SW3 button successively for 5s on the main module to enter into the automatic debugging, and then the engineering debugging will perform according to the set procedures. Step 4(conformation of outdoor unit' quantity) and step 4(conformation of indoor unit' quantity) should be confirmed manually by pressing “SW3”, while other procedures will be performed automatically. Once the debugging for each step is finished, “oC” will be displayed; once all engineering debugging are finished, “oF” will be displayed, which indicates the unit is under standby

status.

Functions of debugging buttons:

Key No.	SW1	SW2	SW3	SW4
Function	Up	Down	OK	Back

Buttons and digital display tube on the motherboard location:



Debugging procedure for test run, display instruction for indicator on main board of outdoor unit and operation method are as below:

Description of each stage of debugging progress			
Progress	Debugging Code		Instruction for Code and Operating Method
	LED		
	Display Code	Display Code	
01_ Set master unit	01/CC	Display repeatedly	There is no master unit in the system. The system cannot continue to conduct debugging, and all the buttons are invalid that must be reset by cutting the power.
	01/CF	Display repeatedly	There are two or more master units in the system. The system cannot continue to conduct debugging, and all the buttons are invalid that must be reset by cutting the power.
	01/OF	Display repeatedly	There is only one master unit in the system. The unit will automatically enter into the next step after display for once.
02_ Allocate addresses	02	Flicker	The system is allocating addresses. It will display as below after 10 seconds:
	02/L7	Display repeatedly	There is no master unit. The display will last for 1 minute, within this 1 minute, the master IDU can be set by debugging software. If the master IDU has not been set within this 1 minute, the system will automatically set the IDU with the minimum IP address as the master IDU.
	02/OC	Display repeatedly	The system has finished allocating the addresses, there is master IDU. It will automatically enter into the next step's operation after displaying for once.
03_ Confirm the quantity of ODU	03/QTY of module	Display repeatedly	Confirmation of quantity of modules in the system. If the actual quantity of ODU is in conformity with the displayed quantity, please check the dial code and wire connection and then conduct debugging for confirmation.
	03/OC	Display repeatedly	If the actual quantity of ODU is in conformity with the displayed quantity, press SW3 button to confirm. After confirmation, all the module nixie tubes will repeatedly display "03" and "0C", after displaying for once, the system will automatically enter into the next operation.

Description of each stage of debugging progress			
Progress	Debugging Code		Instruction for Code and Operating Method
	LED		
	Display Code	Display Code	
04_ Confirm the quantity of IDU	04/Cb	Display repeatedly	It is not allowed to connect more than one indoor unit in the system. Please check and debug again to confirm.
	04/oC	Display repeatedly	The quantity of IDU in the system has been confirmed.It will enter into the next step.
05_ Detect ODU's internal communication	05/C2	Display repeatedly	Communication between master control and driving of ODU. Please check if the communication wire between mainboard and driving board of ODU is correctly connected , if it is, enter into the next step. If the ODU should be powered off for the debugging, after re-energizing the unit, please conduct debugging from the above 01 step.
	05/oC	Display repeatedly	The communication between master control and driving of ODU are normal. After displaying for once, it will automatically enter into the next step.
06_ Detect outdoor components	06/corresponding error code	Display repeatedly	Error of components of ODU. Except "06", others will flickeringly display corresponding error code. After eliminating all the errors , it will automatically enter into the next step. If the ODU should be powered off for the debugging, after re-energizing the unit, please conduct debugging from the above 01 step.
	06/oC	Display repeatedly	No component of ODU is found in the system, it will enter into the next step 10 seconds later.
07_ Detect indoor components	07/ corresponding error code	Display repeatedly	Error of components of IDU are detected. For example, the IDU displays d5 and d6 simultaneously, the nixie tube will repeatedly display "07", "d5", "d6". After eliminating all the errors , it will automatically enter into the next step. If the ODU should be powered off for the debugging, after re-energizing the unit, please conduct debugging from the above 01 step.
	07/oC	Display repeatedly	No component of IDU is found in the system, it will automatically enter into the next step 5 seconds later.
08_ Confirm preheated compressor	08/U0	Display repeatedly	Insufficiency preheating of compressor. The nixie tube will display as the left until the preheating time for compressor has reached 8 hours, then press SW3 can skip over the waiting time, and automatically enter into the next step 2 seconds later. (Note: if the preheating time for the compressor is less than 8 hours, there may be a risk for damage of compressor, please conduct with care)
	08/oC	Display repeatedly	If the ODU is continuously energized for ≥8h, or the continuous 8-hour energizing time in the last time till now is less than 2 hours (it requires clock chip), it means the preheating is completed, the system will automatically enter into the next step 2 seconds later.
09_ Confirm status of valve of ODU	09/U4	Display repeatedly	The system shuts down due to malfunction. The error module nixie tube repeatedly display "09" and "U6", other module nixie tubes repeatedly display "09" and "J0". If error occurs, please check if the valve is opened, and at the same time check if the connecting pipes between different modules are correctly connected. If all the modules shut down, then all the module nixie tube will display "09" and "oC" for once.
10_ Debugging completed status	OFF	On	The whole unit has gone through the debugging, the system is in stand-by status.

1.3 Parameters reference value for the normal operation of unit

No.	Debug item		Parameter name	Unit	Reference
1	System parameters	ODU parameters	Outdoor temperature	℃	—
2			Compressor discharge temperature	℃	<ul style="list-style-type: none"> ●When compressor starts, discharge temp in cooling mode is within 70~105℃ and at least 10℃ higher than the high pressure saturation temp; ●As for temp in heating mode, it is within 65~90℃ and at least 10℃ higher than the high pressure saturation temp.

3			Defrosting temperature	℃	<ul style="list-style-type: none"> ●In cooling mode, defrosting temp is 4~10℃ lower than system's high pressure value; ●In heating mode, defrosting temp is about 2℃ different from system's low pressure value. 	
4			System high pressure	℃	<ul style="list-style-type: none"> ●In cooling mode, the normal high pressure value is within 20℃~55℃. According to the change of ambient temp and system's operating capacity, the high pressure value will be 10℃~30℃ higher than ambient temp. The higher ambient temp is, the smaller temp difference is. If ambient temp is 25~35℃ in cooling mode, system's high pressure value will be within 44~53℃. ●In heating mode, if ambient temp is above -5℃, system's high pressure value is within 40~52℃. If ambient temp is low and many IDUs are turned on, the high pressure will be lower. 	
5			System low pressure	℃	<ul style="list-style-type: none"> ●When ambient temp in cooling mode is 25~35℃, the low pressure value is 0~8℃. ●When ambient temp in heating mode is above -5℃, the low pressure value is -15~8℃. 	
6			Opening angle of thermal EXV	PLS	<ul style="list-style-type: none"> ●In cooling mode, the thermal electronic expansion valve remains 480PLS. ●In heating mode, the adjustable opening angle of EXV is 60~480PLS. 	
7			Compressor working current	A	When compressor works normally, the current is no more than 23.0A.	
8			Compressor's IPM temp	℃	When ambient temperature is below 35℃, IPM temperature is lower than 70℃. Maximum temperature is 80℃.	
9			IDU ambient temp	℃	—	
10			IDU parameters	Indoor heat exchanger's inlet temp	℃	<ul style="list-style-type: none"> ●According to ambient temp, for a same IDU in cooling mode, the inlet temp will be 1℃~7℃ lower than the outlet temp, and 4~9℃ higher than the low pressure value. ●For a same IDU in heating mode, the inlet temp will be 10℃~20℃ lower than the outlet temp.
11				Indoor heat exchanger's inlet temp	℃	
12				Opening angle of indoor EXV	PLS	<ul style="list-style-type: none"> ●In cooling mode, the opening angle of indoor EXV varies within 40~480PLS. ●In heating mode, the opening angle of indoor EXV varies within 70~480PLS.
13				Communication parameters	Communication data	—
14			Drainage system	—	—	Indoor unit can drain water out completely and smoothly. Condensate pipe has no backward slope of water; Water of outdoor unit can be drained completely through drain pipe. No water drop from unit base.
15	Others	—	—	Compressor and indoor/outdoor fan motor do not have strange noise. Unit can operate normally.		

2 Malfunction List

2.1 Malfunction list for the IDU

Display code	Content	Display code	Content	Display code	Content
L0	Malfunction of indoor unit	L9	Wrong number of indoor unit for one-to-more indoor unit	d8	Malfunction of water temperature sensor
L1	Indoor fan protection	LA	Wrong series for one-to-more indoor unit	d9	Malfunction of jumper cap
L2	E-heater protection	LH	Alarming due to bad air quality	dA	Abnormal address for indoor unit
L3	Water overflow protection	LC	The indoor unit model can't match with outdoor unit model	dH	Abnormal PCB for wired controller

L4	Power supply of wired controller is faulted	d1	Poor indoor PCB	dC	Abnormal code-dialing setting of capacity
L5	Freeze prevention protection	d3	Malfunction of ambient temperature sensor	dL	Malfunction of air exhaust temperature sensor
L6	Mode shock	d4	Malfunction of entry tube temperature sensor	dE	Malfunction of indoor CO ₂ sensor
L7	No main indoor unit	d6	Malfunction of exit tube temperature sensor	C0	Communication malfunction
L8	Insufficient power supply	d7	Malfunction of humidity sensor	AJ	Clean alarming for filter
db	Special code: engineering debugging code				

2.2 Status display table for indicators on main board of ODU

Display code	Content	Display code	Content	Display code	Content
E0	Malfunction of outdoor unit	E1	High pressure protection	E2	Low-temperature protection for discharge
E3	Low pressure protection	E4	Discharge high temperature protection for compressor	EC	Loose protection for discharge temperature sensor for compressor 1
F0	Poor main board of outdoor unit	F1	Malfunction of high pressure sensor	F3	Malfunction of low pressure sensor
F5	Malfunction of discharge temperature sensor for compressor 1	J0	Other module protection	J1	Overcurrent protection for compressor 1
J7	Air-mixing protection for 4-way valve	J8	High pressure ration protection of system	J9	Low pressure ratio protection of system
JL	High pressure is too low	b1	Malfunction for outdoor ambient temperature sensor	b2	Mafunction of defrosting temperature sensor 1
b3	Mafunction of defrosting temperature sensor 2	b4	Malfunction of liquid temperature sensor for subcooler	b5	Malfunction of gas temperature sensor for subcooler
b6	Malfunction for temperature sensor of inlet tube of gas and liquid separator	b7	Malfunction for temperature sensor of exit tube of gas and liquid separator (exit tube A)	b9	Malfunction of gas exit temperature sensor for heat exchanger
bH	Abnormal clock of system	P0	Malfunction driven board for compressor	P1	Driven board of compressor works abnormally
P2	Power voltage protection for the driven board of compressor	P3	Reset protection for the driven module of compressor	P4	Driven PFC protection of compressor
P5	Overcurent protection for inverter compressor	P6	Driven IPM module protection for compressor	P7	Malfunction of driven temperature sensor for compressor
P8	Overheating protection for driven IPM of compressor	P9	Desynchronizing protection for inverter compressor	PH	High voltage protection for driven DC bus bar of compressor
PC	Circuit malfunction of driven current detection for compressor	PL	Low voltage protection for driven DC bus bar of compressor	PE	Phase-losing of inverter compressor
PF	Malfunction of driven charging loop for compressor	PJ	Failure start up for inverter compressor	PP	AC current protection for inverter compressor
U0	Preheat time is not enough for compressor	U2	Capacity code of outdoor unit/wrong setting of jumper cap	U4	Insufficient refrigerant protection
U5	Wrong address for the driven board of compressor	U6	Alarm due to abnormal valve	U8	Malfunction of pipeline for indoor unit
U9	Malfunction of pipeline for outdoor unit	UC	Setting for indoor unit and outdoor unit is succeeded	UL	Wrong code-dialing during emergency operation

Display code	Content	Display code	Content	Display code	Content
UE	Refrigerant-charging is invalid	C0	Communication malfunction for indoor unit, outdoor unit and wired controller of indoor unit	C2	Driven communication malfunction between main board and inverter compressor
C3	Driven communication malfunction between main board and inverter compressor	C4	Malfunction of indoor unit-lacking	C5	Alarming due to engineering series number shock of indoor unit
C6	Alarming due to wrong quantity of outdoor unit	C8	Emergency status of compressor	C9	Emergency status of fan
CA	Emergency status of module	CH	High rated capacity	CC	No malfunction of main control unit
CL	Low rated capacity	CF	Malfunction of main control unit	CJ	Address shock of system
CU	Communication malfunction between indoor unit receiving lamp board	Cb	Distribution overflow of Ip address	A0	Debugging for unit
A1	Operational parameter inquiry of compressor	A2	Refrigerant recovery	A3	Defrosting
A4	Oil return	A5	On-line test	A6	Heat pump function setting
A7	Quit mode setting	A8	Vacuum pump mode	A9	IPLV test
AA	EU AA class energy efficiency test mode	AH	Heating	AL	Charge refrigerant automatically
AE	Charge refrigerant by hand	AF	Fan blow	AJ	Cleaning alarm for filter
AP	Startup debugging confirmation of unit	AU	Long-distance emergency stop	Ab	Emergency stop
Ad	Limit operation	n0	SE setting for the operation	n1	Defrosting period K 1 setting
n2	Upper limit setting for the collocation matching ratio for indoor unit and outdoor unit	n4	Limit setting for the maximum output capacity	n6	Engineering series number inquiry for indoor unit
n7	Malfunction inquiry	n8	Parameters inquiry	nA	Heat pump unit
nH	Heating only model	nC	Cooling only model	nE	Negative code
nF	Fan model				

3 Troubleshooting

3.1 Exception Analyzing and Troubleshooting (IDU)

3.1.1 "d1" Indoor circuit board error



Error display: IDU wired controller and IDU receive light board will display

Error judgment condition and method:

Check if the reading of address chip and memory chip of IDU mainboard is normal. If the data of address chip and memory chip cannot be read, it is abnormal

Possible reason:

- Address chip is abnormal
- Memory chip is abnormal. Replace main control board directly

Troubleshooting:

Replace main control board directly

3.1.2 “d3” Ambient temperature sensor error



Error display: IDU wired controller and IDU receive light board will display

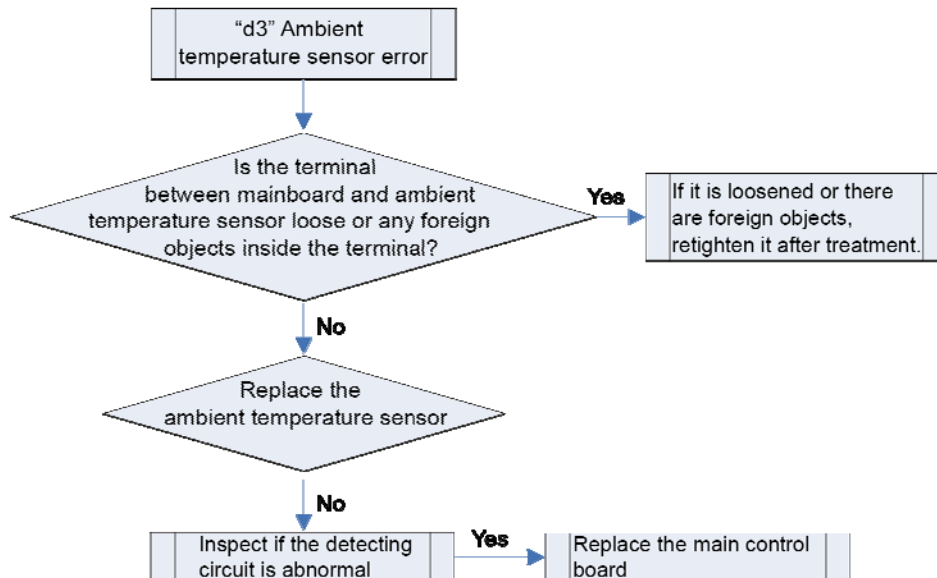
Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

Possible reason:

- Poor contact between ambient temperature sensor and terminal in mainboard interface
- Ambient temperature sensor is abnormal
- Detecting circuit is abnormal

Troubleshooting:



3.1.3 “d4” Inlet pipe temperature sensor error



Error display: IDU wired controller and IDU receive light board will display

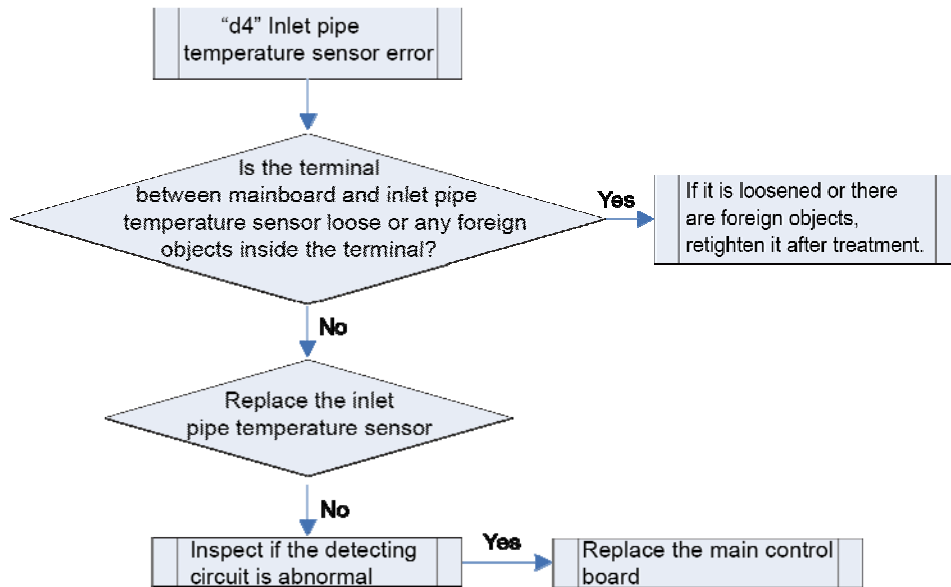
Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

Possible reason:

- Poor contact between inlet pipe temperature sensor and terminal in mainboard interface
- Inlet pipe temperature sensor is abnormal
- Detecting circuit is abnormal

Troubleshooting:



3.1.4 “d6” Outlet pipe temperature sensor error



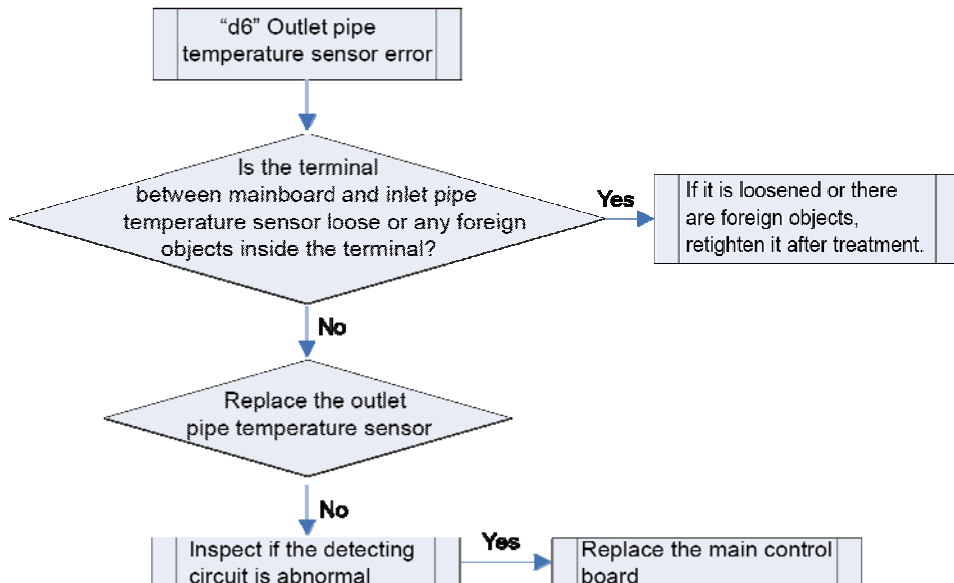
Error display: IDU wired controller and IDU receive light board will display

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

Possible reason:

- Poor contact between outlet pipe temperature sensor and terminal in mainboard interface
- Outlet pipe temperature sensor is abnormal
- Detecting circuit is abnormal



3.1.5 “d9” Jumper cap error



Error display: IDU wired controller and IDU receive light board will display

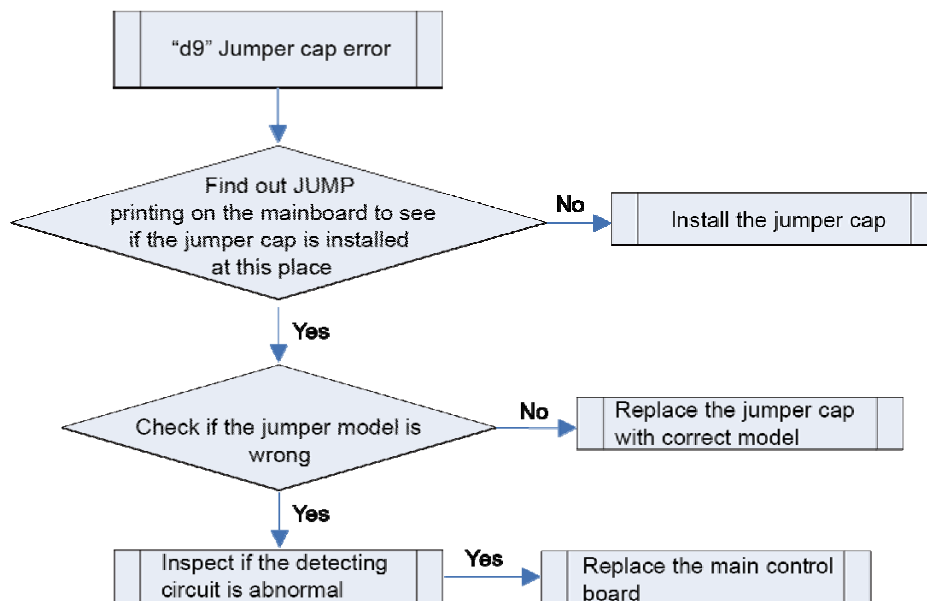
Error judgment condition and method:

Possible reason:

If jumper cap model doesn't match with mainboard, report the error

- Jumper cap is not installed
- Jumper cap model is wrong
- Detecting circuit is abnormal

Troubleshooting:



3.1.6 “dH” wired controller circuit board error



Error display: IDU wired controller and IDU receive light board will display

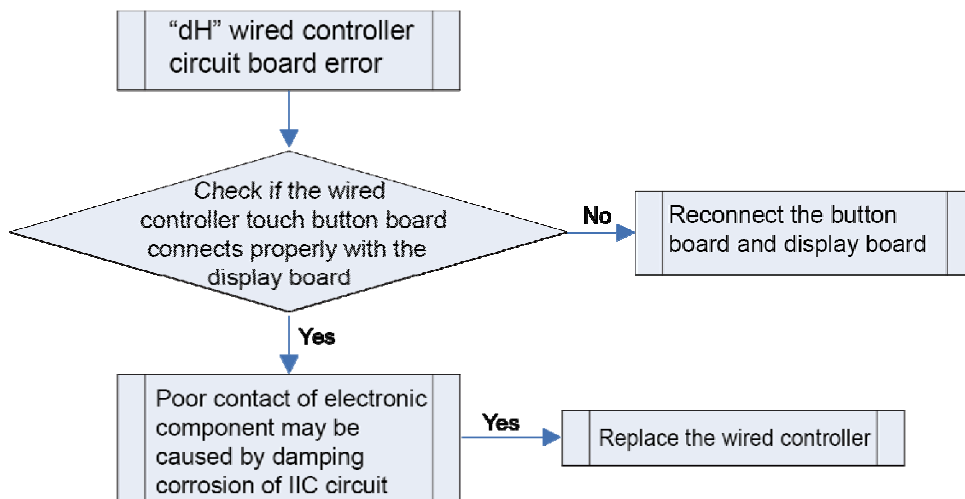
Error judgment condition and method:

Wired controller IIC communication is abnormal

Possible reason:

- Communication of wired controller touch button board and display board IIC is abnormal;
- Read and write of wired controller memory chip IIC is abnormal (when memory chip is existed);

Troubleshooting:



3.1.7 “dC” Capacity DIP switch setting error



Error display: IDU wired controller and IDU receive light board will display

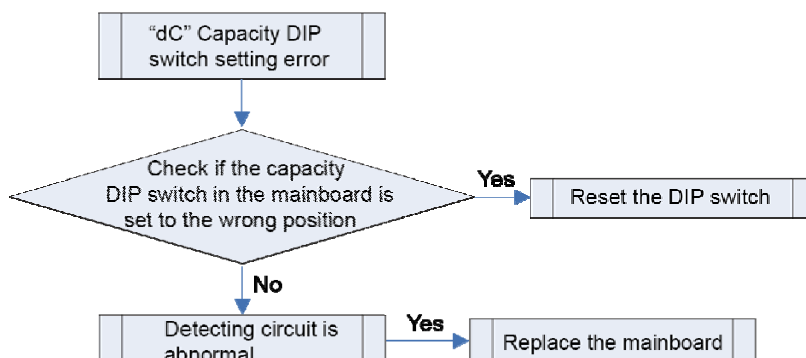
Error judgment condition and method:

If capacity DIP switch is set to the wrong position, report the error.

Possible reason:

- Capacity DIP switch is set to the wrong position
- Detecting circuit is abnormal

Troubleshooting:



3.1.8 “db” Project debugging

Error display: ODU mainboard, IDU wired controller and IDU receive light board will display



Error judgment condition and method:

This is a status code of project debugging, not a error code. When IDU or ODU displays this code, it means the unit is under debugging status and the IDU cannot be operated.

Troubleshooting: ——

Possible reason: ——

3.1.9 “L1” Indoor fan protection

Error display: IDU wired controller and IDU receive light board will display



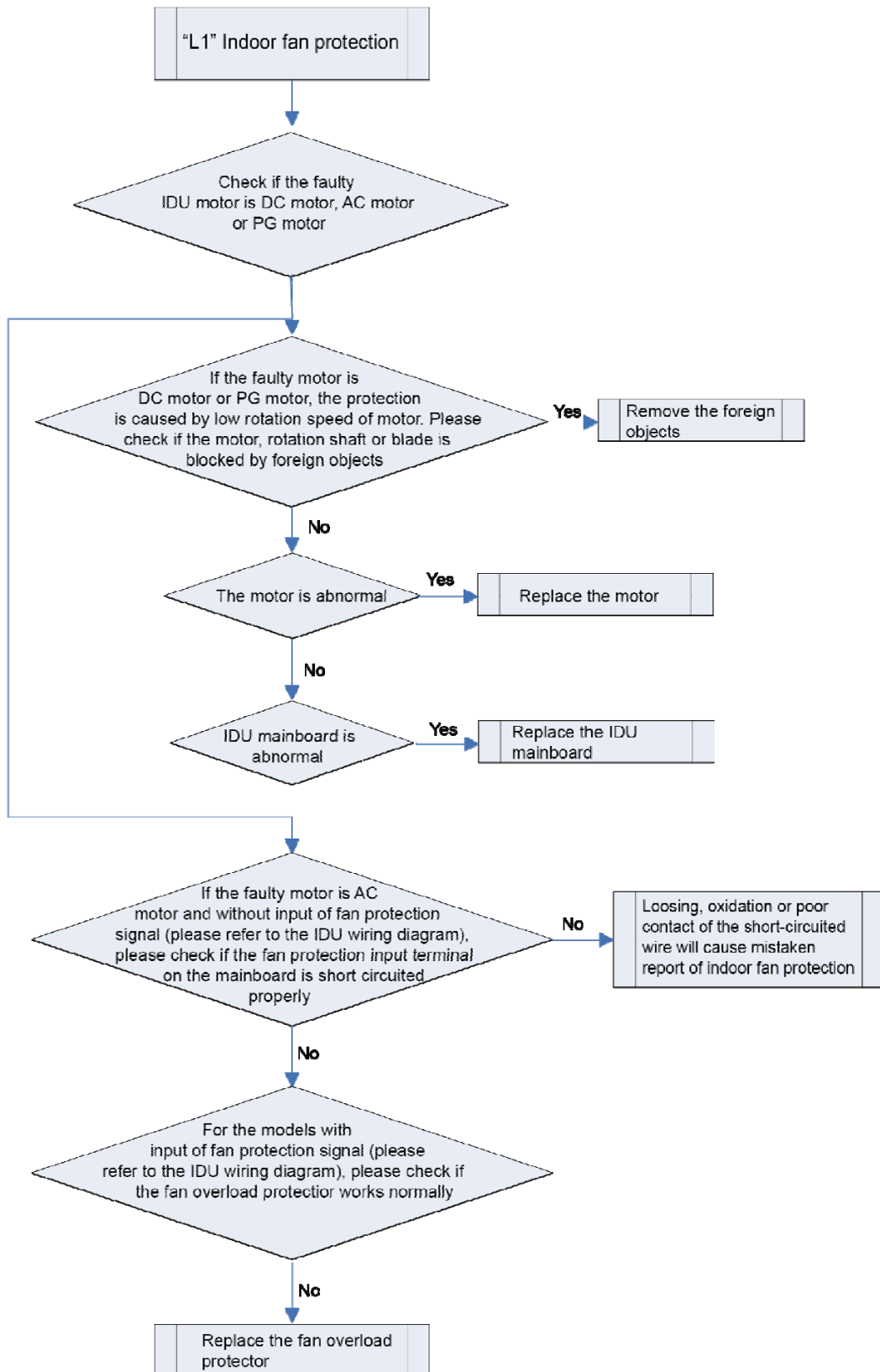
Error judgment condition and method:

Check if the rotation speed of IDU is too slow, or it stops rotation, or protection signal of outdoor fan is transferred. If yes, it is judged that indoor fan protection occurs.

Possible reason:

- Motor stops operation or it is blocked
- IDU mainboard is abnormal

Troubleshooting:



3.1.10 “L4” Power supply overcurrent protection



Error display: IDU wired controller and IDU receive light board will display

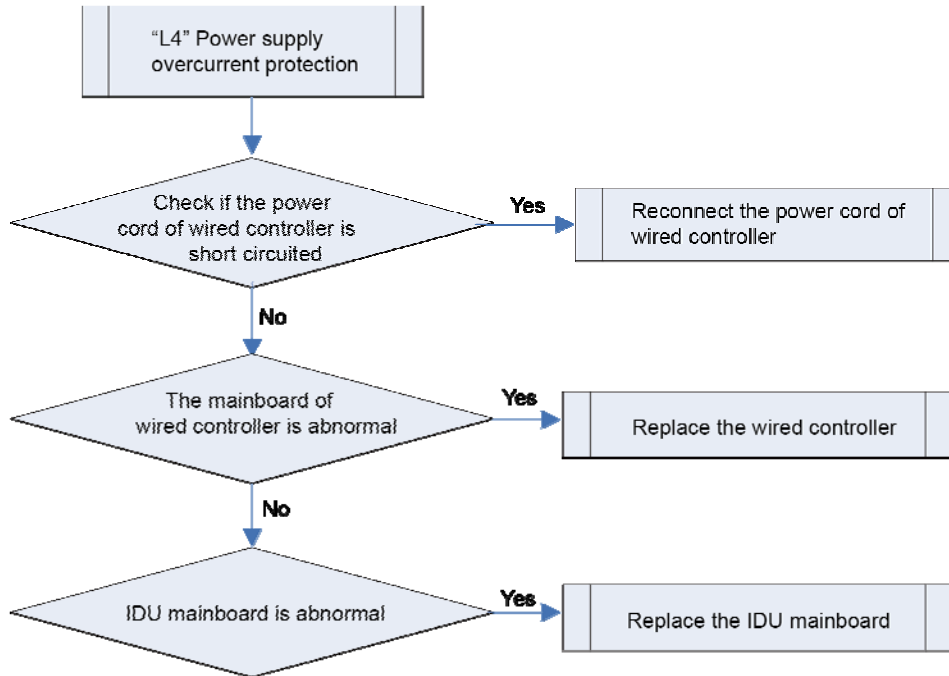
Error judgment condition and method:

Check if the power supply current from IDU to wired controller is normal. If power supply current is too big, it is judged that the current is abnormal.

Possible reason:

- Power supply conducting wire of wired controller is short circuited
- IDU mainboard is abnormal
- Mainboard of wired controller is abnormal

Troubleshooting:



3.1.11 “L5” Freeze protection



Error display: IDU wired controller and IDU receive light board will display

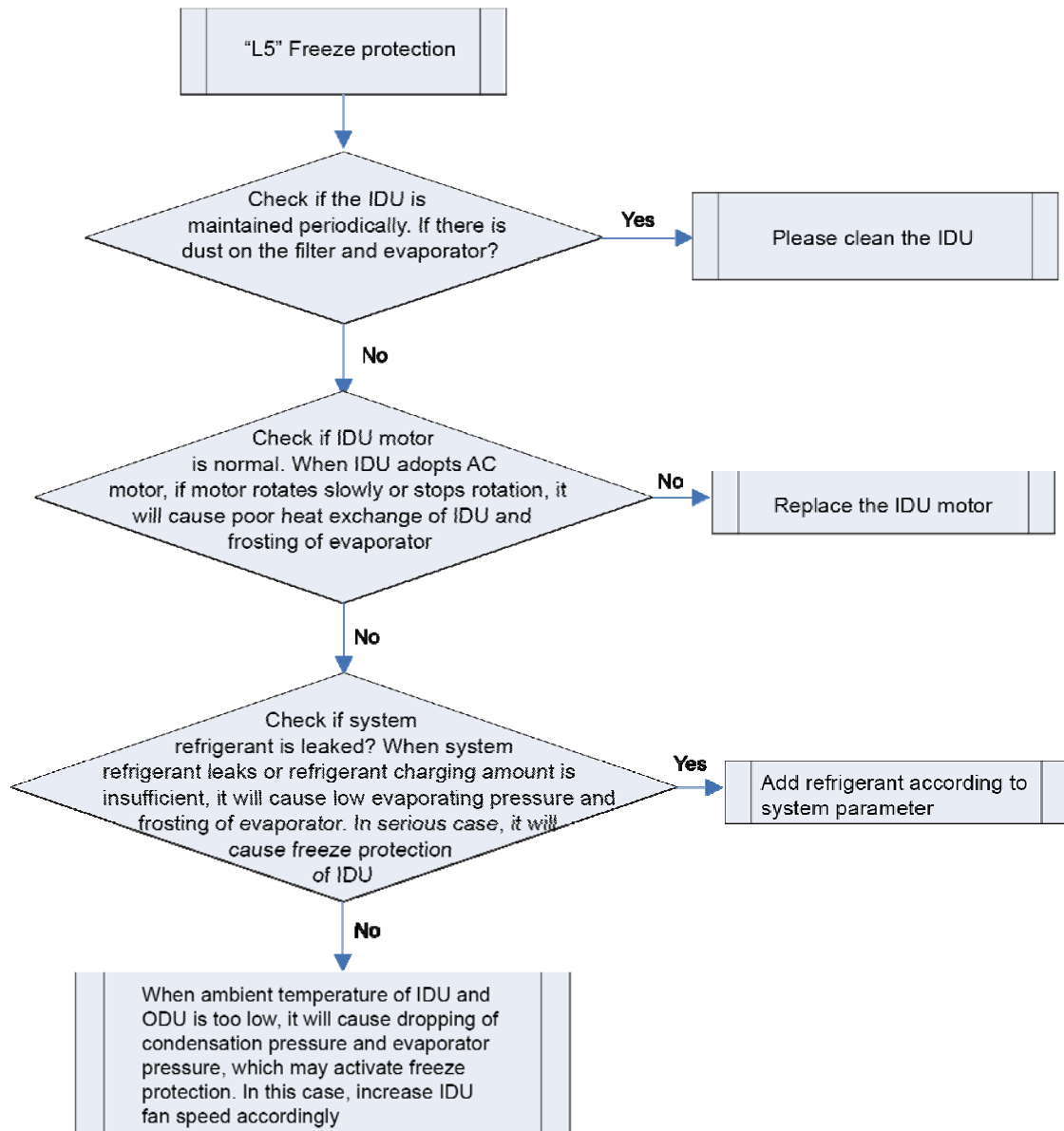
Error judgment condition and method:

Check IDU pipe temperature. When pipe temperature is too low, freeze protection will be activated to prevent freezing damage of evaporator.

Possible reason:

- IDU filter and evaporator are dirty
- IDU motor is blocked
- Refrigerant amount is insufficient
- Ambient temperature of IDU and ODU is too low

Troubleshooting:



3.1.12 “LC” Mismatch of IDU and ODU models



Error display: IDU wired controller and IDU receive light board will display

Error judgment condition and method:

When some IDUs or devices which cannot be identified by some ODU are installed in the system, mismatch error of IDU and ODU models will occur.

Possible reason:

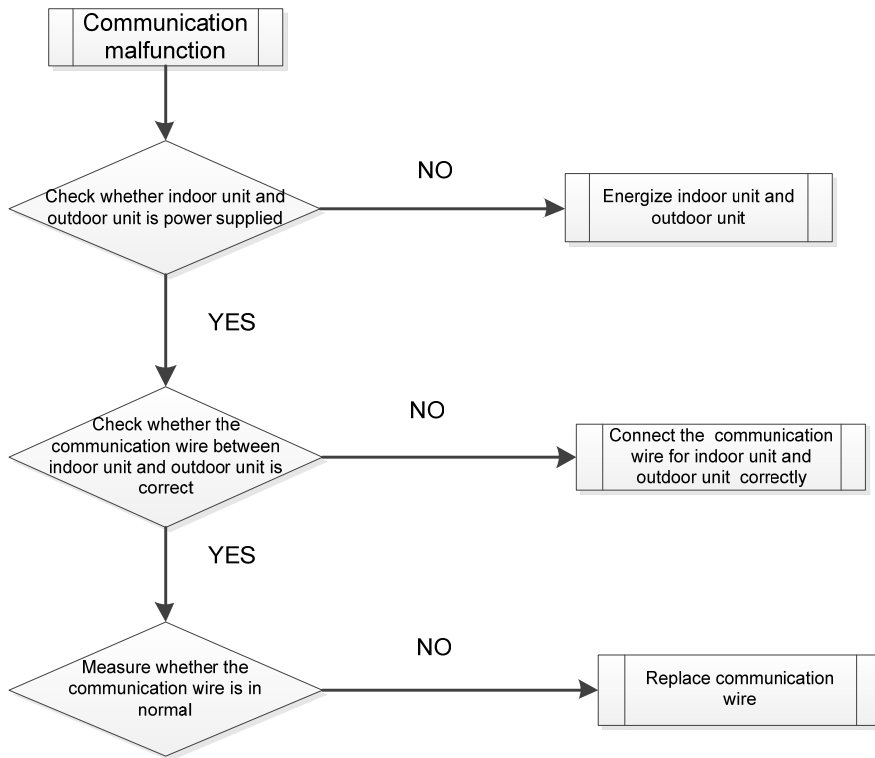
- Mismatch of IDU and ODU

Troubleshooting:

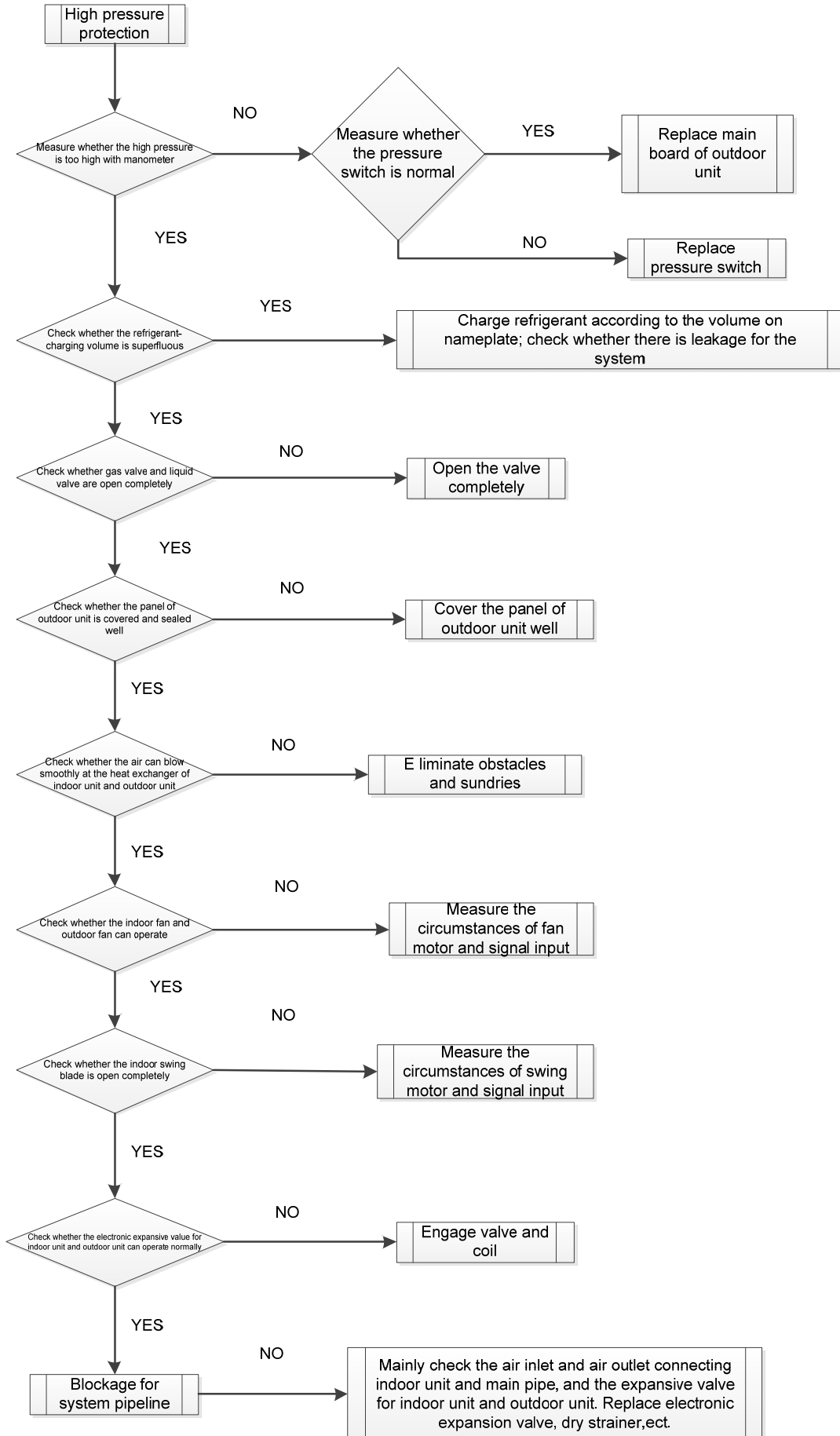
When some IDUs or devices which cannot be identified by some ODU are installed in the system (E.g. floor heating device is installed in modular DC inverter multiple VRF system), the error will occur. Please remove the relevant IDU devices or replace the ODU with suitable model.

3.2 Exception Analyzing and Troubleshooting (ODU)

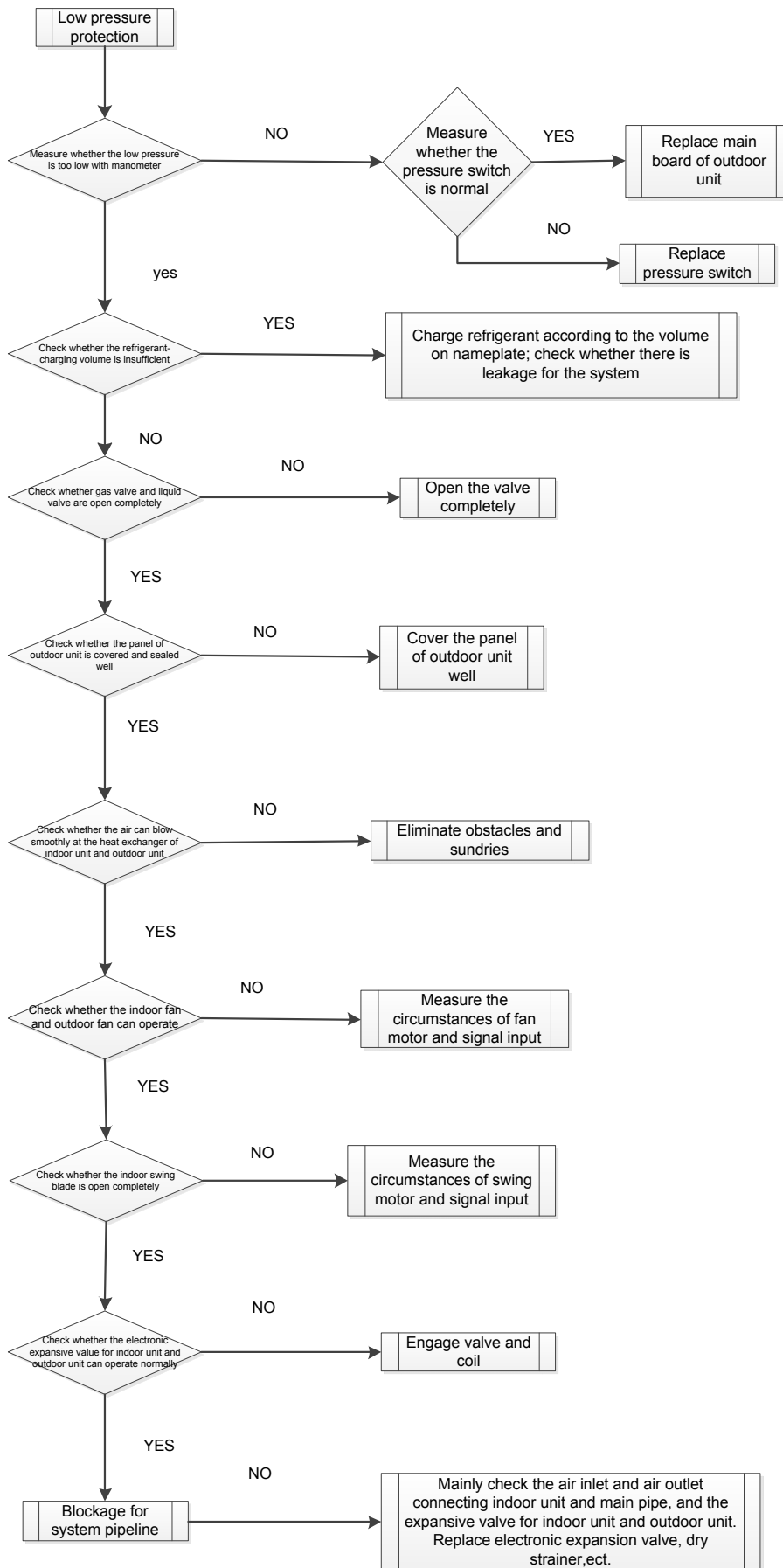
3.2.1 Communication malfunction



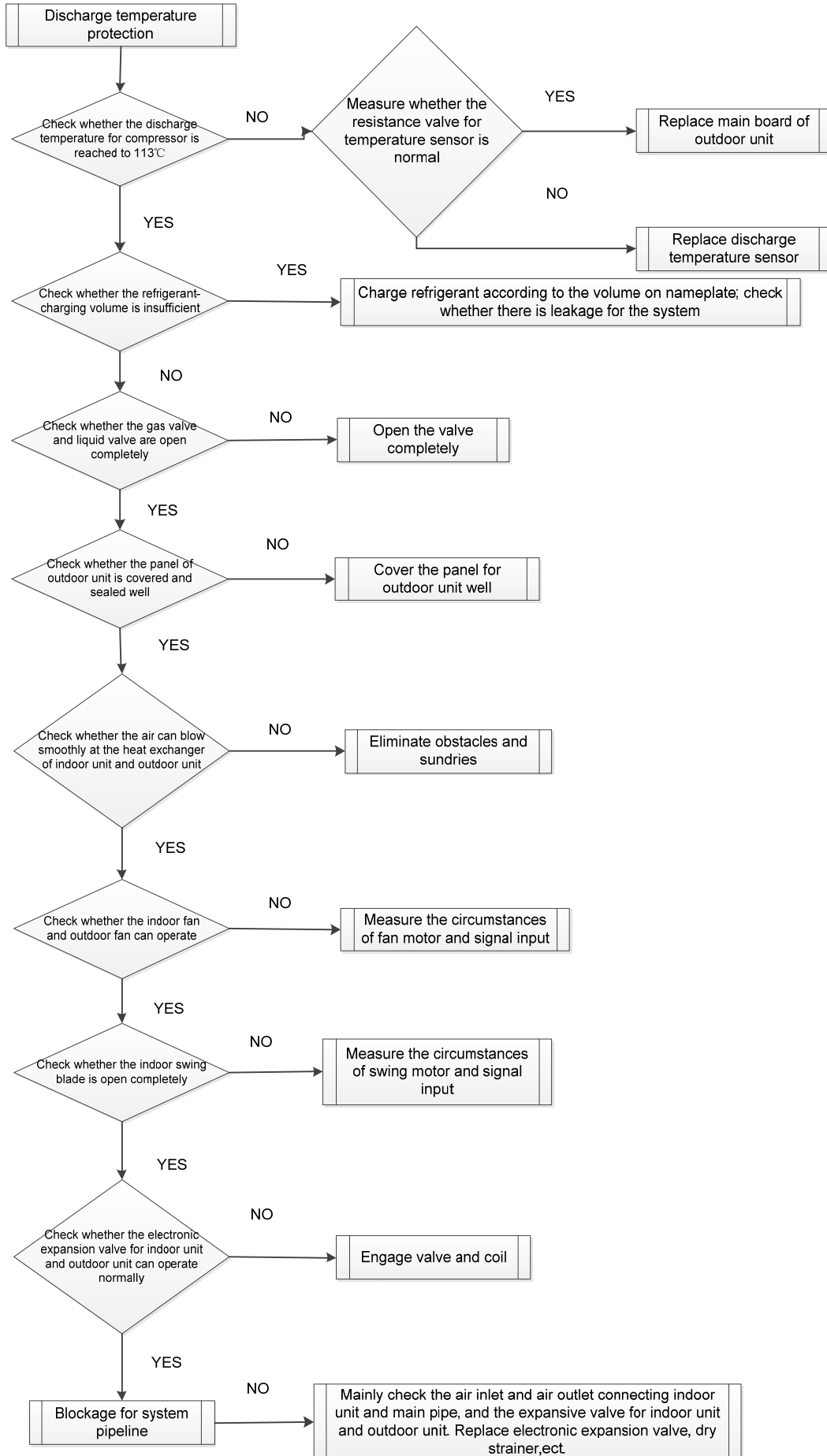
3.2.2 High pressure protection



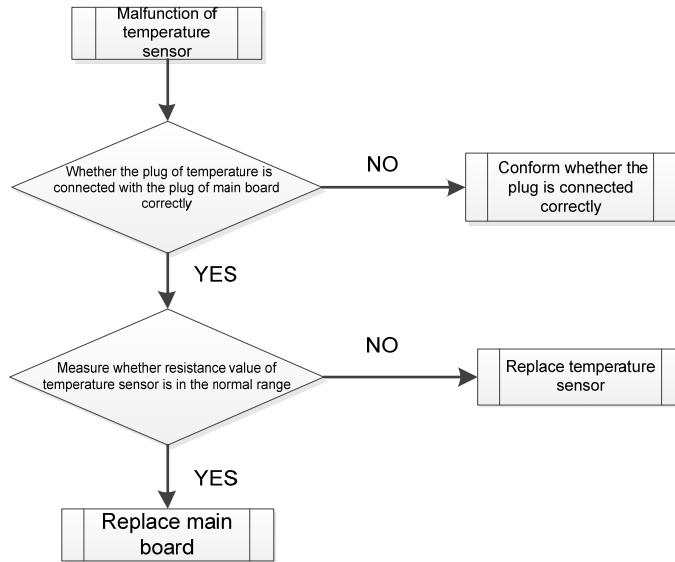
3.2.3 Low-pressure protection



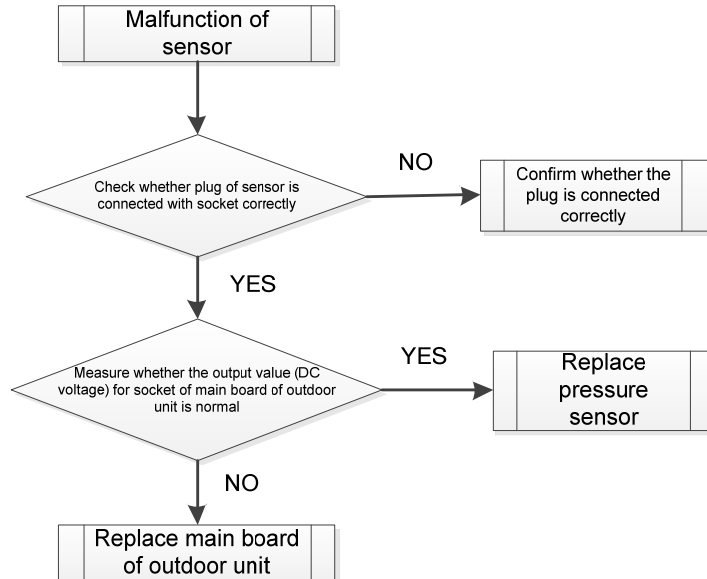
3.2.4 Discharge temperature protection



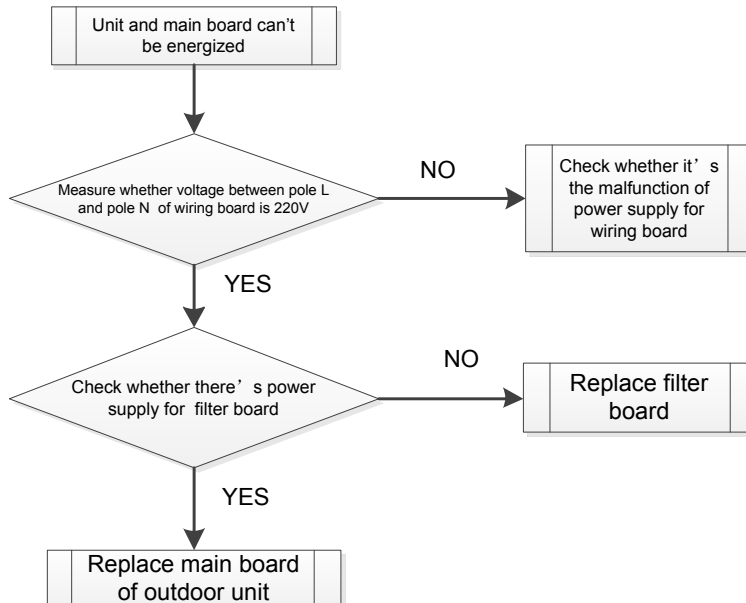
3.2.5 Mafuction of temperature sensor



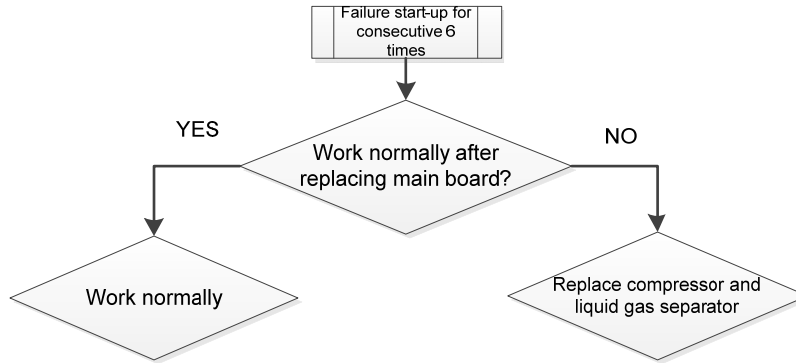
3.2.6 Malfunction of sensor



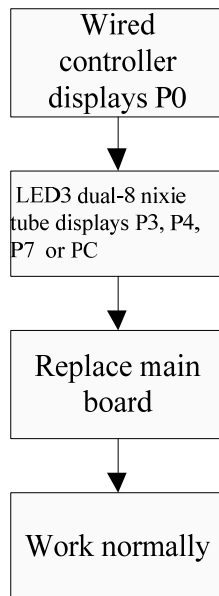
3.2.7 Unit and main board can't be energized



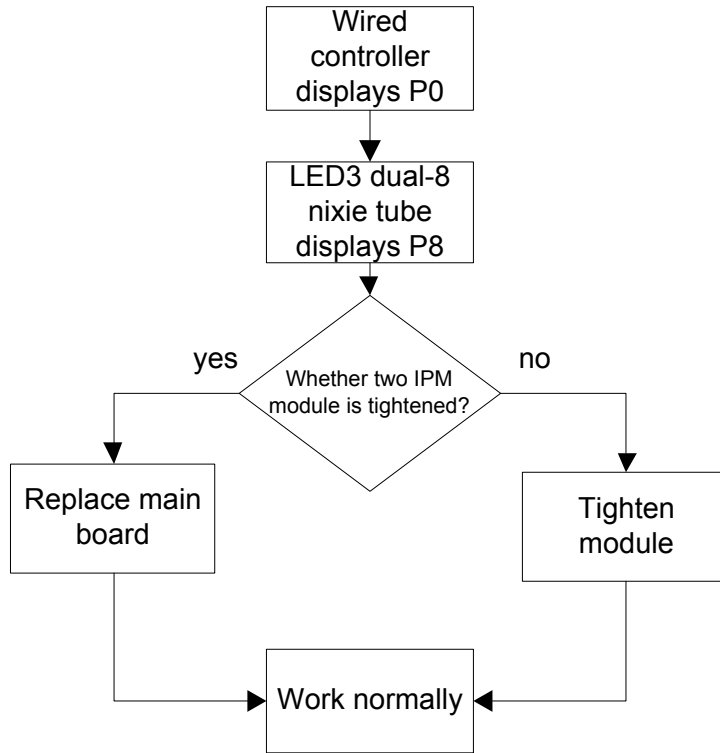
3.2.8 Failure start-up



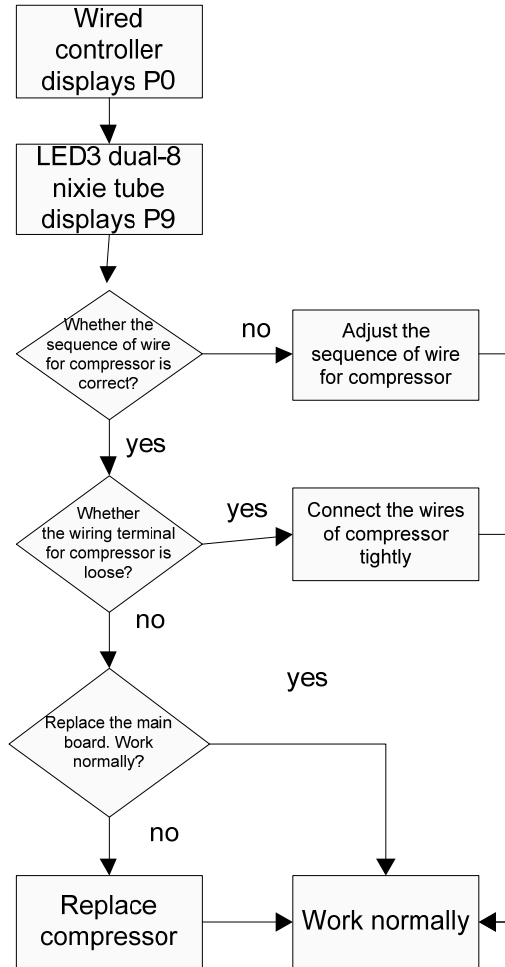
3.2.9 Reset protection for drive module of compressor, drive PFC protection for compressor, malfunction of drive temperature sensor for compressor, circuit malfunction of drive current detection for compressor



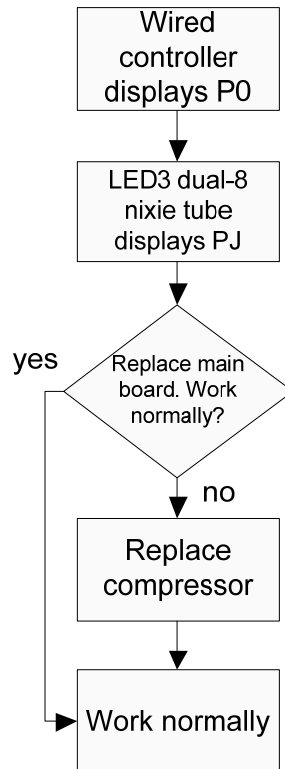
3.2.10 Drive IPM overtemperature protection for compressor



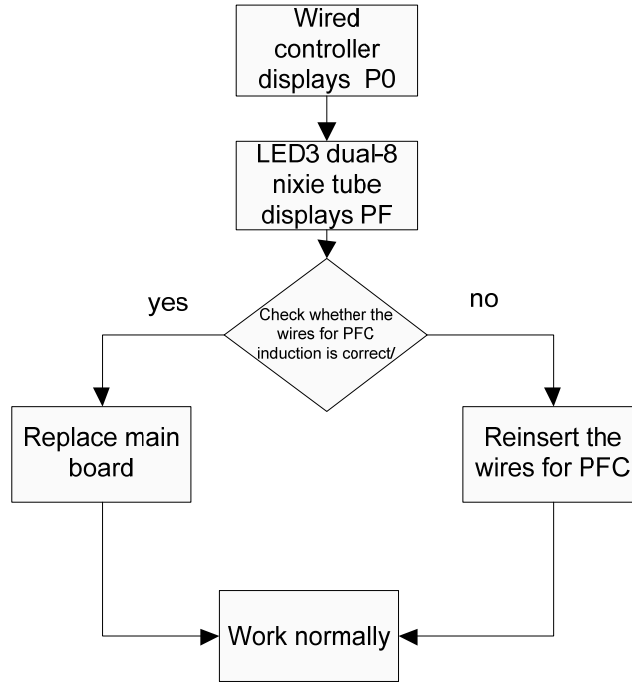
3.2.11 Desynchronizing protection for inverter compressor



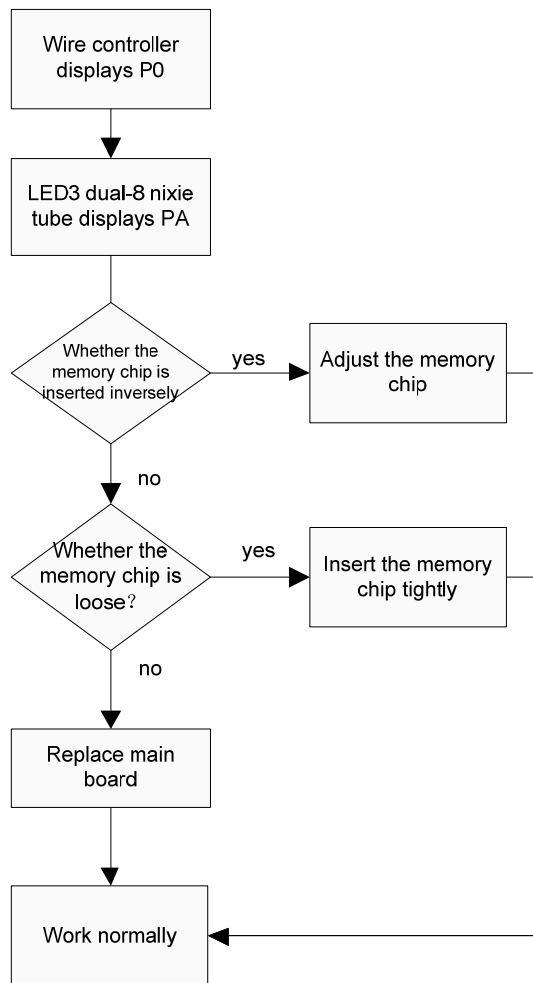
3.2.12 Failure startup for inverter compressor



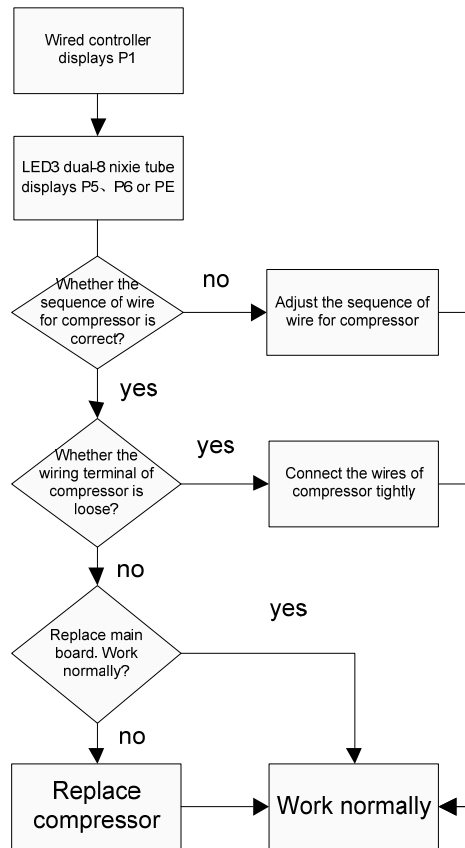
3.2.13 Loop malfunction of driven charging for compressor



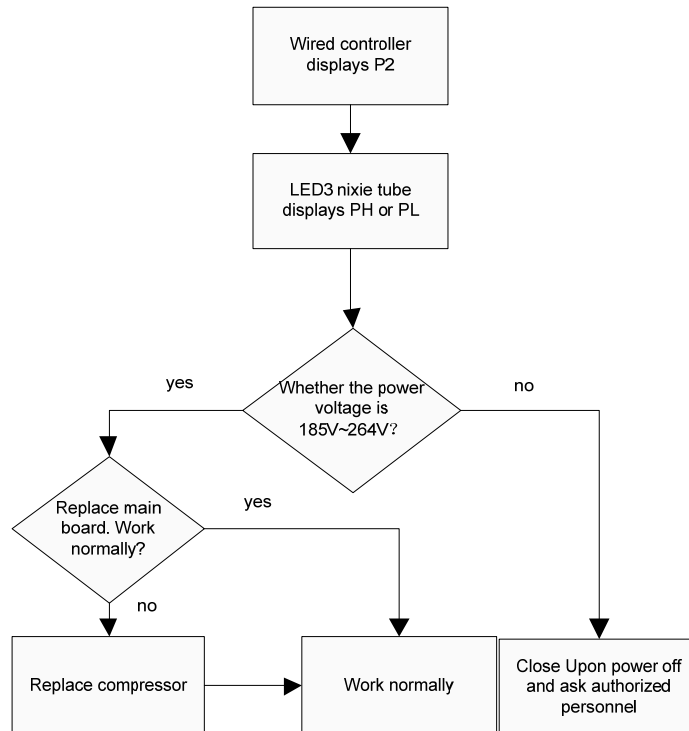
3.2.14 Malfunction of memory chip for inverter compressor



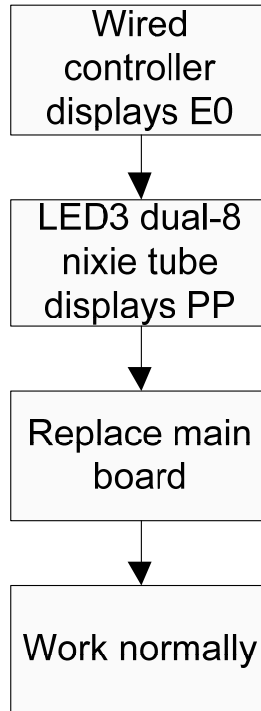
3.2.15 Overcurrent protection for inverter compressor, IPM module protection, phase-lacking of inverter compressor



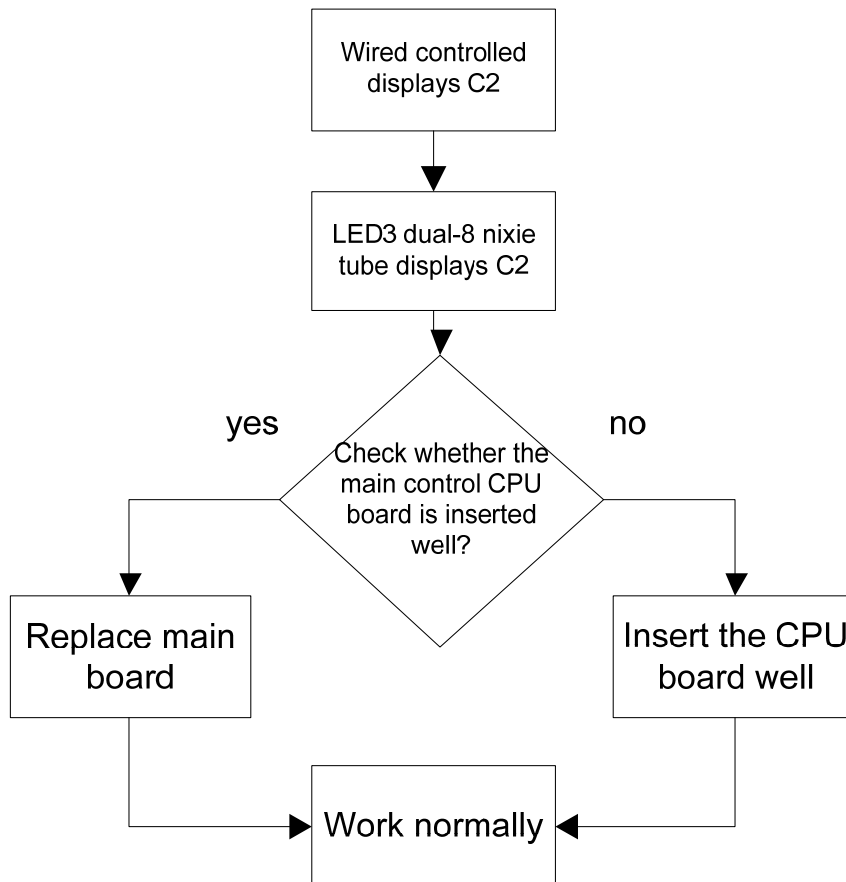
3.2.16 High pressure protection for driven DC bus bar of compressor, low pressure protection for driven DC bus bar of compressor



3.2.17 AC current protection for inverter compressor



3.2.18 Communication malfunction between main controller and driver of inverter compressor



4 After-sales Emergency Measures

When some unrecoverable fault occurs to one module which is connected with several others in parallel, the following emergency measures are recommended to guarantee the heating or cooling

capacity of the indoor units and the service life of modules except the faulted one are not affected.

Step 1: set all indoor units under “Off” mode and cut off the power supply to the indoor and outdoor units.

Step 2: shut off all cutoff valves of the faulted outdoor unit, including the cutoff valves of the liquid/gas pipe as well as the oil balancing valve.

Step 3: cut off the air switch of the module.

Step 4: remove the communication line between the faulted module and other modules which are still kept connected through the communication line.

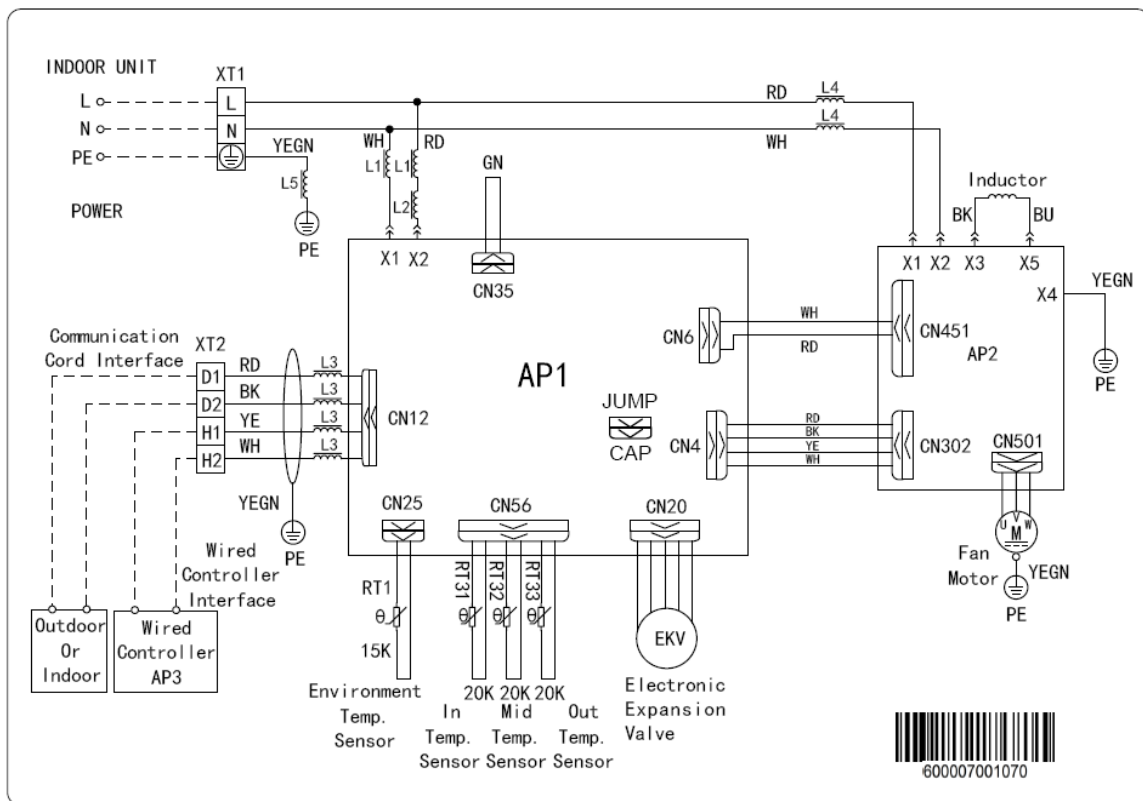
Step 5: readjust the address and quantity settings on the main board of the modules except the faulted one.

Step 6: power and restart the unit.

5 Wiring Diagram

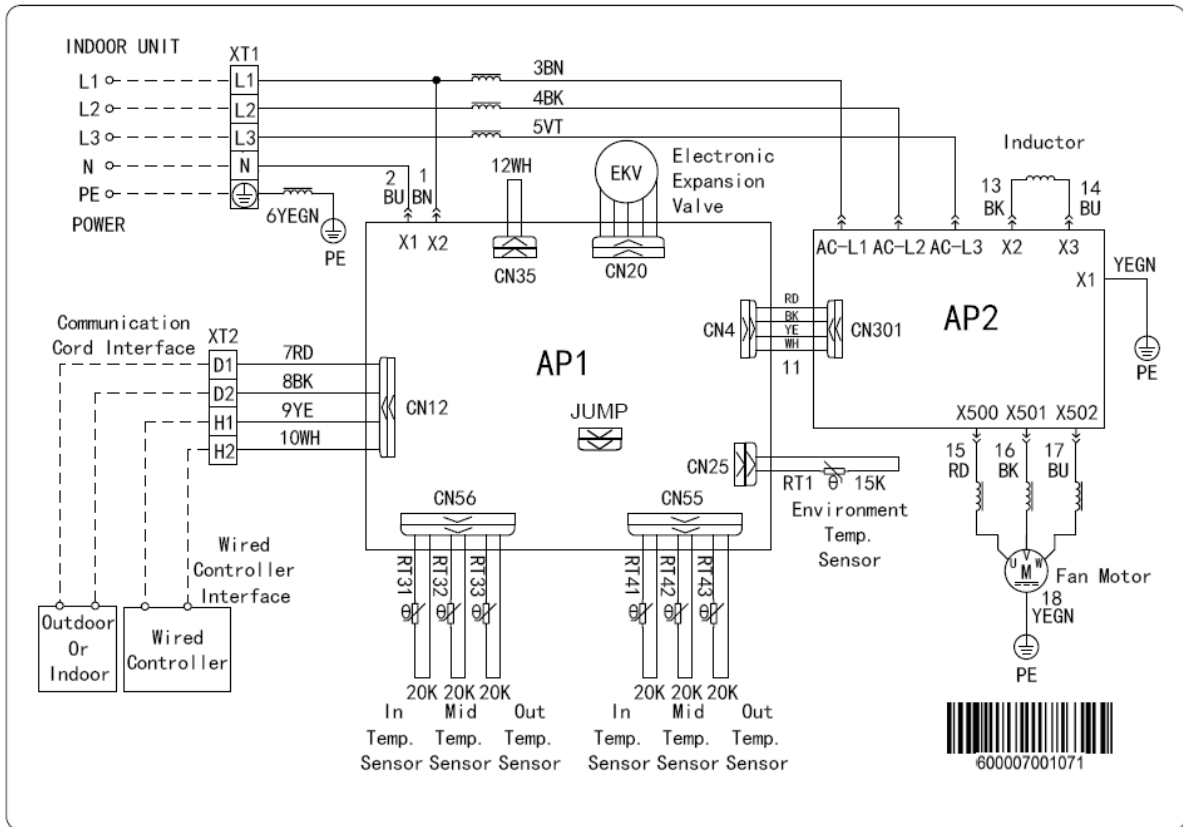
Advertence: These diagrams only for reference ,the actually diagram please reference the diagram on actually unit.

FGR20Pd/DNa-X(I)/FGR25Pd/DNa-X(I)/FGR30Pd/DNa-X(I):

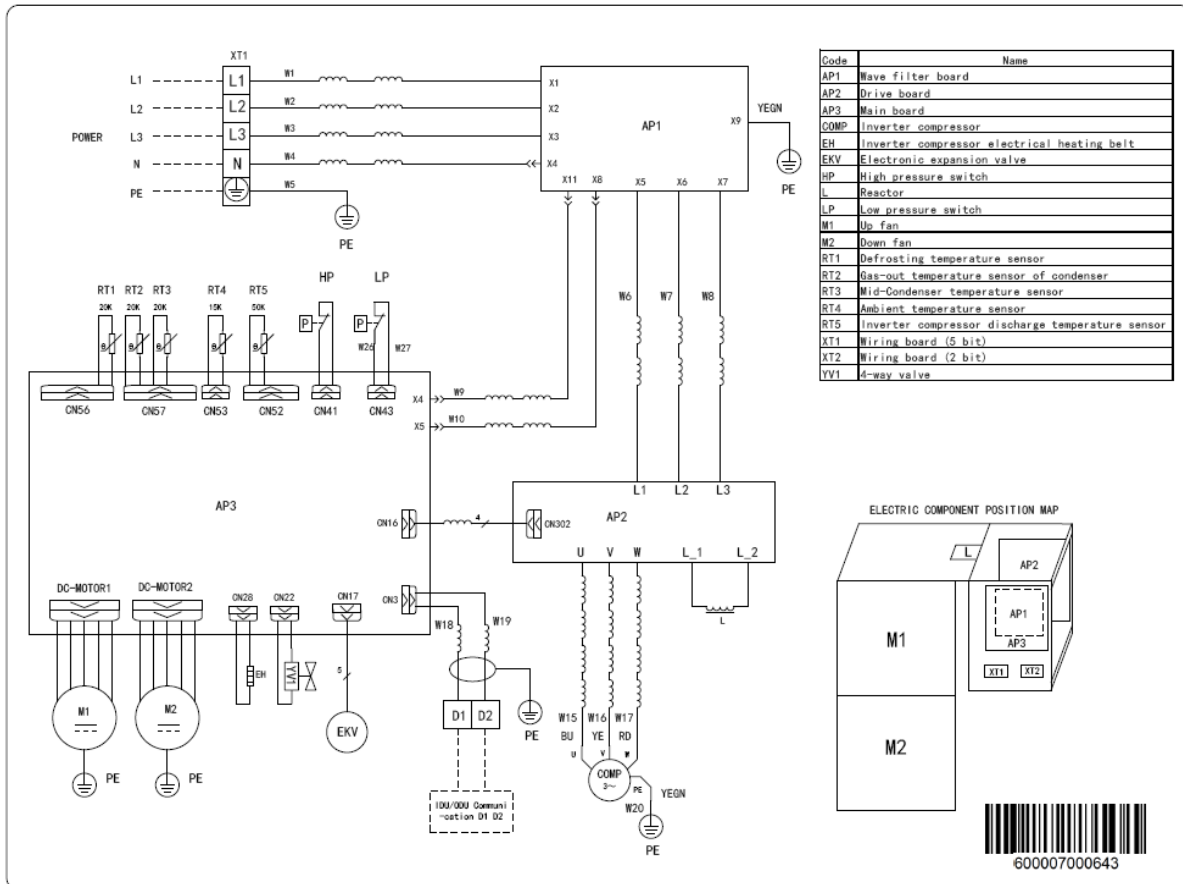


FGR40Pd/D(2)Na-X(I):

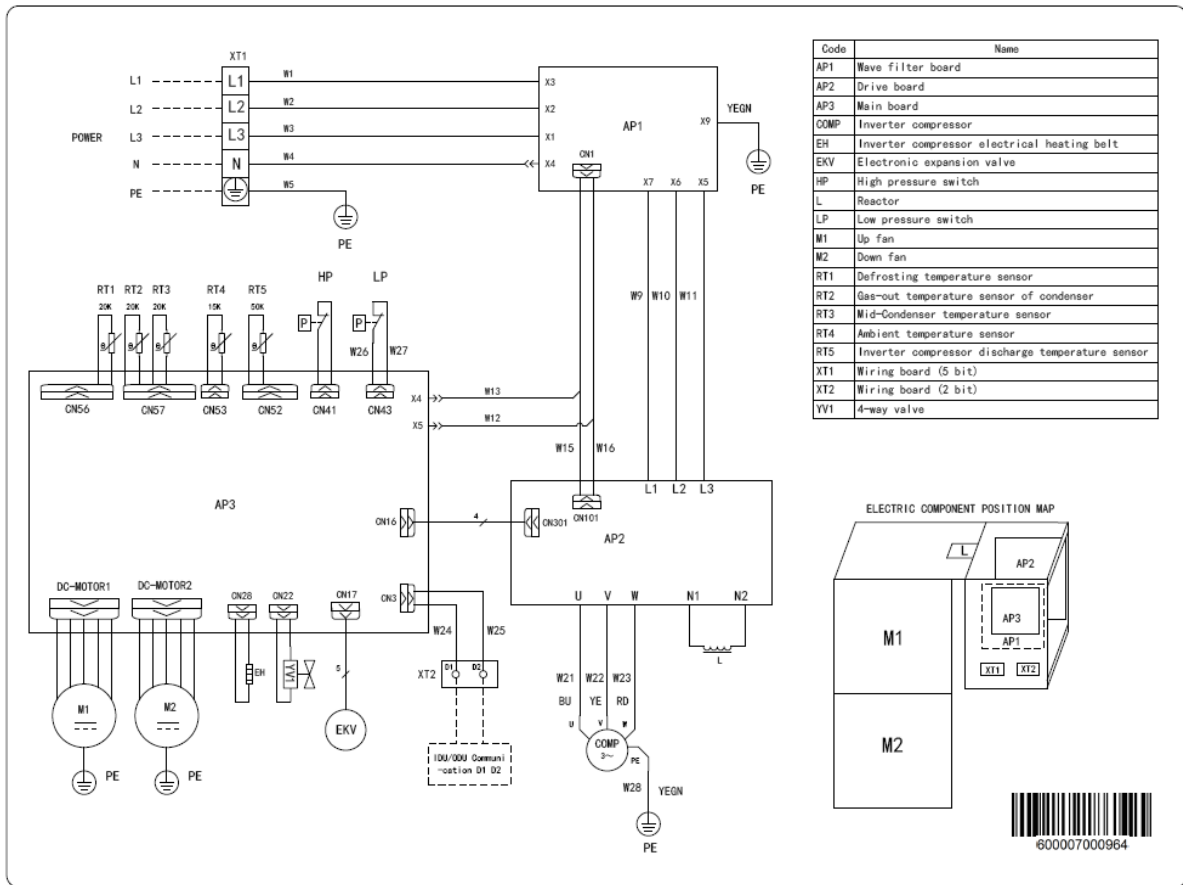
Duct split Air conditioner Inverter Series



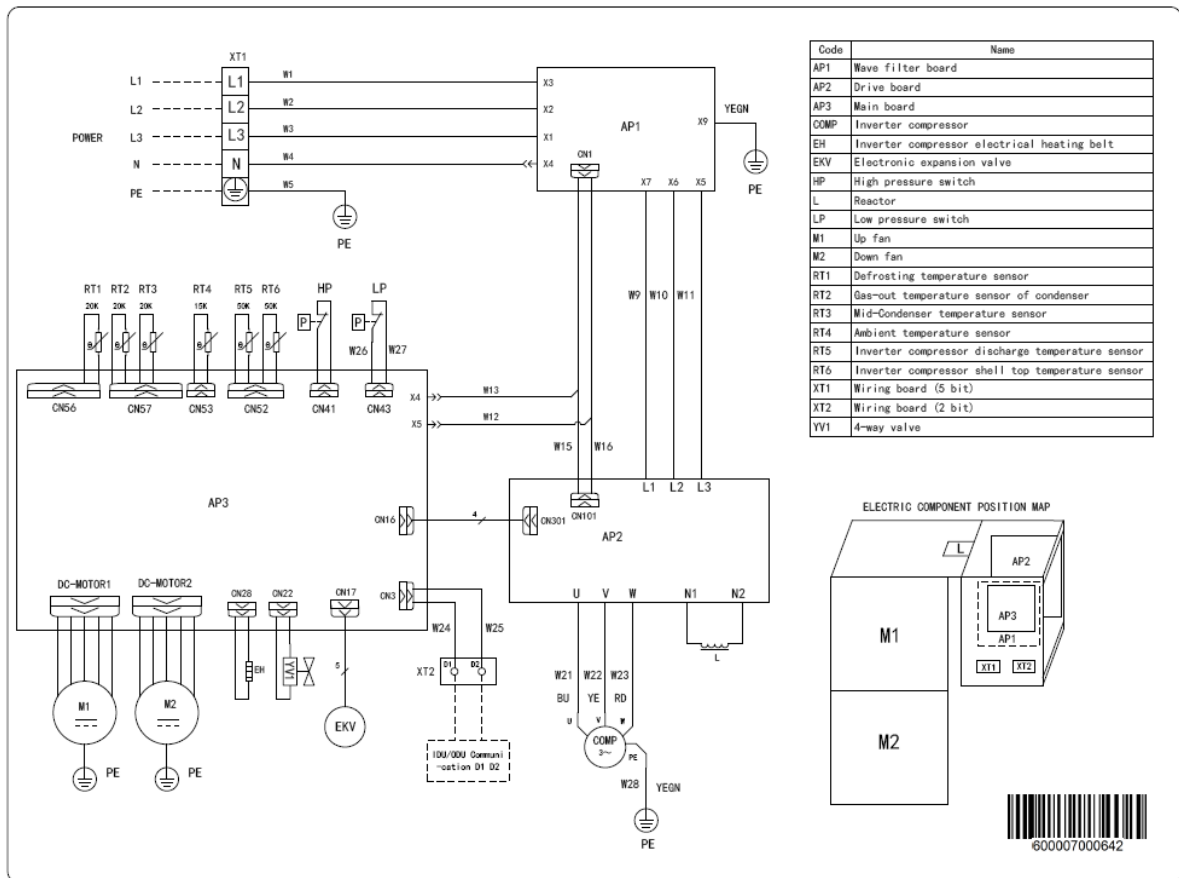
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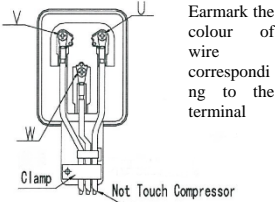
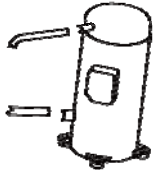
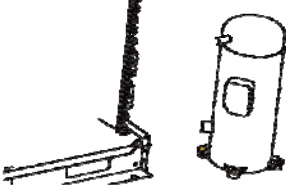
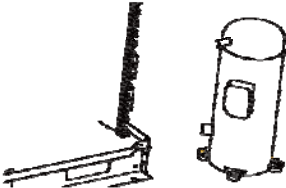
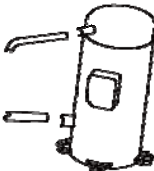
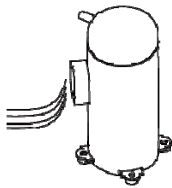
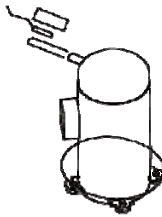
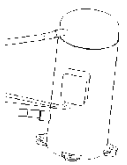


FGR30Pd/DNa-X(O):

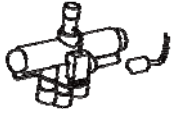
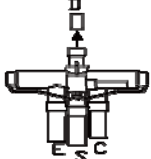
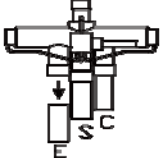
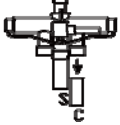
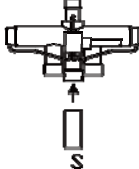
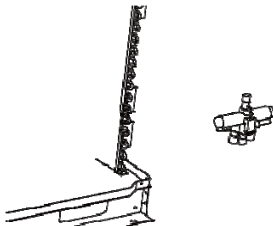


6 Disassembly And Assembly Procedure Of Main Parts

Introduction to Main Parts

Disassembly and Assembly of Compressor		
Remark: Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of the compressor		
Step	Illustration	Handling Instruction
1. Disconnect the power cord		① Unscrew the retaining screw of power cord with screwdriver. ② Unplug the power cord. Note: Earmark the colour of wire corresponding to the terminal when Removing the wire , and the mixture can be avoided when recovering the wire connection.
2. Cut off the connection between compressor and pipes		Don't leave the welding slag inside pipes
3. Remove the compressor from the chassis		① Unscrew retaining nuts of the footing of compressor ② Remove the compressor from the chassis Hold it tightly to avoid accident.
4. Fix the new compressor on chassis		① Place the new compressor on chassis ② Fix retaining nuts of compressor footing.
5. Connect the compressor with system pipes		Don't block it by welding.
6. Connect the power cord of compressor		Note: Earmark the colour of wire corresponding to the terminal when connecting the wire , and the mixture can be avoided
7. Recover the electric heating tape of compressor and discharge temperature sensor, etc.		Enwind the bottom of compressor with electric heating tape and fix it.
8. Check if the compressor rotates in reverse and if lubricant have leaked		Check if the wiring is correct with reference to circuit diagram and check if there is any leakage after welding.

Disassembly and Assembly of 4-way valve

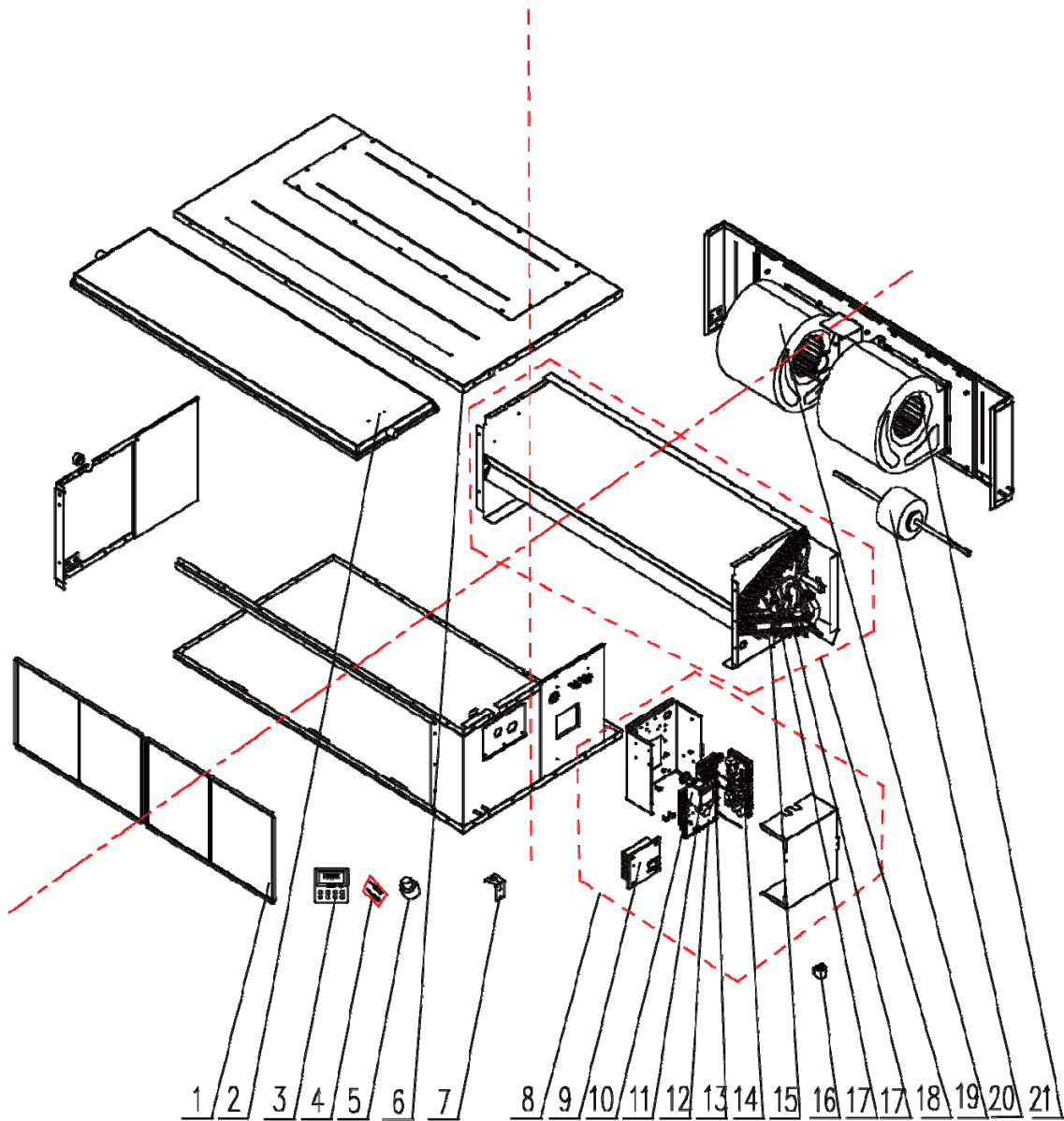
Remark: Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of 4-way valve.		
Step	Illustration	Handling Instruction
Remove electric coils of 4- way valve		Place electric coils far away from the 4-way valve to prevent the connecting line of 4-way valve from burning when succeeding welding.
Disconnect the pipe (site D in illustration) of 4-way valve and discharge pipe		Don't leave welding slag inside pipes.
Disconnect the pipe (site E in illustration) of 4-way valve and connecting pipe		Don't leave welding slag inside pipes.
Disconnect the pipe (site C in illustration) of 4-way valve and connecting pipe		Don't leave welding slag inside pipes.
Disconnect the pipe (site S in illustration) of 4-way valve and connecting pipe		Don't leave welding slag inside pipes.
Remove the 4-way valve		Remove 4-way valve after it is cooled.
Install new 4-way valve in reversed order and wrap it with wet cloth before welding.		

7 Exploded Views And Part List

7.1 Indoor Unit

1、 Model: FGR20Pd/DNa-X(I)、 FGR25Pd/DNa-X(I)、 FGR30Pd/DNa-X(I)

Exploded View:



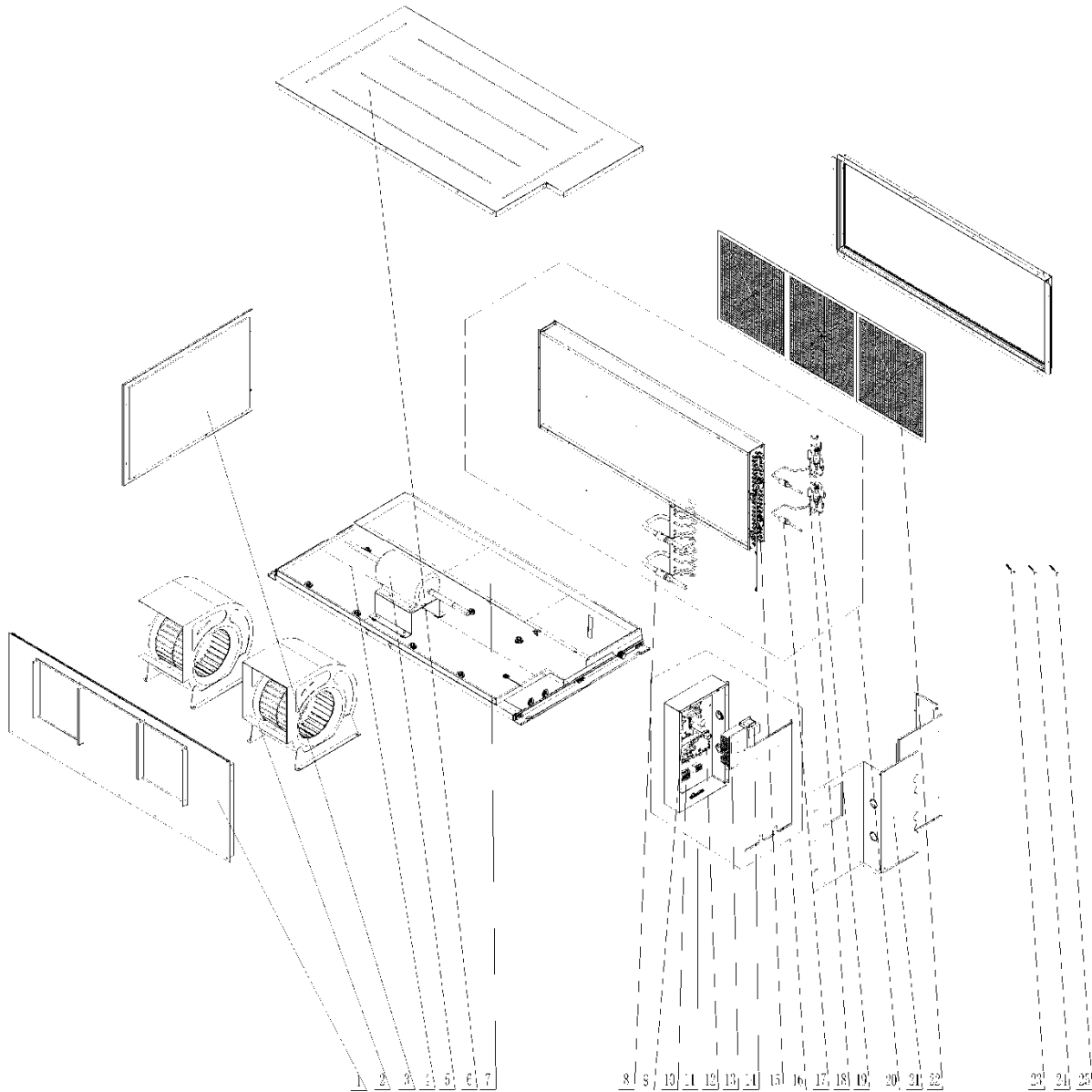
NO	Model	FGR20Pd/DNa-X(I)	FGR25Pd/DNa-X(I)	FGR30Pd/DNa-X(I)	Qty
	Product Code	CF010N0730	CF010N0740	CF010N0750	
	Part Name	Part Code	Part Code	Part Code	
1	Filter Sub-Assy	11725211	11724102	11724102	2
2	Water Tray Assy	01284620	01284306	01284306	1
3	Display Board	30000100097	30000100097	30000100097	1
4	Sensor Sub-assy	390002000058	390002000058	390002000058	1
5	Choke Plug of Water Pipe	76712454	76712454	76712454	2
6	Top Cover Board Sub-assy	01265359	01264100090	017011000037	1
7	Hook	02112466	02112466	02112466	4
8	Electric Box Assy	100002002010	100002002010	100002002010	1
9	Radiator	49018000068	49018000068	49018000068	1
10	Reactor	43130189	43130189	43130189	1
11	Terminal Board	4201800002601	4201800002601	4201800002601	1
12	Main Board	300002000383	300002000383	300002000383	1
13	Terminal Board	42010259	42010259	42010259	1
14	Main Board	300002000357	300002000357	300002000357	1
15	Electronic Expansion Valve	43044100190	43044100190	43044100190	1
16	Electric Expand Valve Fitting	4304413205	4304413205	4304413205	1
17	Strainer	0741410000601	0741410000601	0741410000601	2

Duct type split Air conditioner Inverter Series

NO	Model	FGR20Pd/DNa-X(I)	FGR25Pd/DNa-X(I)	FGR30Pd/DNa-X(I)	Qty
	Product Code	CF010N0730	CF010N0740	CF010N0750	
	Part Name	Part Code	Part Code	Part Code	
18	Evaporator Assy	011001000372	011001000371	011001000271	1
19	Motor for Centrifugal Fan(Right Type)	15705307	1570411801	10300400004701	1
20	Brushless DC Motor	15704100009	15704100009	15704100009	1
21	Motor for Centrifugal Fan(Left Type)	15705306	15704118	103004000047	1

2、Model: FGR40Pd/D(2)Na-X(I)

Exploded View:



NO	Model	FGR40Pd/D(2)Na-X(I)	Qty
	Product Code	CF010N0760	
	Part Name	Part Code	
1	Air Outlet Panel Sub-assy	000040000029	1
2	Motor for Centrifugal Fan	103004000048/ 10300400004801	1/1

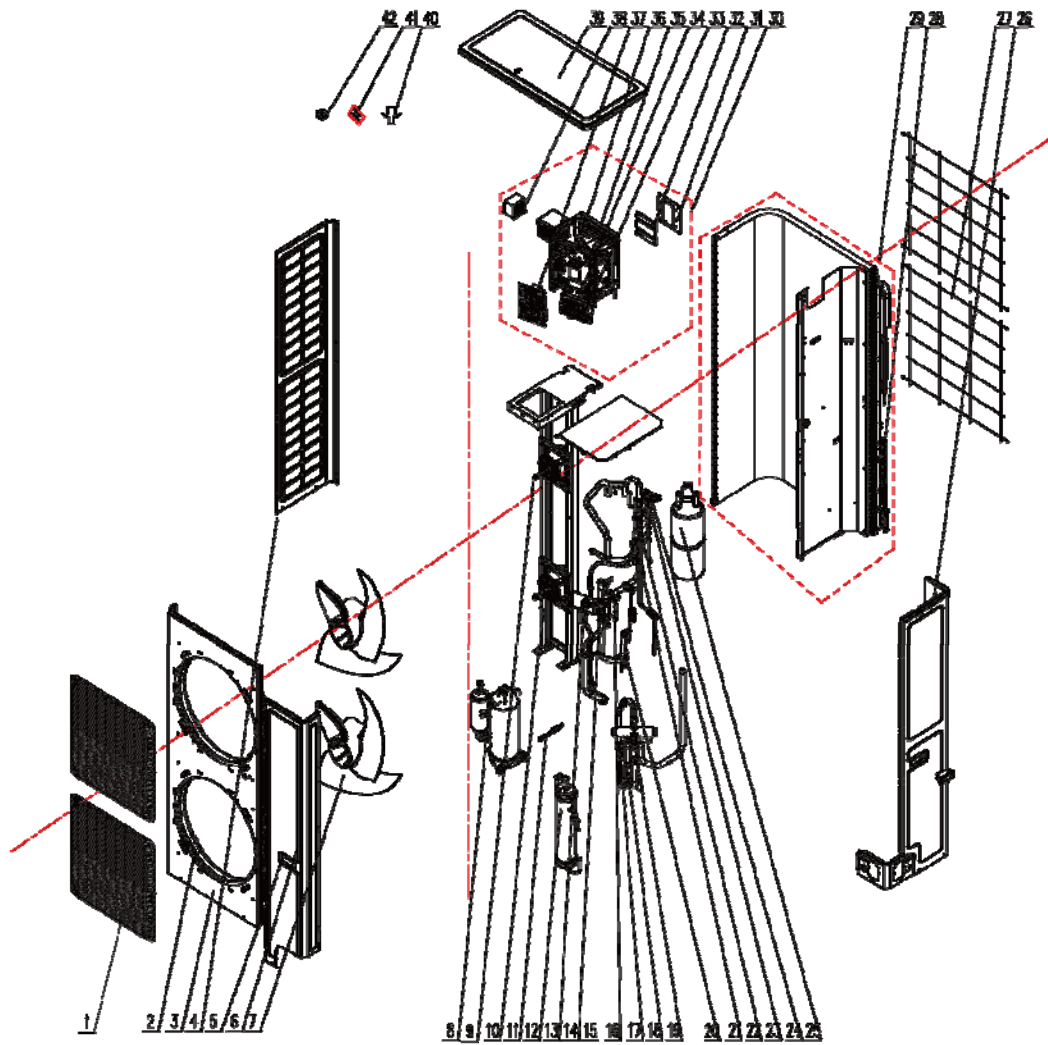
Duct type split Air conditioner Inverter Series

3	Left Side Plate Assy	000080000020	1
4	Hange frame assy	000249000001	1
5	Brushless DC Motor	150104000015	1
6	Top Cover Board Sub-assy	017011000039	1
7	Water Collecting Tray Assy	007070000002	1
8	Strainer	07210037	1
9	Main Board	300002000357	1
10	Terminal Board	420001000004	1
11	Terminal Board	4201800002601	1
12	Main Board	300002000380	1
13	Radiator	49018000013	1
14	Reactor	43130189	1
15	Electric Expand Valve Fitting	4304413205	2
16	Electric Box Assy	100002001945	1
17	Strainer	0741410000601	2
18	Electronic Expansion Valve	43044100190	2
19	Strainer	07415210	2
20	Evaporator Assy	011001000429	1
21	Access panel sub-assy	000170000001	1
22	Filter Sub-Assy	07210029	1
23	Temperature Sensor	3900028024G	1
24	Temperature Sensor	3900028022G	1
25	Ambient Temperature Sensor	39000198G	1

7.2 Outdoor Unit

1、Model:FGR20Pd/DNa-X(O)、FGR25Pd/DNa-X(O)

Exploded View:

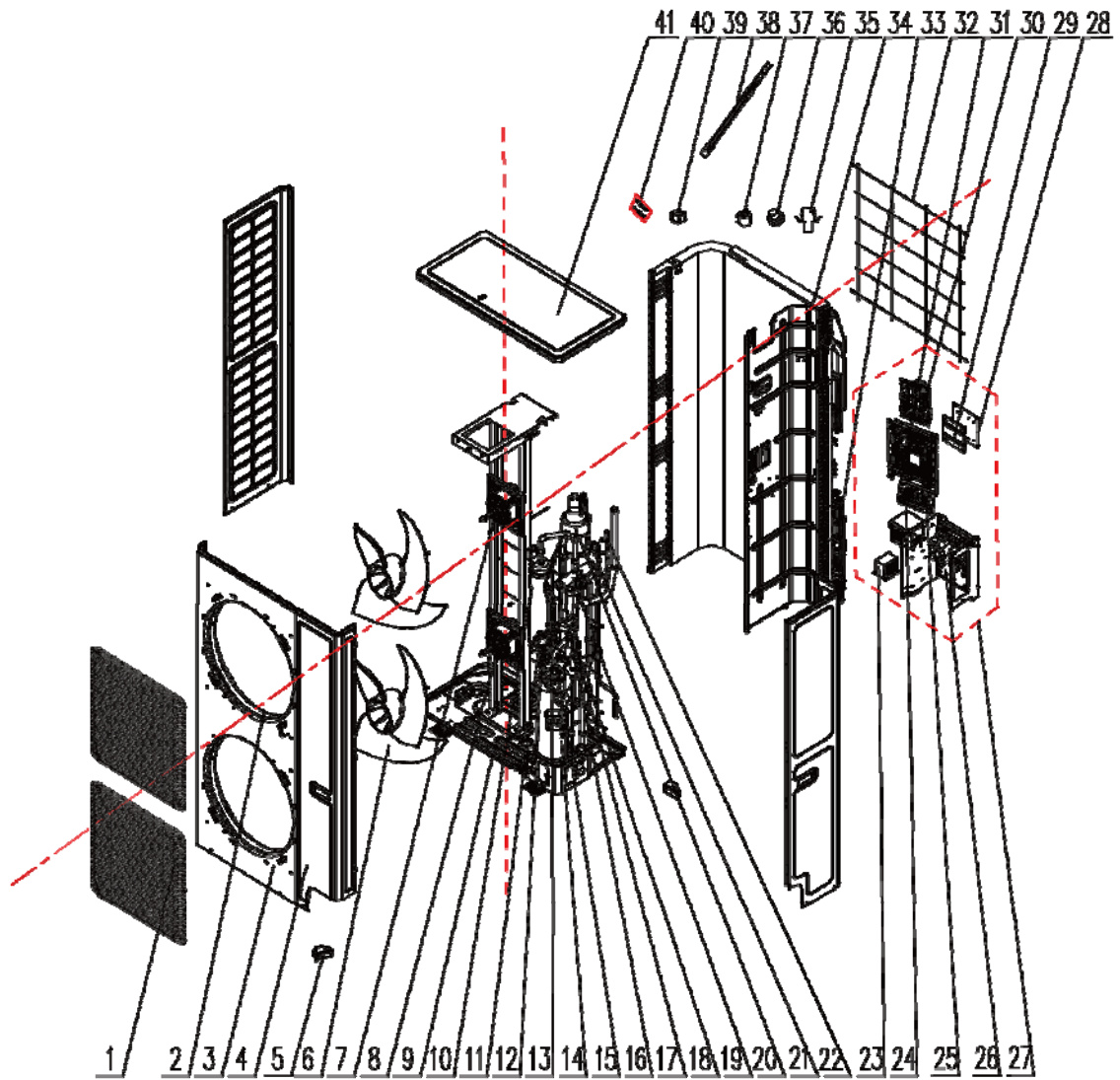


NO	Model	FGR20Pd/DNa-X(O)	FGR25Pd/DNa-X(O)	Qty
	Product Code	CF010W0730	CF010W0740	
	Part Name	Part Code	Part Code	
1	Front Grill	01572800003	01572800003	2
2	Diversion Circle	10474100003	10474100003	2
3	Cabinet Assy	01514100015	01514100023	1
4	Left Side Plate	01314100084P	01314100090P	1
5	Handle	\	26235253	1
6	Front Side Plate	01314100082P	01314100091P	1
7	Axial Flow Fan	10434100006	10434100008	2
8	Compressor and Fittings	00204100013	00204100033	1
9	Brushless DC Motor	1570280000401\ 1570280000402	15704100010/ 1570410001001	1/1
10	Motor Support Assy	000046000007	000046000057	1
11	Electrical Heater(Compressor)	7651521212	7651521212	1
12	Oil Separator	07424105	07424100050	1
13	Cut off Valve	07334100011	07334100011	1
14	Cut off valve	07334100054	07334100012	1
15	Pressure Protect Switch	4602000902	4602000902	1
16	Pressure Protect Switch	46020007	46020007	1
17	One Way Valve	07334100075	07335210	1
18	Strainer	07212402	07414100026	1
19	4-way Valve	43000338	43000339	1
20	Strainer	07212403	07415200002	1
21	Bidirection Strainer	/	07220016	1

Duct type split Air conditioner Inverter Series

NO	Model	FGR20Pd/DNa-X(O)	FGR25Pd/DNa-X(O)	Qty
	Product Code	CF010W0730	CF010W0740	
	Part Name	Part Code	Part Code	
22	One Way Valve	07133618	04324001	1
23	Electronic Expansion Valve	43044100173	43044100173	1
24	Electric Expand Valve Fitting	4304413219	4304413205	1
25	Gas-liquid Separator	07424140	07424141	1
26	Rear Side Plate	01314100083P	01314100092P	1
27	Rear Grill	01574100011	01574100014	1
28	Strainer	07212403	07212121	1
29	Condenser Assy	000100000042	000100000059	1
30	Electric Box Assy	100002001182	100002001106	1
31	Radiator	430034000028	49018000080	1
32	Radiator	430034000027	49018000088	1
33	Terminal board	420001000019	420001000019	1
34	Terminal board	42011221	42011221	1
35	Main Board	300027000340	300027000392	1
36	Main Board	300027000244	300027000244	1
37	Filter Board	30223000118	30228000015	1
38	Reactor	4313017401	4313017401	1
39	Coping	01264100047P	01264100052P	1
40	Drainage Joint	26113009	26113009	1
41	Sensor Sub-assy	390002000046	390002000046	1
42	Magnet Coil	4300040032	4300040032	1

2、Model: FGR30Pd/DNa-X(O)
Exploded View:



NO	Model	FGR30Pd/DNa-X(O)	Qty
	Product Code	CF010W0750	
	Part Name	Part Code	
1	Front Grill	01572800003	2
2	Diversion Circle	10474100003	2
3	Cabinet	01514100016P	1
4	Front Side Plate	01314100091P	1
5	Handle	26235253	2
6	Axial Flow Fan	10434100008	2
7	Brushless DC Motor	15704100010	1
8	Brushless DC Motor	1570410001001	1
9	Chassis Assy	209058000011	1
10	Oil Separator	07424100050	1
11	Cut off Valve	07130208	1
12	Cut off Valve	07334100013	1
13	Strainer	07415200002	1
14	Compressor and Fitting	00204100015	1
15	Cut off Valve	07334100014	1
16	Strainer	07414100024	1
17	Pressure Protect Switch	4602000902	1
18	Pressure Protect Switch	46020007	1
19	4-way Valve	43000339	1
20	Gas-liquid Separator	07424100048	1

Duct type split Air conditioner Inverter Series

NO	Model	FGR30Pd/DNa-X(O)	Qty
	Product Code	CF010W0750	
	Part Name	Part Code	
21	One way Valve	04324001	1
22	Electronic Expansion Valve	43044100190	1
23	Reactor	4313017401	1
24	Terminal board	42011221	1
25	Terminal board	420001000019	1
26	Main Board	30223000039	1
27	Electric Box Assy	100002001274	1
28	Radiator	49018000080	1
29	Radiator	49018000088	1
30	Filter Board	30228000015	1
31	Main Board	300027000244	1
32	Rear Grill	01574100014	2
33	Filter	0341010701	1
34	Condenser Assy	000100000050	1
35	Drainage Joint	26113009	1
36	Drainage hole Cap	76715005	3
37	Electric Expand Valve Fitting	4304413205	1
38	Electric Heater(Compressor)	7651540714	1
39	Magnet Coil	4300040032	1
40	Sensor Sub-assy	390002000027	1
41	Coping	01264100052P	1



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