Service Manual

Duct Type Split Air Conditioner
Inverter Series

Capacity: 20kW~40kW
Rated Frenquency: 50/60Hz
Operation Range: -7℃~48℃

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

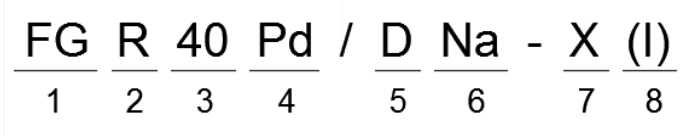
Contents

PRODUCT

1 Product List

Model	Cooling Capacity	Heating Capacity	Power Supply	Refrigerant	Appearance	
	kW	kW			Outdoor	Indoor
FGR20Pd/DNa-X	20	22	3N/380-415V/50Hz / 60Hz	R410a		
FGR25Pd/DNa-X	25	27.5				
FGR30Pd/DNa-X	30	33				
FGR40Pd/D(2)Na-X	40	43				

2 Nomenclature



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

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	1680X900X650
		Package	mm	1785×985×450	1800X1020X670
	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

Fig.2.1 Appearance of wired controller

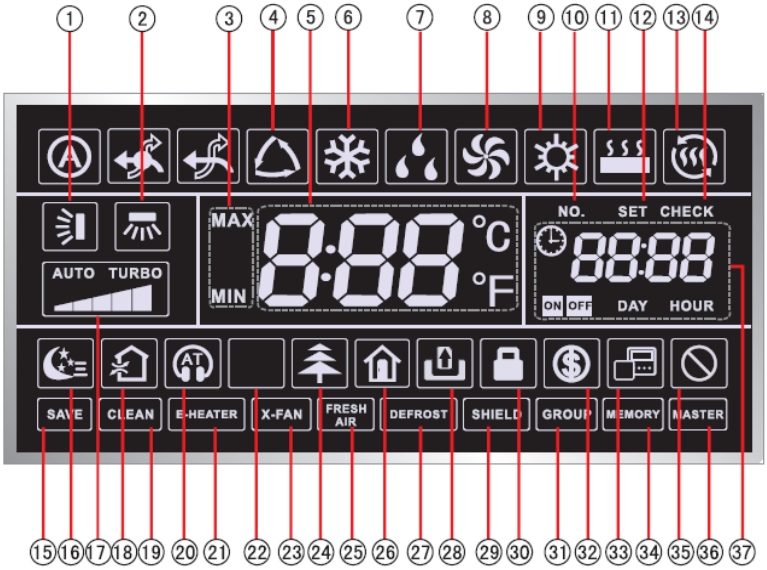


Fig2.2 LED graphics of wired controller

Table 2.1 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

No.	Symbols	Instructions
8		Fan mode
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		

Button Graphics:

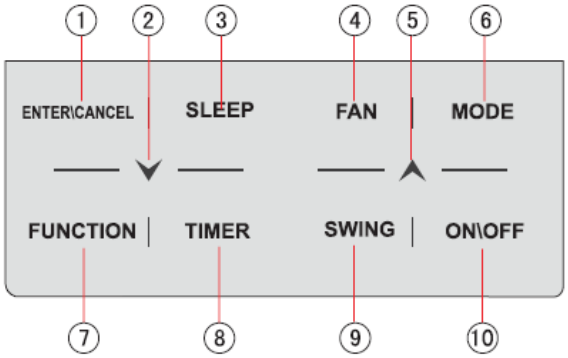


Fig.2.3 Button graphics

1.2 Installation and removal

1.2.1 Installation dimensions

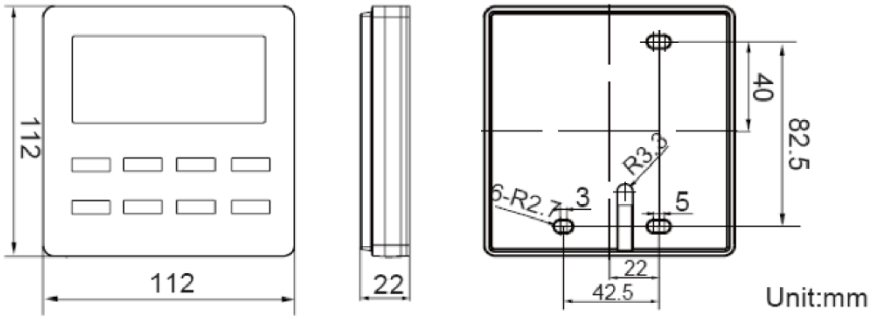


Fig.2.4 Installation dimensions

1.2.2 Installation method

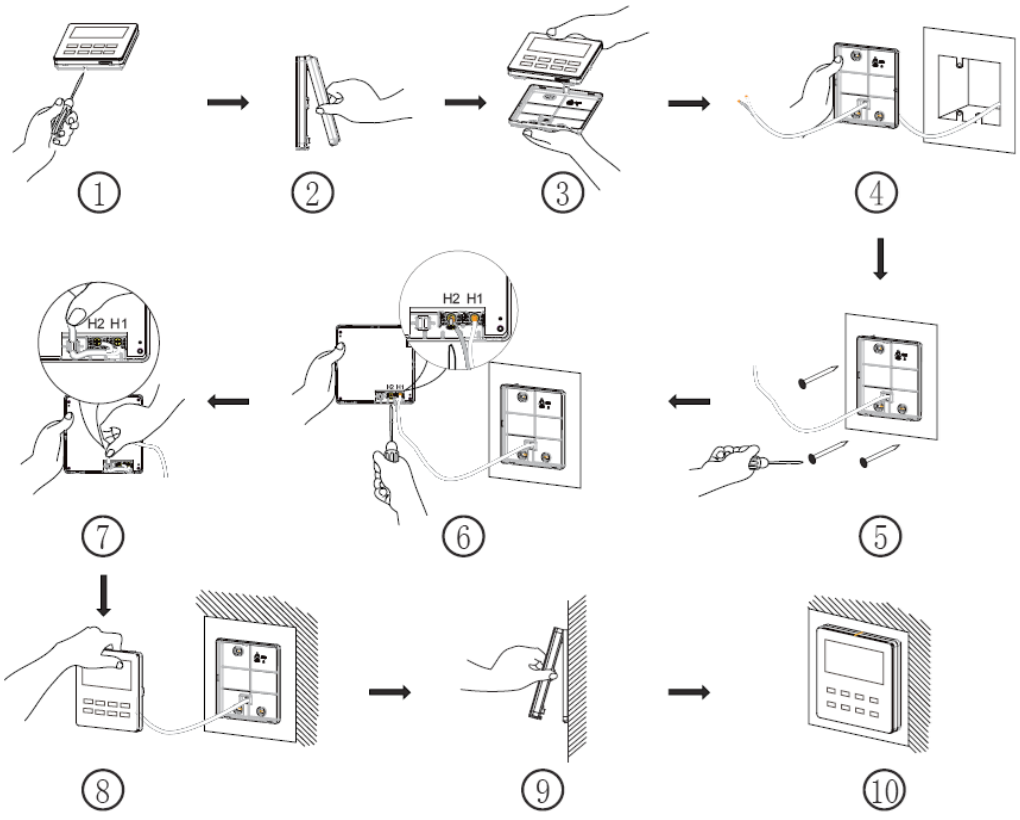


Fig.2.5 Installation of Wired Controller

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

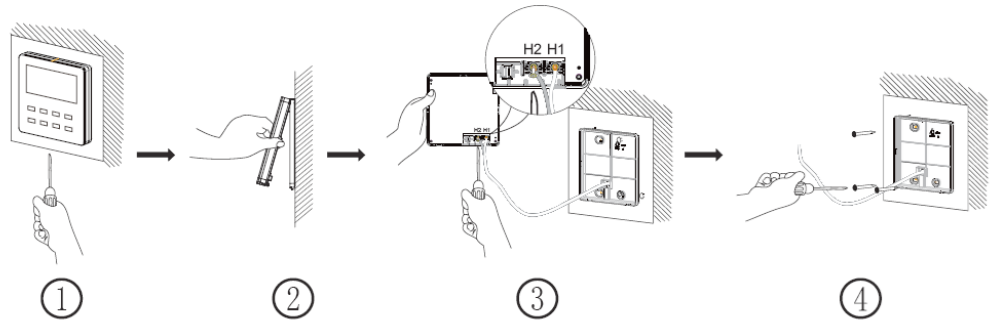


Fig.2.6 Removal of Wired Controller

1.2.4 Connection of communication cord

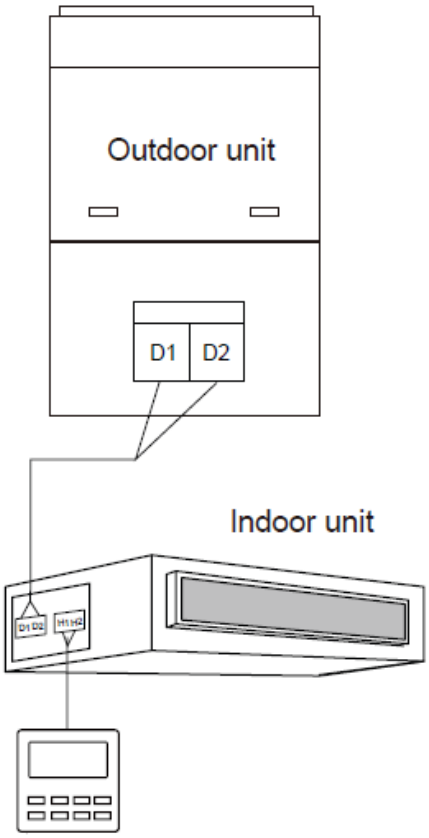
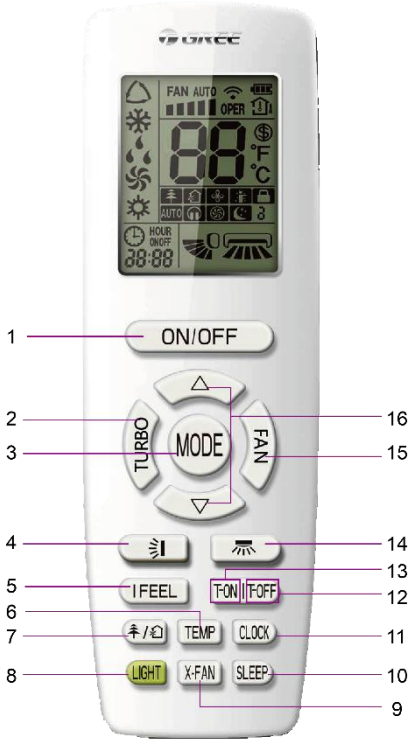


Fig.2.7 One wired controller controls one indoor unit

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 Monitoring Software

3.1 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.

3.2 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 commissioing 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.

3.3 Parts introduction

3.3.1 List of parts

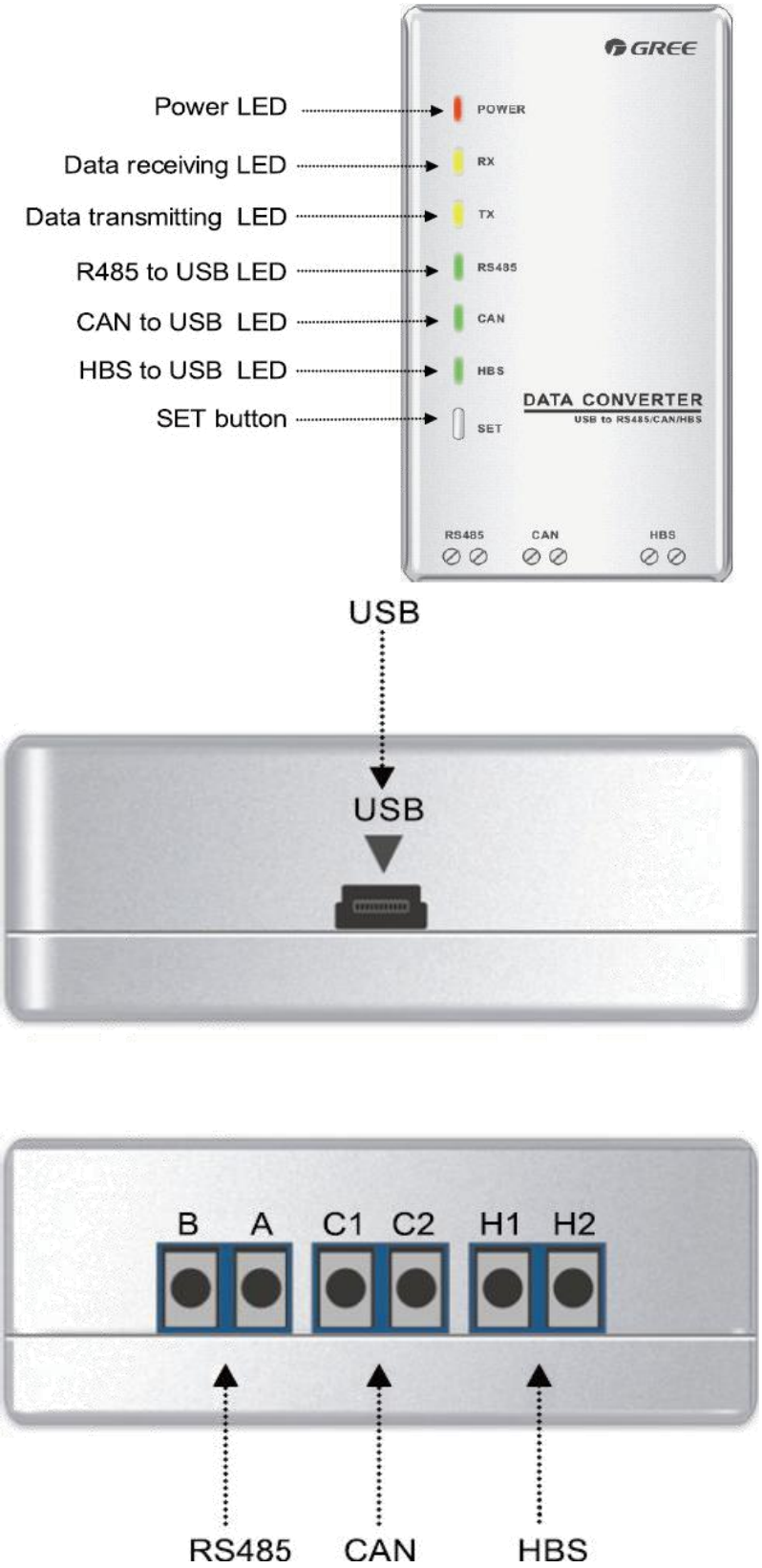
Name	Model	Material no.	Remark
Gree USB data converter	MC40-00/B	30118027	Convert the air conditioning communication into computing communication
Gree Commissioning Tool Kits (CD-ROM)	DG40-33/A(C)	36400000003	Include Gree debugger, monitoring software, USB driver and USB converter configuring software.
USB wire	\	40020082	Wire connecting computer's USB interface and converter
Communicaiton 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

3.3.2 Gree USB data converter

3.3.2.1 Functions introduction

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

3.3.2.2 Appearance



3.3.2.3 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.

3.3.2.4 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.

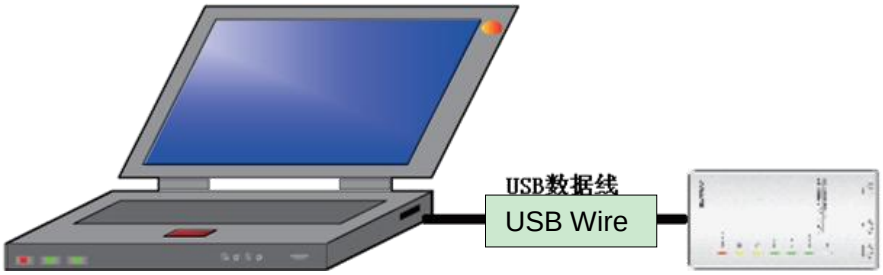
3.3.3 Communication board

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.

3.3.4 Communication cord

3.3.4.1 USB wire

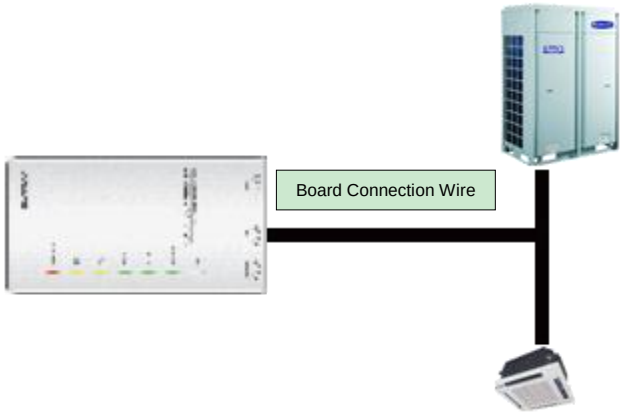
- Connect USB wire with computer's USB interface at one end and with the USB interface of USB data converter at the other end, as indicated below:



3.3.4.2 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:



3.4 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 mangement 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 comsists 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.

3.4.1 Software installation

3.4.1.1 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

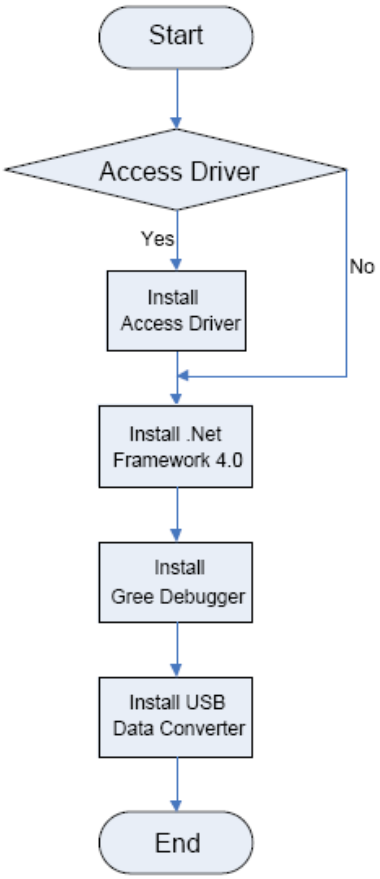
(2) CD Playing

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 automically 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.

3.4.1.1 Installation flowchart

Button Graphics



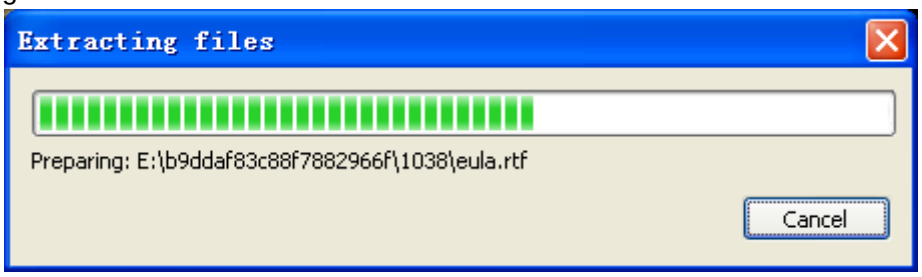
This flowchart describes basically the software installation process. See below for details.

3.4.1.2 Installation process

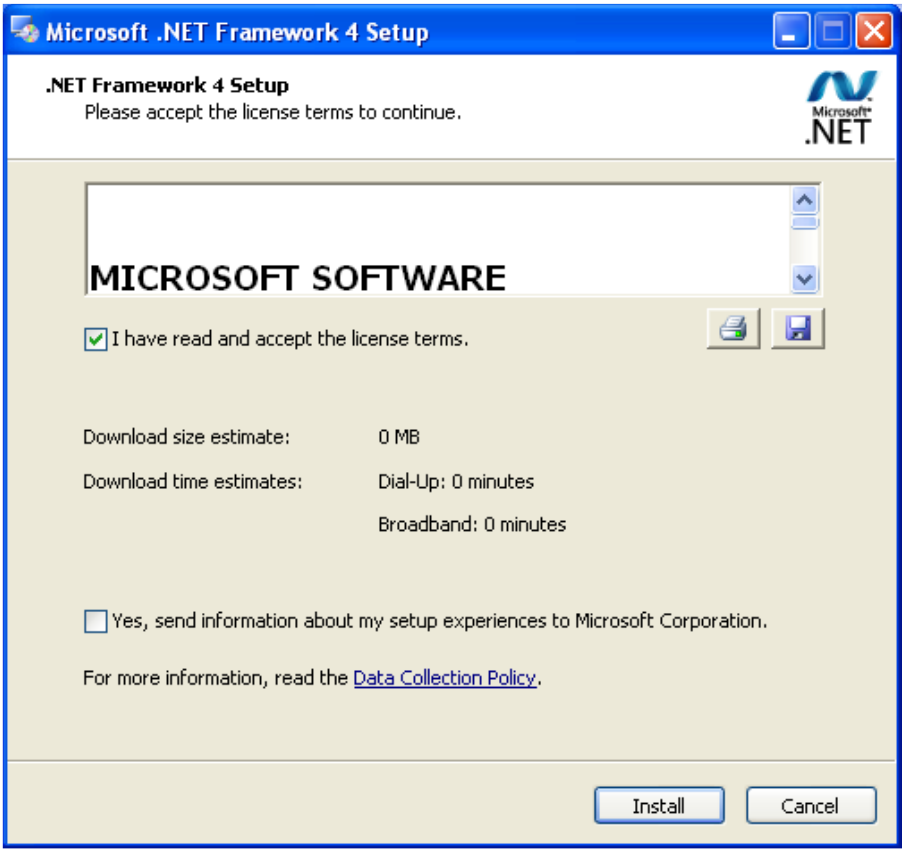
(1) Install .Net Framework 4.0

- 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".

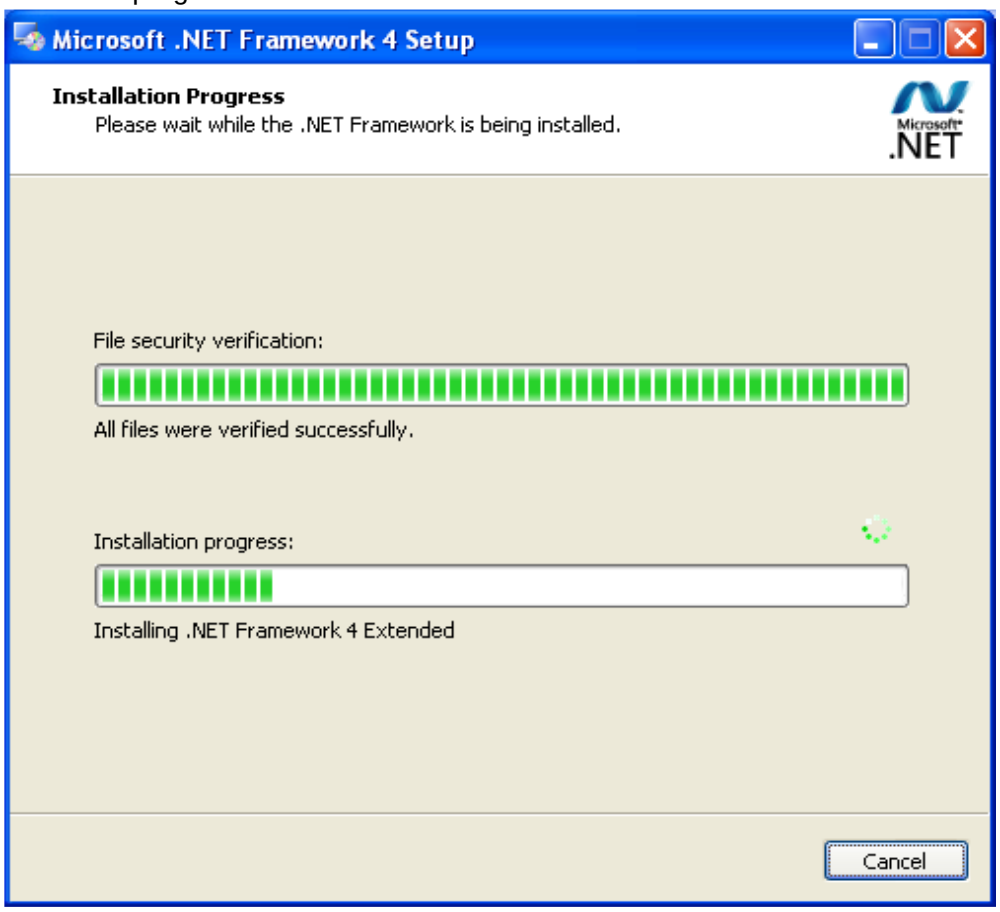
- Extracting files



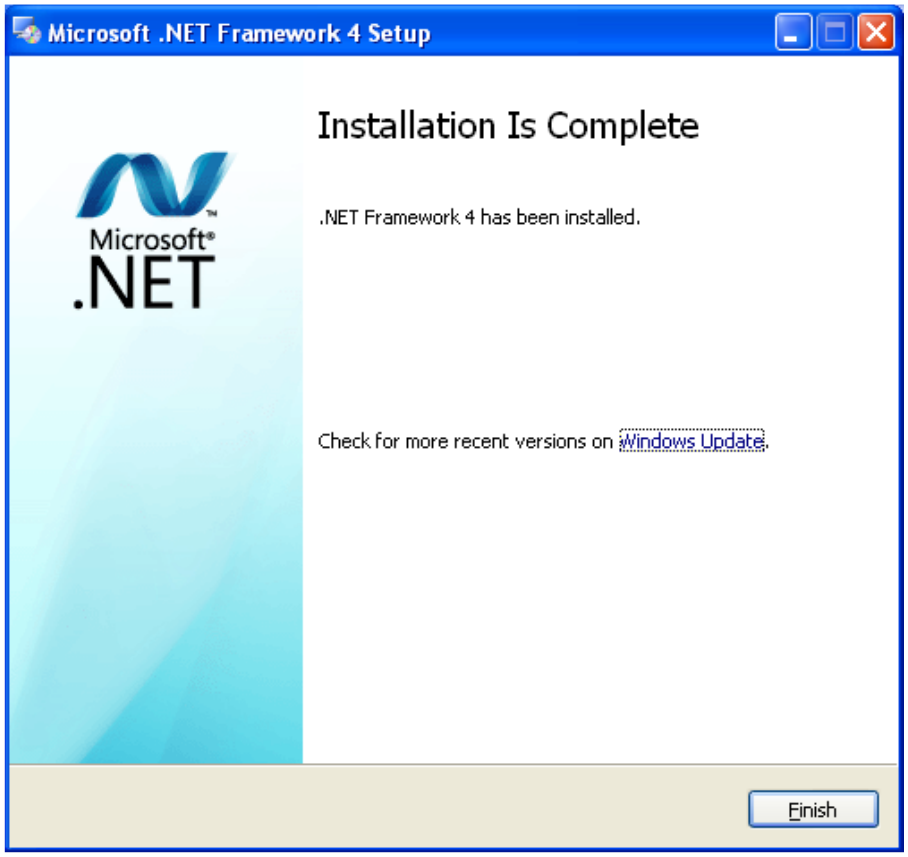
- Click and select “I have read and accept the license terms”. Then click “Install”.



- Installation is in progress.



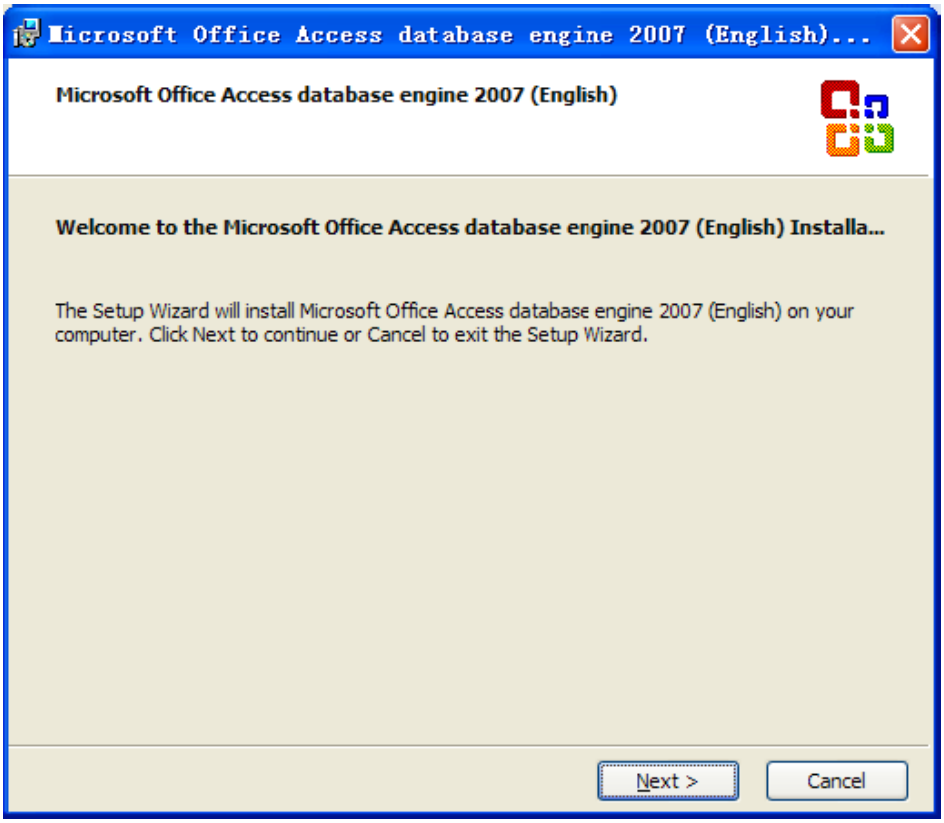
- Click “Finish” to complete the installation.



(2) Install Access Driver

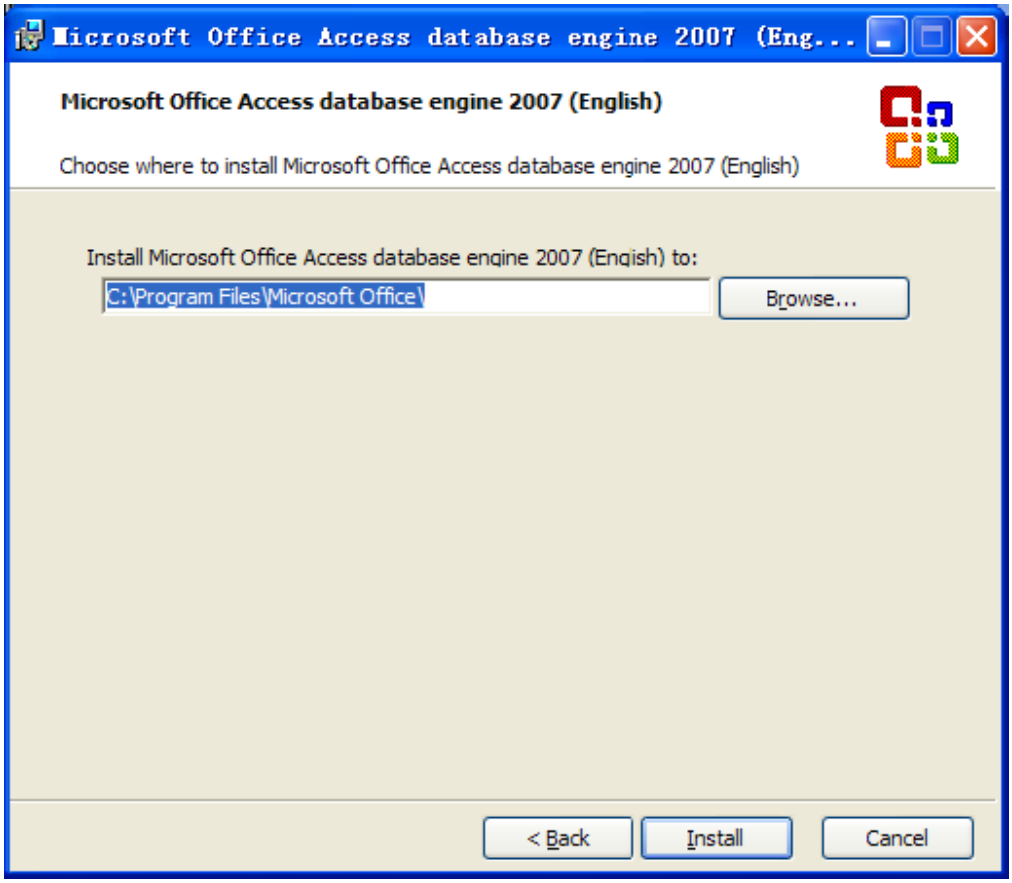
- Before operating Gree commissioning software, please first install Access Driver (necessary for versions below OFFICE 2007). Click “Install Access Driver”.

- Click ”Next”.

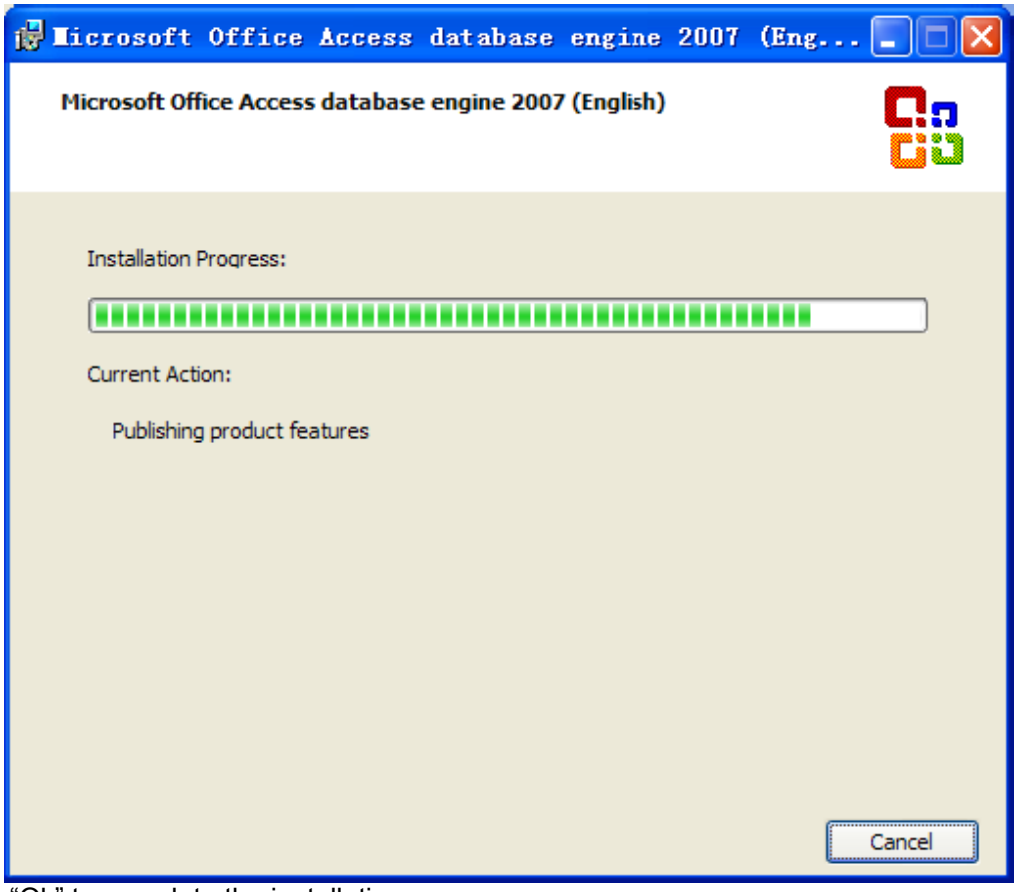


- Tick “I accept the terms in the License Agreement” and then click “Next”

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



- Installation is in progress.

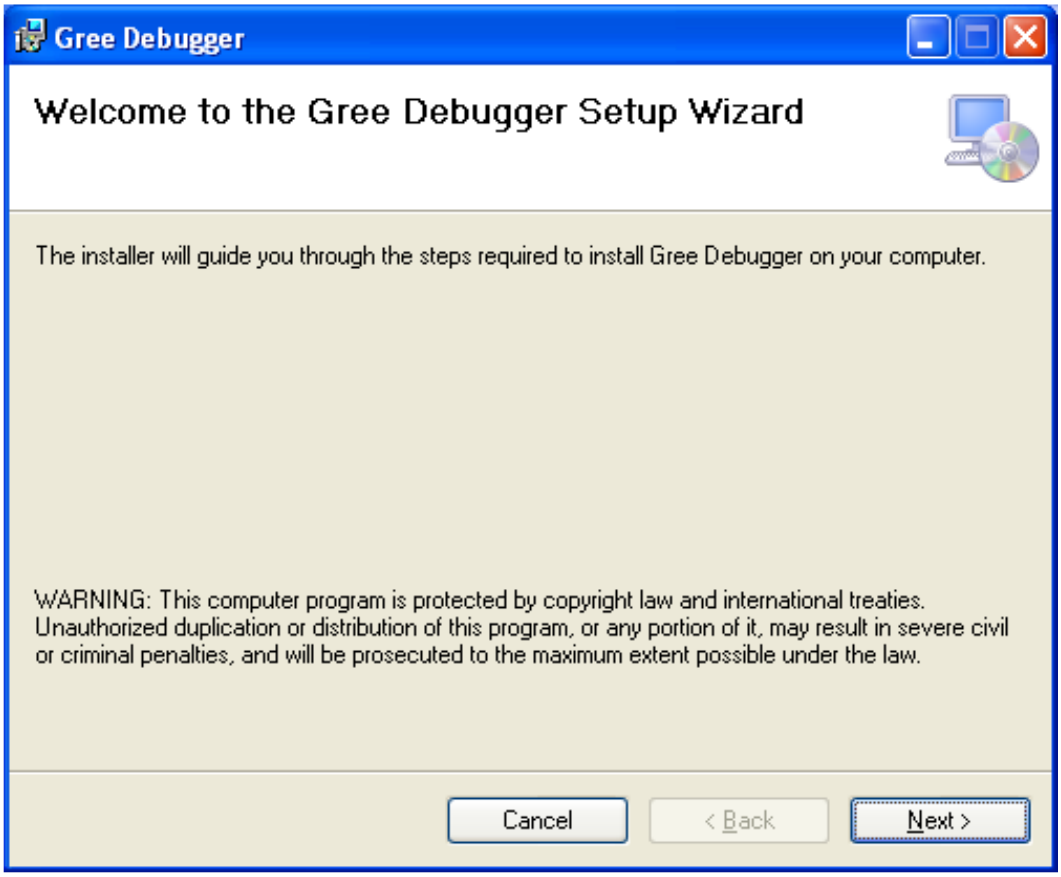


- Click “Ok” to complete the installation.

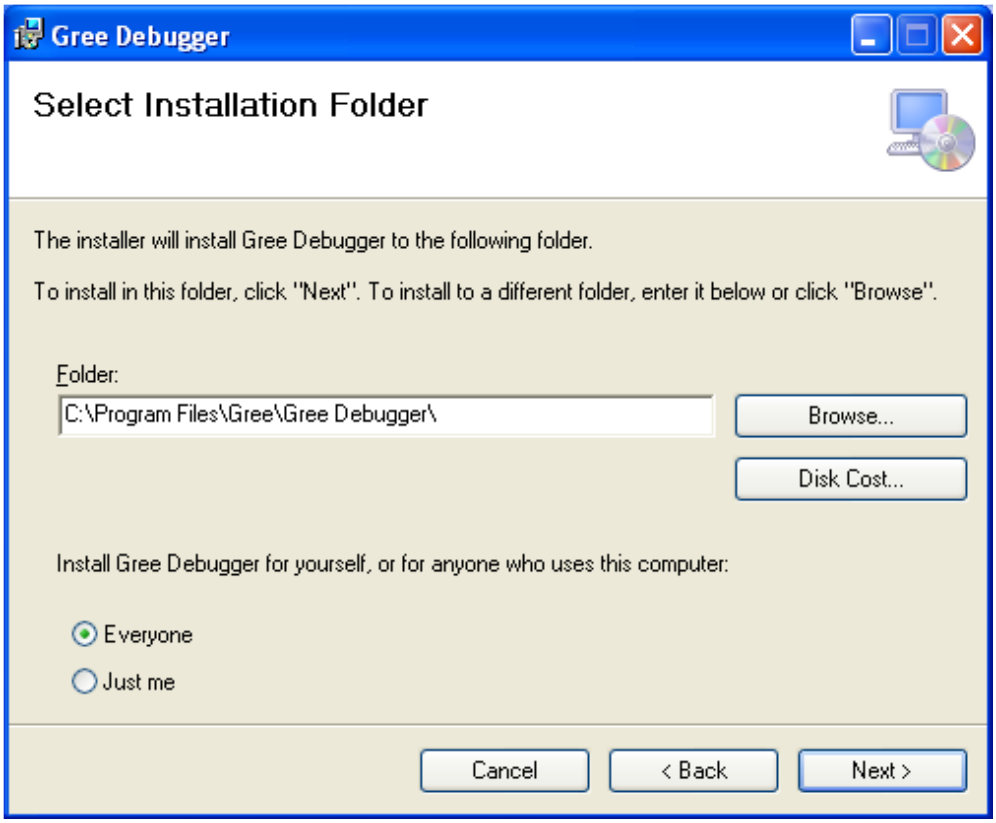
(3) Install Gree Debugger

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

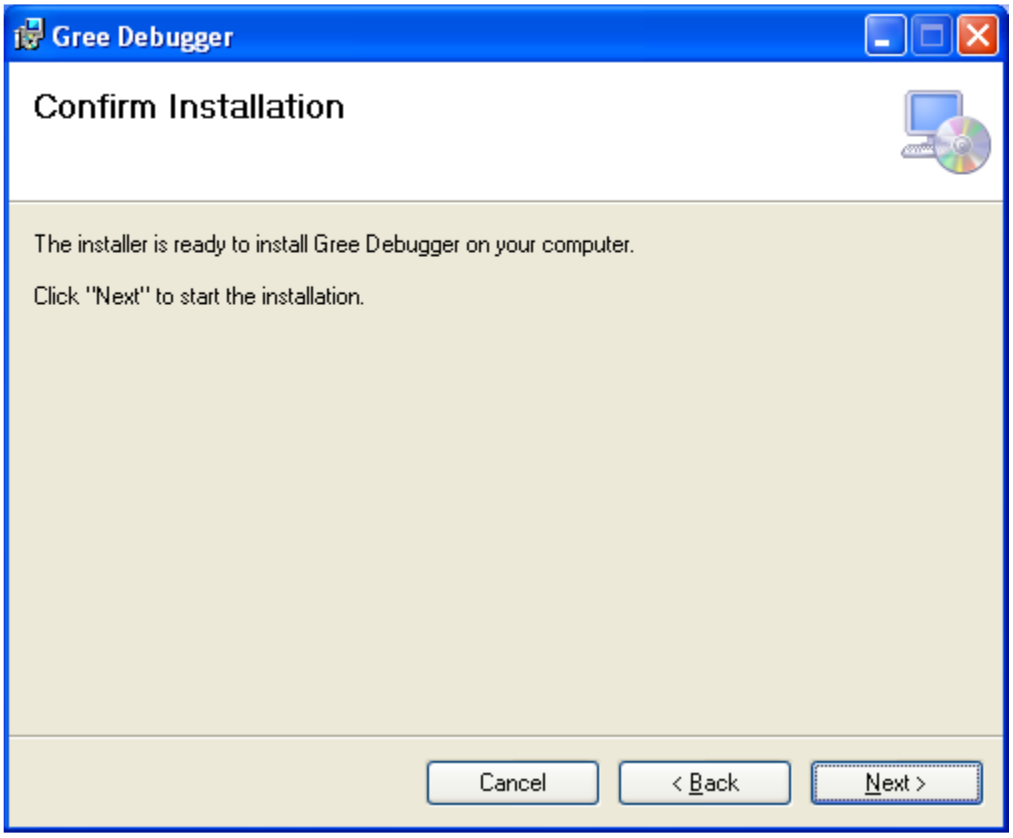
- Click “Next”.



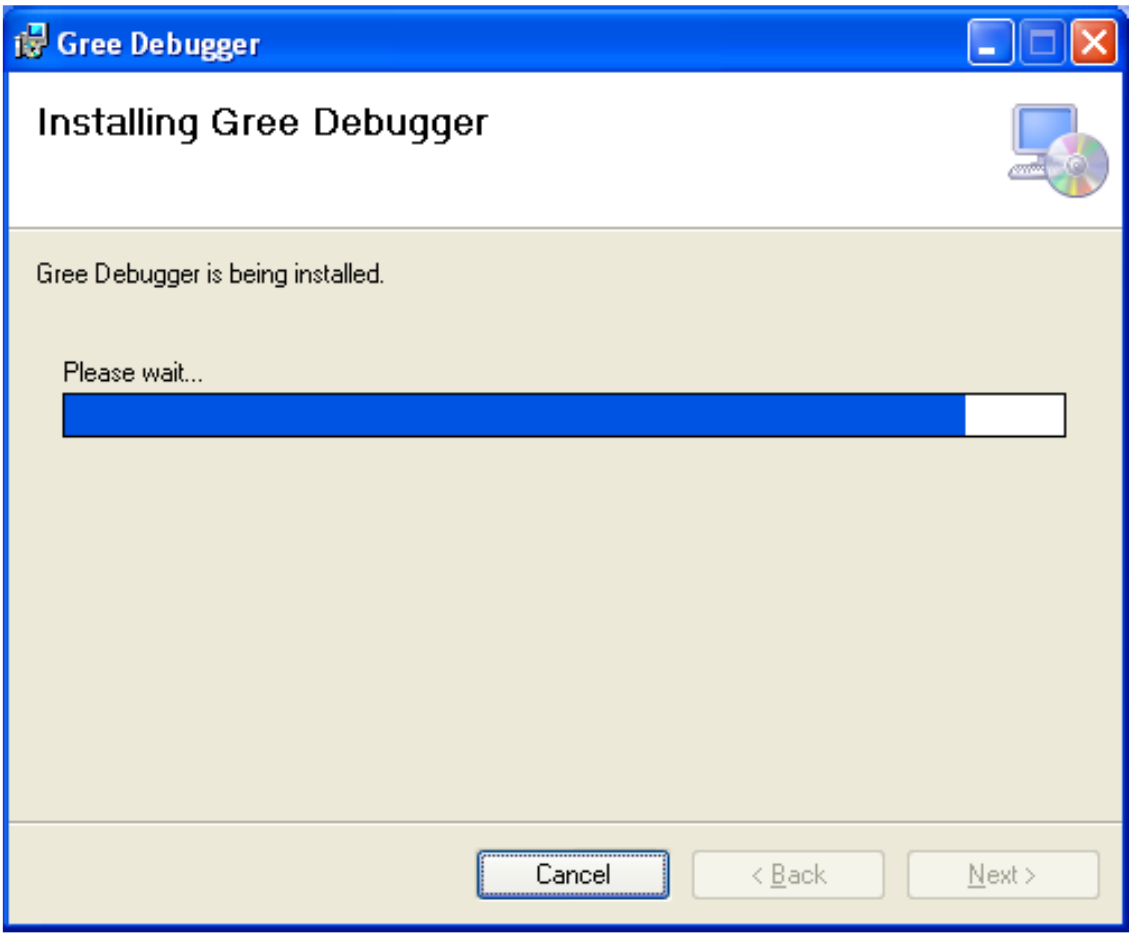
- Click “Browse” to select installation folder. If no change is needed for the folder, click “Next” to continue the installation.



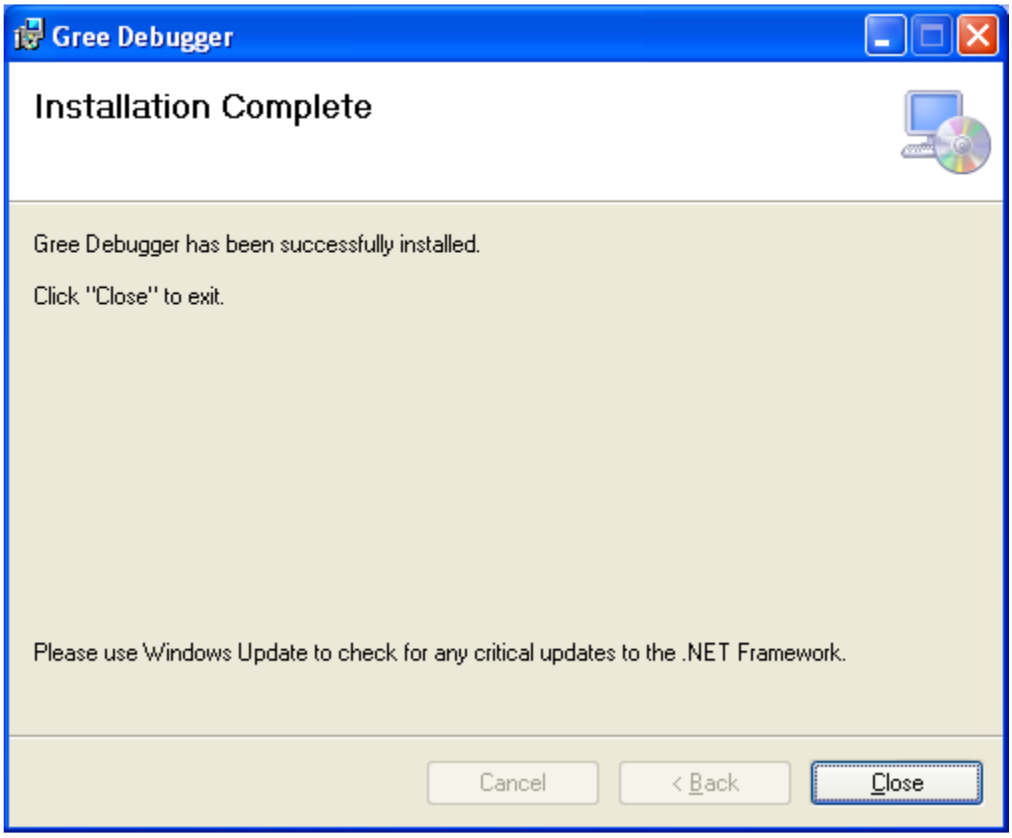
- Click “Next”.



- Installation is in progress.



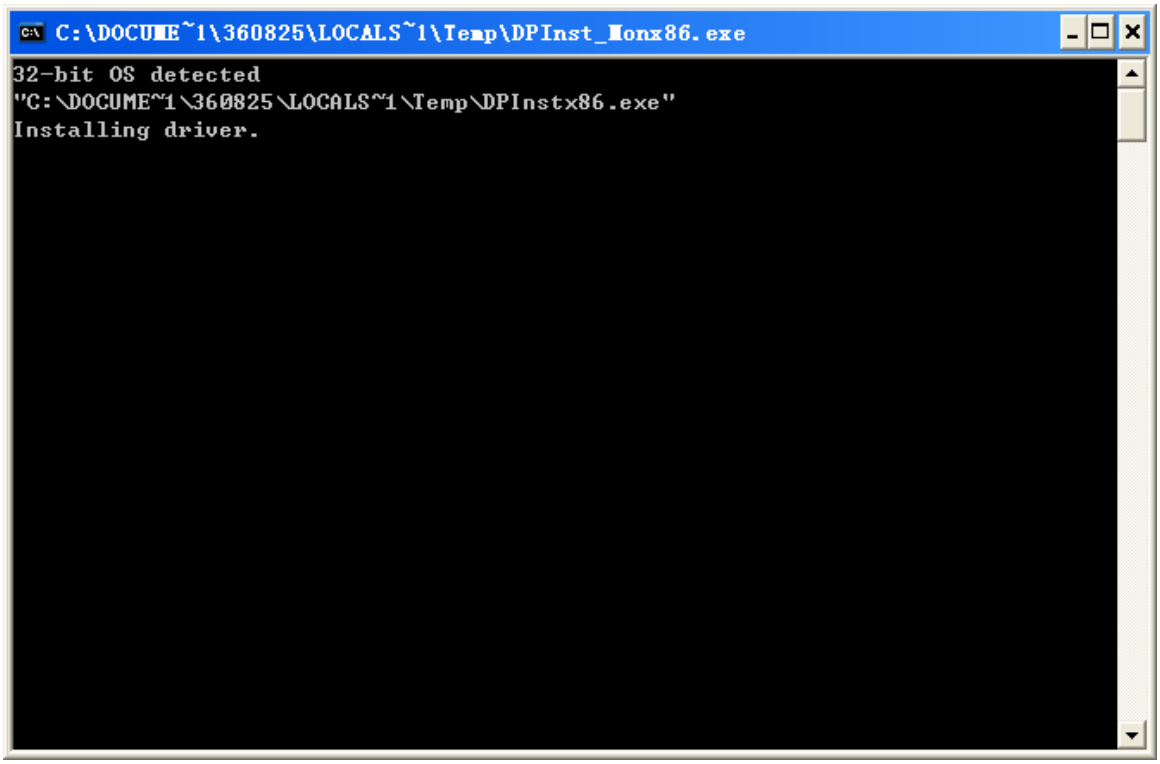
- Click “Close” to complete the installation.



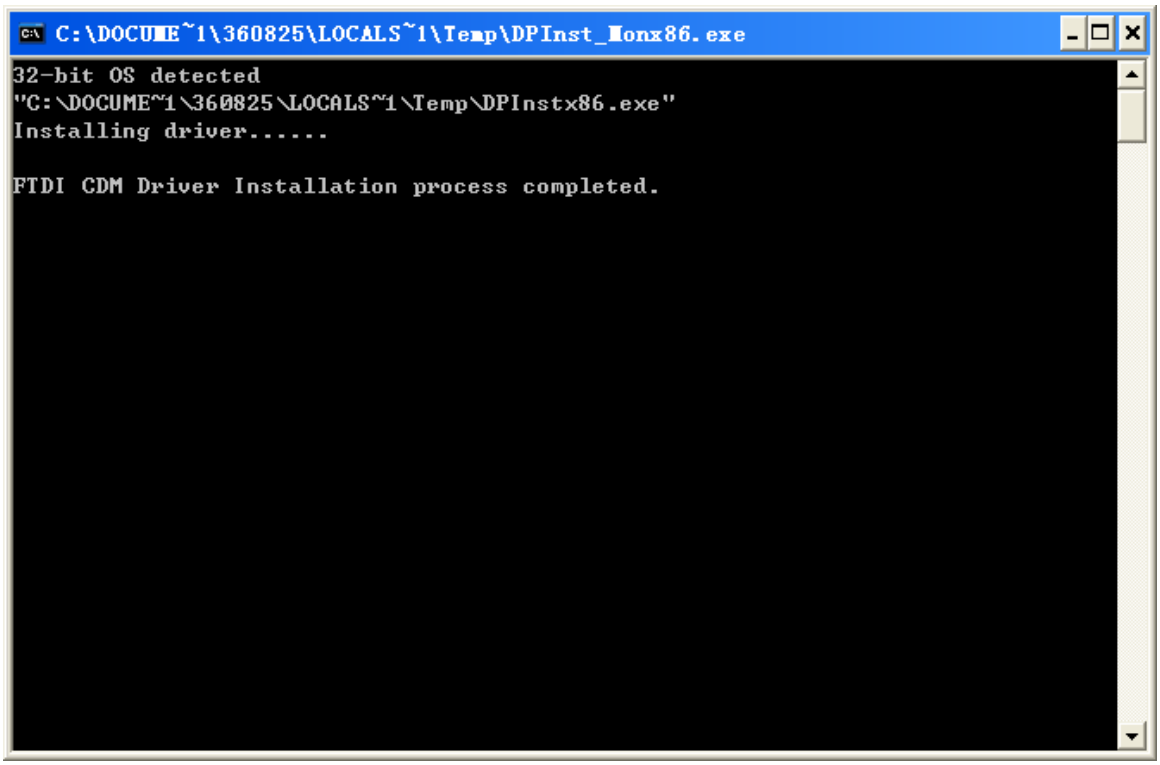
(4) Install USB Converter Driver

- 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.



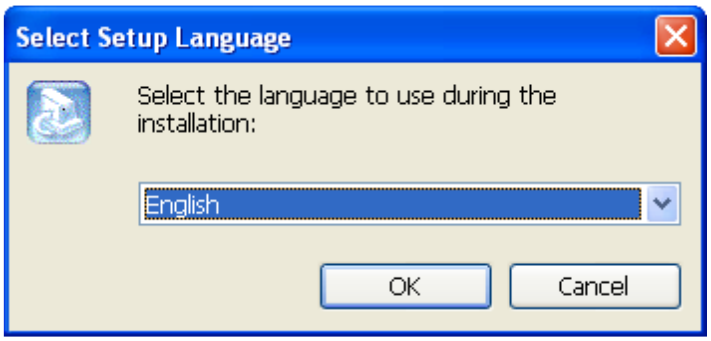
- This window will exit after installation is finished.



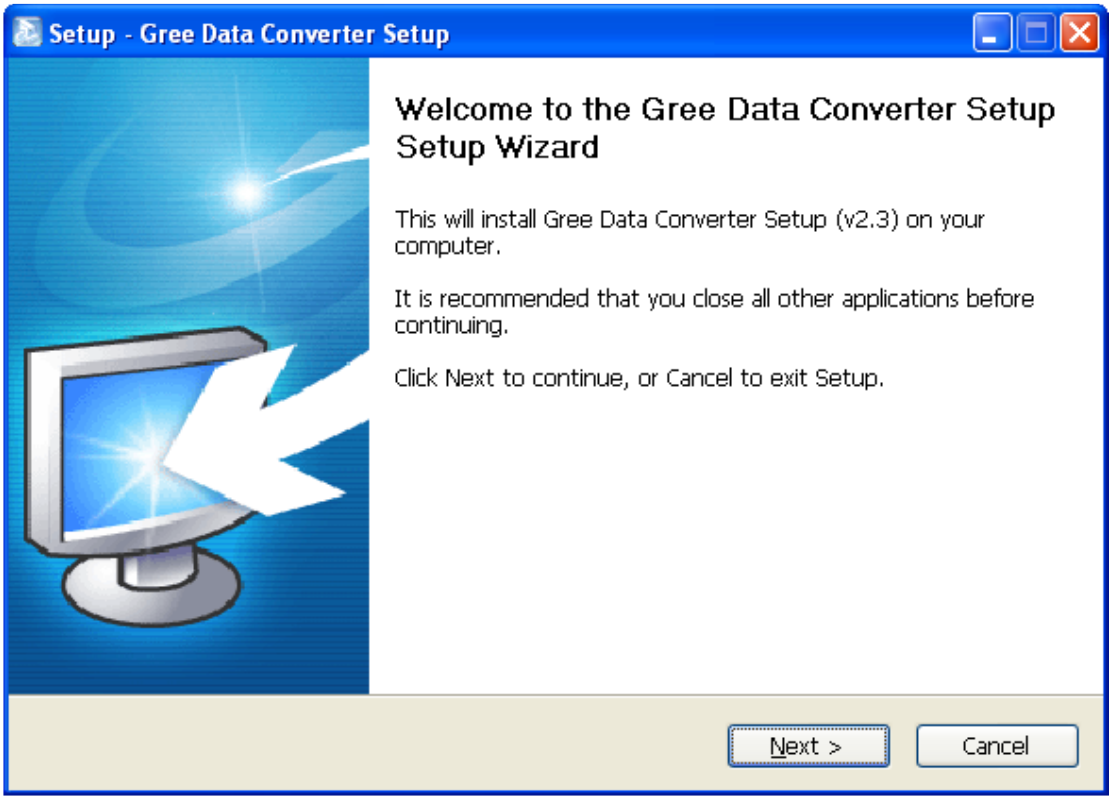
(5) Install Gree USB Data Converter

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

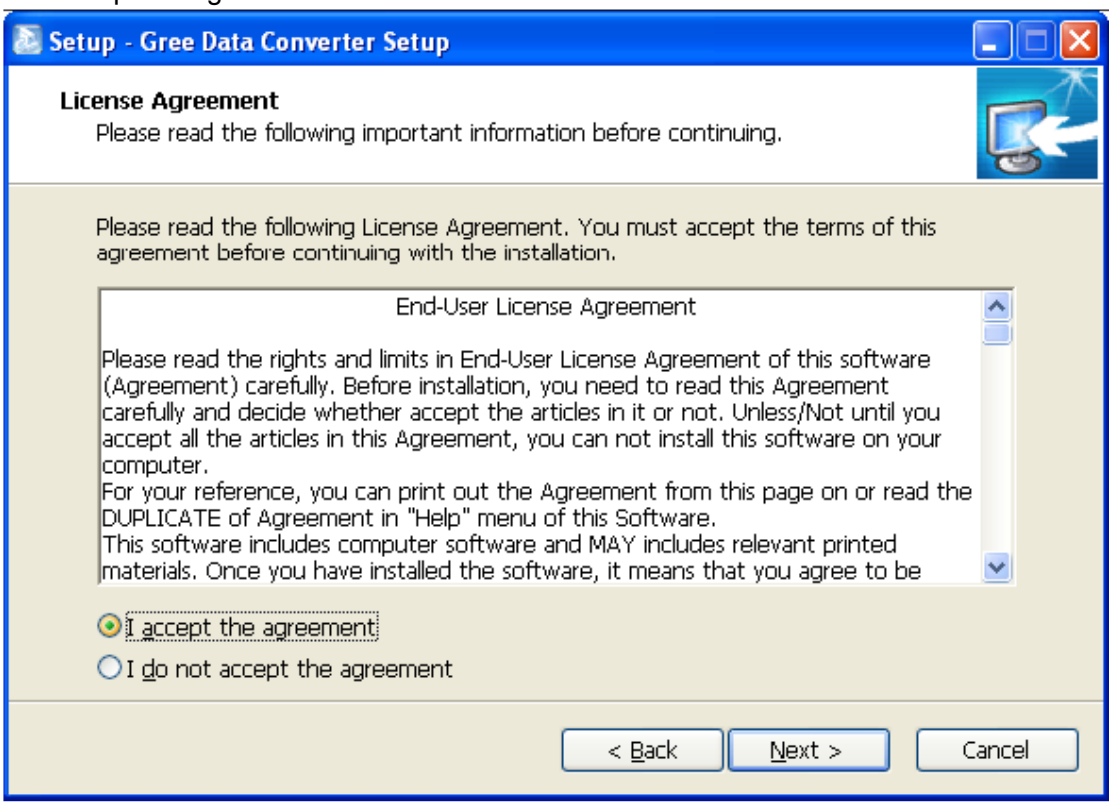
- Then select the setup language. You can choose Chinese ”simplified”, Chinese “traditional” or English. Then click “OK”.



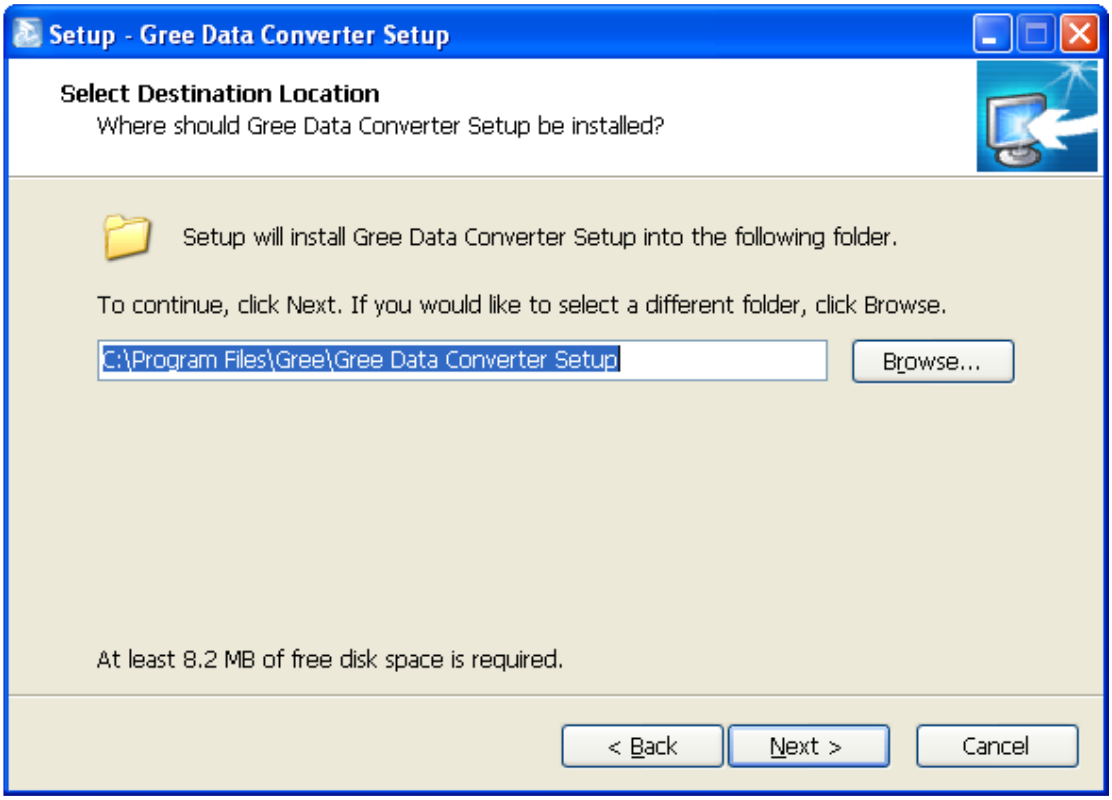
- Click “Next”.



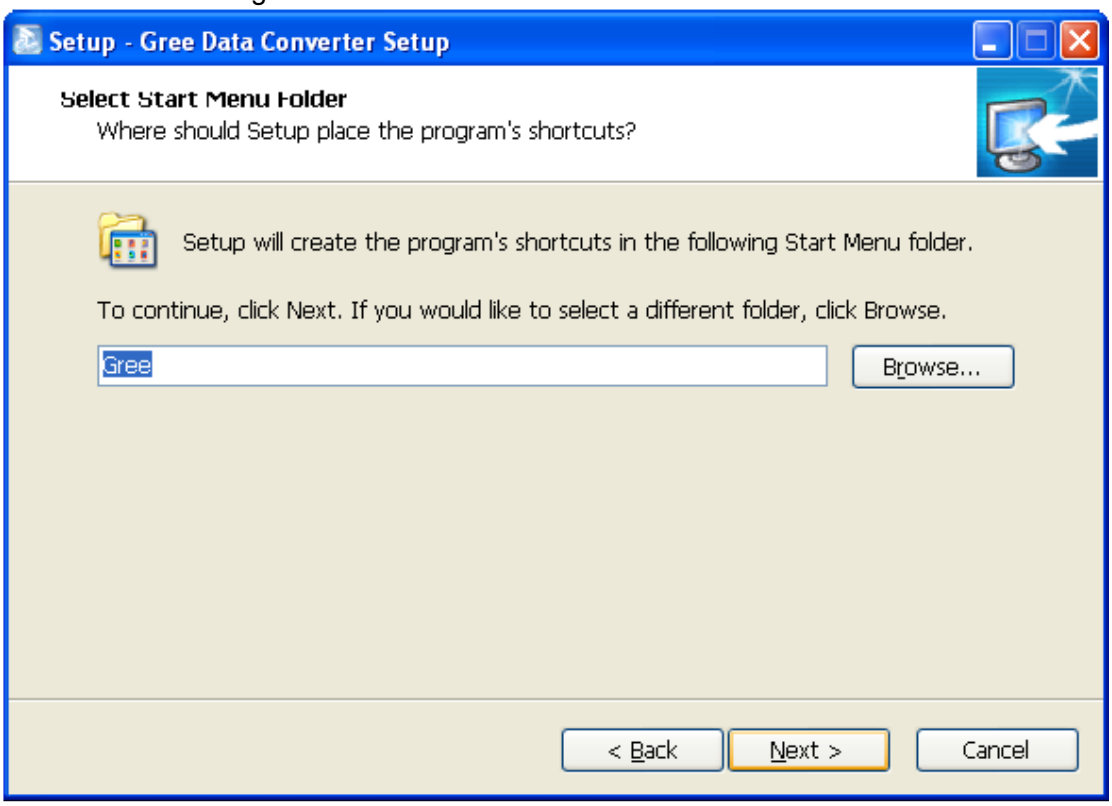
- Tick “I accept the agreement”. Then click “Next” to continue installation.



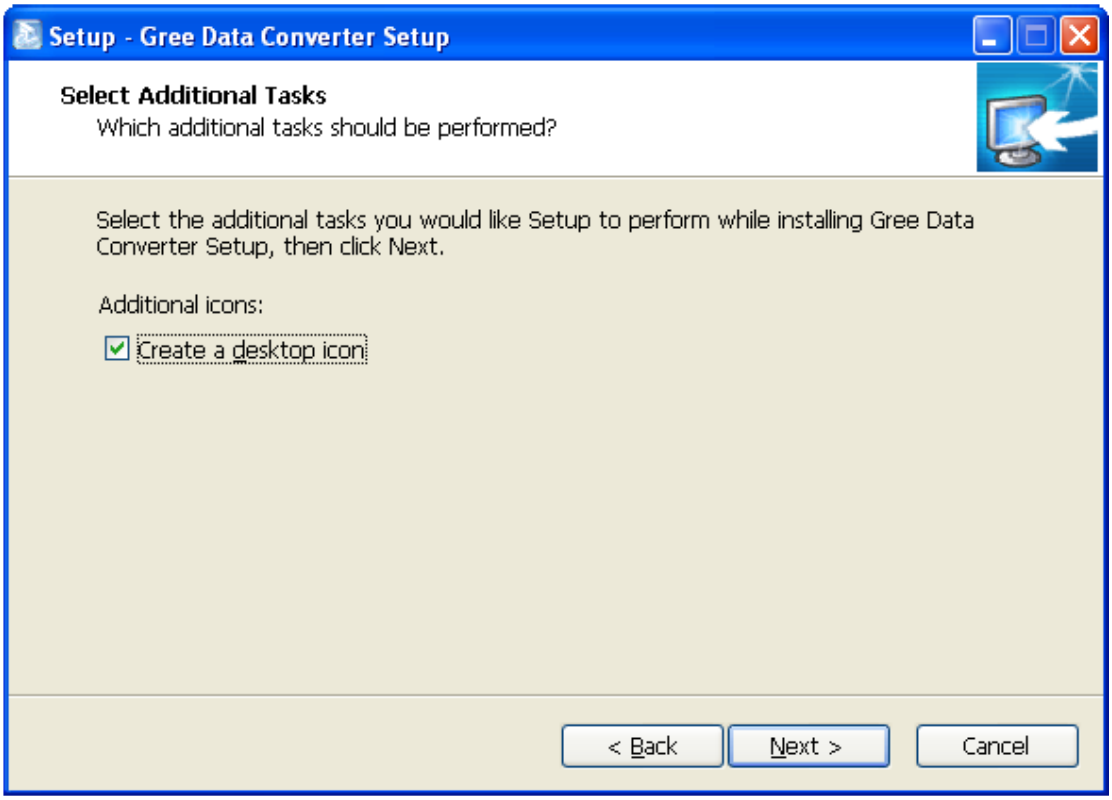
- Click “Browse” to select your expected installation folder. Click “Next” to continue.



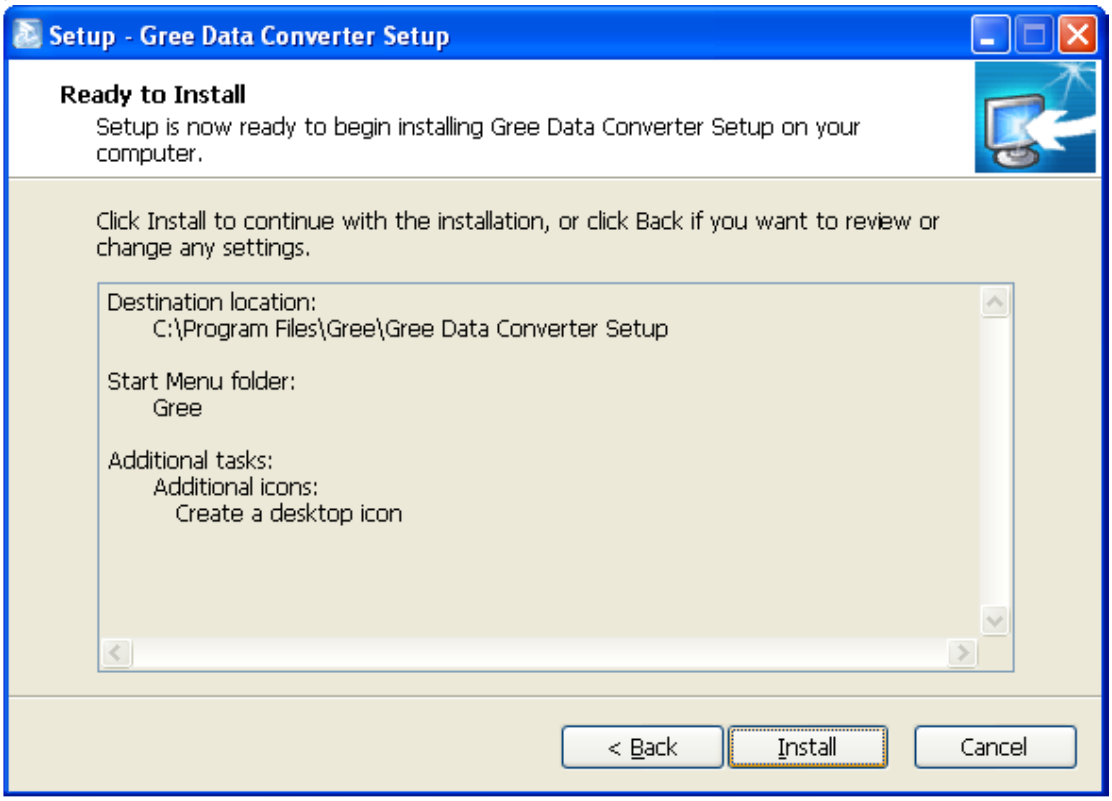
- Click “Browse” to change folder. Click “Next” to continue.



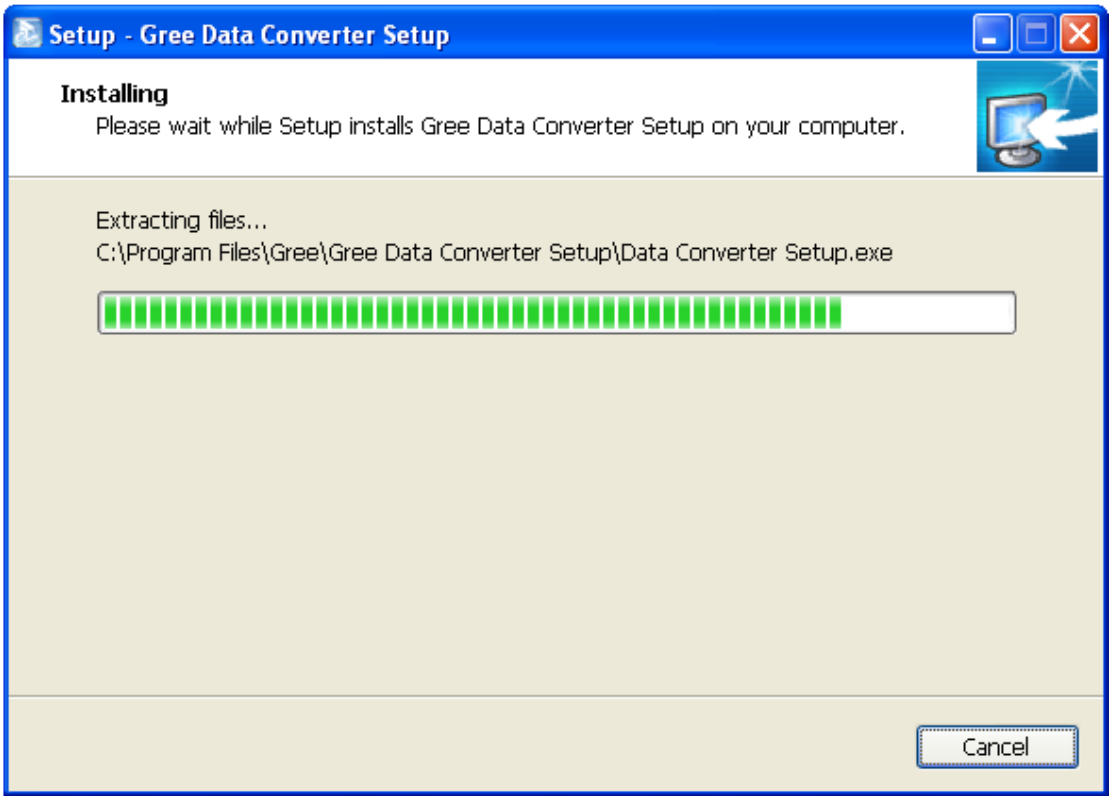
- If you want to create s desktop shortcut, tick “Creat a desktop icon”. Then click “Next” to continue.



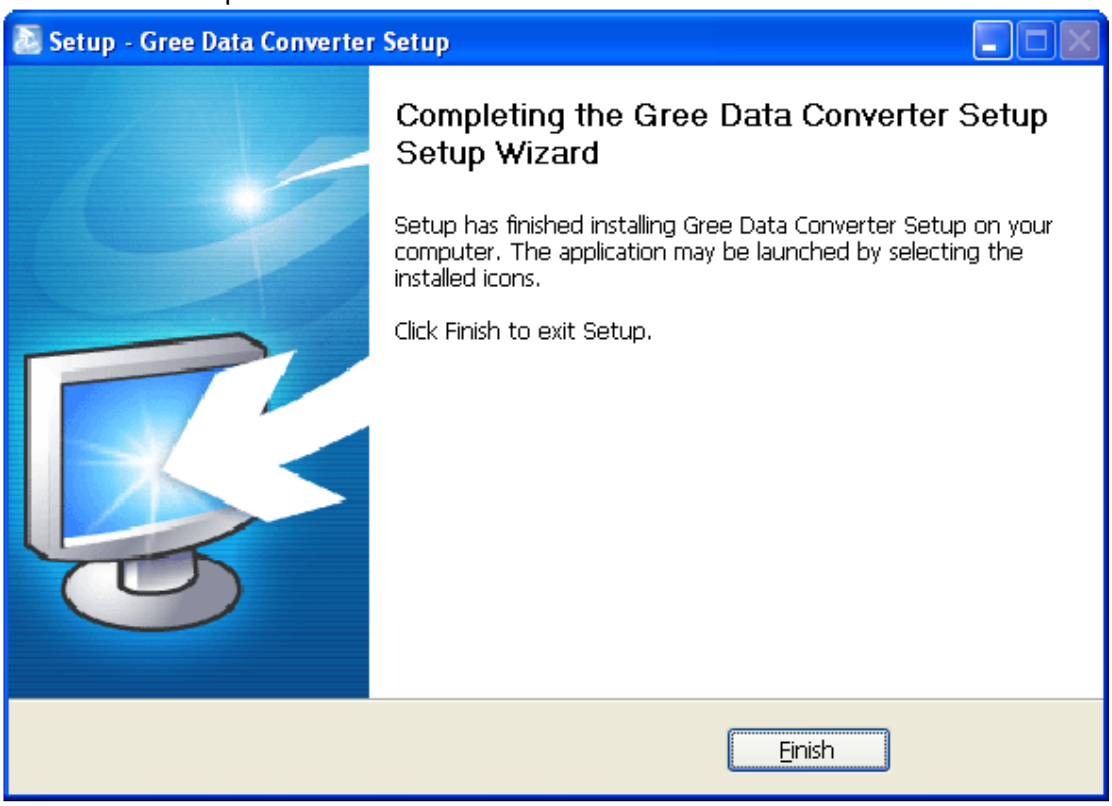
- Destiniation location, folder and additional task will be shown in the next step. If you need to change any of it, please click “Back”. If not, click “Install” to start installation.



- Installaiton is in progress.



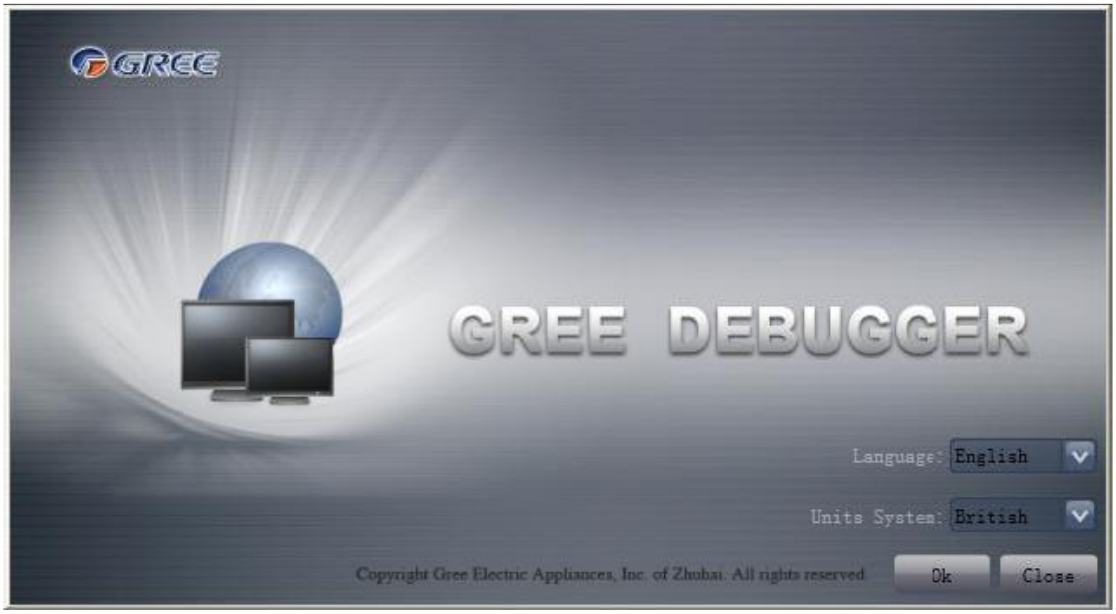
- Click “Finish” to complete the installation.



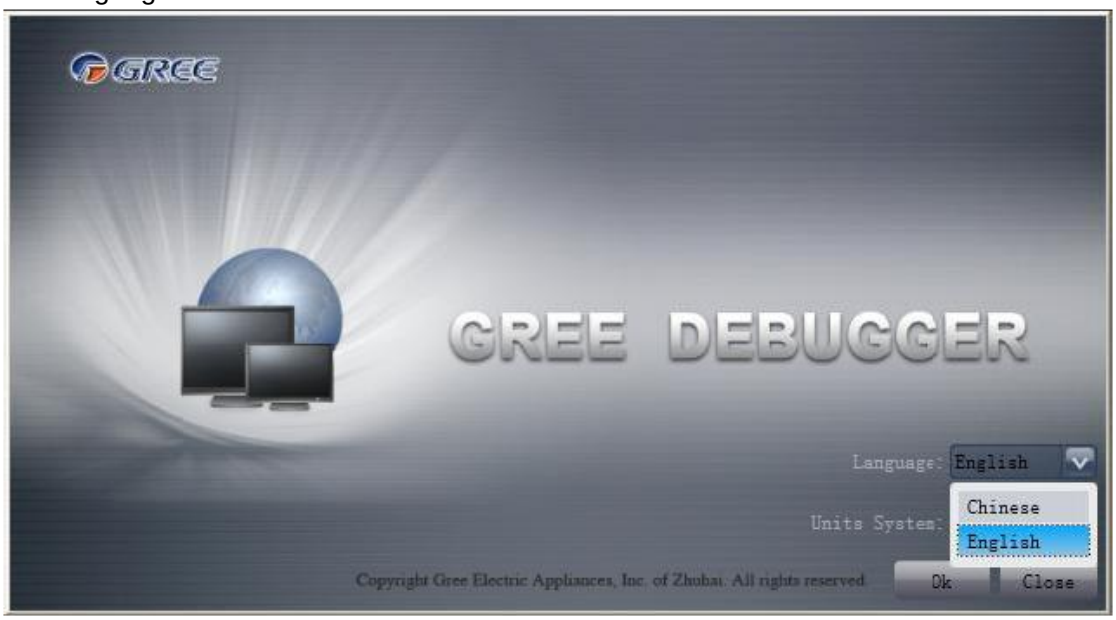
3.4.2 Data monitoring

- Start up Gree Debugger.

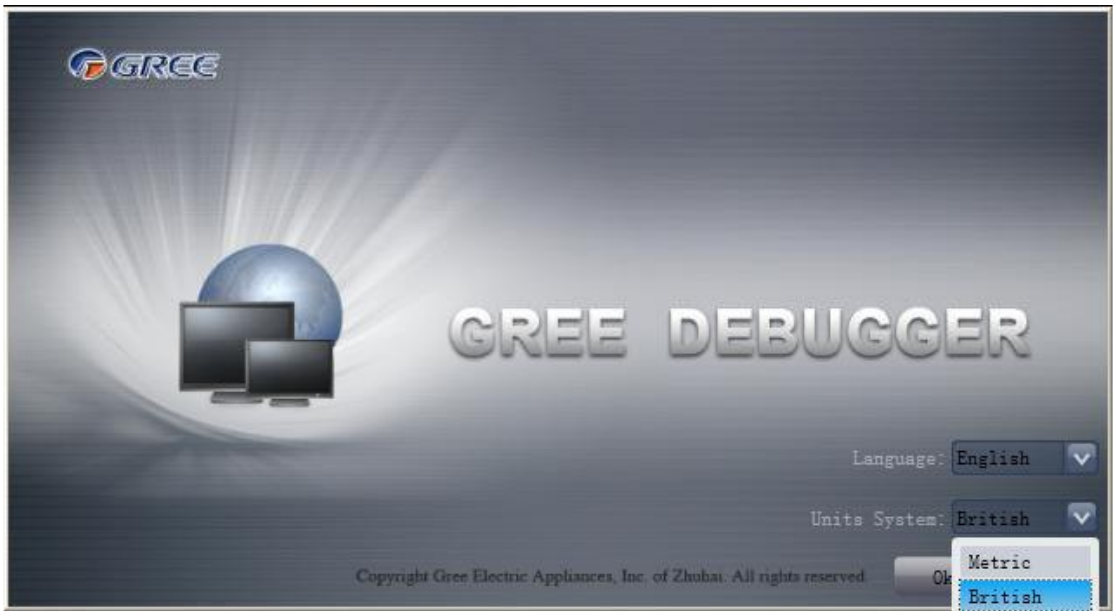
- On the original interface, user can select language and units system. Click “OK” to confirm the defaulted language and units system and start up the software.



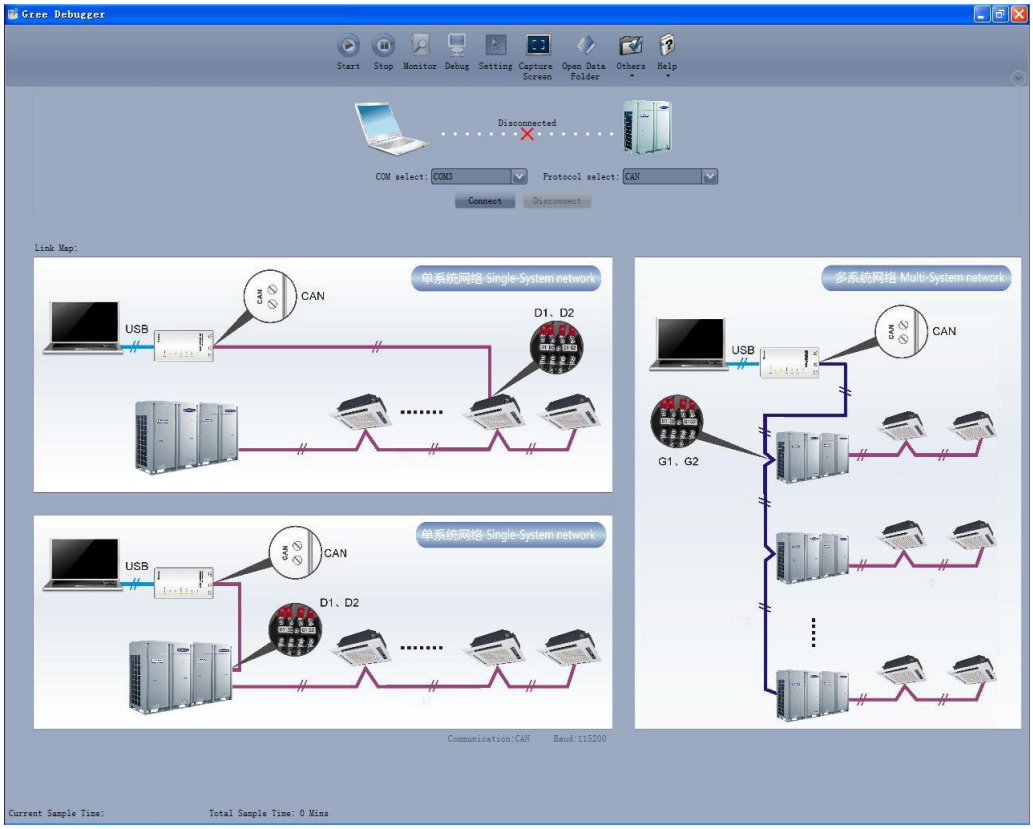
- Select language.



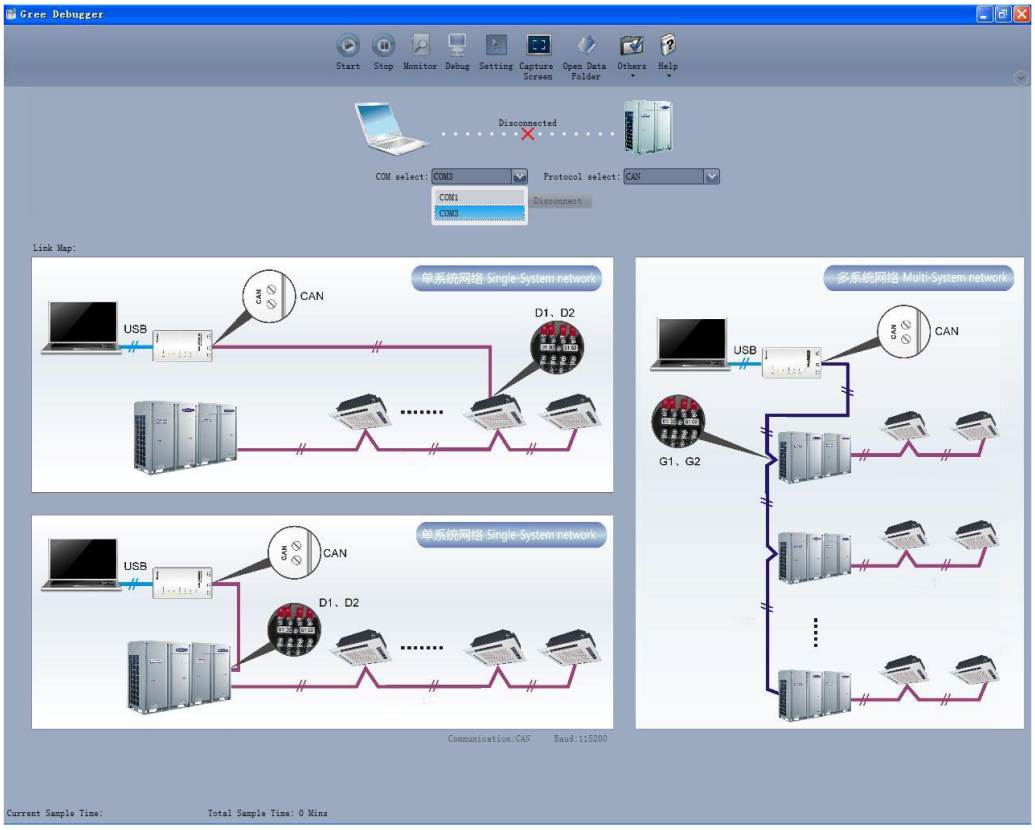
- Select system of units.



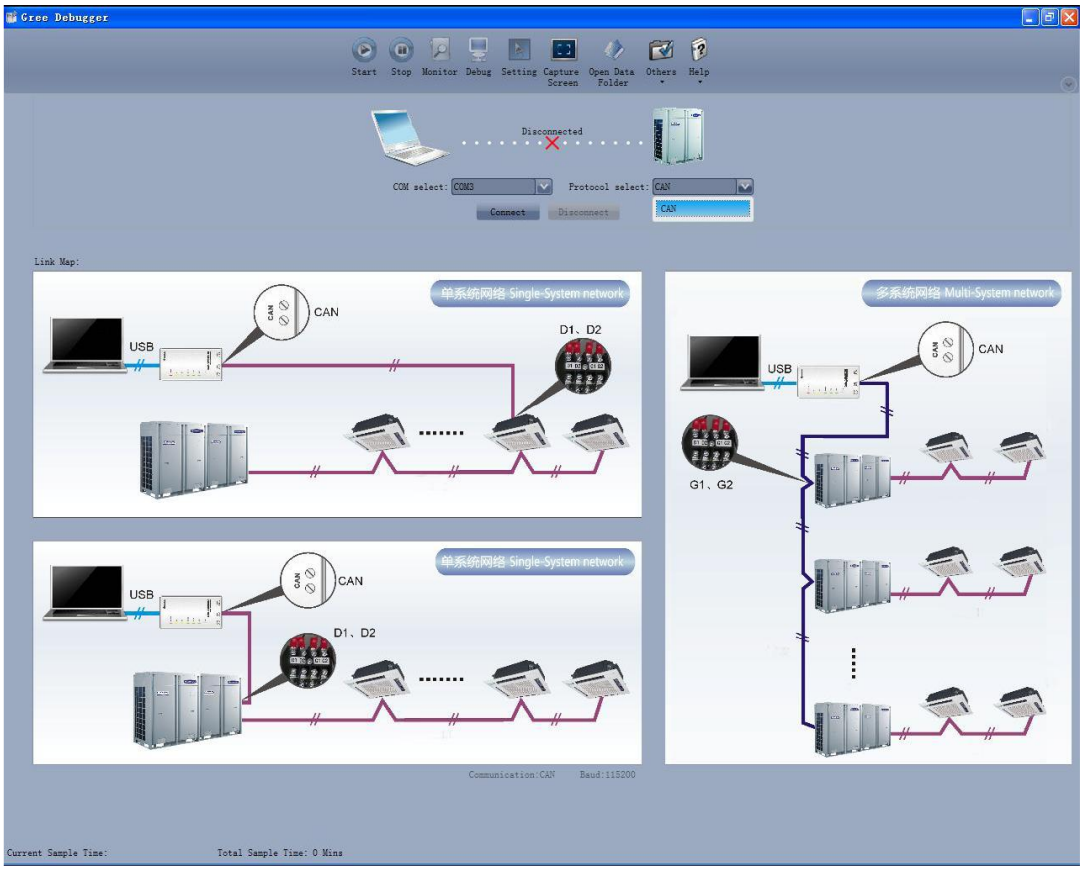
- If units you want to monitor are already connected, and able to communicate normally, with correct COM and protocal, then you may click “Connect” to enter the interface of numbers. Otherwise, connect in accordance with the connection diagram shown below.



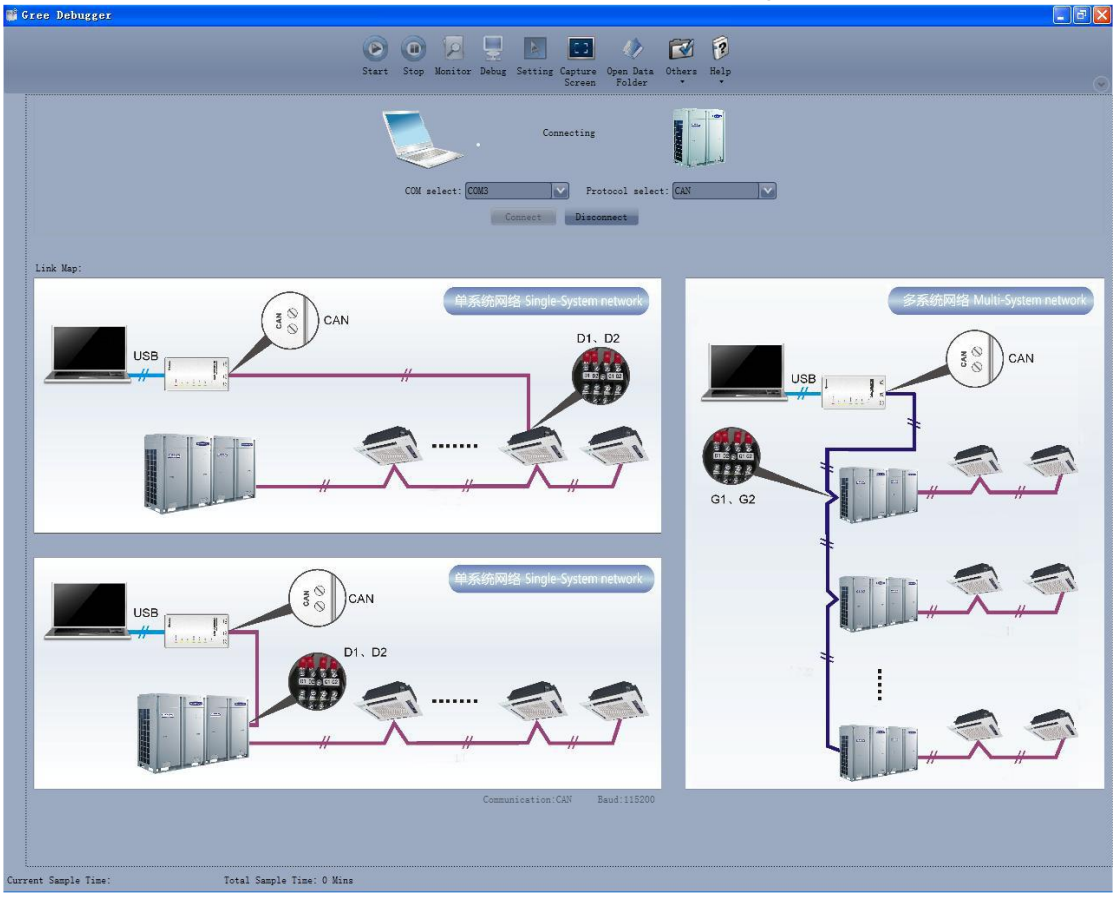
- COM selection: the serial port in your computer can be detected automatically. You just need to select your desired serial port.

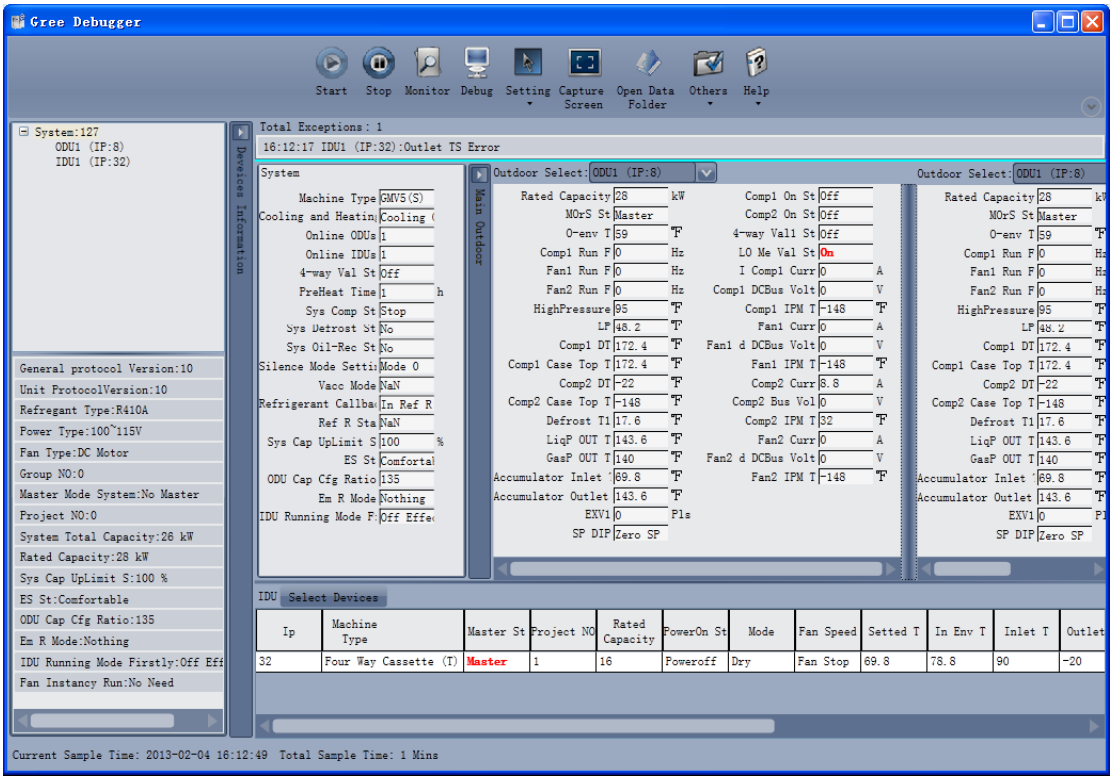


- Protocal selection: This is to select the communication method of your units. Currently, CAN is applicable to the units.

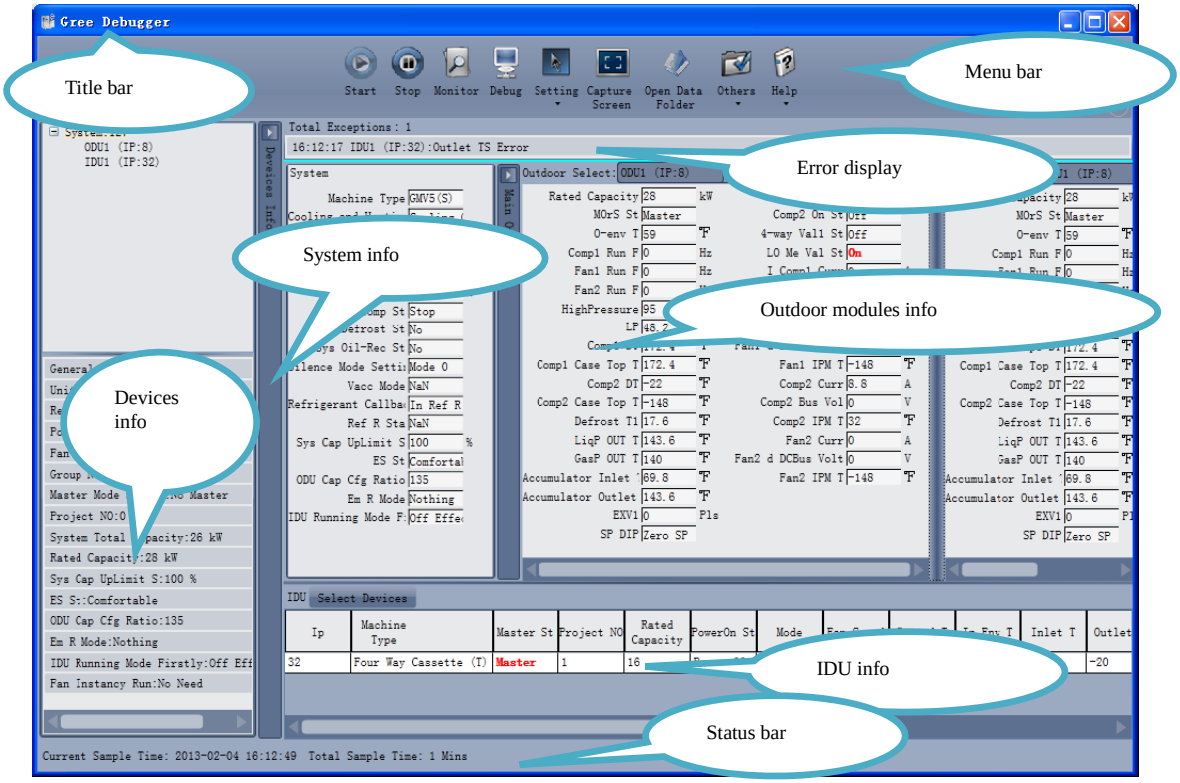


- After the selection, click “Connnect”. If units can communicate normally with computer, then the interface of numbers will be shown soon. Otherwise, “Connecting” will be shown.

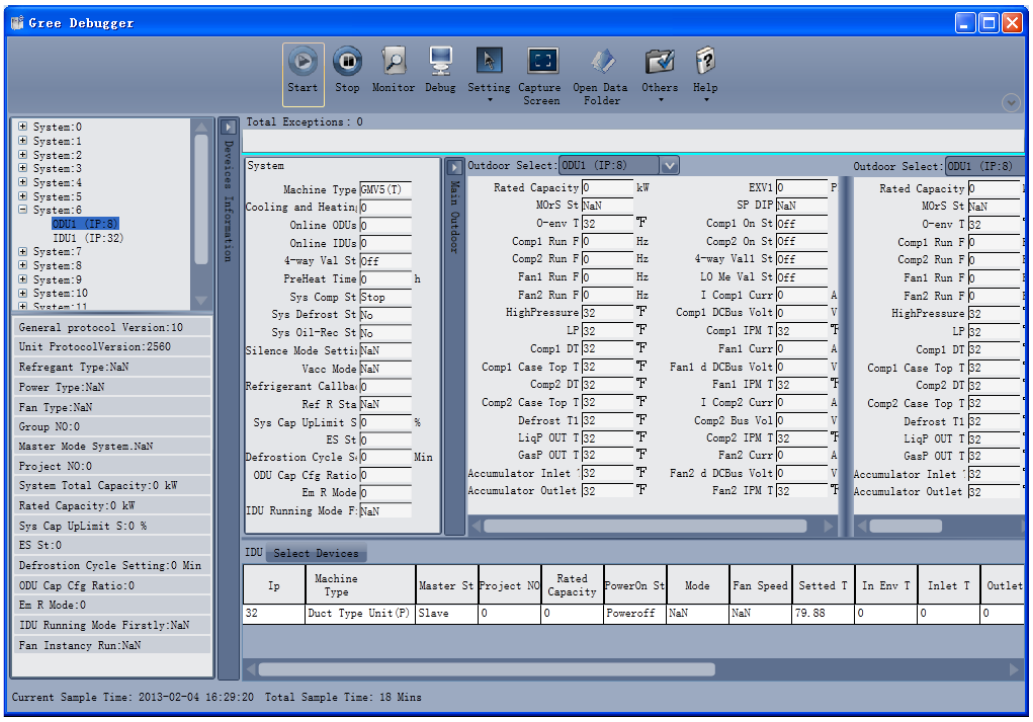




- There are several display zones on this interface. You can hide devices information and system information by clicking devices information icon and system icon . Display zones of indoor unit information and errors can be dragged up and down at the dividing lines. As to the display zone of outdoor modules 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.

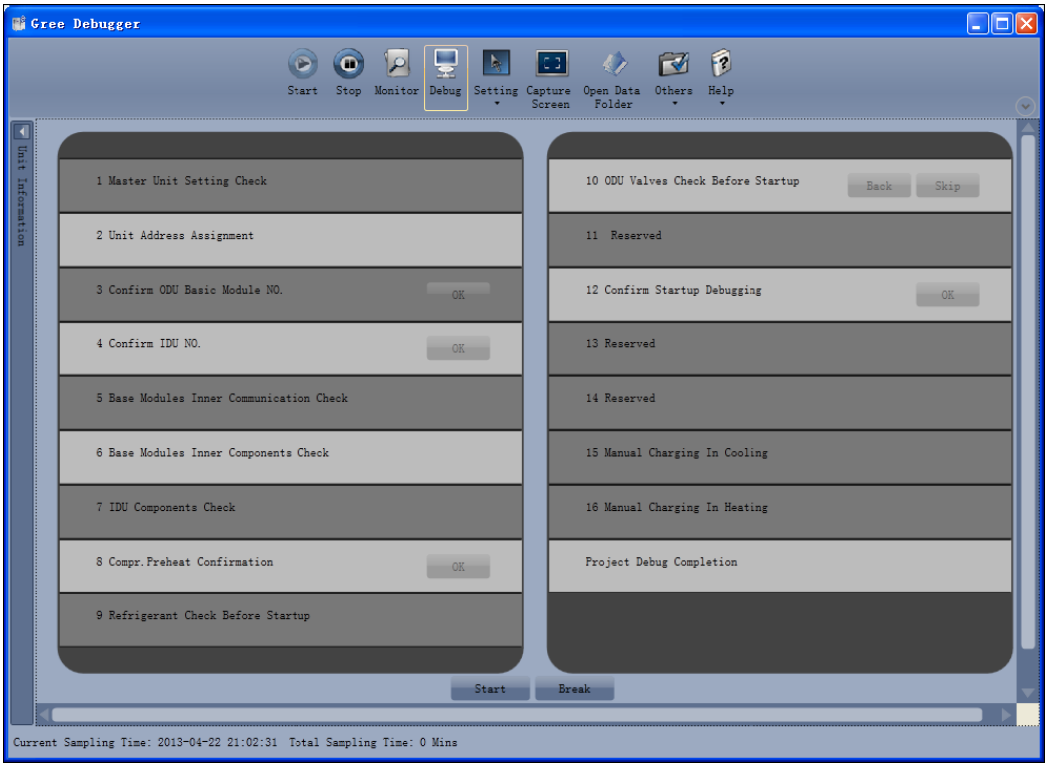


- On the display zone of devices information, you may click to select and view units that need monitoring.

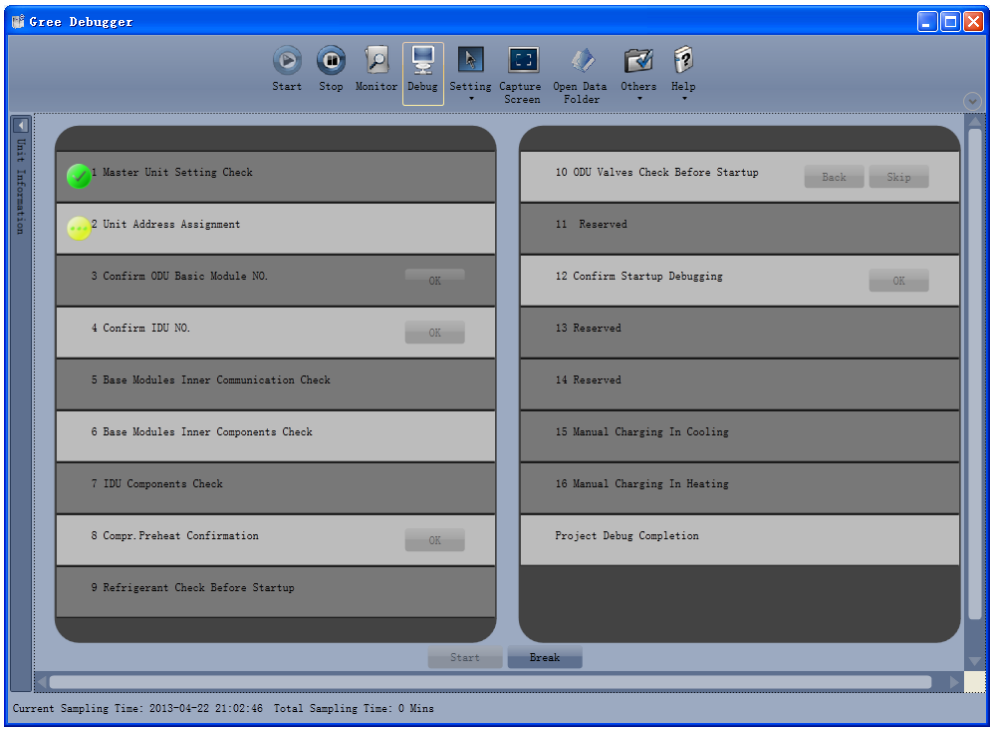


3.4.3 Project debugging

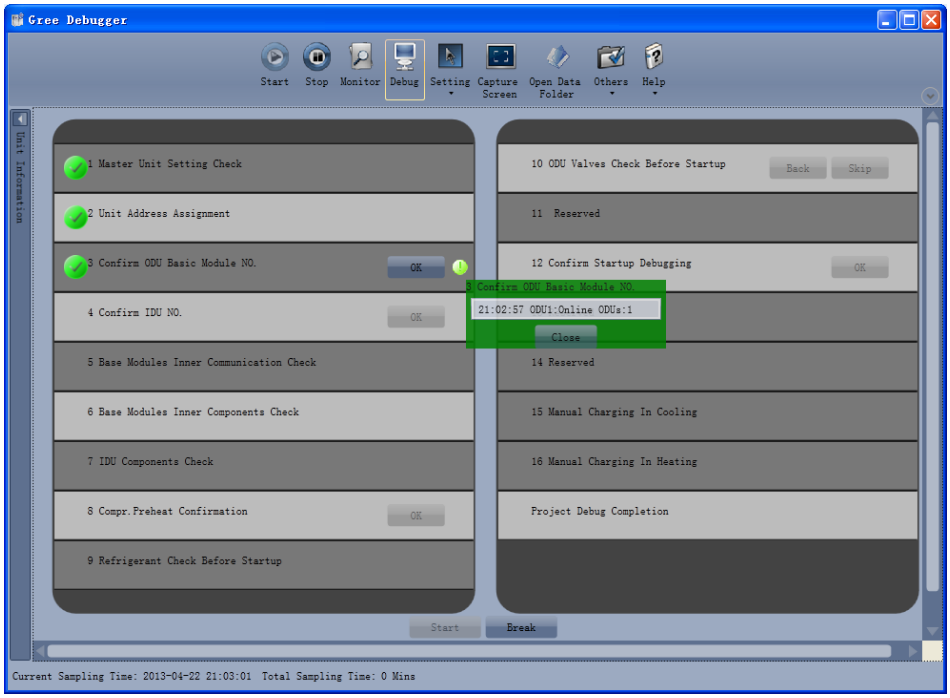
- Click icon of “Debug” on the menu bar and the interface will be switched to project debugging, where auto debugging will be started from up to down and from left to right. Note: Debugging function is only applicable to a single-system network.



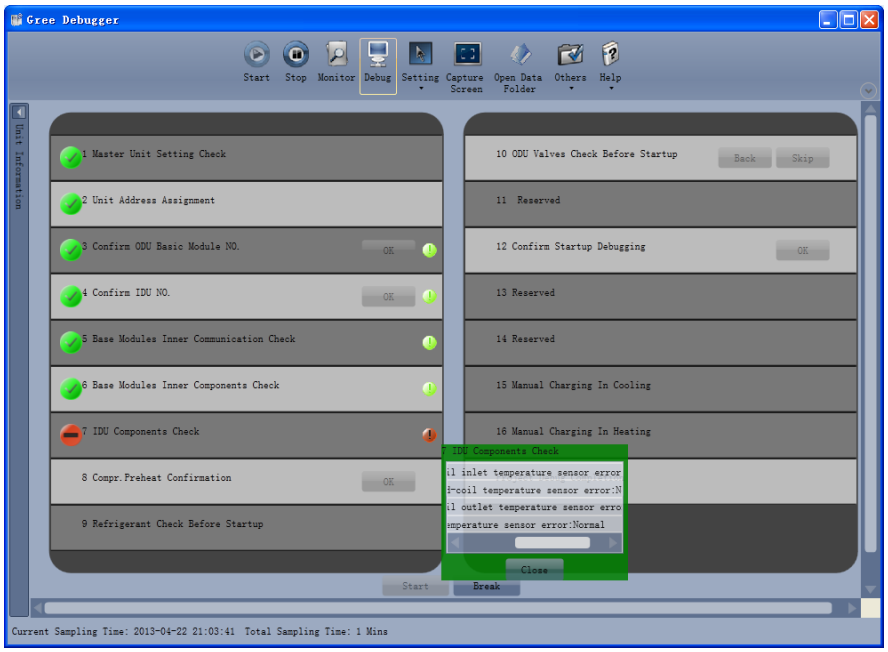
- Click “Start” to enable the debugging function. Then debugging will be started up automatically.  indicates that debugging is in progress while  indicates debugging is completed.



- 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).



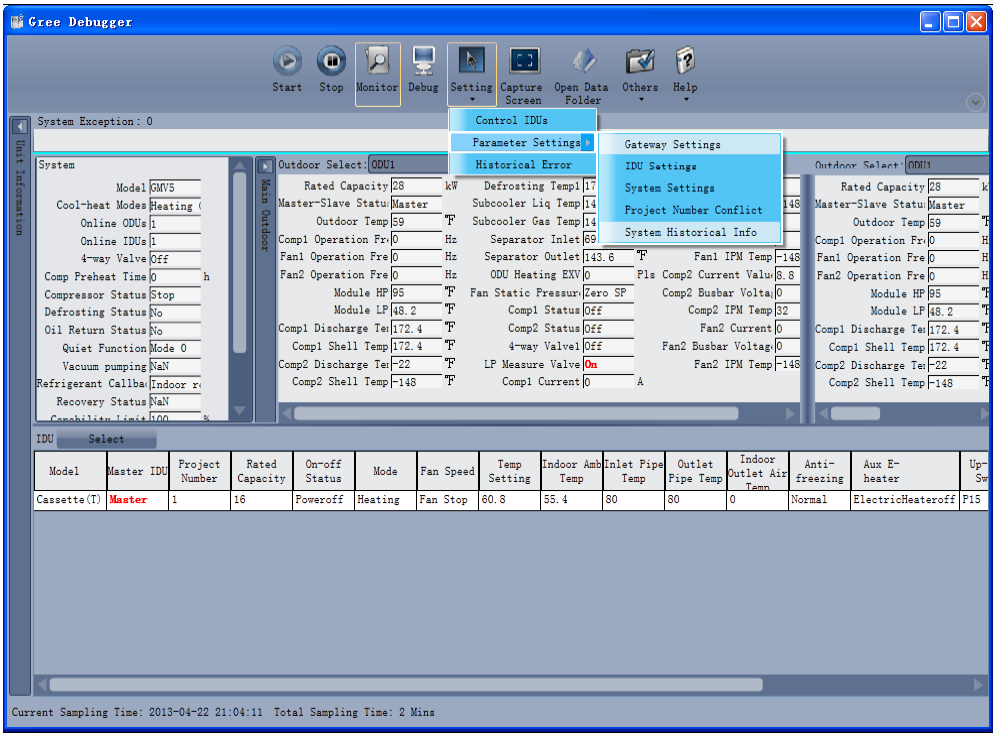
- Icon  indicates that there is problem found during debugging. Debugging will not be completed unless problem is solved (after problem is solved, step without “OK” button will switch to the next step automatically, otherwise user needs to click “OK” to continue). Click icon  and relevant information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



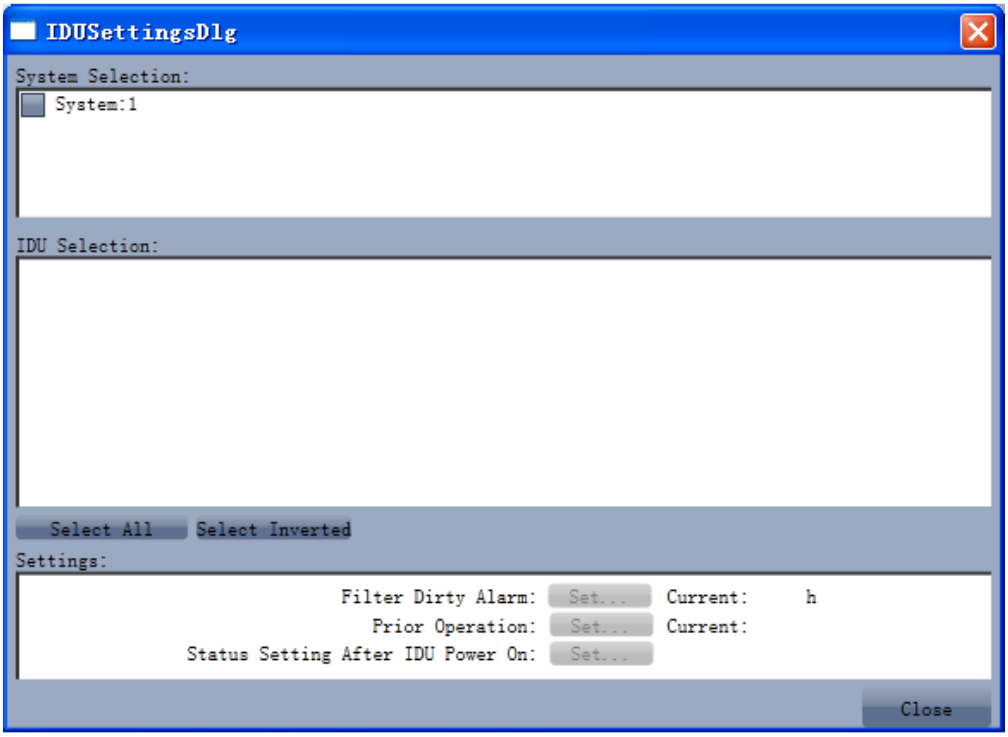
- During debugging, a click on “Break” can stop debugging. Click “Start” to resume debugging and then debugging will be finished step by step. For No.10 ODU Valves Check Before Startup, there are “Back” and “Skip” buttons. If there is error in this step, you can back to step No.9 and click “OK” to restart 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).

3.4.4 Control units

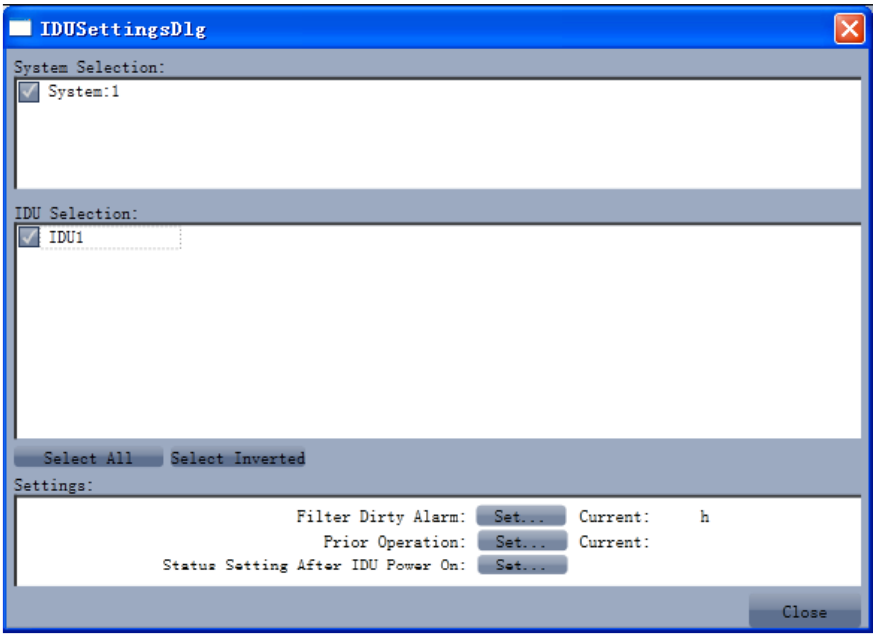
- Click icon of “Setting” on menu bar and select parameter settings, which include “Gateway Settings”, “IDU Settings”, “System Settings”, “Project Number Conflict (In case there is project number conflict in indoor units, other functions will be shielded. Then this parameter needs to be set in order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

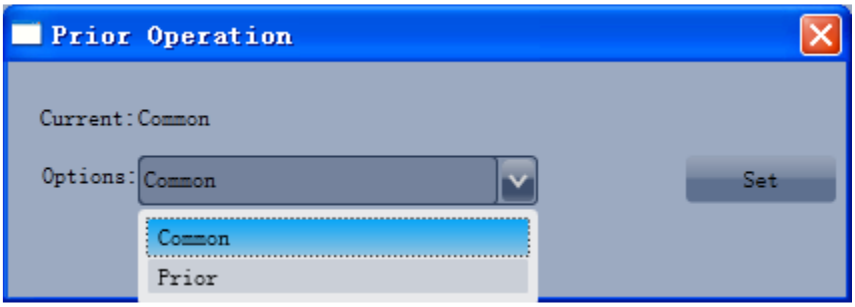


- Take indoor unit as an example. Click “IDU Settings” and a dialog box will pop up.



- 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.

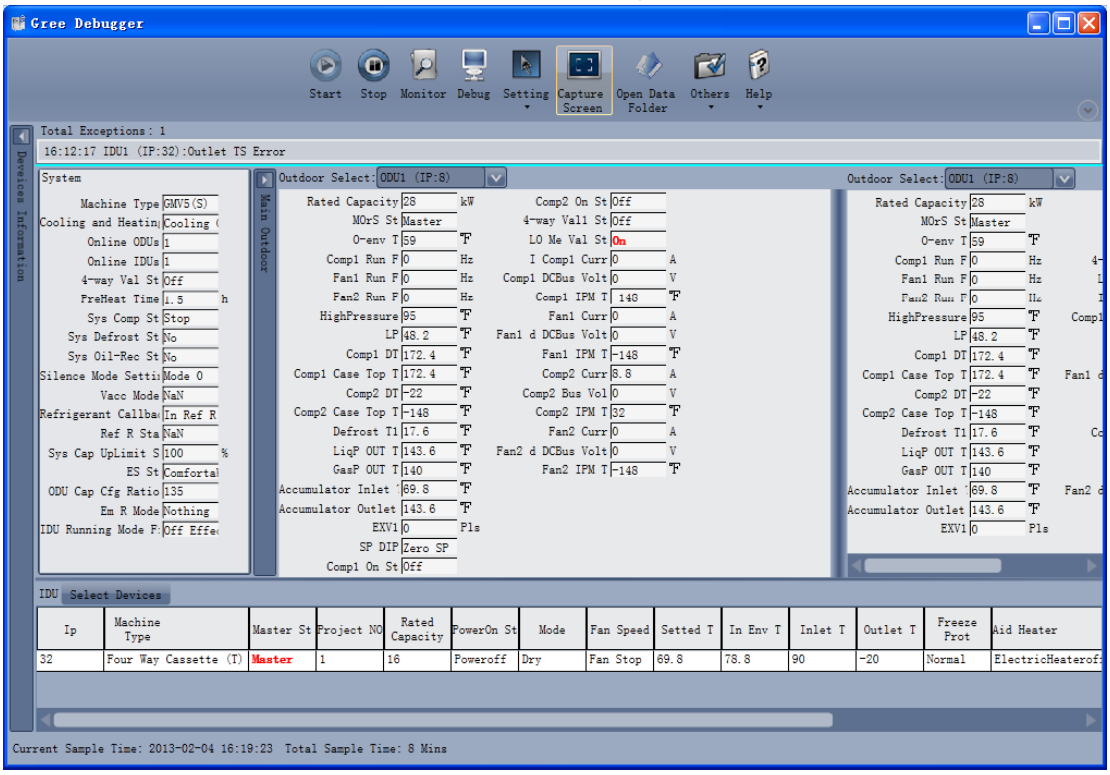


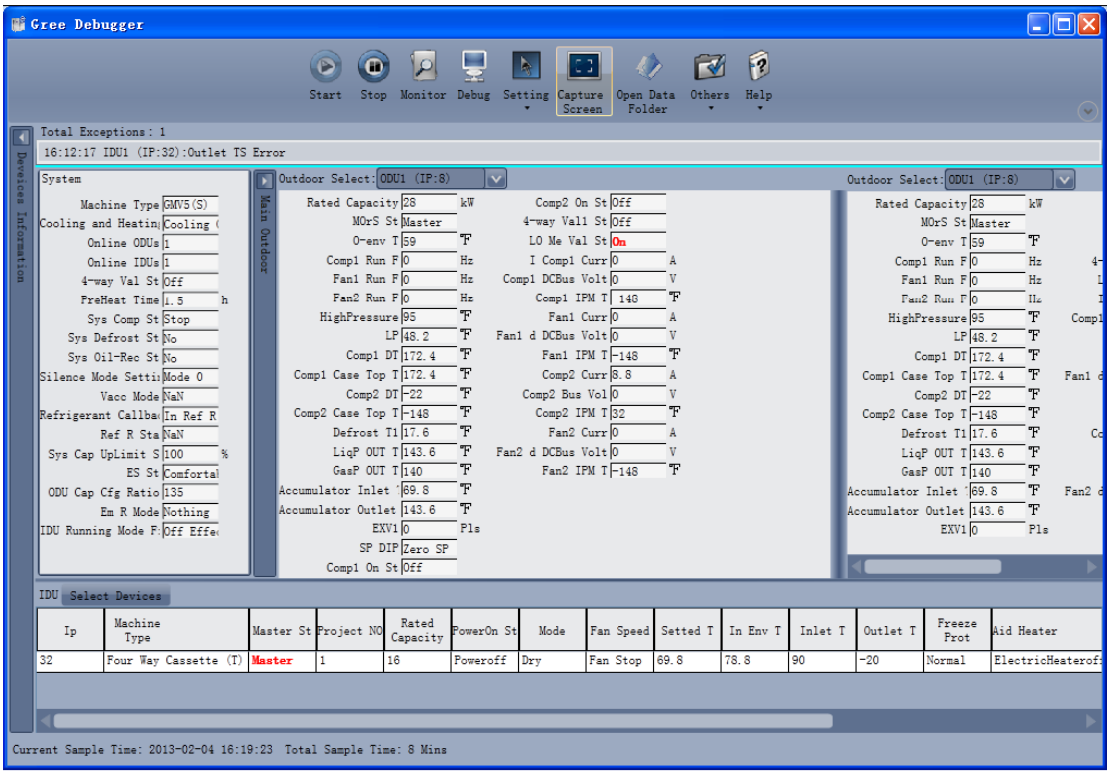


3.4.5 Other functions

Capture screen

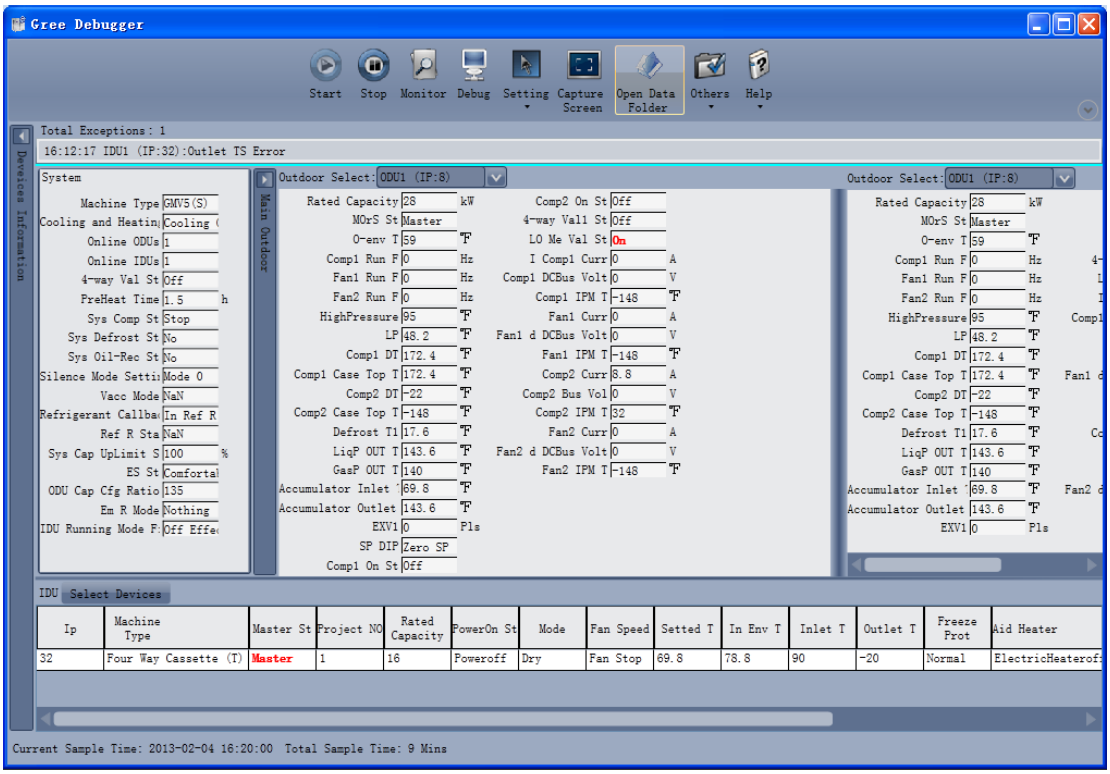
- Click icon of “Capture Screen” to print the interface. If you want to open the interface, click “Open”.

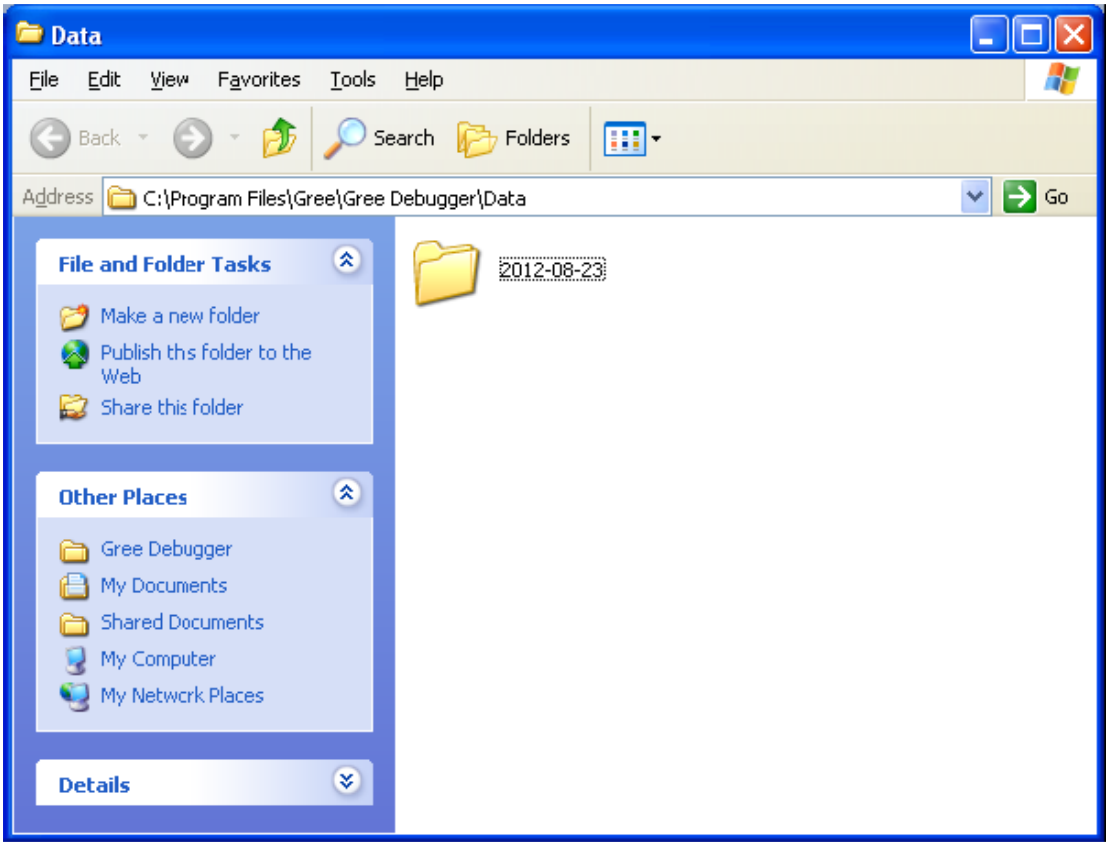




Search for database folder

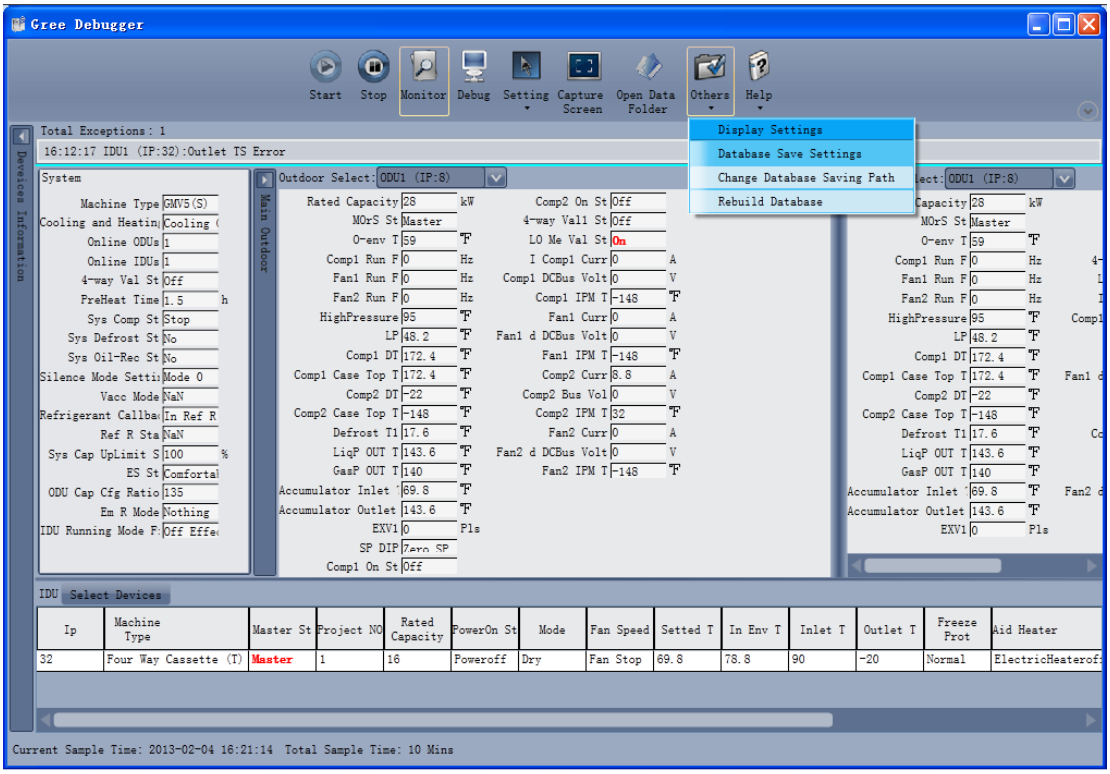
- Click icon of “Open Data Folder” on the menu bar to open database folder.

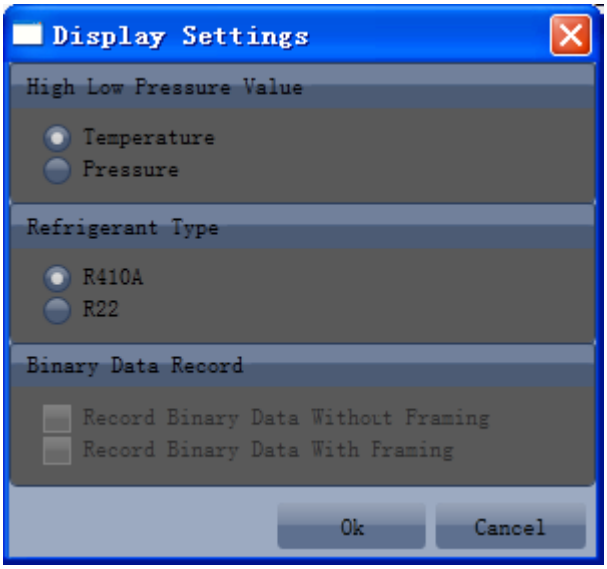




Conversion of pressure value

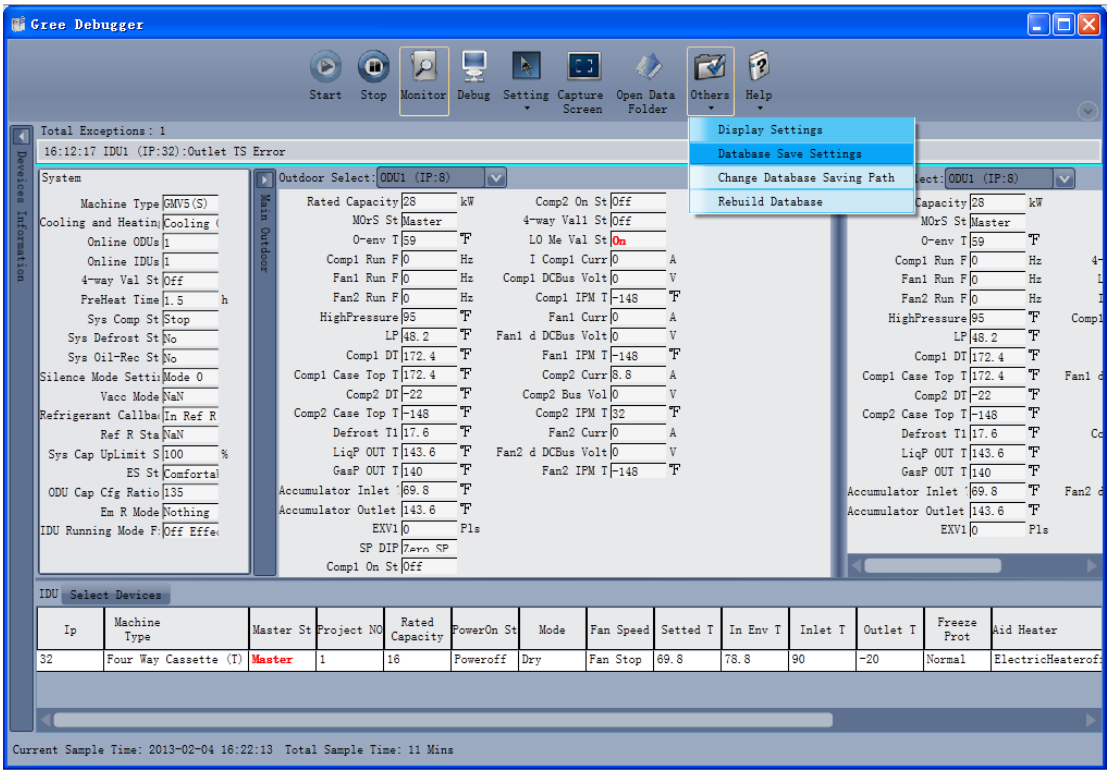
- Click icon of “Others” on the menu bar and then click “Display Settings” to select “High Low Pressure Value” and “Refrigerant Type”. Select “Temperature” and the pressure parameter displayed on the interface will be temperature. Select “Pressure” and the pressure parameter displayed on the pressure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

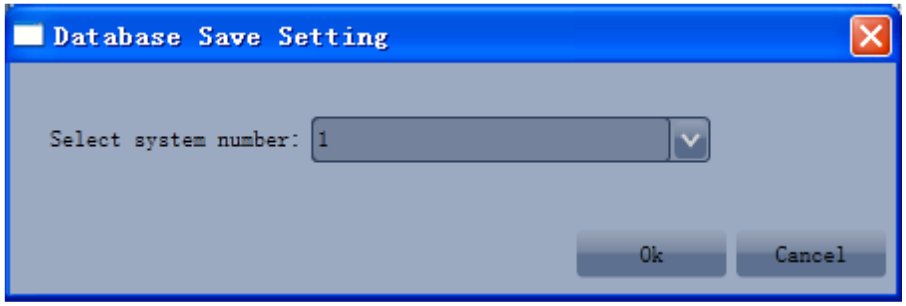




Database saving of multiple systems

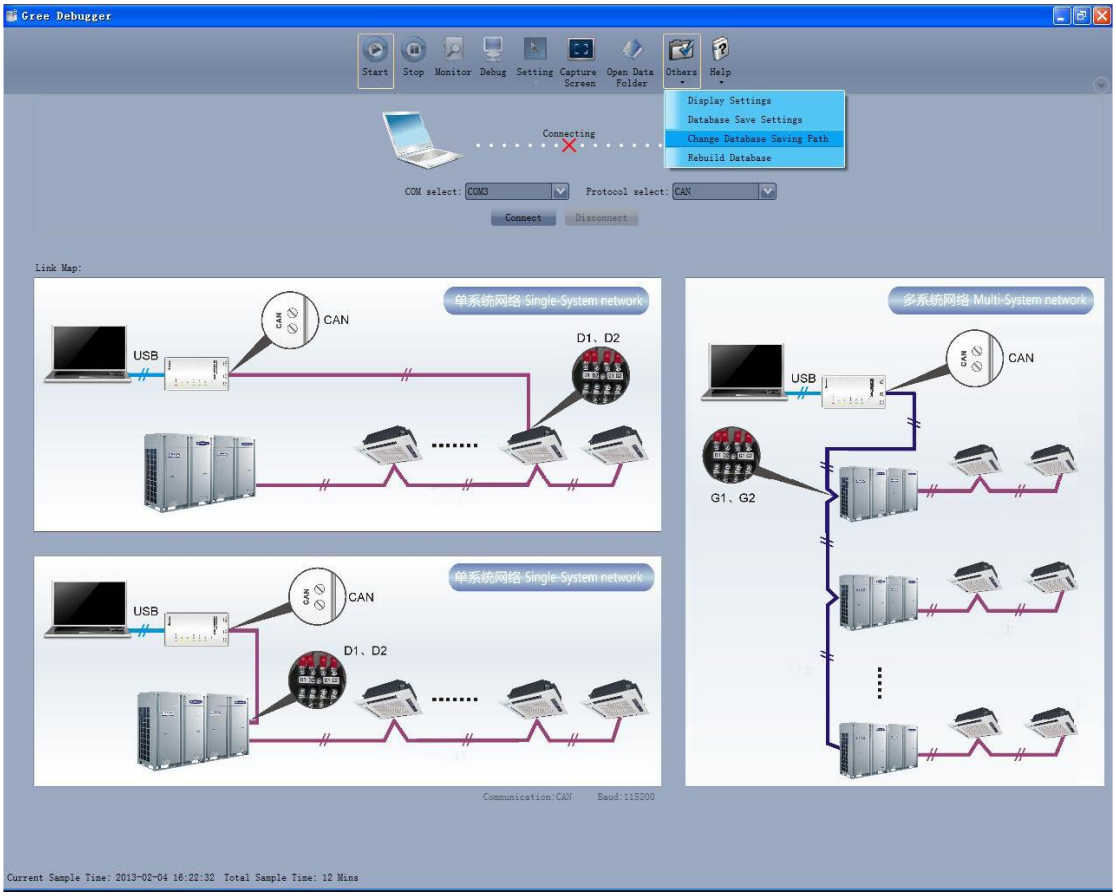
- Click icon of “Others” on the menu bar and click “Database Save Settings” to select which system that needs to save database. Because there is a large quantity of data in a network that contains multiple systems, data of only one system can be saved.

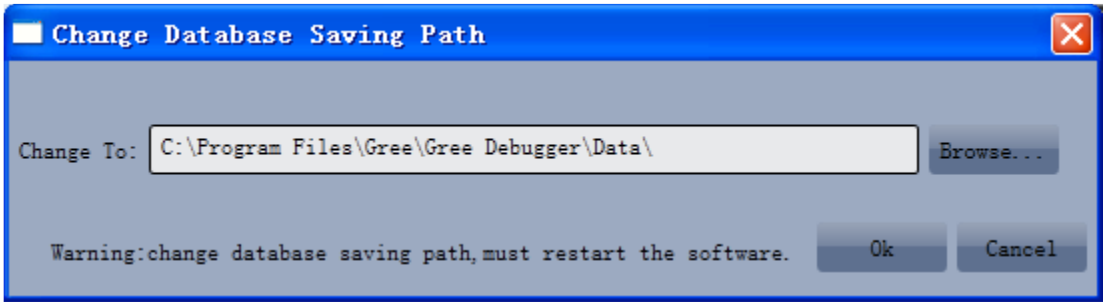


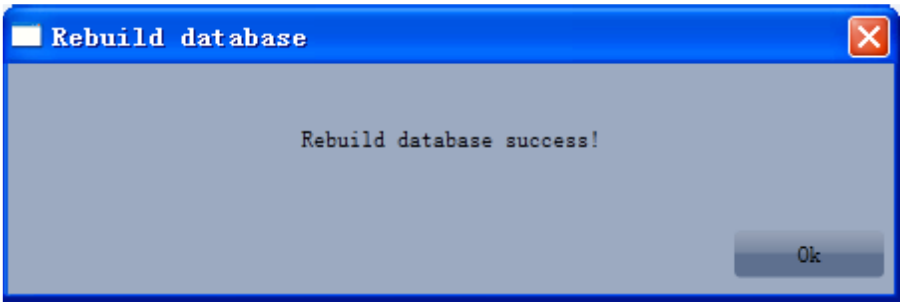


Change database saving path and rebuild database

- 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.



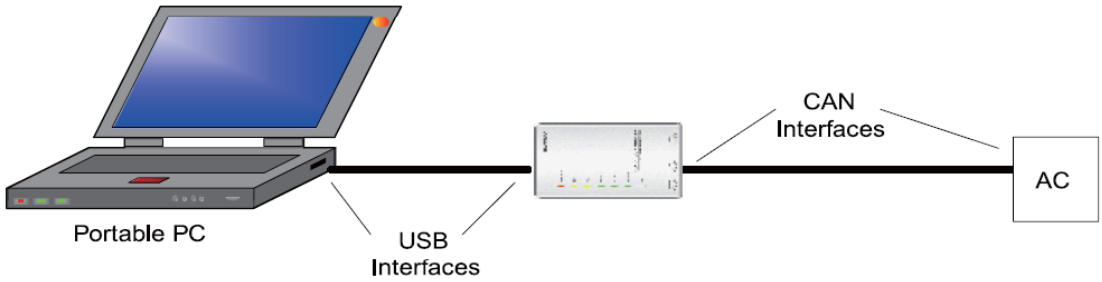




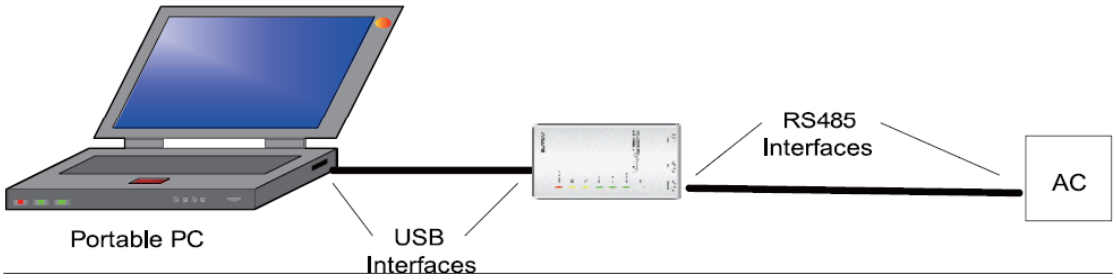
3.4.6 Usage of USB Converter

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.



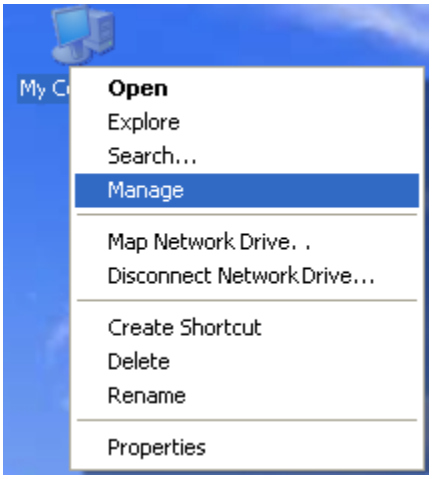
- Gree monitoring software should be connected with RS485 interface when converter is used. Connect outdoor or indoor units or the mainboard of wired controller according to actual needs.



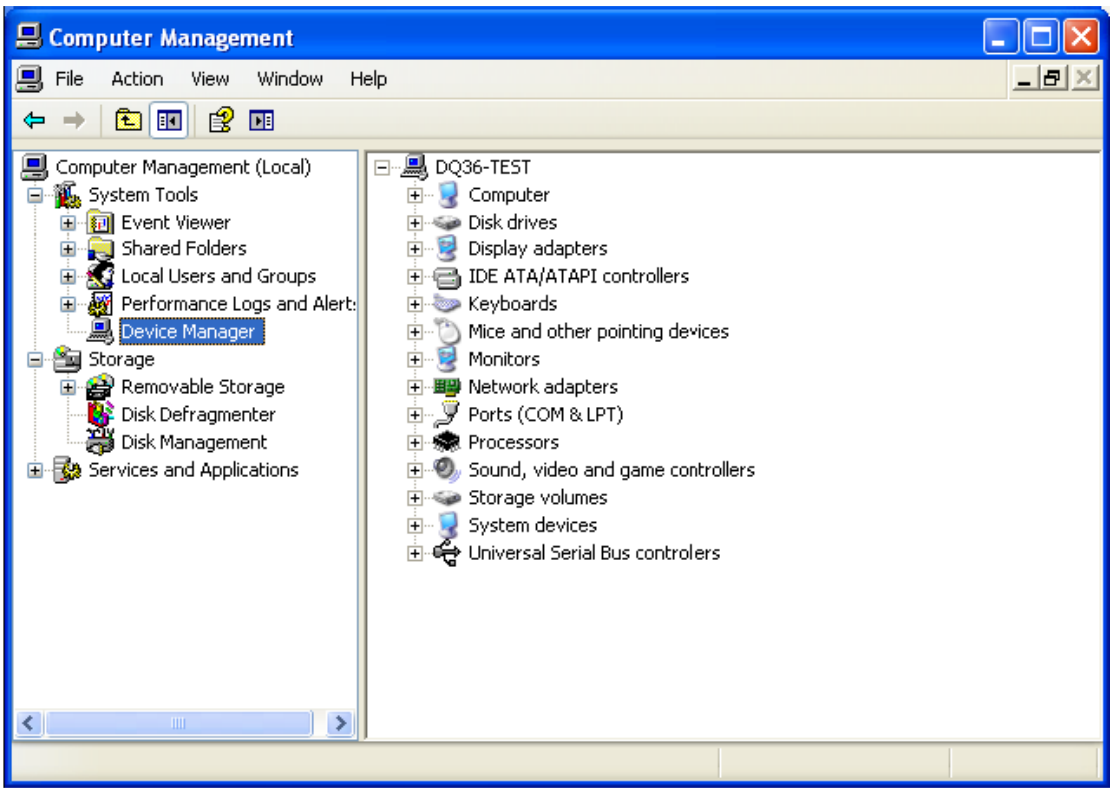
- HBS, CAN and RS485 of the converter can be switched by buttons. Press the button “SET” on the converter to realize the conversion among HBS, CAN and RS485 interfaces. You can check the setting through the function LEDs.

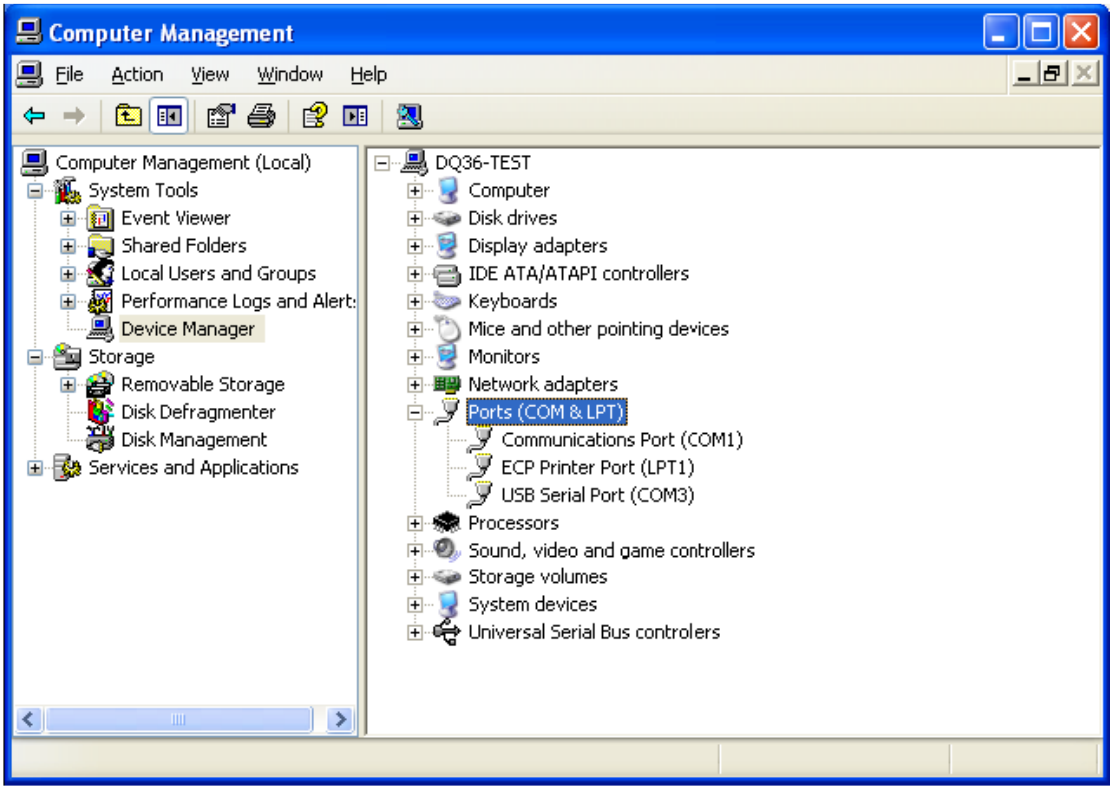
  Notice: If it’s the first time your PC uses Gree USB data converter, in order to prevent Gree USB data converter from being mistaken by your computer as other devices and make sure your mouse can work well, it is necessary to turn off the Serail Enumerator of computer after Gree USB data converter is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


Computer Management
File Action View Window Help
Computer Management (Local)
System Tools
Event Viewer
Shared Folders
Local Users and Groups
Performance Logs and Alert:
Device Manager
Storage
Removable Storage
Disk Defragmenter
Disk Management
Services and Applications
DQ36-TEST
Computer
Disk drives
Display adapters
IDE ATA/ATAPI controllers
Keyboards
Mice and other pointing devices
Monitors
Network adapters
Ports (COM & LPT)
Processors
Sound, video and game controllers
Storage volumes
System devices
Universal Serial Bus controlers


Computer Management
File Action View Window Help
Computer Management (Local)
System Tools
Event Viewer
Shared Folders
Local Users and Groups
Performance Logs and Alert:
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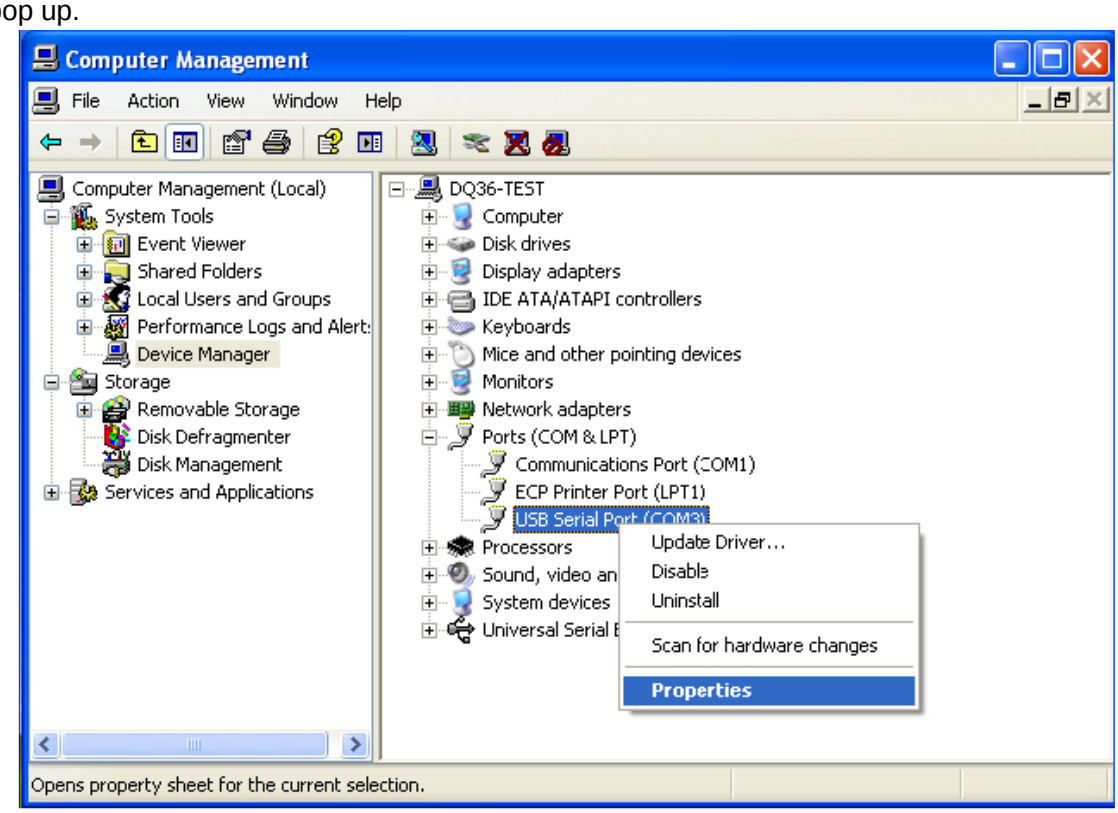
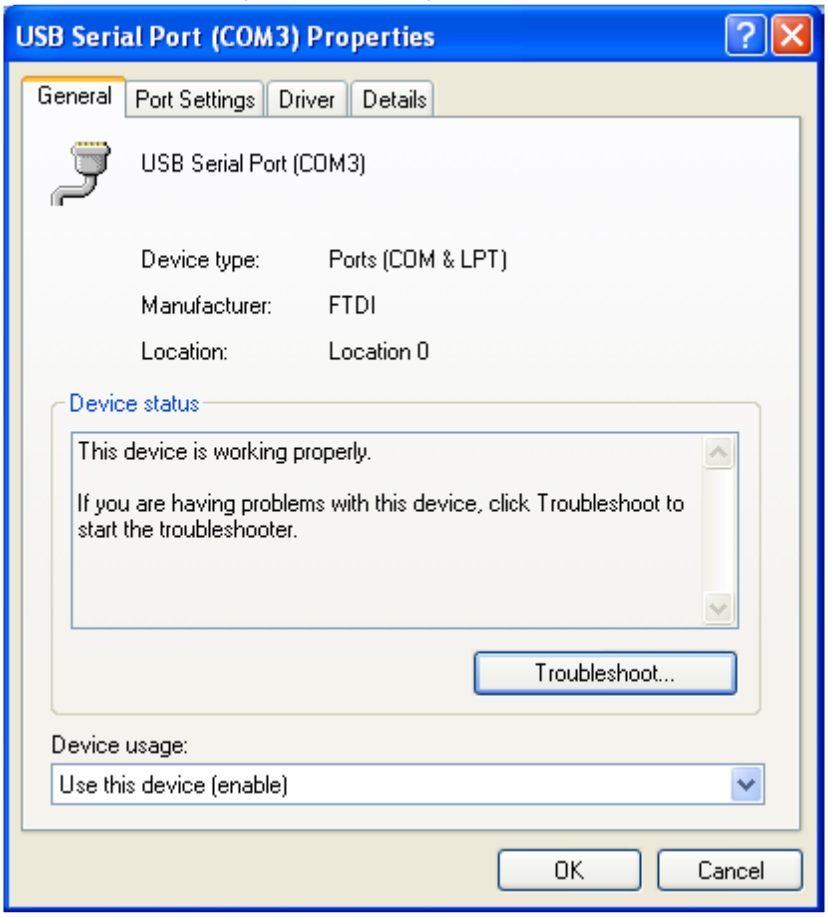
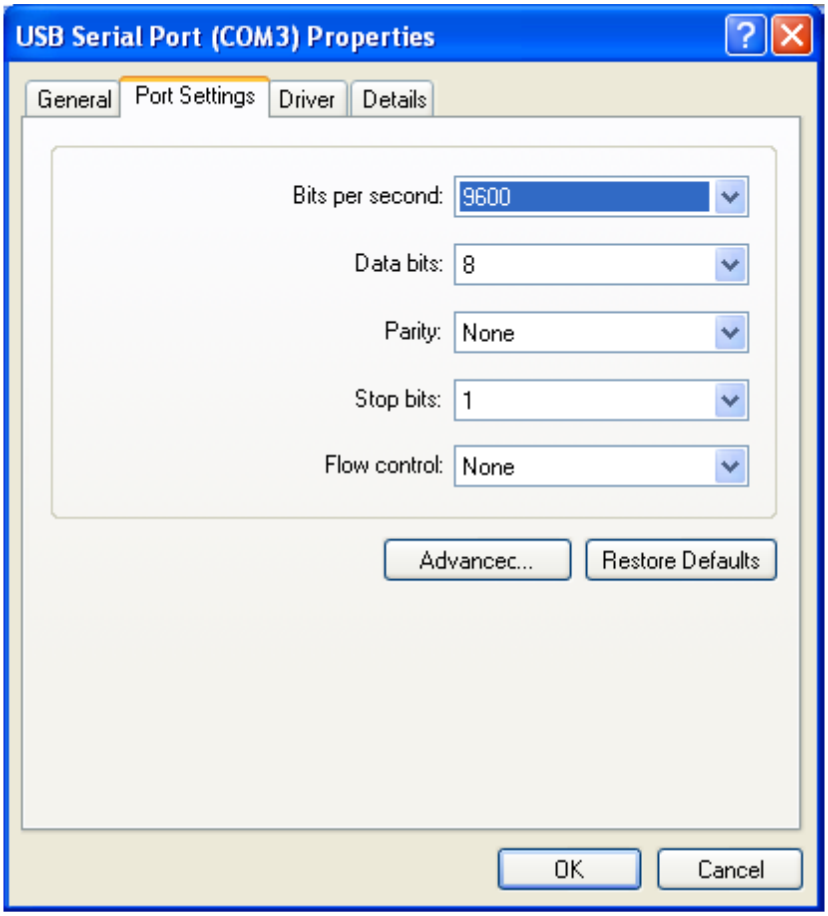
Mice and other pointing devices
Monitors
Network adapters
Ports (COM & LPT)
Communications Port (COM1)
ECP Printer Port (LPT1)
USB Serial Port (COM3)
Processors
Sound, video and game controllers
Storage volumes
System devices
Universal Serial Bus controlers

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

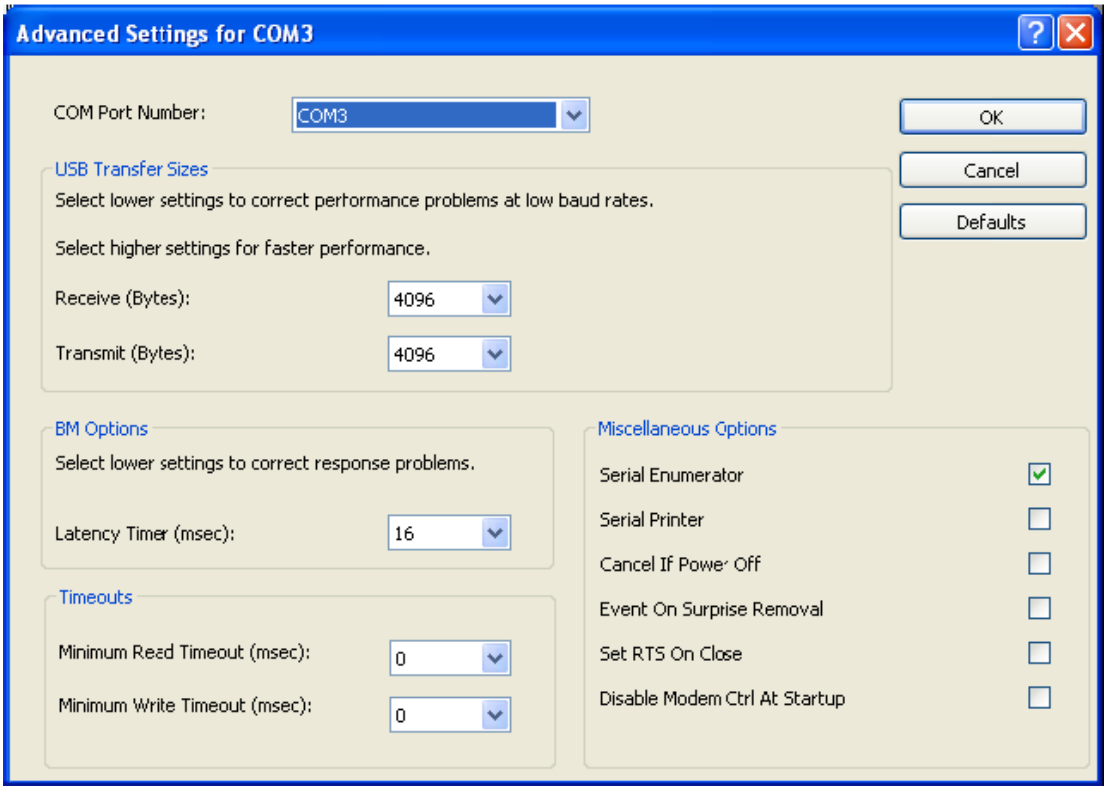


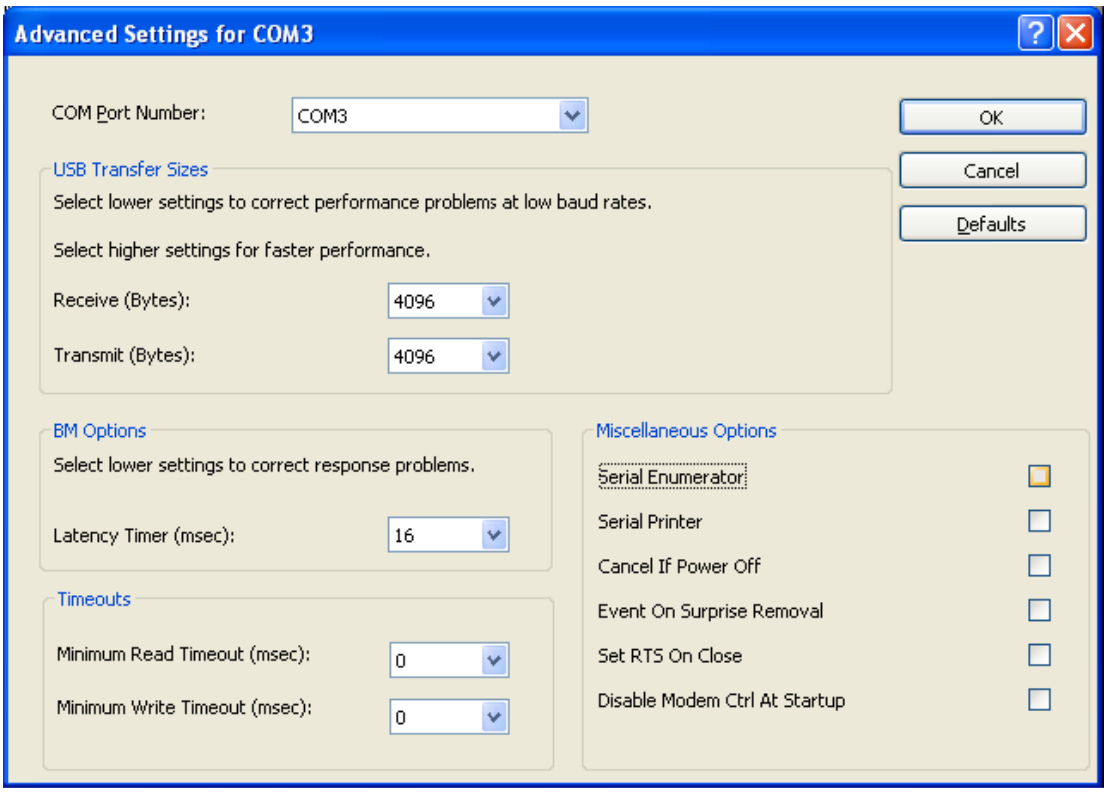
Step 5: Then click ”Port Settings” in the dialog box.





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)

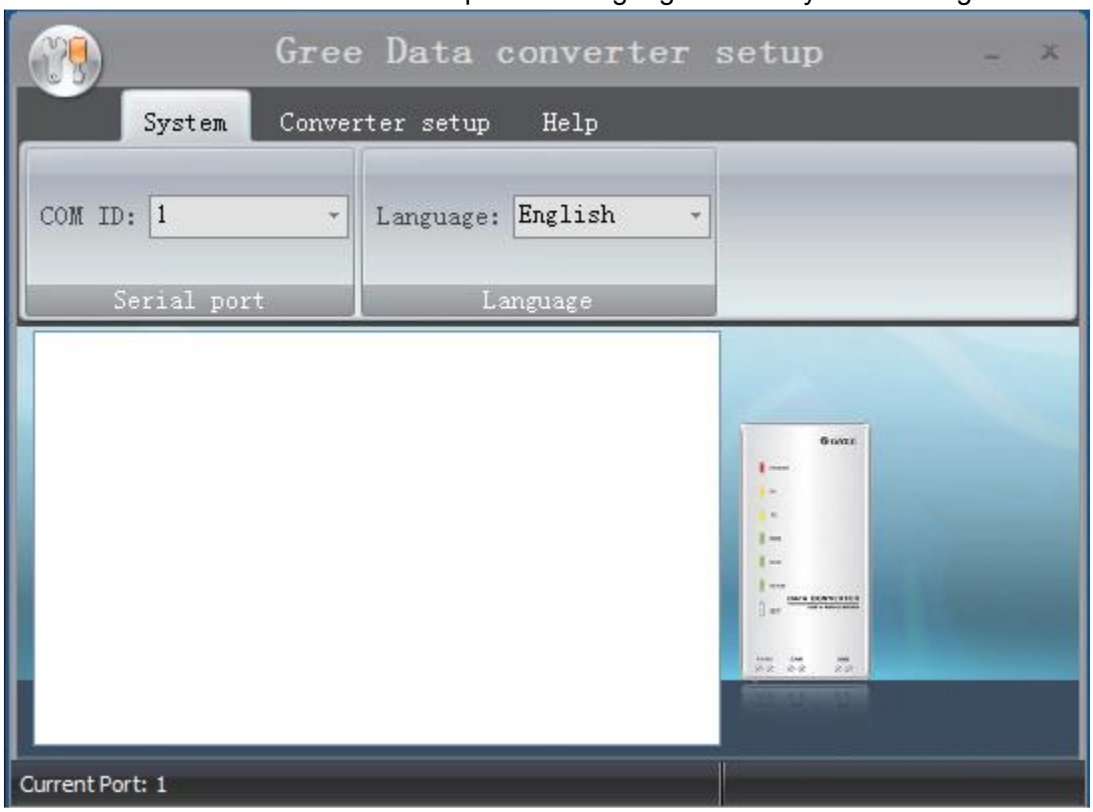
HBS interface	9600	19200	38400	57600
USB interface	4800	9600	19200	38400

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

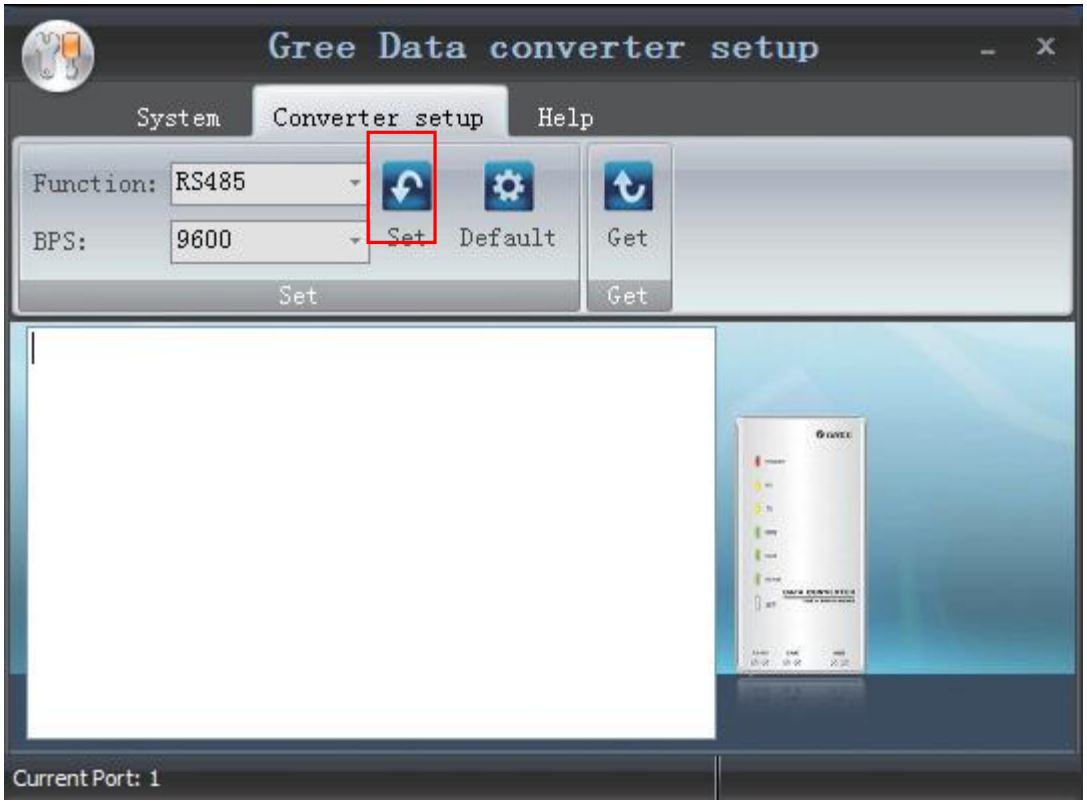
CAN interface	20000	50000	100000	125000
USB interface	115200	115200	256000	256000

- Double-click the desktop shortcut.

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

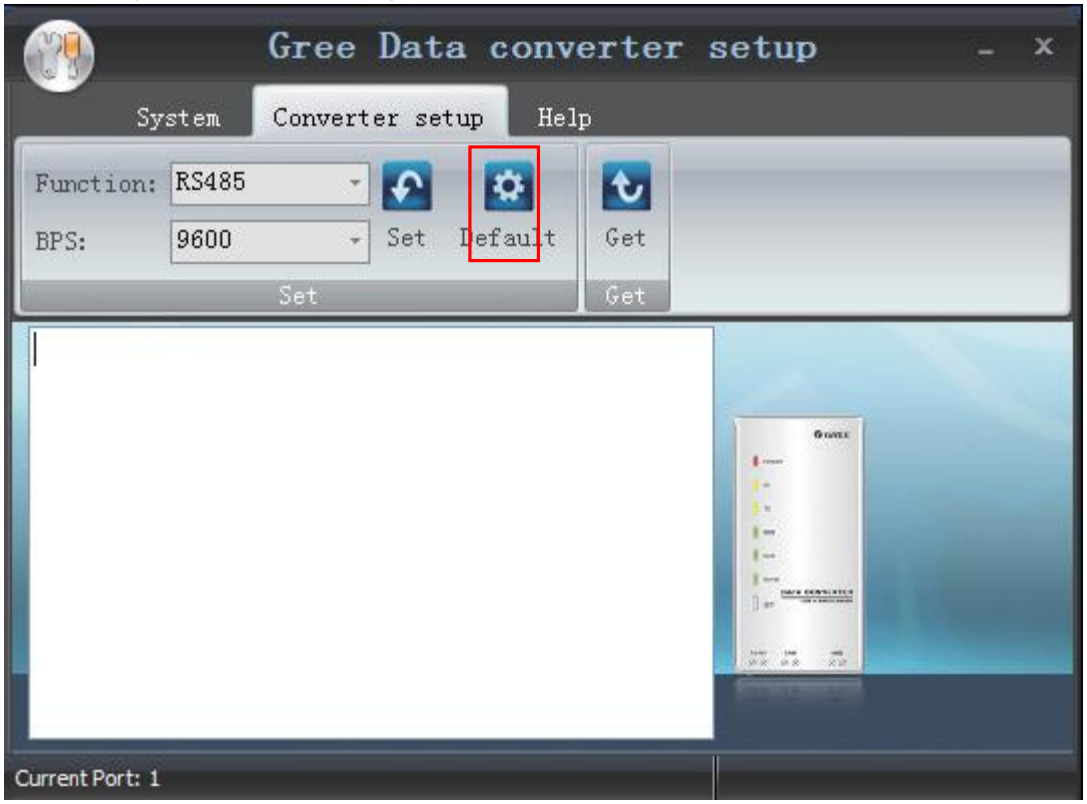


- Select the function that is to be set and the corresponding baud rate (refer to the look-up table) in the “Converter Setup”.Then click “Set”.

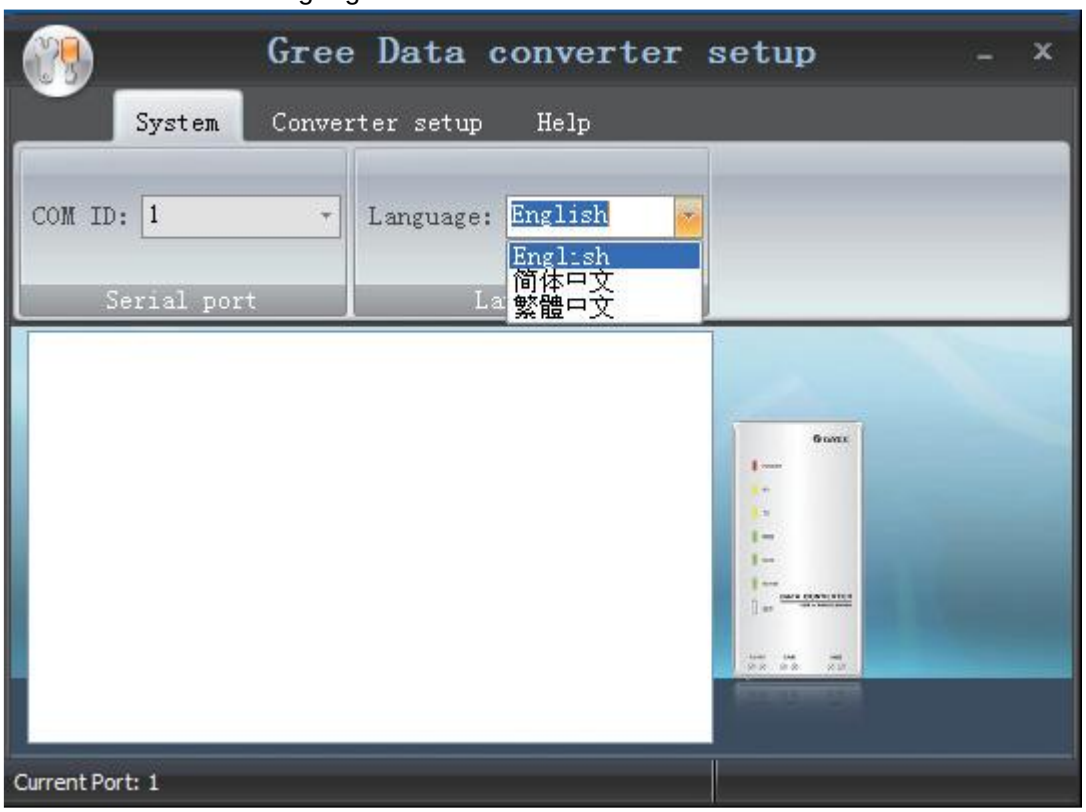


- If you want to restore ex-factory settings, click “Default” to restore the default settings.

- 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:

<table>
<tr><td colspan="4">Description of each stage of debugging progress</td></tr>
<tr><td>——</td><td colspan="2">Debugging Code</td><td rowspan="3">Instruction for Code and Operating Method</td></tr>
<tr><td rowspan="2">Progress</td><td colspan="2">LED</td></tr>
<tr><td>Display Code</td><td>Display Code</td></tr>
<tr><td rowspan="3">01_ Set master unit</td><td>01/CC</td><td>Display repeatedly</td><td>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.</td></tr>
<tr><td>01/CF</td><td>Display repeatedly</td><td>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.</td></tr>
<tr><td>01/OF</td><td>Display repeatedly</td><td>There is only one master unit in the system. The unit will automatically enter into the next step after display for once.</td></tr>
<tr><td rowspan="3">02_ Allocate addresses</td><td>02</td><td>Flicker</td><td>The system is allocating addresses. It will display asbelow after 10 seconds:</td></tr>
<tr><td>02/L7</td><td>Display repeatedly</td><td>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.</td></tr>
<tr><td>02/OC</td><td>Display repeatedly</td><td>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.</td></tr>
<tr><td rowspan="2">03_ Confirm the quantity of ODU</td><td>03/QTY of module</td><td>Display repeatedly</td><td>Confirmation of quantity of modules in the system. If the actual quantity of ODU is inconformity with the displayed quantity, please check the dial code and wire connection and then conduct debugging for confirmation.</td></tr>
<tr><td>03/OC</td><td>Display repeatedly</td><td>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.</td></tr>
<tr><td rowspan="2">04_ Confirm the quantity of IDU</td><td>04/Cb</td><td>Display repeatedly</td><td>It is not allowed to connect more than one indoor unit in the system. Please check and debug again to confirm.</td></tr>
<tr><td>04/oC</td><td>Display repeatedly</td><td>The quantity of IDU in the system has been confirmed.It will enter into the next step.</td></tr>
</table>

Description of each stage of debugging progress			
——	Debugging Code		Instruction for Code and Operating Method
Progress	LED		
	Display Code	Display Code	
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 continous 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 erroe 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.

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 IDUs and 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	1. If the wire diameter is enlarged to 2×1 mm^2 (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;

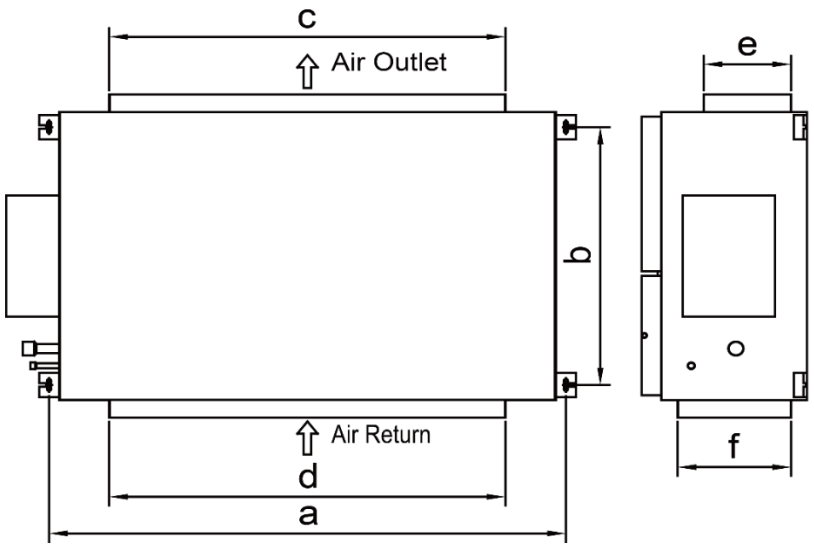
b. U-steel: 14# or above;

c. Angle steel: 30mm×30mm×3mm or above;

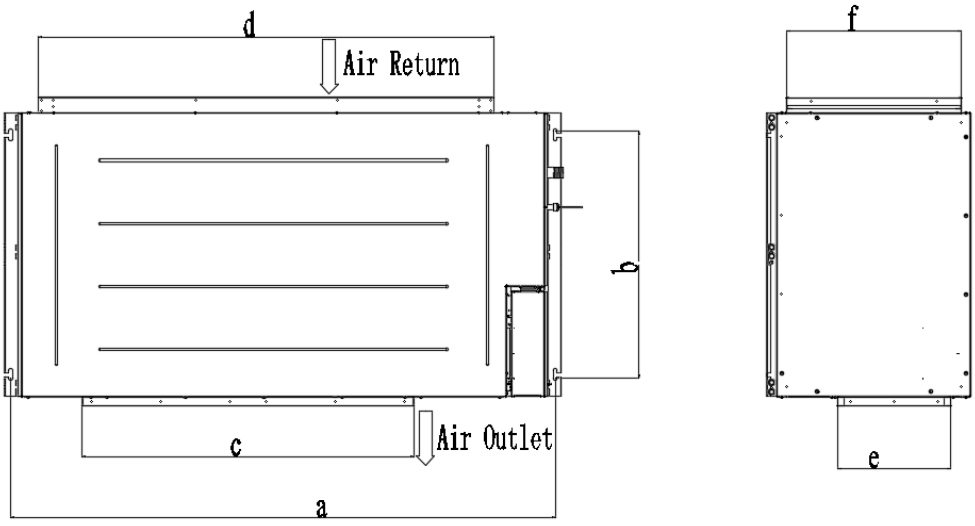
d. Round steel: Φ10mm or above

3 Installation of Indoor Unit

3.1 Outline and installation dimension



a. 20KW、25KW 、30KW



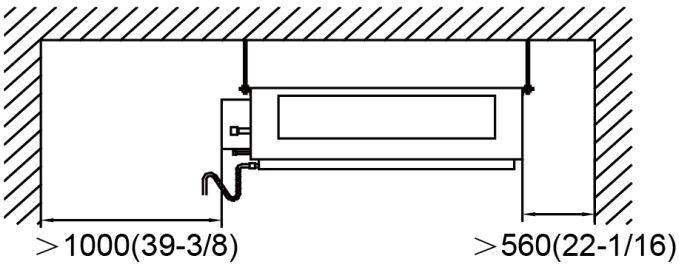
b. 40kW

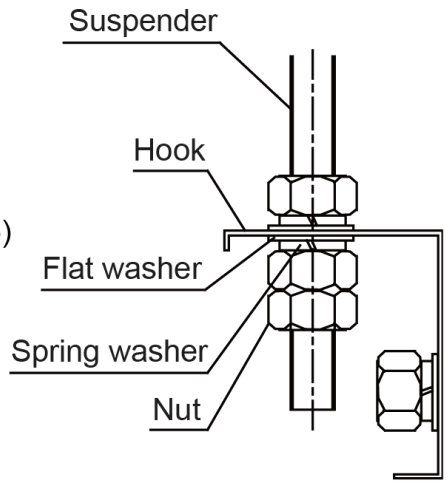
Below are dimensions of A, B, C, etc. for different models:

Unit: mm

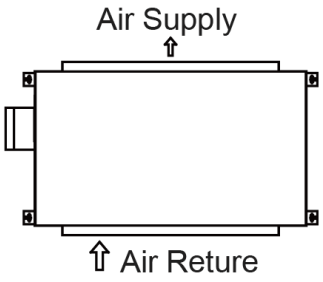
Model	a	b	c	d	e	f
FGR20Pd/DNa-X(I)	1334	632	990	1150	192	363
FGR25Pd/DNa-X(I)	1541	705	980	1350	270	420
FGR30Pd/DNa-X(I)	1541	705	980	1350	270	420
FGR40Pd/D(2)Na-X(I)	1730	760	1054	1450	360	560

3.2 Installation space





Installation of suspender



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.

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 40º 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;

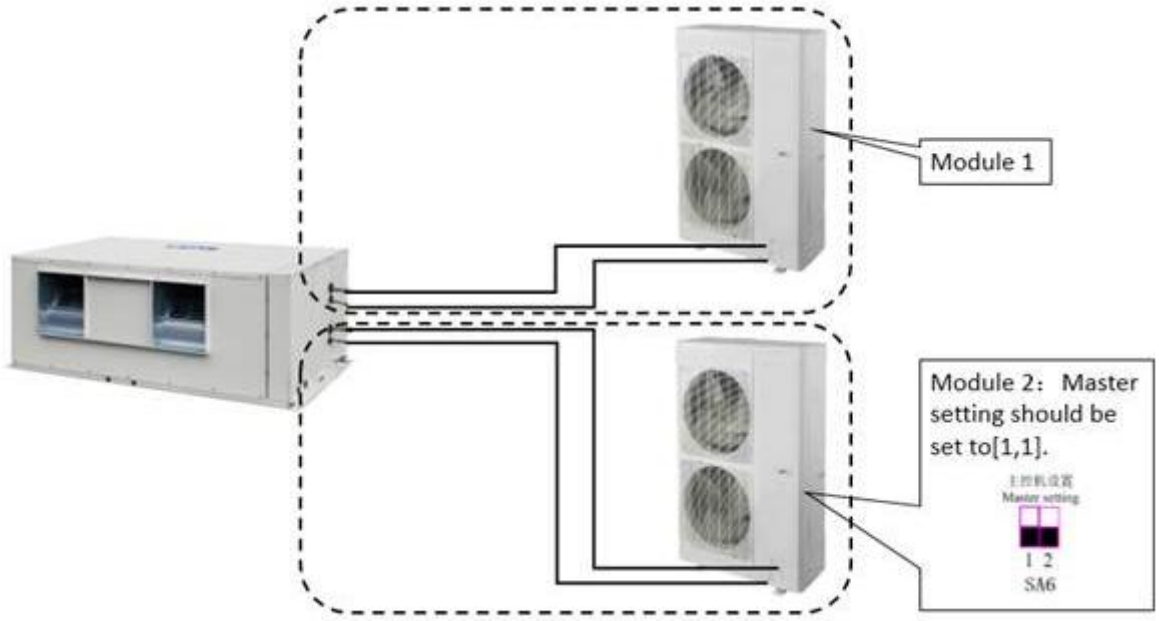
●The installation of outdoor unit shall adopt rubber damping pad or spring damper to reduce noise and vibration;

●The installation dimension shall accord with the installation requirement of this manual and the outdoor unit must be fixed at the installation site;

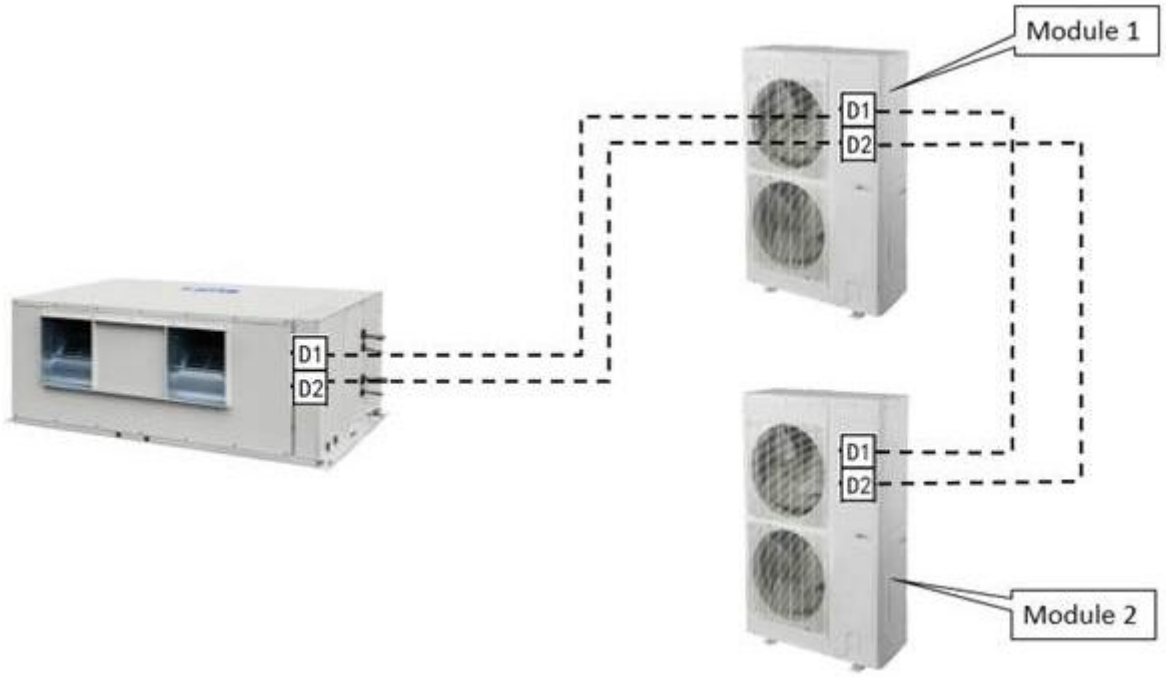
●The installation shall be done by professional technicians.

●For the FGR40Pd/D(2)Na-X,there are two outdoor units,Module 1 is the master controller. It must be installed like this:

a.The diagram of connection pipe and Master control setting.



b. The connection method of communication wires.



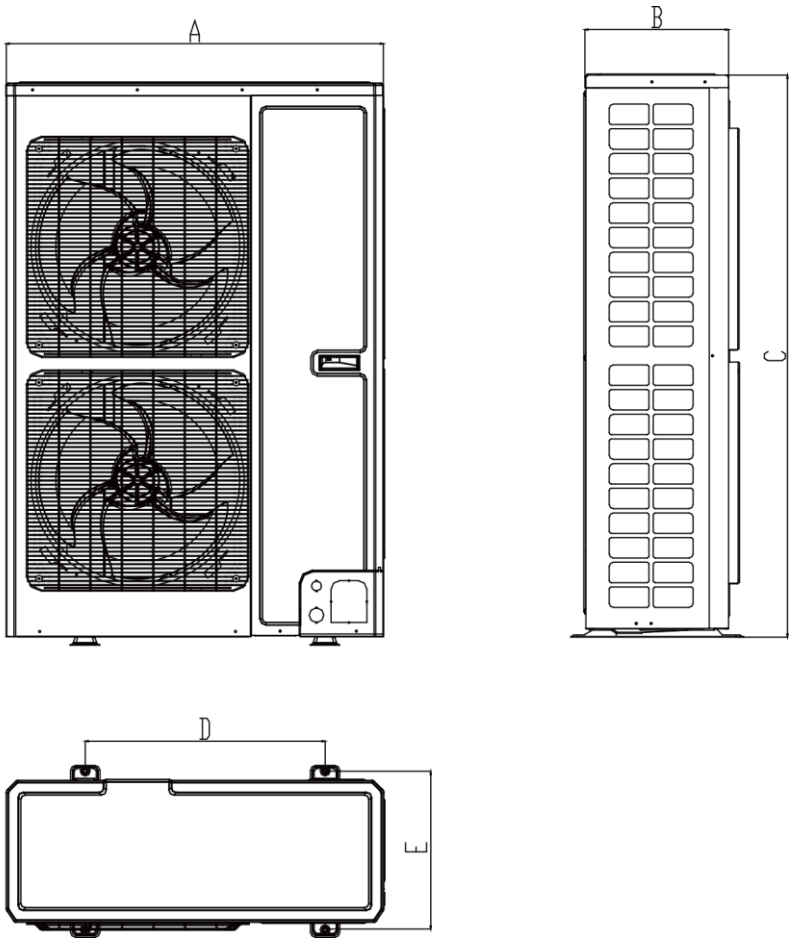
4.5 Fixing and damping of unit

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 40º during hanging and moving.

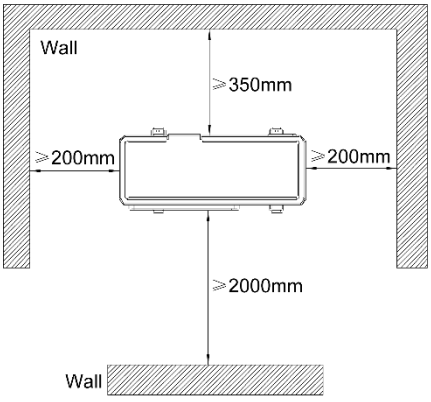


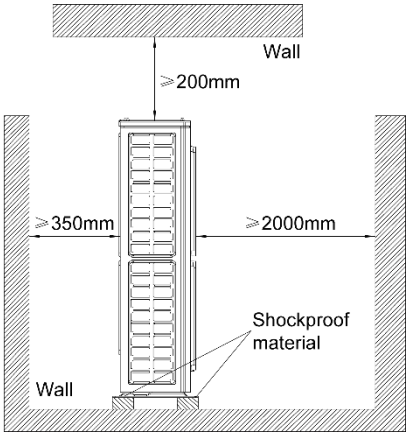
Unit: mm

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

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:





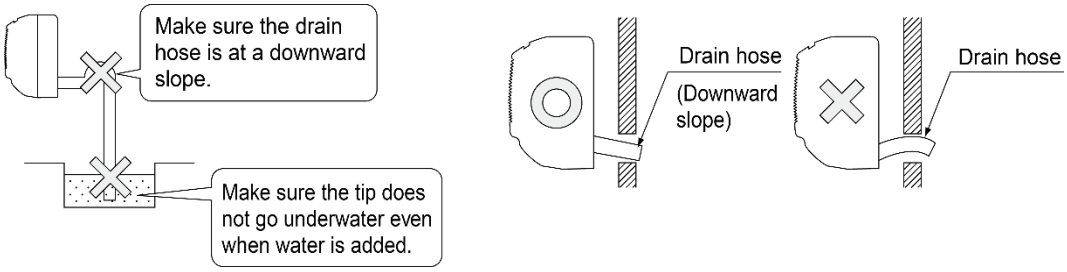
5 Installation of drain pipe

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

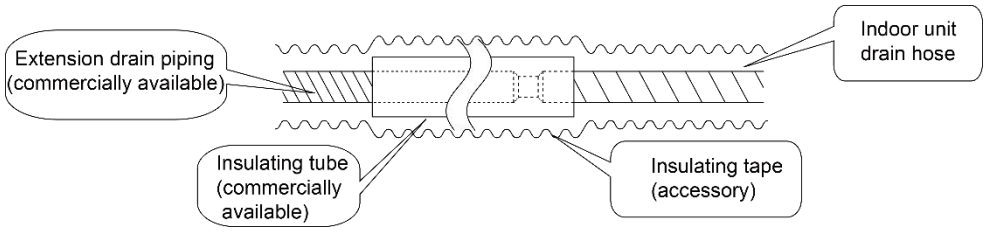
air may not remain trapped inside the pipe.

For example:

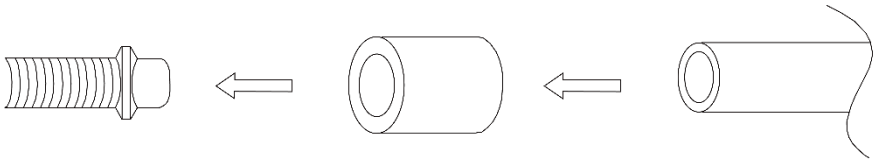


◆Keep pipe size equal to or greater than that of the connecting pipe.

◆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 connectedto the indoor unitCommercially availablehard vinyl chloride pipejoint (nominal diameter 13mm)Commercially availablehard vinyl chloride pipe(nominal diameter 13mm)

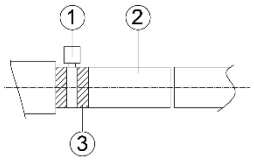
◆Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.

5.2 Installing the Drain Pipes

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

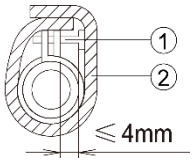
◆Tighten the clamp until the screw head is less then 4 mm from the hose.

①. Metal clamp (accessory)
②. Drain hose (accessory)
③. Grey tape (accessory)

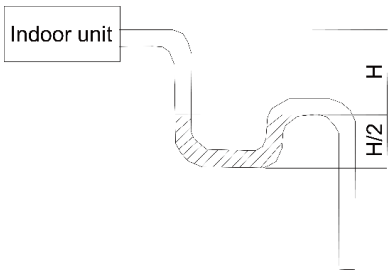


◆Insulate the pipe clamp and the drain hose using heat insulation sponge.

①. Metal clamp (accessory)
② Insulation sponge (accessory)



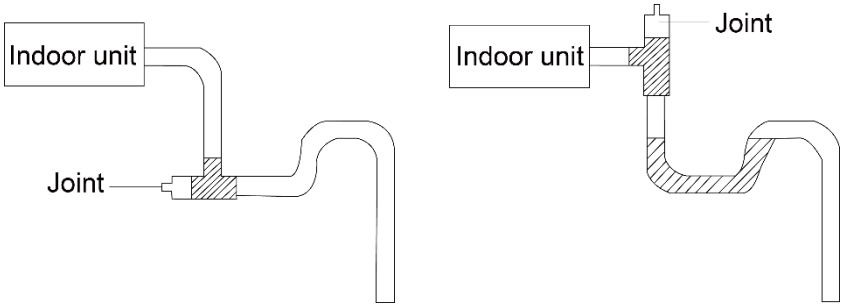
◆If the air flow of indoor unit is high, this might cause negative pressure and result in return suction of outdoor air. Therefore, U-type water trap shall be designed on the drainage side of each indoor unit.



◆ Install water trap as shown below

◆ Install one water trap for each unit

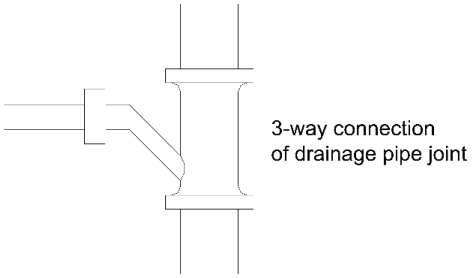
◆Installation of water trap shall consider easy cleaning in the future.



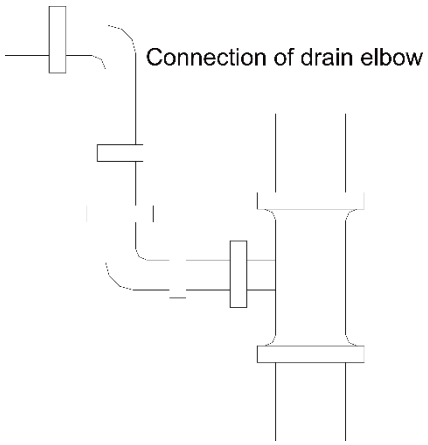
◆Connection of drainage branch pipe to the standpipe or horizontal pipe of drainage main pipe

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

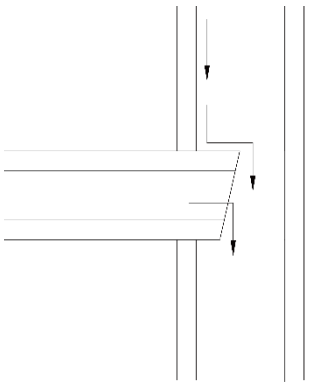
N01:3-way connection of drainage pipe joint



NO2: Connection of drain elbow

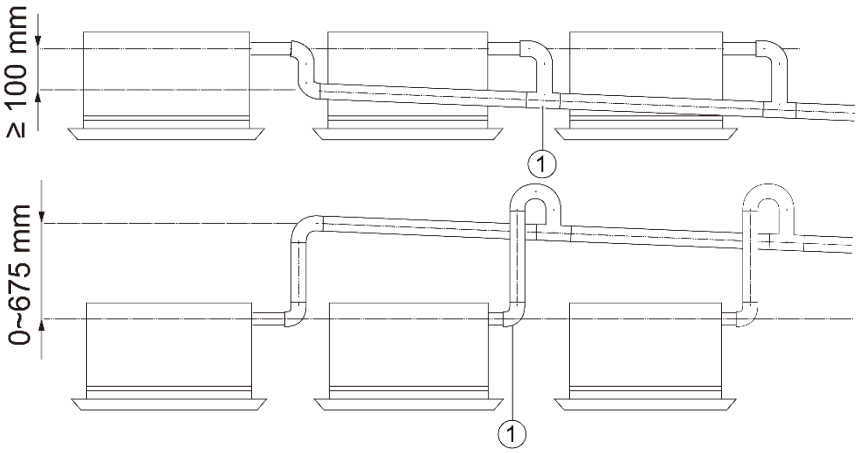


NO3: Connection of horizontal pipe



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)

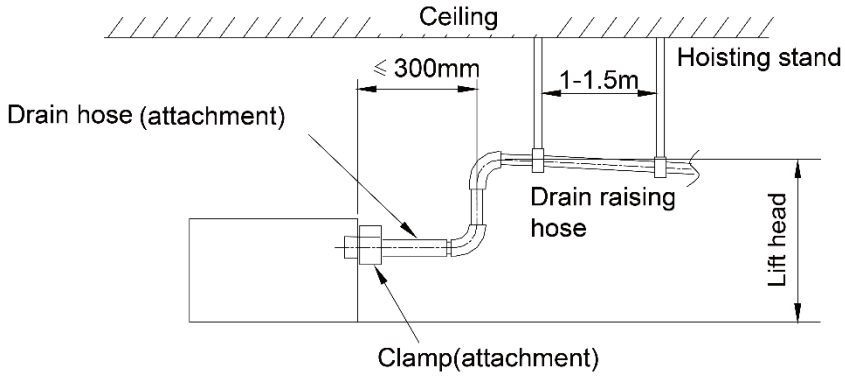


5.3 Precautions when doing riser piping work

◆Make sure that heat insulation work is executed on the following 2 spots to prevent any possible water leakage due to dew condensation.

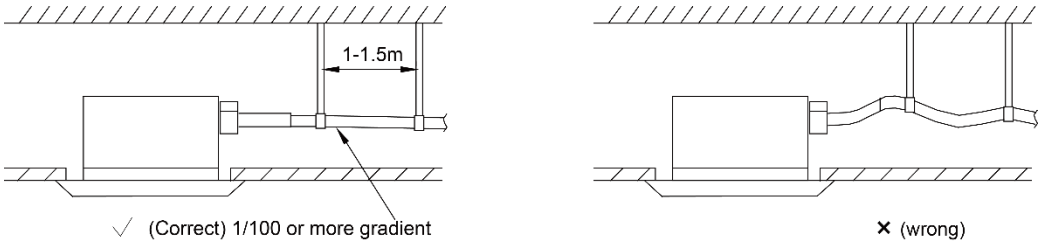
a) Connect the drain hose to the drain raiser pipe, and insulate them.

b) Connect the drain hose to the drain outlet on the indoor unit, and tighten it with the clamp.

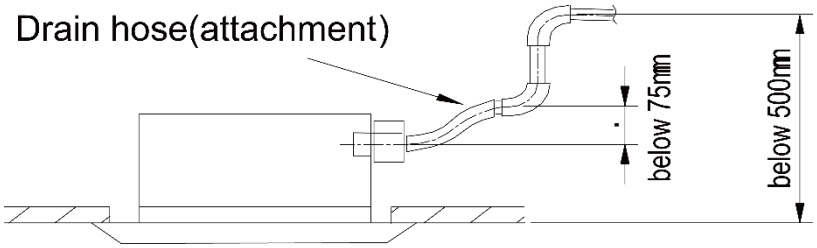


◆Stand the raiser piping horizontally, and make sure it is not further than 300 mm from the base of the drain outlet.

◆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.

MAINTENANCE

1 Troubleshooting

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 exhause temperature sensor
L6	Mode shock	d4	Malfunction of entry tube temperature sensor	dE	Malfunction of indoor $C0_2$ 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				

Display code	Content	Display code	Content	Display code	Content
E0	Malfunction of outdoor unit	E1	High pressure protection	E2	Low-temperature protection for dicharge
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	Maflunction of defrosting temperature sensor 1
b3	Maflunction 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

Display code	Content	Display code	Content	Display code	Content
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 oudoor unit is succeeded	UL	Wrong code-dialing during emergency operation
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 quanity of outdoor unit	C8	Emergency status of compressor	C9	Emergency status of fan
CA	Energycy 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 syste
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 opereation	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 ouput capacity	n6	Engineering series number inqury 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				

2 After-sales Emergency Masures

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.

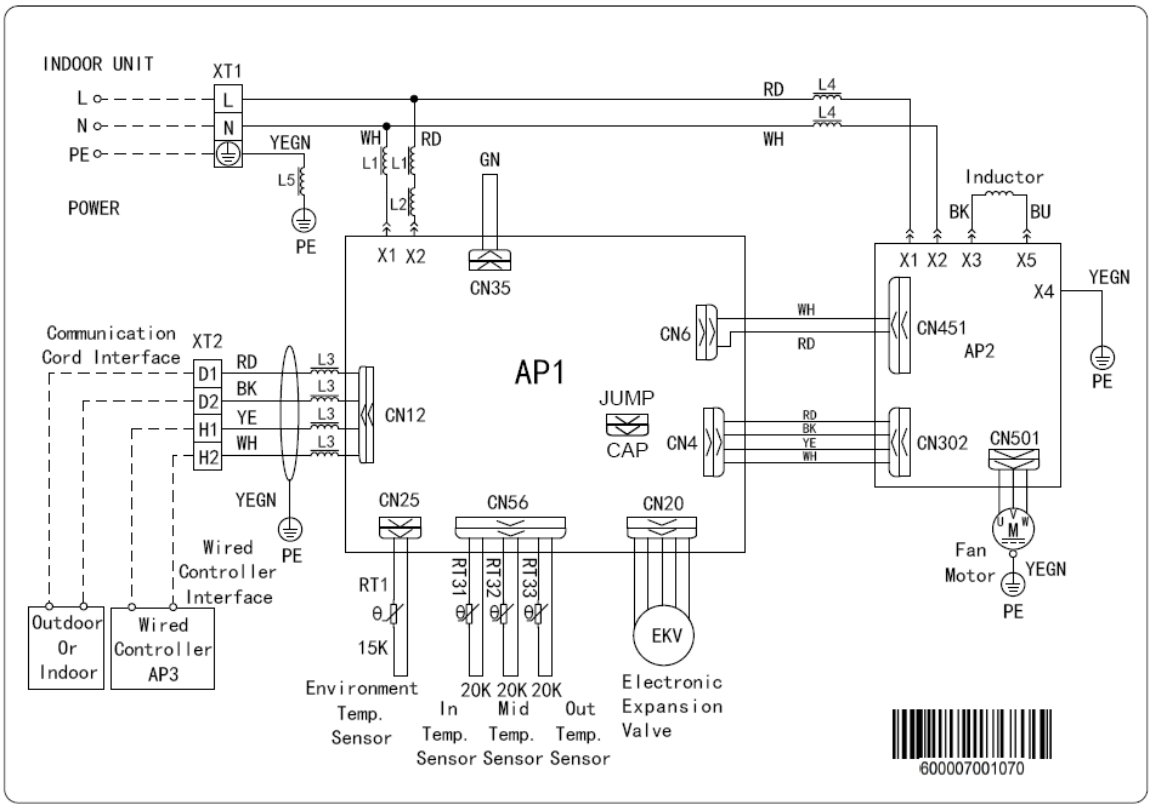
Step 5: readjust the address and quantity settings on the main board of the modules except the faulted one.

Step 6: power and restart the unit.

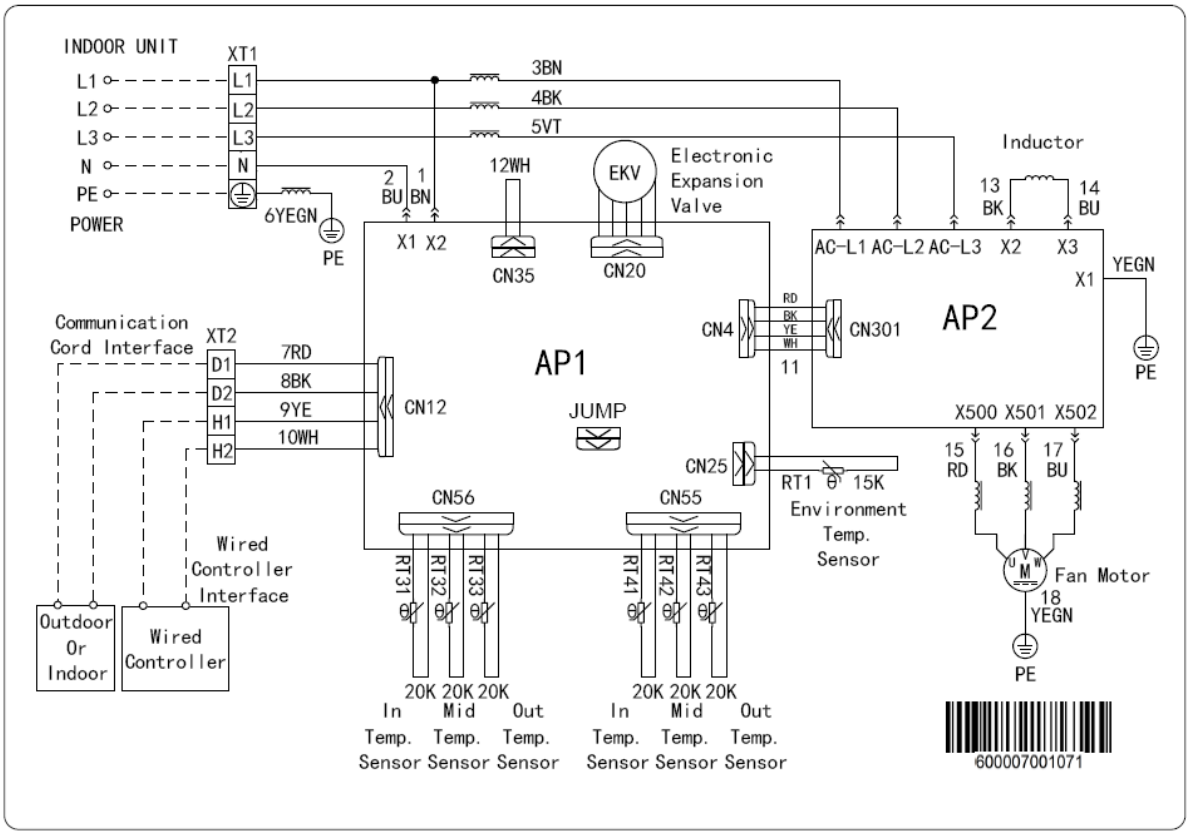
3 Wiring Diagram

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

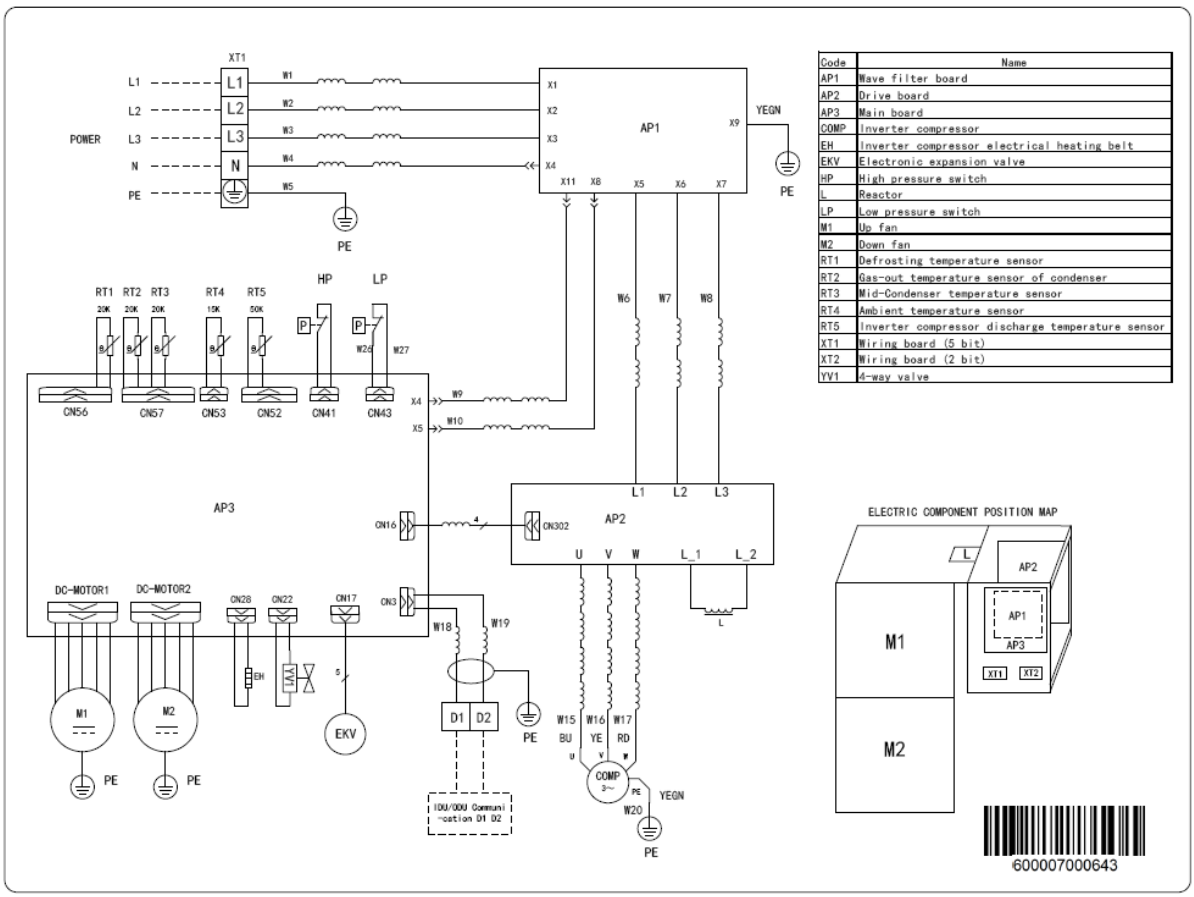
FGR20Pd/DNa-X(I)/FGR25Pd/DNa-X(I)/FGR30Pd/DNa-X(I)：



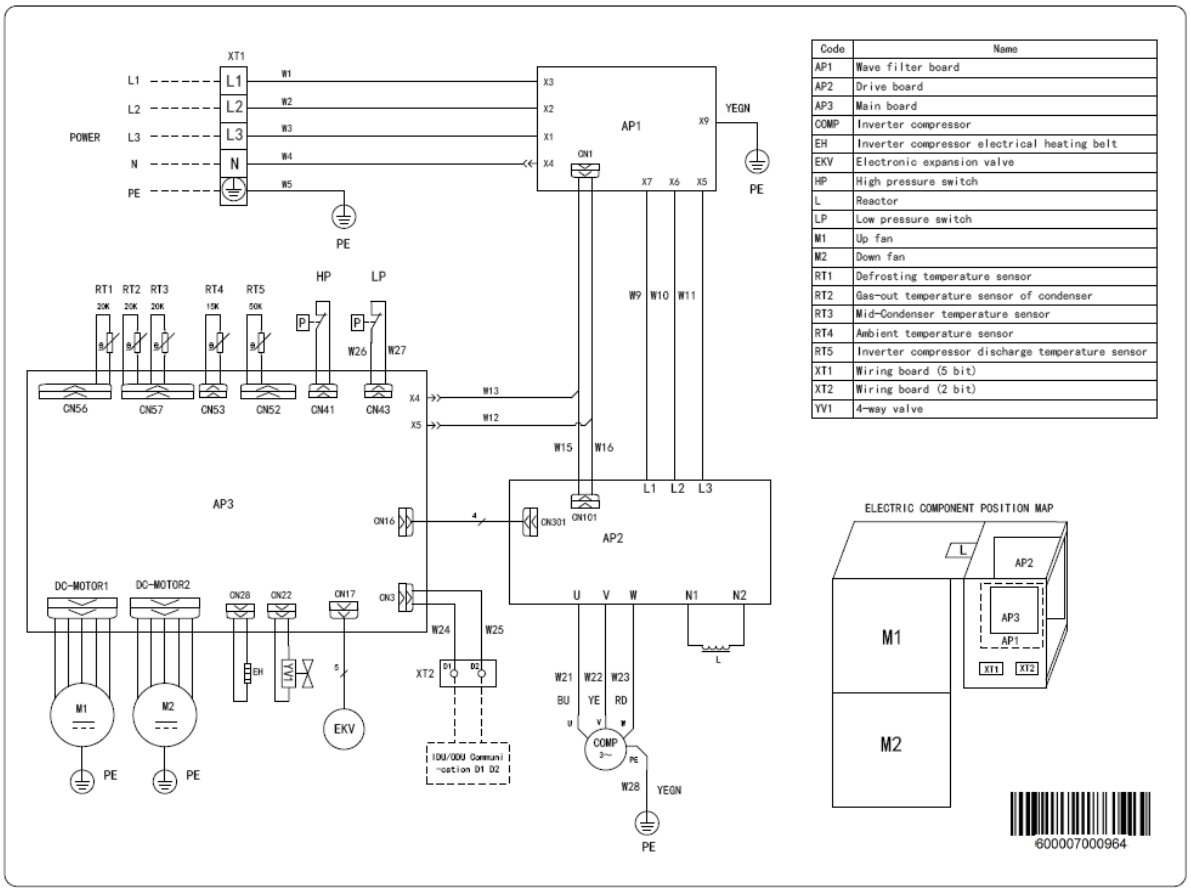
FGR40Pd/D(2)Na-X(I)：



FGR20Pd/DNa-X(O)：

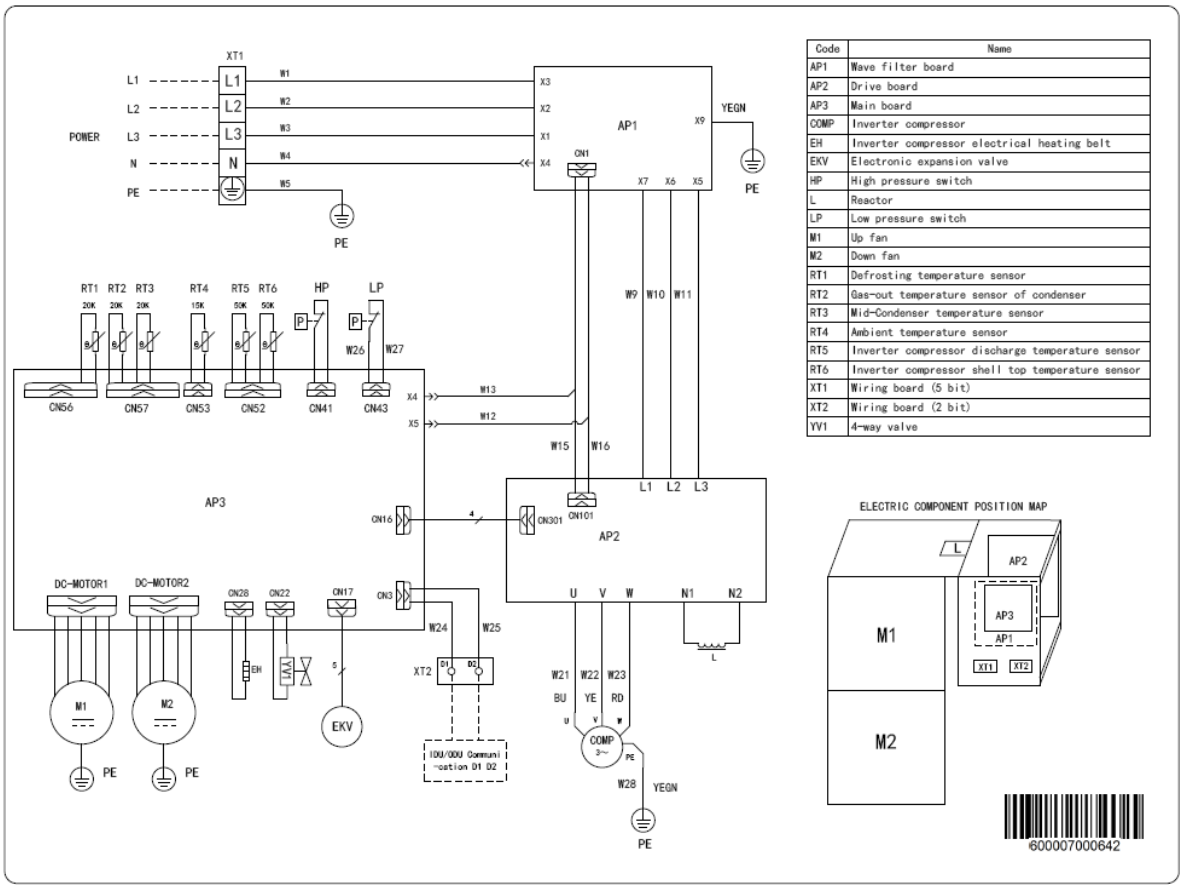


FGR25Pd/DNa-X(O)：



Code	Name
AP1	Wave filter board
AP2	Drive board
AP3	Main board
COMP	Inverter compressor
EH	Inverter compressor electrical heating belt
EKV	Electronic expansion valve
HP	High pressure switch
L	Reactor
LP	Low pressure switch
M1	Up fan
M2	Down fan
RT1	Defrosting temperature sensor
RT2	Gas-out temperature sensor of condenser
RT3	Mid-Condenser temperature sensor
RT4	Ambient temperature sensor
RT5	Inverter compressor discharge temperature sensor
XT1	Wiring board (5 bit)
XT2	Wiring board (2 bit)
YV1	4-way valve

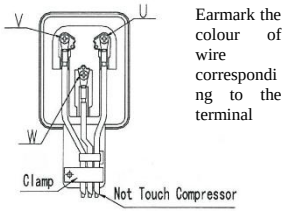
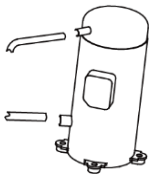
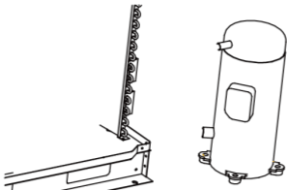
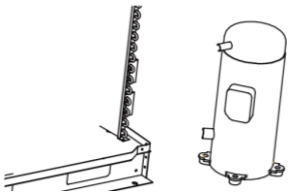
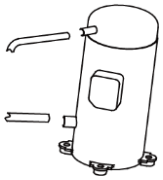
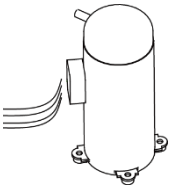
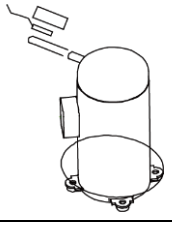
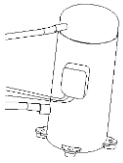
FGR30Pd/DNa-X(O)：



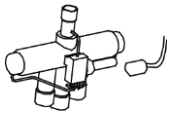
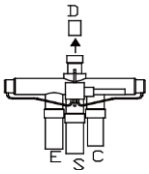
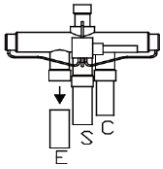
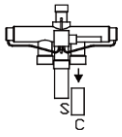
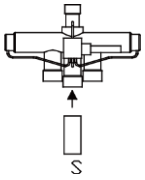
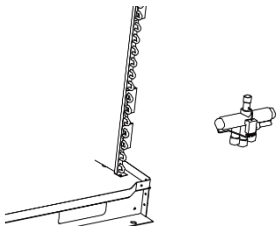
Code	Name
AP1	Wave filter board
AP2	Drive board
AP3	Main board
COMP	Inverter compressor
EH	Inverter compressor electrical heating belt
EKV	Electronic expansion valve
HP	High pressure switch
L	Reactor
LP	Low pressure switch
M1	Up fan
M2	Down fan
RT1	Defrosting temperature sensor
RT2	Gas-out temperature sensor of condenser
RT3	Mid-Condenser temperature sensor
RT4	Ambient temperature sensor
RT5	Inverter compressor discharge temperature sensor
RT6	Inverter compressor shell top temperature sensor
XT1	Wiring board (5 bit)
XT2	Wiring board (2 bit)
YV1	4-way valve

4 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	 Earmark the colour of wire corresponding to the terminal	①Unscrew the retaining screw of power cord with screwdriver. ②Unplug 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		①Unscrew retaining nuts of the footing of compressor ②Remove the compressor from the chassis Hold it tightly to avoid accident.
4.Fix the new compressor on chassis		①Place the new compressor on chassis ②Fix retaining nuts of comprssor 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

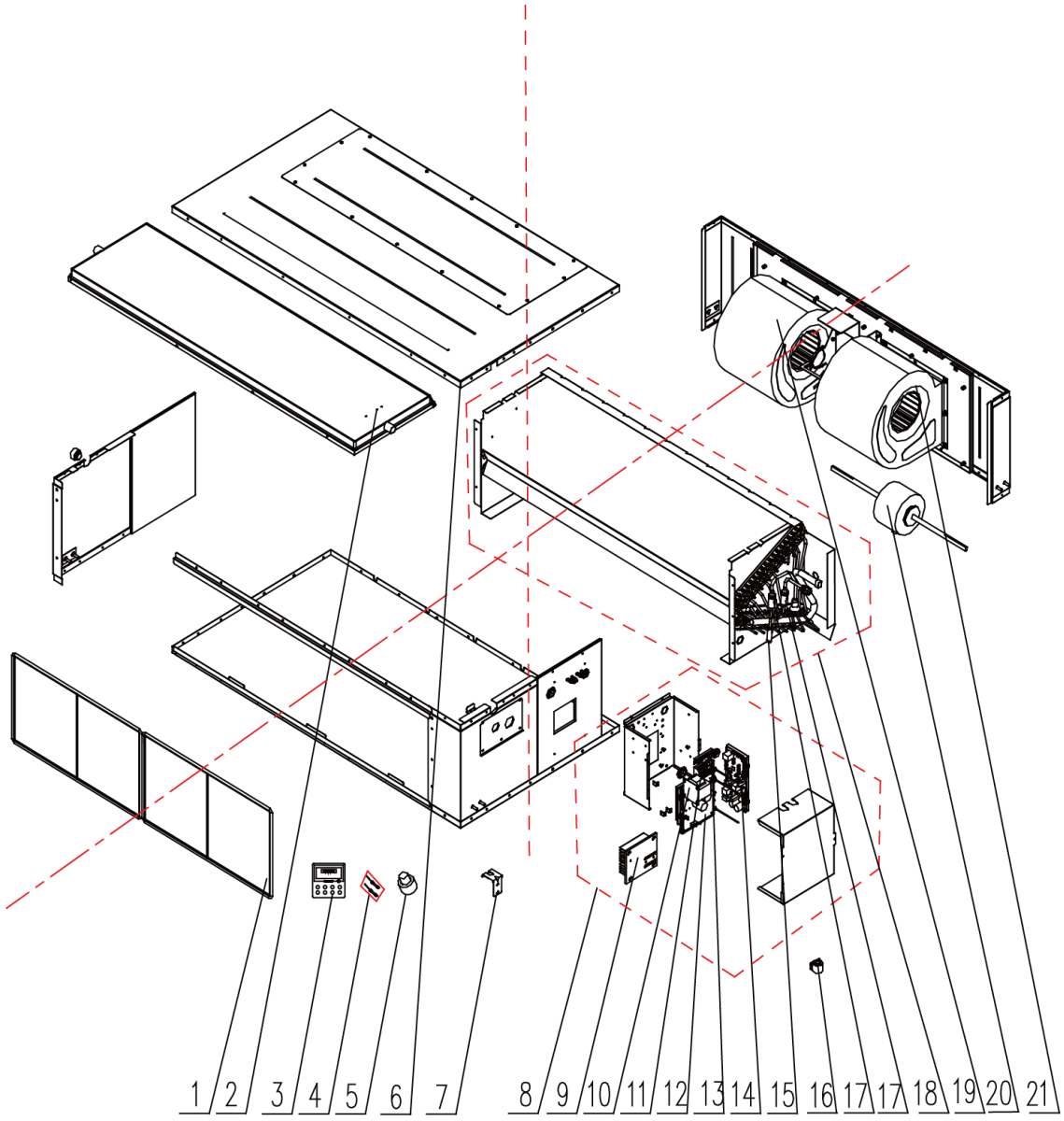
Remark: Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of 4-way valve.		
Step	Illustration	Handling Instruction
Remove electric coils of 4- way valve		Place electric coils far away from the 4-way valve to prevent the connecting line of 4-way valve 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-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.		

5 Exploded Views And Part List

5.1 Indoor Unit

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

Exploded View:

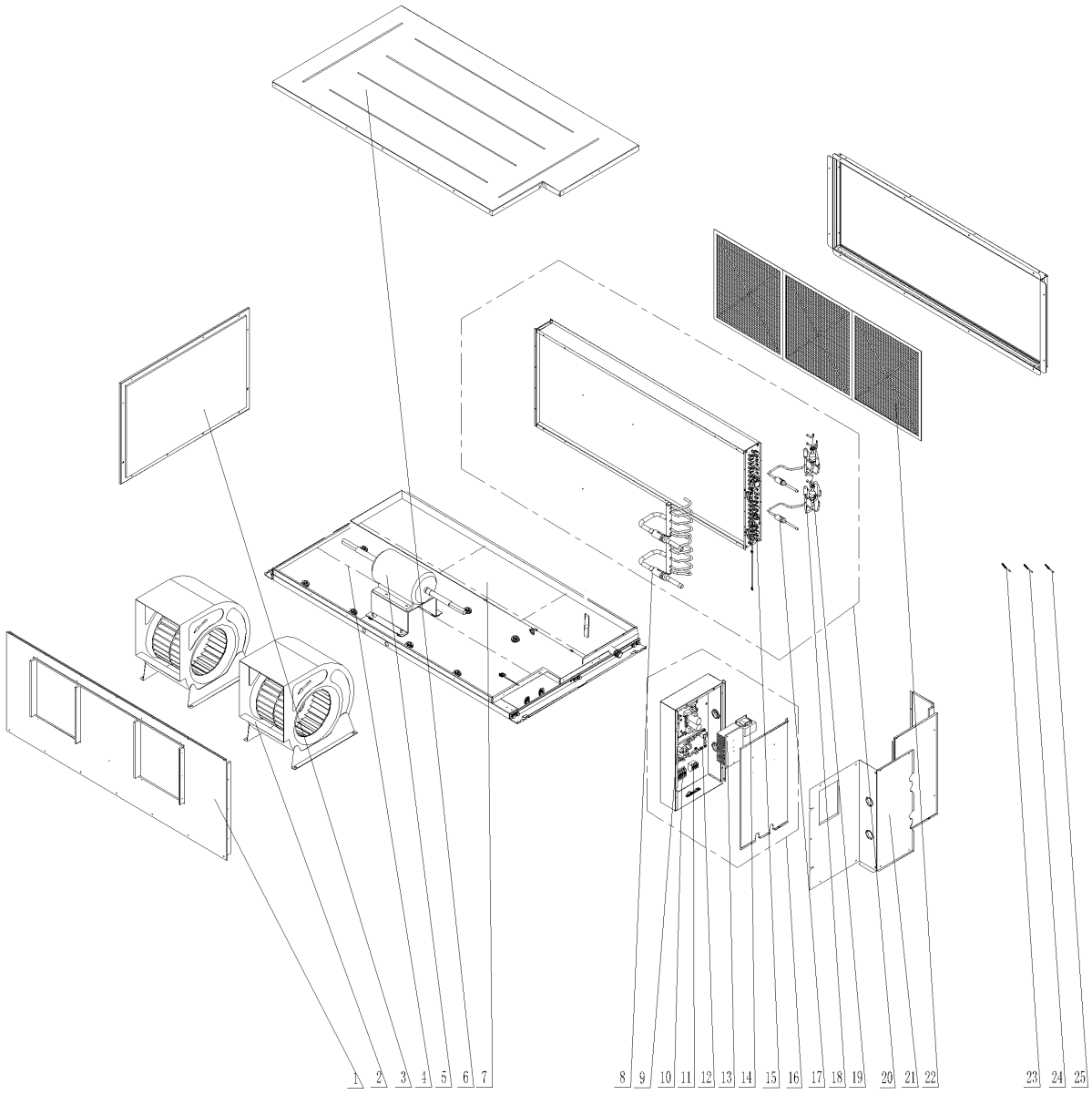


NO	Model	FGR20Pd/DNa-X(I)	FGR25Pd/DNa-X(I)	FGR30Pd/DNa-X(I)	Qty
	Product Code	CF010N0730	CF010N0740	CF010N0750	
	Part Name	Part Code	Part Code	Part Code	
1	Filter Sub-Assy	11725211	11724102	11724102	2
2	Water Tray Assy	01284620	01284306	01284306	1
3	Display Board	300001000097	300001000097	300001000097	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	Teminal Board	4201800002601	4201800002601	4201800002601	1
12	Main Board	300002000383	300002000383	300002000383	1
13	Teminal Board	42010259	42010259	42010259	1
14	Main Board	300002000357	300002000357	300002000357	1

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	
15	Electronic Expansion Valve	43044100190	43044100190	43044100190	1
16	Eletric Expand Valve Fitting	4304413205	4304413205	4304413205	1
17	Strainer	0741410000601	0741410000601	0741410000601	2
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:



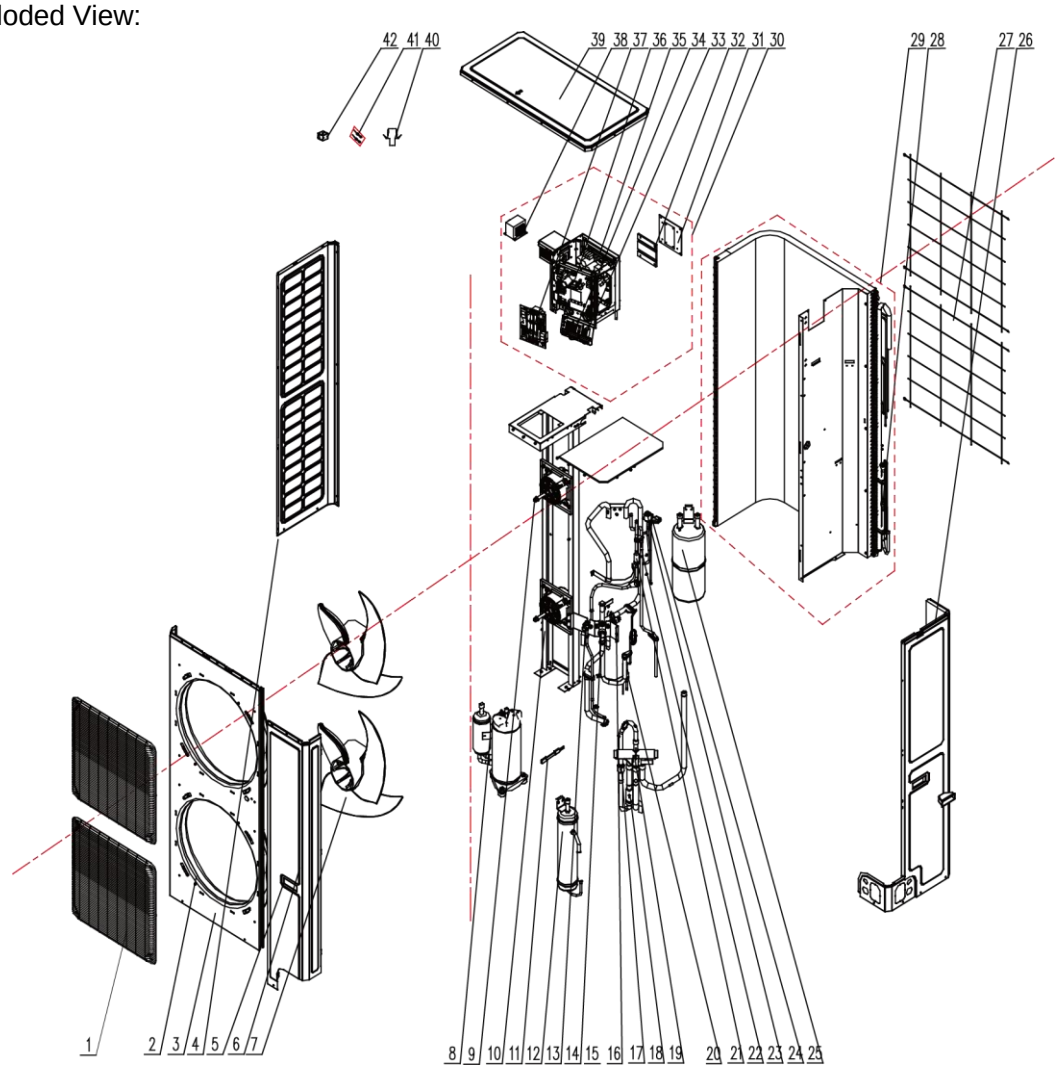
NO	Model	FGR40Pd/D(2)Na-X(I)	Qty
	Product Code	CF010N0760	

	Part Name	Part Code	
1	Air Outlet Panel Sub-assy	000040000029	1
2	Motor for Centrifugal Fan	103004000048/ 10300400004801	1/1
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

5.2 Outdoor Unit

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

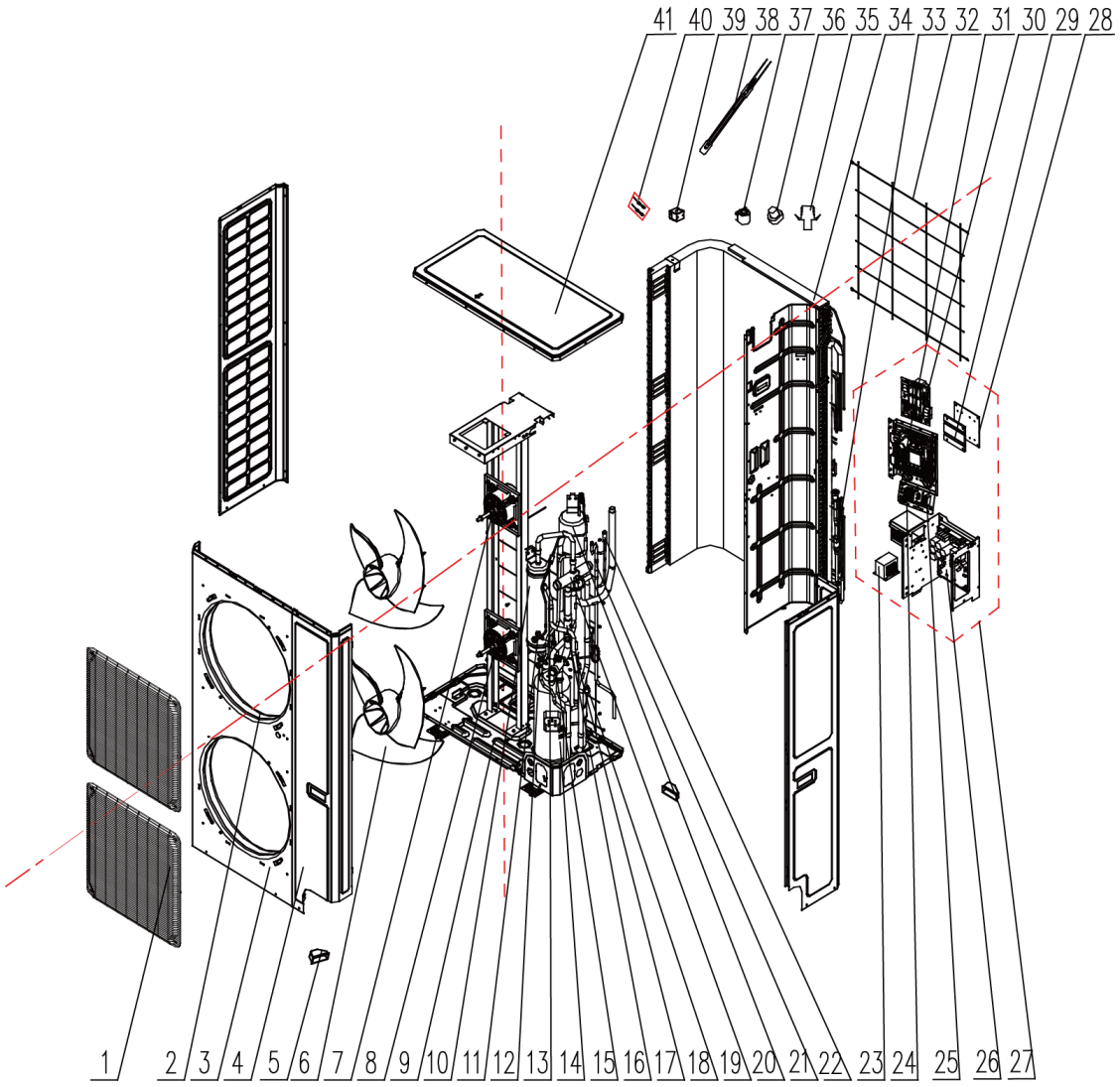
Exploded View:



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

NO	Model	FGR20Pd/DNa-X(O)	FGR25Pd/DNa-X(O)	Qty
	Product Code	CF010W0730	CF010W0740	
	Part Name	Part Code	Part Code	
20	Strainer	07212403	07415200002	1
21	Bidirection Strainer	/	07220016	1
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
21	One way Valve	04324001	1

NO	Model	FGR30Pd/DNa-X(O)	Qty
	Product Code	CF010W0750	
	Part Name	Part Code	
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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