DELTA
HVAC

Portable Debugger/ Trouble Shooting Device
89VTC-100A

INSTRUCTION MANUAL

www.delta-dct.com

User Notice

- Be sure of correct power supply connection of the unit before using the debugger.
- Be sure of correct power supply connection of the debugger. If there is not any indication on the debugger LED, please check the power supply terminal.
- Avoid whack, throw or frequent assembly and disassembly of the debugger.
- Do not operate the debugger with wet hand.

Contents

1 Function Introduction

Portable debugger is a set of specialized installation debugging/trouble shooting tool for personnel of air conditioner debugging and testing. Its main features include:

(1). Monitor various unit parameters and support multiple protocols, with automatic protocol identifying function.

(2). Support the debugging not only for the whole unit but also for the indoor unit of the VRF system.

(3). Access to easy operation and carry-over.

Note: Different software support different numbers of protocol.

2 Debugger Connection

2.1 Power Supply and Communication Interface

4-core port includes power supply and communication.

There are two connecting methods:

2.1.1 Connecting Method 1

Step 1: Remove the wired controller and insert its 4-core port into patchboard COM1.

Step 2: Connect patchboard COM1 to the wired controller with the 4-core wiring.

Step 3: Connect patchboard COM4 to debugger COM1 with the 4-core wiring.
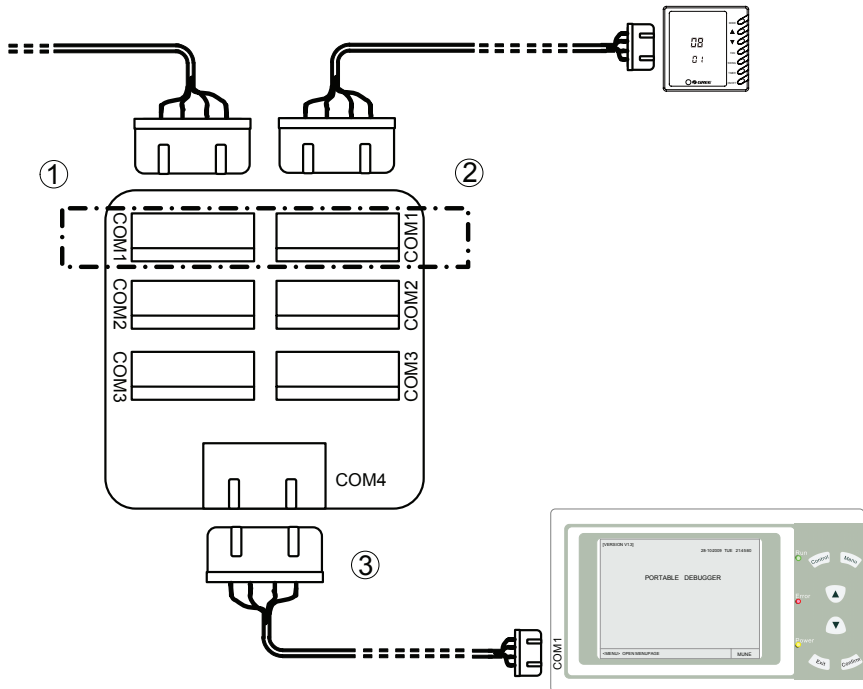
Fig. 2-1 Connecting Method 1

2.1.2 Connecting Method 2

Step 1: Remove the wired controller and insert its 4-core port into debugger COM1.

Step 2: Connect debugger COM2 to the wired controller with the 4-core wiring.
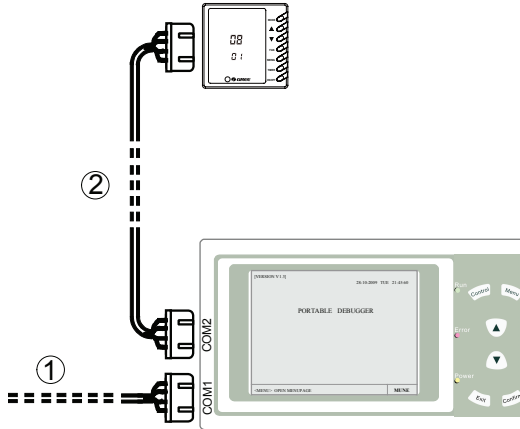
Fig. 2-2 Connecting Method 2

3 Operation Instructions

3.1 Control Panel of Debugger
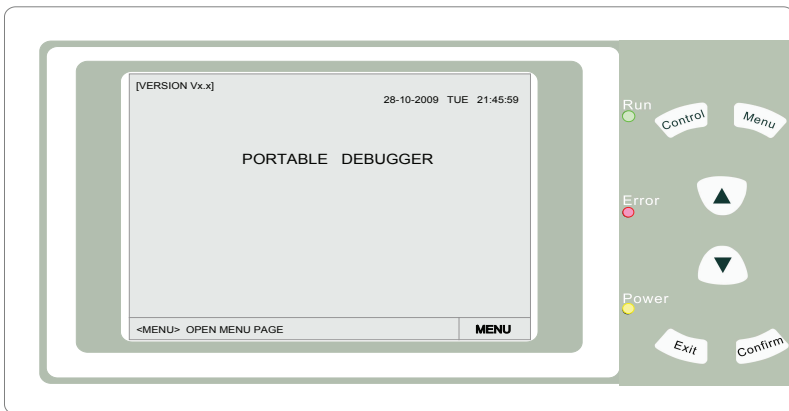
Fig.3-1 Control Panel of the Debugger

- ◆ **Power** LED (yellow): This LED lights up when the debugger is energized.
- ◆ **Error** LED (red): This LED lights up when there is communication malfunction (the protocol is not identified).
- ◆ **Run** LED (green): This LED lights up when receiving communication data.
- ◆ $_{Control}$: It is available in "*IDU STATE"(indoor unit state page)* (only available in indoor unit of VRF series). A long press on it can access to the *CENTRALZED CONTROL* page and a quick press can select/unselect the online indoor unit.
- ◆ $Menu$: Press this button on main page to enter "Menu page". Press this button in parameter page to move the cursor.

- ◆ ▲ : During selection, press this button to switch upward or leftward; during modifying data, press this button to increase numerical value. This button supports increment function.

- ◆ ▼ : During selection, press this button to switch downward or rightward; during modifying data, press this button to decrease numerical value. This button supports decrement function.

- ◆ *Exit* : Press this button to exit from this option.

- ◆ *Confirm* : During selection, press this button to confirm the selected option. During modifying data, press this button to confirm parameter value and move cursor.

- ◆ "***Status bar***": It simply indicates the function of the current button.

3.2 Menu Structure
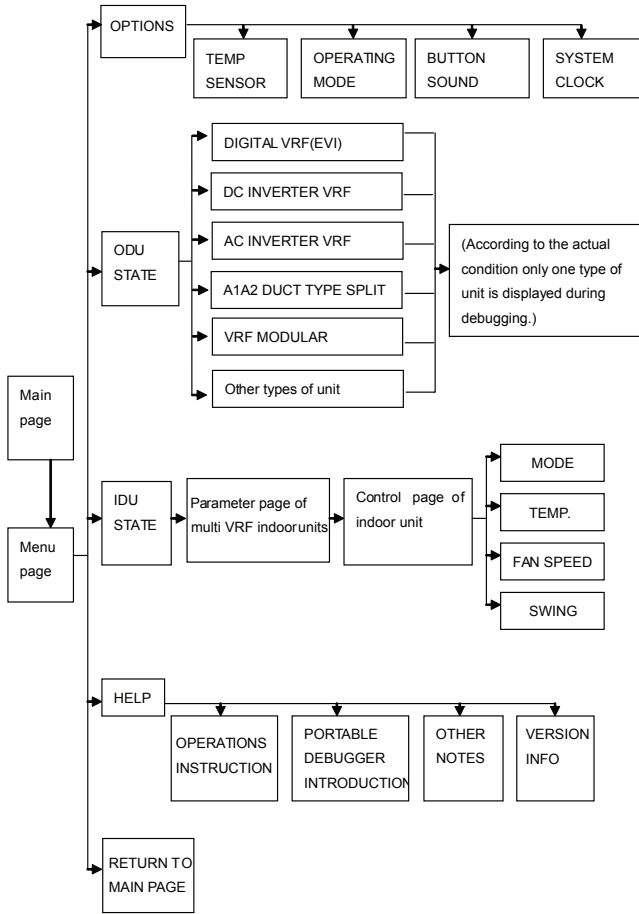
Fig. 3-2 Menu Structure

3.3 Operation Instruction of Pages

3.3.1 Main Page

After energized, the display will be initialized, with running LED and malfunction LED flashing. The communication data begins to be identified in 5 seconds. It is as shown below.

```
[VERSION Vx.x]
                                    28-10-2009  TUE  21:45:59




                    PORTABLE   DEBUGGER






 <MENU>  OPEN MENU PAGE                              MENU
```
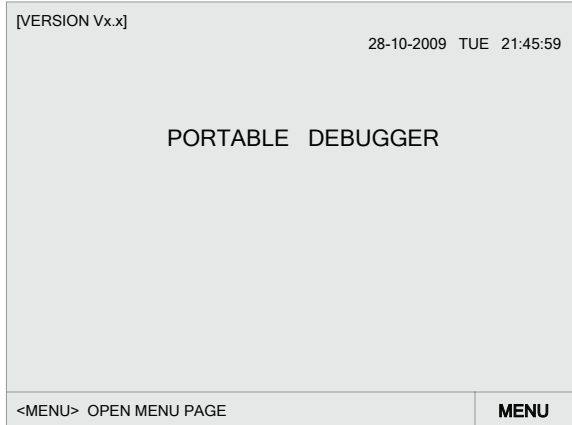
Fig.3-3 Main Page

Main page:

The version of portable debugger is shown on the left upper corner, while the date and time is shown on the right upper corner.

The status bar is on the left lower corner and it simply shows the function of the current button.

3.3.2 Menu Page

Press the *Menu* button on the main page to select each menu item, including **OPTIONS**, **ODU STATE, IDU STATE**, **HELP**, **MAINPAGE**, as shown below.

```
[VERSION Vx.x]
                                    28-10-2009  TUE  21:45:59



                    PORTABLE   DEBUGGER




                                           OPTIONS
                                           ODU STATE
                                           IDU STATE
                                           HELP
                                           MAINPAGE
 ▲  SELECT OPTIONS,<Confirm>ENTER OPTIONS.          MENU
 ▼
```
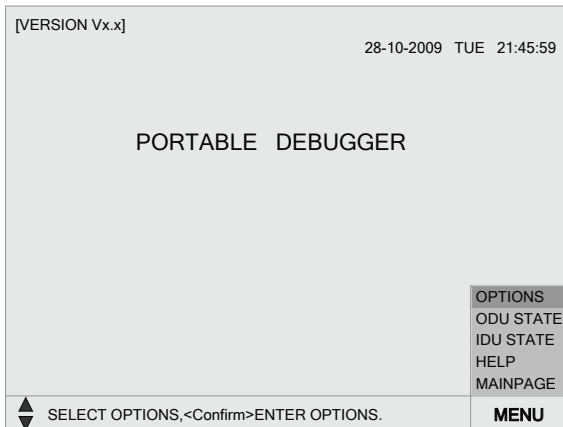
Fig. 3-4 Menu Page

Press the ▲/▼ button to move the cursor to the desired item and then press the ***Confirm***

button to enter the corresponding page. After that, press the *__Menu__* or *__Exit__* button to quit.

3.3.3 **OPTIONS** Page

Select *__OPTIONS__* in the menu page to enter the page as shown below:
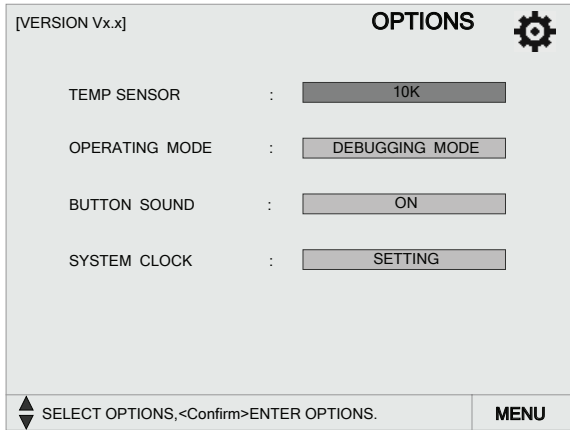
Fig.3-5 OPTIONS Page

Press the ▲/▼ button to move the cursor to the desired item and then press the *__Confirm__* button to enter the corresponding page. After that, set the expected parameters or press the *__Exit__* button to quit.

__TEMP SENSOR__: (Fig.3-6) The discharge temperature and oil temperature are set through adjusting the resistance of their sensors.

10KΩ and 4.3KΩ parameters can be selected. The default is 10KΩ.
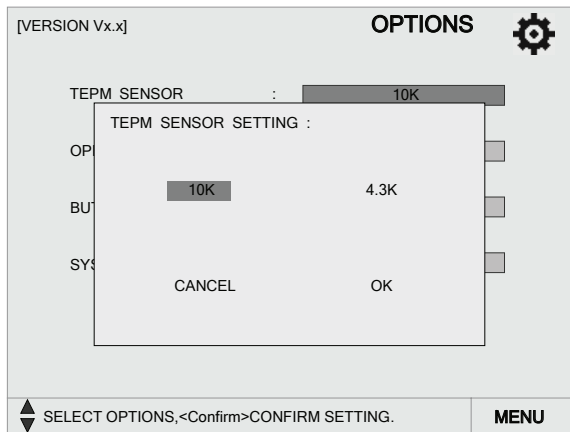
Fig.3-6 *TEMP SENSOR SETTING* Page

__OPERATING MODE__:(Fig.3-7) It is capable of setting the operation mode for either the whole system or the indoor unit through the debugger.
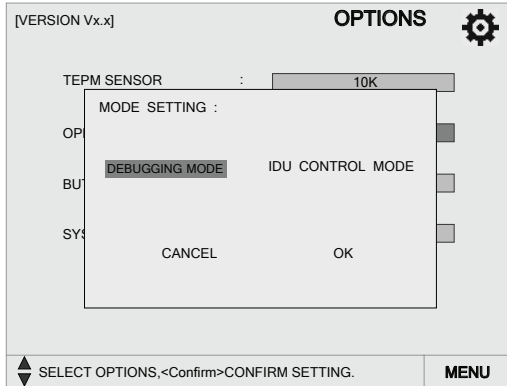
Fig.3-7 *MODE SETTING* Page

BUTTON SOUND:(Fig.3-8) whether there is button sound depends on the users' preference.

Fig.3-8 *SOUND SETTING* Page

SYSTEM CLOCK: (Fig.3-9) Set the current time, including year, month, date, hour, minute and week.

Fig.3-9 *SYSTEM CLOCK SETTING* Page

3.3.4 **ODU STATE** Page

Select **ODU STATE** in the menu page and press the **_Confirm_** button to enter **ODU State** page. The debugger can identify and display automatically the unit-related information. If not, the display area will be blank.

```
[VERSION Vx.x]        DEBUGGING MODE    ODU  STATE  🔍
                      DC INVERTER VRF

COMPRESSOR 1:   OFF           COMPRESSOR 2：   OFF
EXH TEMP  1    : -30℃         EXH TEMP  2    :  17℃
OIL TEMP  1    : -30℃         OIL TEMP  2    : -30℃
INLET TUBE     : -30℃         MID  TUBE      : -30℃
OUTLET TUBE    : -30℃         AMBIENT        : -30℃CERR
LIQ BYPASS 1   :  OFF         LIQ BYPASS 2   :  OFF
EXV STEP       :  480         CAPACITY       :    0
FAN SPEED      :  OFF         HIGH PRESSURE： -20℃
LOW PRESSURE： 70℃            HIGH PRESSURE：  NORMAL
LOW PRESSURE： NORMAL         EXH PROTEC     :  NORMAL
OVER AMP       : NORMAL       DEFROST        :  N/A
DRIV COMM      : NORMAL
  NEXT    1 ←, 2 , 3
▲
▼   SELECT ODU STATE PAGE.                    MENU
```

Fig.3-10 *ODU STATE* Page

Press the ▲/▼ button for information on different pages. After that, press the **_Exit_** button to back to the main page.

3.3.5 **IDU STATE** Page

Select the **IDU STATE** item and press the **_Confirm_** button to go to the page as shown below.

```
[VERSION Vx.x]        DEBUGGING MODE    IDU STATE  🔍
                      IDU  ADDRESS  01

INLET TUBE    : 35℃          OPER MODE    :  OFF
MID TUBE      : 20℃          SET TEMP     :  17℃
OUTLET TUBE   : -30℃CERR     SET FAN SPEED：  AUTO
TEMP          : 26℃          FAN SPEED    :  HIGH
ANTI-FROZEN   : NORMAL       SWING        :  OFF
FLOODING      : NORMAL       MODE CONFLICT：  NORMAL
HIGH TEMP     : NORMAL       EXV STEP     :    0
IDUCAP        : 2.0          DISPLAY COMM :  NORMAL
INDOOR COMM   : NORMAL       TYPE         :  H  SEIRES
PRODUCT  TYPE：NORMAL        SET MASTER   :  SLAVE
E-HEATER      : OFF          DOOR CARD    :  --------
PUMP          : OFF
  NEXT   In  1 ←, 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , 14 , 15 , 16
        Disp 1 ←, 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 , 11 , 12 , 13 , 14 , 15 , 16
▲
▼   SELECT IDU,<Confirm>ENTER SETTING PAGE.      MENU
```
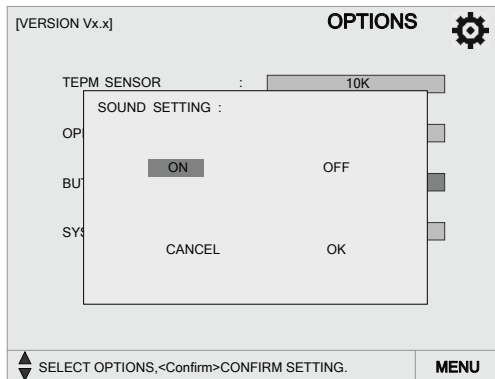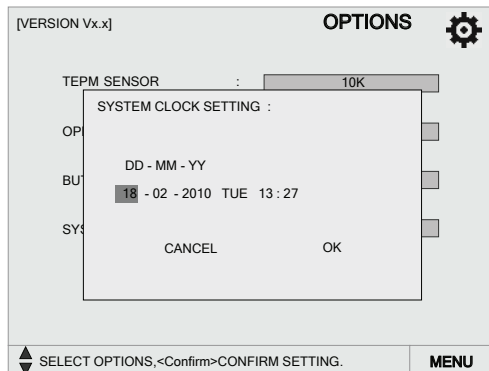
Fig.3-11 *IDU STATE* Page

Press the ▲/▼ button to view the indoor unit information on different pages and press the **_Confirm_** button to go to the corresponding page. A long press on the **_Control_** button can access to the **CENTRALIZED CONTROL** page where it is able to set and control the running state of the indoor unit, and a press on the **_Exit_** button can back to the main page. ("In" represents the online indoor unit; while "Disp" represents the online wired controller).

3.3.6 **HELP** Page

Select the *HELP* item and press the *__Confirm__* button to go the page as shown below.

```
[VERSION Vx.x]                    HELP          ❓

OPERATION INSTRUCTIONS:
<Menu>      IN THE MAIN PAGE TO OPEN THE MENU LIST.
<Control>   CONTROL BUTTON AVAILABLE IN IDU PAGE,
            TO SELECT CONTROL MODE.PRESS TWO SECONDS

            TO ENTER CENTRALIZED CONTROL PAGE.
 <  ▲  >    UP & DOWN BUTTON FOR TURNING PAGES,
    ▼
            SETTING VALUES & CHANGING CURSOR FUNCTION

<Exit>      QUIT TO THE PREVIOUS PAGE.
<Confirm>   CONFIRM THE OPERATIONS.
STATUS BAR:SHOWING FUNCTIONS OF BUTTONS.
 INFO      ABOUT     OTHERS    VERSION

▲
▼  SELECT HELP PAGE.                           MENU
```
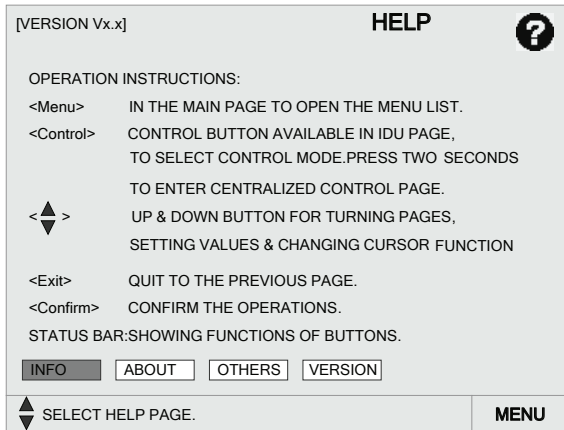
Fig.3-12 *HELP* page

4 Debugging Instructions

The portable debugger is capable of performing debugging for either the whole system (DEBUGGING MODE) or the indoor unit (IDU CONTROL MODE).

```
[VERSION Vx.x]                   OPTIONS        ⚙

   TEPM SENSOR          :          10K
         MODE  SETTING :
   OP                                      ▭

         DEBUGGING  MODE      IDU  CONTROL MODE
   BU                                      ▭

   SYS                                     ▭
              CANCEL              OK



▲
▼  SELECT OPTIONS,<Confirm>CONFIRM SETTING.    MENU
```
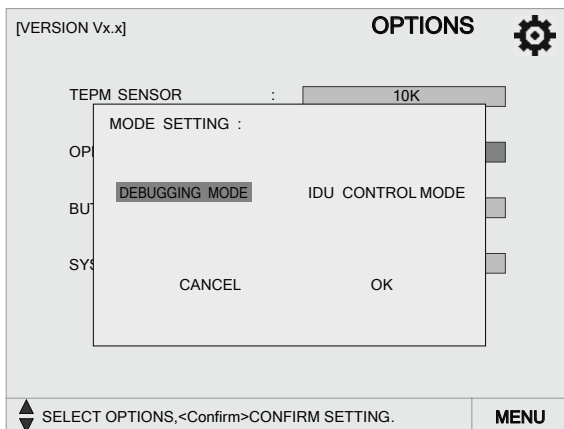
Fig.4-1 *MODE SETTING* Page

4.1 **DEBUGGING MODE**

It is possible to view *ODU STATE* page and *IDU STATE* page. Meanwhile the control function is available.

Only *ODU STATE* page can be viewed except for multi VRF series and some of the indoor unit information can be viewed in this page.

4.1.1 **SINGLE UNIT CONTROL**
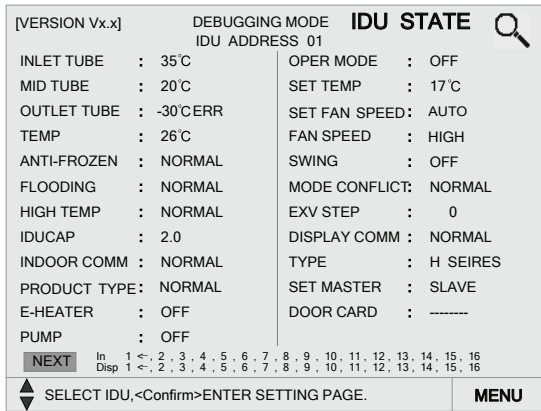
It is only applicable to the multi VRF series.
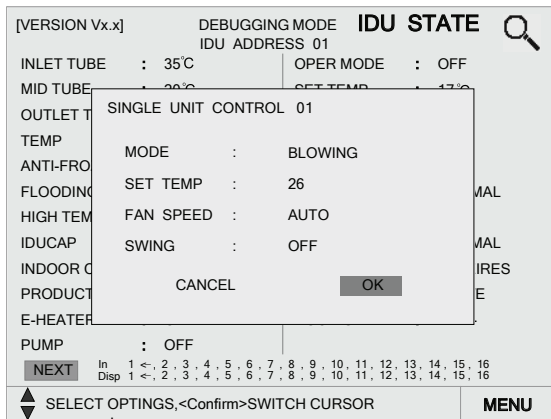

Fig4-2 *IDU STATE* page

Fig.4-3 *SINGLE UNIT CONTROL* Page

Step 1: Enter the ***IDU STATE*** page (Fig.4-2). When entering the page initially, the cursor will indicate the minimum address of the online indoor unit.

Step 2: Press the ▲/▼ button to select different indoor unit address. The cursor will indicate the current selected indoor unit.

Step 3: Press ***Confirm*** button to enter ***SINGLE UNIT CONTROL*** (Fig.4-3). The cursor is defaulted to indicate the ***Confirm*** button and then repress the ***Confirm*** button to execute the control.

Step 4: If setting parameter needs to be modified, press ***Menu*** button and move the cursor to the option that can be set. Press the ▲/▼ button to set parameter, then press the ***Confirm*** button to confirm the setting and the cursor will move to the next option. At last, press ***Confirm*** button to execute the control and the ***SINLGE UNIT CONTROL*** is finished.

4.1.2 **CENTRALIZED CONTROL**

It is only applicable to the multi VRF series.
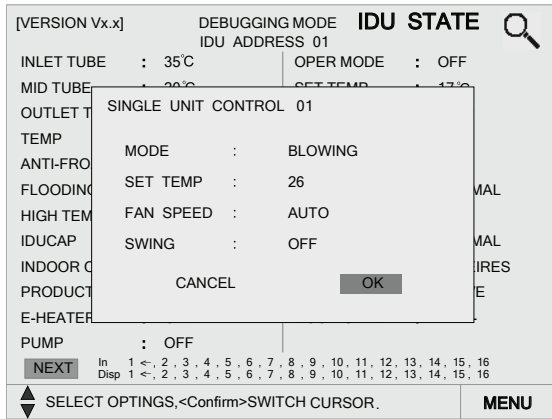
Fig4-4 *CENTRALIZED CONTROL* Page

4.1.3 **SELECT CONTROL**

It is only applicable to the multi VRF series.
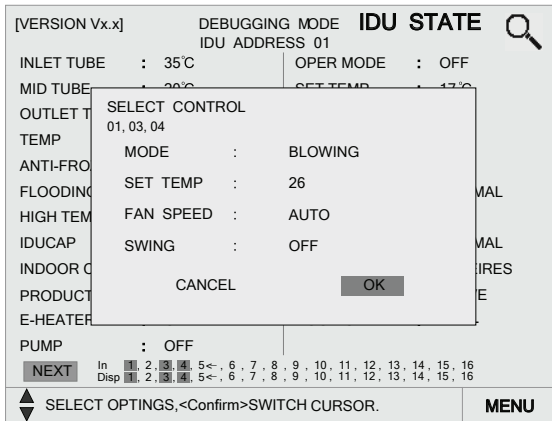
Fig.4-5 *SELECT CONTROL* Page

Step 1: Enter the *IDU STATE* page (Fig.4-2). When entering the page initially, the cursor will indicate the minimum address of the online indoor unit.

Step 2: A quick press on the **_Control_** button can select the indoor unit currently indicated by the cursor. The selected address will be white and the cursor will move to the next indoor unit address. Repress **_Confirm_** button to continue selection of indoor units.

Step 3: After selection, press **_Confirm_** button to enter the **SELECT CONTROL** page (Fig.4-5). Then, repress the Confirm button which the cursor is defaulted to indicate to execute the SELECT CONTROL.

Step 4: If setting parameter needs to be modified, press **_Menu_** button and move the cursor

to the item that can be set. Press the ▲/▼ button to set parameter, then press _**Confirm**_ button to confirm the setting and the cursor will move to the next item. At last, press _**Confirm**_ button to execute the control and the **SELECT CONTROL** is finished.

4.2 **INDOOR CONTROL MODE**

It is only applicable to the indoor unit of the multi VRF series.

Step 1: It can be set at the OPTIONS page. Please refer to 3.3.3 *OPTIONS* Page-*OPERATION MODE*.

Step 2: After selection, enter the **IDU STATE** page (Fig.4-2). Press the ▲/▼ button to view the running parameter of indoor unit.

Step 3: In the **IDU STATE** page, **SINGLE UNIT CONTROL**, **CENTRALIZED CONTROL** and **SELECT CONTROL** can be realized. The operating method is the same as _**4.1 DEBUGGING MODE**_.

5 Notice and Trouble Shooting

(1). Ensure that the power and communication port connect with the display.

(2). The four-core wiring and the patchboard of debugger should be specialized or compatible.

(3). If there is no display after energization, please cut off the power and check whether the connection is correct.

(4). The **Run** LED blinks continuously and the **Error** LED also blinks.

A.The debugger has received data, but it can not identify the unit type or the debugger does not support this type of unit. Please refer to the specification for supported units.

B.The debugger has received data, but the data is interfered and the debugger can not identify it.

Please ensure that the debugger is in the **DEBUGGING MODE**. In **INDOOR CONTROL MODE** there should be no outdoor unit.

Please check whether the connection of unit communication wire is normative.

C.The debugger has received data, but the data is in error.

Please check whether the selection of patchboard port is correct. If small patchboard is used, please make sure the same set of ports is used. Please refer to _**2. Debugger connection for connecting instruction**_.

(5). During the normal operation of the debugger, if display parameter blinks, please check:

A. whether the communication wire is connected correctly;

B. whether the debugger supports this unit;

C. whether there is communication interference;

D. ensure that the debugger is in **DEBUGGING MODE** or that there is no outdoor unit connected in **INDOOR CONTROL MODE**.

DC INVERTER VRF:

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
Page 1		
COMPRESSOR 1	ON, OFF	
DISCHARGE T1	-100~+155 (ERR)	DISCHARGE TEMPERATURE 1
OIL TEMP 1	-30~+100 (ERR)	OIL TEMPERATURE 1 This parameter is not available in this unit.
INLET TUBE	-100~+155 (ERR)	
OUTLET TUBE	-100~+155 (ERR)	
LIQ BYPASS 1	ON, OFF	This parameter is not available in this unit.
EXV STEP	0-480	
FAN SPEED	OFF, LOW, MID, HIGH, ULTRA-HIGH	
LOW PRESSURE	-100~+155 (ERR)	This parameter is not available in this unit.
LP PROTECTION	NORMAL, ERR	LOW PRESSURE ROTECTION
OVER CURRENT	NORMAL, ERR	OVER CURRENT, DRIVE ABNORMITY
DRIV COMM	NORMAL, ERR	drive communication
COMPRESSOR 2	ON, OFF	This parameter is not available in this unit.
DISCHARGE T2	-100~+155 (ERR)	DISCHARGE TEMPERATURE 2 This parameter is not available in this unit.
OIL TEMP 2	-30~+100 (ERR)	OIL TEMPERATURE 2 This parameter is not available in this unit.
MID TUBE	-100~+155 (ERR)	
AMBIENT	-100~+155 (ERR)	
LIQ BYPASS 2	N/A	This parameter is not available in this unit.
CAPACITY	0-100	
HIGH PRESSURE	-100~+155 (ERR)	
HP PROTECTION	NORMAL, ERR	HIGH PRESSURE PROTECTION
DISCHARGE	NORMAL, ERR	DISCHARGE PROTECTION
DEFROST	DEFROST,N/A	

Page 2		
FREQ DECREASE	0-100	FREQUENT DECREASED ACCELERATION This parameter is not available in this unit.
COMP 1 TYPE	DC INVERTER	COMPRESSOR 1 TYPE
TOP EXH TEMP1	0-255	TOP EXH TEMPERATURE 1 This parameter is not available in this unit.
FAN TYPE	REGULATOR,3-SPEED FAN, DC FAN, AC FAN	
UNIT STATE	ON, OFF	
SET FREQUENCY	0-255	
BUS CURRENT	0-255	
IPM RADIATOR	-100~+155	IPM RADIATOR TEMPERATURE
COMP CURRENT	0-255	COMPRESSOR CURRENT
V PHASE AMP	0-255	V PHASE AMPERE This parameter is not available in this unit.
FREQ INCREASE	0-100	FREQUENT INCREASED ACCELERATION This parameter is not available in this unit.
COMP 2 TYPE	FIXED SPEED	COMPRESSOR 2 TYPE This parameter is not available in this unit.
TOP EXH TEMP 2	0-255	TOP EXH TEMPERATURE This parameter is not available in this unit.
COMP QTY	1—2	COMPRESSOR QUANTITY
GAS BYPASS	ON, OFF	
OPER FREQ	0-255	OPERATING FREQUENCY
BUS VOLTAGE	0-380	
PFC RADIATOR	-100~+155	PFC RADIATOR TEMPERATURE This parameter is not available in this unit.
U PHASE AMP	0-255	U PHASE AMPERE This parameter is not available in this unit.
POWER TYPE	1-PHASE, 3-PHASE	

Page 3		
DRIV AMBIENT	-100~+155(ERR)	DRIVER AMBIENT TEMPERATURE This parameter is not available in this unit.
DRIVER RESET	NORMAL, ERR	
PFC ERROR	NORMAL, ERR	
AC CURRENT	NORMAL, ERR	AC CURRENT PROTECTION This parameter is not available in this unit.
ROTOR LOCKED	NORMAL, ERR	This parameter is not available in this unit.
AMP DETECT	NORMAL, ERR	AMPERE DETECT This parameter is not available in this unit.
EQUIL VALVE	ON, OFF	EQUILIBRATED VALVE This parameter is not available in this unit.
SENSOR JOINT	NORMAL, ERR	This parameter is not available in this unit.
AC CONTACTOR	NORMAL, ERR	This parameter is not available in this unit.
START FAIL	NORMAL, ERR	This parameter is not available in this unit.
MISSING PHASE	NORMAL, ERR	This parameter is not available in this unit.
IPM ERROR	NORMAL, ERR	
DC VOLTAGE	OVER HIGH, OVER LOW	This parameter is not available in this unit.
OUT-OF-STEP	NORMAL, ERR	This parameter is not available in this unit.
OVERSPEED	NORMAL, ERR	This parameter is not available in this unit.
TEMP DRIFT	NORMAL, ERR	TEMPERATURE DRIFT PROTECTION This parameter is not available in this unit.
OVER CURRENT	NORMAL, ERR	COMPRESSOR OVER CURRENT

A1A2 DUCT TYPE SPLIT:

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
SET MODE	OFF, AUTO, COOLING, DEHUMIDIFYING, BLOWING	
SET FAN SPEED	HIGH, MID, LOW, AUTO	
SET TEMP	16-30	SET TEMPERATURE
SET FAN VOLT	220V,200V,180V,160V,140V,120V,100V,80V	SET FAN VOLTAGE
INDOOR TEMP	-30~+150 (ERR)	INDOOR AMBIENT TEMPERATURE
IDU FAN SPEED	OFF, LOW, MID, HIGH	INDOOR UNIT FAN SPEED
E-HEATER	ON, OFF	
COMPRESSOR	ON, OFF	
DEFROST	DEFROST,N/A	
FORCED OPER	NONE, COOLING, HEATING, OFF	FORCED OPERATION
SUB-ROOM	ON, OFF	SUB-ROOM SWITCH
PRODUCT TYPE	---	N/A
OPER STATE	COOLING, HEATING, BLOWING, DRY, OFF	OPERATION STATE
HIGH PRESSURE	NORMAL, ERR	
LOW PRESSURE	NORMAL, ERR	
OVER CURRENT	NORMAL, ERR	
ANTI-FROZEN	NORMAL, ERR	
ANTI HIGHTEMP	NORMAL, ERR	ANTI HIGH TEMPERATURE
DISCHARGE	NORMAL, ERR	DISCHARGE PROTECTION
EXH SENSOR	NORMAL, ERR	DISCHARGE SENSOR
IDU FAN OL	NORMAL, ERR	INDOOR FAN OVERLOAD
ODU SENSOR	NORMAL, ERR	OUTDOOR SENSOR
EVP SENSOR	NORMAL, ERR	EVAPORATOR SENSOR
COND SENSOR	NORMAL, ERR	CONDENSER SENSOR

AIR SOURCE WATER HEATER:

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
SET STATE	ON, OFF	
SET TEMP	35-60	SET TEMPERATURE
OUTDOOR TEMP	-100~+155 (ERR)	OUTDOOR AMBIENT TEMPERATURE
TANK WATER	-100~+155 (ERR)	TANK WATER TEMPERATURE
ODU MID TUBE	-100~+155 (ERR)	OUTDOOR MID TUBE TEMPERATURE. During water heating, mid tube temperature is at least 4~5℃ lower than ambient temperature. If the tube temperature is similar with ambient temperature, check whether the temperature sensor has broken off.
SUCTION TEMP	-100~+155(ERR)	SUCTION TEMPERATURE. During water heating, when the ambient temperature is below 35℃, temperature of air intake duct is at least 4~5℃ lower than ambient temperature. If the tube temperature is similar with ambient temperature, check whether the temperature sensor has broken off or whether the system lacks refrigerant. When the ambient temperature is above 35℃, identify the whether the running state is normal according to mid tube temperature.
DISCHARGE	-100~+155(ERR)	DISCHARGE TEMPERATURE. The protection temperature is 120℃. In normal running state, discharge temperature is lower than 115℃ but is higher than temperature of water tank.
EXV STEP	0~480	It remains 0 step when the unit is off. In heating mode, the opening ranges from 120 to 480 steps. It keeps 250 steps for 2 min during the initial start-up.
OUTDOOR FAN	ON, OFF	In normal state, the compressor will start up after the fan starts running. 30s after the stop of compressor, the fan will stop. The outdoor fan stops during defrosting.

PUMP	ON, OFF	WATER PUMP. The water pump starts running after the outdoor fan runs for 10s and it will stop after the compressor stops for 30s.
DEFROST	DEFROST,N/A	The fan stops running during defrosting.
COMPRESSOR	ON, OFF	The water pump must be turned on when the compressor is running.
4-WAY VALVE	ON, OFF	Four-way valve can only be energized in the mode of defrosting.
E-HEATER	ON, OFF	The e-heater will start up according to the ambient temperature and it will start up or stop automatically with the start-up or stop of the compressor. When the ambient temperature sensor is fault, the e-heater will stop running. When ambient temperature Te≥7℃, the e-heater keeps off. When ambient temperature Te≤2℃, the e-heater will start up after the compressor runs for 30s. When the compressor stops for 5s, the e-heater will stop. When ambient temperature 2℃ <Te<7℃, it keeps the original running state.
HEATING BELT	ON, OFF	The e-heater will start up according to the ambient temperature. When the ambient temperature sensor is fault, the e-heater will stop running. When ambient temperature Te≥20℃, the e-heater keeps off. When ambient temperature 15℃ <Te<20℃, it keeps the original running state. When ambient temperature Te<15℃, the e-heater will be off during the start-up of the compressor. It will be energizing after the compressor stops.

HIGH PRESSURE	NORMAL, ERR	HIGH PRESSURE PROTECTION. The system will not stop running upon the occurrence of high pressure protection. Unless turn on the unit again, the malfunction can be removed.
LOW PRESSURE	NORMAL, ERR	LOW PRESSURE PROTECTION. The hardware is shielded. If there is any malfunction, check whether the wire is loose. (This malfunction does not exist in this unit.)
EXH HIGH TEMP	NORMAL, ERR	DISCHARGE HIGH TEMPERATURE. When the discharge temperature is beyond 120℃, the unit will stop running. When the discharge temperature is below 90℃, the unit will resume running. If the same malfunction occurs successively for 3 times, the system will not start up any more.
FLOW SWITCH	NORMAL, ERR	The hardware is shielded. If there is any malfunction, check whether the wire is loose. (This malfunction does not exsit in this unit.)
ANTI-FROZEN	NORMAL, ERR	When the ambient temperature is below 1℃, the system will start anti-freeze function. Otherwise, check whether there is thermometric shift or inaccuracy of the ambient temperature sensor.
ANTI-ADHESION	NORMAL, ERR	Check the communication signal of anti-adhesion and malfunction of external e-heater.

U-MATCH

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
Page 1		
OPER MODE	OFF, COOLING, DEHUMIDIFY, BLOWING, HEATING	
OUTDOOR TEMP	-100~+155	OUTDOOR AMBIENT TEMP :
CONDENSER	-100~+155	CONDENSER TEMP :
DISCHARGE	-30~+225	DISCHARGE TEMP :
COMPRESSOR	ON, OFF	
OUTDOOR FAN	OFF, HIGH, MID, LOW	
4-WAY VALVE	ON, OFF	
HIGH PRESSURE	NORMAL, ERR	HIGH PRESSURE PROTECTION:
LOW PRESSURE	NORMAL, ERR	LOW PRESSURE PROTECTION:

OL PROTECT	NORMAL, ERR	OVERLOAD PROTECTION:
DISCHARGE	NORMAL, ERR	DISCHARGE PROTECTION:
DEFROST	DEFROST, N/A	
SET MODE	OFF, COOLING, DEHUMIDIFY, BLOWING, HEATING	
SET TEMP	16-30	
SET FANSPEED	AUTO, LOW, MID, HIGH	
DISPLAY TEMP	-100~+155(ERROR)	
ONFAN SPEED	OFF, LOW, MID, HIGH	
SWING	ON, OFF	
PUMP	ON, OFF(ERR)	
E-HEATER	ON, OFF(ERR)	
ANTI FLOOD	NORMAL, ERR	
ANTI HIGHTEMP	NORMAL, ERR	
ANTI FROZEN	NORMAL, ERR	
IDU FAN OL	NORMAL, ERR	INDOOR FAN OVERLOAD:
Page 2		
SENSOR SELECT	RETURN, THERMOSTAT	TEMP SENSOR SELECT:
RETURN SENSOR	-100~+155(ERR)	AIR RETURN TEMP SENSOR:
EVP TEMP	-100~+155(ERR)	EVAPORATOR TEMP :
FRESH AIR	1-10	
SLEEPING MODE	ON, OFF	
ECO MODE	BOTH, COOLING, HEATING , OFF	
ECO HEATING	16-30	
ECO COOLING	16-30	
DISABLE ECO	ON , OFF	DISABLE ECO MODE
ODU JUMPER	0-255(ERR)	ODU JUMPER NO.:
HEATPUMP	COOLING ONLY, COOLING & HEATING	
DISABLE LP	ON, OFF	DISABLE LOW PRESSURE:
VIOLET RAY	ON, OFF(ERR)	

E-DEDUST	ON, OFF(ERR)	ELECTROSTATIC DEDUST:
E-DEDUST CLEAN	YES, NO	ELECTROSTATIC DEDUST CLEAN:
ONLINE DAMPER	ON, OFF, N/A	
FAN DAMPER	ON, OFF	
INDOOR CAP	2.6, 3.5, 5, 7, 10, 12, 14, 16KW	INDOOR CAPACITY:
IDUCAP JUMPER	NORMAL, ERR	INDOOR CAPACITY JUMPER:
IDUTYPE JUMPER	NORMAL, ERR	INDOOR TYPE JUMPER:
DOOR CARD	INSERTED, PULL OUT, N/A	DOOR CARD SWITCH:
LOCK	LOCK, OFF	
EXV STEP	0-480	
FAN SPEED		
Page 3		
SET FREQUENCY	0-255	
OPER FREQ	0-255	OPERATING FREQUENCY:
COMP CURRENT	0-255.255A	COMPRESSOR CURRENT:
BUS VOLTAGE	0-65535	BUS-BAR VOLTAGE:
IPM TEMP	-100~+155(LIMITED, DECREASE, OVER HIGH)	
PFC TEMP	-100~+155(LIMITED, DECREASE, OVER HIGH)	
U PHASE AMP	0-255	
V PHASE AMP	0-255	
AC CURRENT	0-255.255A(ERR)	
AC VOLTAGE	0-510(ERR)	
DRIV AMBIENT	-100~+155(ERR)	DRIVERAMBIENT TEMP :
SENSOR JOINT	NORMAL, ERR	
MISSING PHASE	NORMAL, SHORTED	
OVER CURRENT	NORMAL, ERR	
IPM ERROR	NORMAL, ERR	
PFC ERROR	NORMAL, ERR	
START FAIL	NORMAL, ERR	START-UP FAILED:

TEMP DRIFT	NORMAL, ERR	TEMPERATURE DRIFT PROTECTION:
PFC	ON, OFF	
AMP SENSOR	NORMAL, ERR	
POWER TYPE	1-PHASE, 3-PHASE	
CHARGEUP CIRC	NORMAL, ERR	CHARGE UP CIRCUIT:
ROTOR LOCKED	NORMAL, ROTOR LOCKED	
OTHER ERRORS	OUT-OF-STEP, OVERSPEED, LOW MAGNETIC	

DC INVERTER VRF WATER HEATER:

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
Page 1		
INVERTER	ON, OFF	INVERTER COMPRESSOR
FIXED SPEED2	ON, OFF	FIXED-SPEED COMPRESSOR 2
TARGET CAP	0-255	TARGET CAPACITY
ODU RATED CAP	0~15	OUTDOOR UNIT RATED CAPACITY
COMP SET FREQ	0-255	COMPRESSOR SET FREQUENCY
FAN1 OPER FREQ	0-255	FAN 1 OPERATING FREQUENCY
INVERT DISCH T	-30~+150(ERR)	INVERTER COMPRESSOR DISCHARGE TEMP
FIXED1 DISCH T	-30~+150(ERR)	FIXED-SPEED COMPRESSOR 1 DISCHARGE TEMP
FIXED2 DISCH T	-30~+150(ERR)	FIXED-SPEED COMPRESSOR 2 DISCHARGE TEMP
INLET TUBE	-30-+100(ERR)	OUTDOOR UNIT TUBE INLET TEMP
MID TUBE	-30-+100(ERR)	OUTDOOR UNIT MID TUBE TEMP
OUTLET TUBE	-30-+100(ERR)	OUTDOOR UNIT TUBE OUTLET TEMP
FIXED SPEED1	ON, OFF	FIXED-SPEED COMPRESSOR 1
OPER MODE	OFF,BLOWING,COOLING,DRY,HEATING,COOL&HW,HEAT&HW,HOTWATER	WHOLE UNIT OPERATING MODE
OPER CAPACITY	0-255	OPERATING CAPACITY
OUTDOOR TEMP	-30-+100(ERR)	OUTDOOR AMBIENT TEMP
COMP OPER FREQ	0-255	COMPRESSOR OPERATING FREQUENCY
FAN2 OPER FREQ	0-255	FAN 2 OPERATING FREQUENCY
INVERT TOP TEM	-30~+150(ERR)	INVERTER COMPRESSOR TOP TEMP
FIXED1 TOP TEM	-30~+150(ERR)	FIXED-SPEED COMPRESSOR 1 TOP TEMP
FIXED2 TOP TEM	-30~+150(ERR)	FIXED-SPEED COMPRESSOR 2 TOP TEMP
DT INLET TUBE	-30-+100(ERR)	DOUBLE-TUBE INLET TEMP
DT MID TUBE	-30-+100(ERR)	MID DOUBLE-TUBE TEMP
DT OUTLET TUBE	-30-+100(ERR)	DOUBLE-TUBE OUTLET TEMP

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Page 2		
EXV A	0-480	EXV A
HIGH PRESSURE	-40-+70(ERR)	HIGH PRESSURE
4-WAY VALVE A	ON, OFF	4-WAY VALVE A
EMV B	ON, OFF	SOLENOID VALVE B
EMV C	ON, OFF	SOLENOID VALVE C
WATER TANK STAT	OFF,HOTWATER,KEEP WARM	WATER TANK STATUS
FLOOR HEATING	ON, OFF	FLOOR HEATING ON/OFF
FH RATED CAP	5-40KW	FLOOR HEATING RATED CAPACITY
H-REC SET TEMP	30~40℃	HEAT RECOVERY SET TEMP
WT SET TEMP	16℃~70℃	WATER TANK SET TEMP
DTE WATER TEMP	-30-+100	DOUBLE-TUBE ENTERING WATER TEMP
WT WATER TEMP	-30-+100	WATER TANK WATER TEMP
EXV B	0-480	EXV B
LOW PRESSURE	-100~+155(ERR)	LOW PRESSURE
4-WAY VALVE B	ON, OFF	4-WAY VALVE B
EMV E	ON, OFF	SOLENOID VALVE E
EMV D	ON, OFF	SOLENOID VALVE D
WATER PUMP	ON, OFF	WATER PUMP
WATER TANK	HEATING,KEEP WARM	WATER TANK HEATING/HOLDING
WT RATED CAP	0~255	WATER TANK RATED CAPACITY
DT LW SET TEM	-30-+100	DOUBLE-TUBE LEAVING WATER SET TEMP
WT REWATER TEM	-30-+100	WATER TANK RETURN WATER TEMP
DT LW TEMP	-30-+100	DOUBLE-TUBE LEAVING WATER TEMP
WT UPWATER TEM	-30-+100(ERR)	WATER TANK UPPER WATER TEMP
Page 3		
COMP CURRENT	0-255.99	COMPRESSOR OPERATING AMP
COMP BUS VOLT	0-65535	COMPRESSOR BUS VOLT

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PFC SWITCH	ON, OFF	PFC SWITCH
GAS BYPASS	ON, OFF	GAS BYPASS
CRANKCASE HEAT	ON, OFF	CRANKCASE HEATER
FH E-HEATER 1	ON, OFF	FLOOR-HEATING E-HEATER
WT E-HEATER	ON, OFF	WATER TANK E-HEATER
FAN1 BUS VOLT	0~255	FAN 1 BUS VOLT
FAN1 AMP	0~255	FAN 1 BUS AMP
FAN1 IPM TEMP	0~255	FAN 1 MODULE TEMP
WIRED CONTRL	ON, OFF	WIRED CONTROLLER
LEAVE FOUNC	NORMAL,LEAVE	LEAVE FOUNCTION
ELEC BOX TEMP	-100~+155(ERR)	ELECTRIC BOX TEMP
COMP IPM TEMP	-100~+155	IPM TEMP
PFC RADIATOR	-100~+155	PFC RADIATOR TEMP
LIQUID BYPASS	ON, OFF	LIQUID BYPASS
ODU DEFR EH	ON, OFF	OUTDOOR UNIT DEFROSTING E-HEATER
FH E-HEATER 2	ON, OFF	FLOOR-HEATING E-HEATER 2
DEFROST	DEFROST,N/A	DEFROSTING
FAN2 BUS VOLT	0~255	FAN 2 BUS VOLT
FAN2 AMP	0~255	FAN 2 BUS AMP
FAN2 IPM TEMP	0~255	FAN 2 IPM TEMP
SET MODE	HOTWATER,SAVING,PRESET, NIGHT,F-HEAT,FH&HW	SET MODE
WT CLEAN	NORMAL,CLEAN	WATER TANK CLEANING
Page 4		
S/D TEMP SENSOR	SINGLE,DUAL	SINGLE/DUAL TEMP SENSOR
WATER TANK KIT	ON, OFF	WATER TANK KIT
FH KIT	ON, OFF	FLOOR HEATING KIT
ODU QUIET OPER	ON, OFF	OUTDOOR UNIT QUIET OPERATION
WT E-HEATER ENA	ENABLE,DISABLE	WATER TANK E-HEATER ENABLE/DISABLE
AC PROTECTION	NORMAL, ERR	AC PROTECTION

AC CONTACTOR	NORMAL, ERR	AC CONTACTOR PROTECTION
HP PROTECTION	NORMAL, ERR	HIGH PRESSURE PROTECTION
LP PROTECTION	NORMAL, ERR	LOW PRESSURE PROTECTION
COM OVER AMP	NORMAL, ERR	INVERTER COMPRESSOR OVER-CURRENT PROTECTION
FLOW	NORMAL, ERR	WATER FLOW SWITCH PROTECTION
ANTI-FROZEN	NORMAL, ERR	ANTIFREEZING PROTECTION
DISINFECTING	YES, NO	DISINFECTING
FH STARTUP MODE	MAIN CTR/WIRED CTR	FLOOR HEATING STARTUP MODE
AC/FH PRIORITY	AC PRIOR,FH PRIOR	AC/FLOOR-HEATING PRIORITY
ODU VERSION	1.0—26.4	OUTDOOR UNIT VERSION
CONTROLLER VER	1.0—26.4	WIRED CONTROLLER VERSION
COOLING&H-REC	ENABLE,DISABLE	COOLING & HEAT RECOVERY
FH E-HEAT STA	ENABLE,DISABLE	FLOOR-HEATING E-HEATER STARTUP
OVER AMP	NORMAL, ERR	OVER-CURRENT PROTECTION
SENSOR JOINT	NORMAL, ERR	CURRENT SENSOR CONNECTION PROTECTION
DISCH HIGH TEM	NORMAL, ERR	HIGH DISCHARGE TEMP PROTECTION
OVERSPEED	NORMAL, ERR	OVER-SPEED PROTECTION
Page 5		
FAN1 VOLT PRO	NORMAL, ERR	FAN 1 VOLRAGE PROTECTION
FAN1 AMP PRO	NORMAL, ERR	FAN 1 CURRENT PROTECTION
FAN1 MOTOR HT	NORMAL, ERR	FAN 1 MOTOR OVERHEATING PROTECTION
FAN1 IPM HT	NORMAL, ERR	FAN 1 IPM OVERHEATING PROTECTION
FAN1 IPM PRO	NORMAL, ERR	FAN 1 IPM PROTECTON
ROTOR LOCKED	NORMAL, ERR	COMPRESSOR STALLING PROTECTION
PFC ERROR	NORMAL, ERR	PFC ERROR
DRIV MOD RESET	NORMAL, ERR	DIRVE MODULE RESET

ODU&WT COMM	NORMAL, ERR	COMMUNICATION ERROR BETWEEN OUTDOOR UNIT AND WATER TANK
RAD SENSOR	NORMAL, ERR	RADIATOR SENSOR ERROR
CHARGING ERROR	NORMAL, ERR	CHARGING CIRCUIT ERROR
BUS UN-VOLT	NORMAL, ERR	DC BUS UNDER-VOLTAGE
FAN2 VOLT PRO	NORMAL, ERR	FAN 2 VOLTAGE PROTECTION
FAN2 AMP PRO	NORMAL, ERR	FAN 2 CURRENT PROTECTION
FAN2 MOTOR HT	NORMAL, ERR	FAN 2 MOTOR OVERHEATING PROTECTION
FAN2 IPM HT	NORMAL, ERR	FAN 2 MODULE OVERHEATING PROTECTION
FAN2 IPM PRO	NORMAL, ERR	FAN 2 MODULE PROTECTON
START FAILED	NORMAL, ERR	STARTUP FAILURE
IPM ERROR	NORMAL, ERR	IPM ERROR
PHASE LOSS	NORMAL, ERR	PHASE LOSS
INV COMM ERROR	NORMAL, ERR	INVERTER COMMUNICATION ERROR
RAD OV-TEMP	NORMAL, ERR	RADIATOR OVER-TEMP
AMP DETECT	NORMAL, ERR	CURRENT SENSING CIRCUIT ERROR
BUS OV-VOLT	NORMAL, ERR	DC BUS OVER-VOLTAGE
Page 6		
FH E-HEATER	NORMAL, ERR	FLOOR-HEATING E-HEATER ERROR
EH OV-BURNING	NORMAL, ERR	E-HEATER OVERBURNING ERROR
MODE DISABLE	YES, NO	MODE DISABLE
TEMPSET DISABLE	YES, NO	TEMP SETTING DISABLE
QUIK WH DISABLE	YES, NO	QUICK WATER HEATING DISABLE
CLEAN DISABLE	YES, NO	CLEANING DISABLE
JUMPER ERROR	NORMAL, ERR	JUMPER ERROR
ON/OFF DISABLE	YES, NO	ON/OFF DISABLE
PARAVIEW DISAB	YES, NO	PARAMETER VIEWING DISABLE
HT DISINFEC DIS	YES, NO	HI-TEMP DISINFECTING DISABLE
LOCK STATUS	YES, NO	LOCK STATUS

Parameter of MULTI VRF INDOOR UNIT:

DISPLAY STATUS AND PARAMETER	STATUS AND PARAMETER RANGE	REMARKS
INLET TUBE	-255~+255 (ERR)	INLET TUBE TEMPERATURE
MID TUBE	-255~+255 (ERR)	MID TUBE TEMPERATURE
OUTLET TUBE	-255~+255 (ERR)	OUTLET TUBE TEMPERATURE
TEMP	-255~+255 (ERR)	AMBIENT TEMPERATURE
ANTI-FROZEN	NORMAL, ERR	ANTI-FREEZE PROTECTION
FLOODING	NORMAL, ERR	FLOODING PROTECTION
HIGH TEMP	NORMAL, ERR	HIGH TEMPERATURE PROTECTION
IDU CAP	2.0,2.5,3.0,3.5,4.0,4.5,5.0,6.0,6.5,7.0,8.0,9.0,10.0,11.2,14.0,25.5	INDOOR CAPACITY
INDOOR COMM	NORMAL, ERR	INDOOR COMMUNICATION
HEATPUMP	YES ,NO	
E-HEATER	ON, OFF	
PUMP	ON, OFF	
OPER MODE	COOLING, DRY, BLOWING, HEATING	OPERATING MODE
SET TEMP	16-30	SET TEMPERATURE
SET FAN SPEED	LOW, MID, HIGH. AUTO	
FAN SPEED	OFF, LOW, MID, HIGH, BREEZE	
SWING	ON, OFF	
MODE CONFLICT	NORMAL, CONFLICT	
EXV STEP	0-480	
DISPLAY COMM	NORMAL, ERR	DISPLAYER COMMUNICATION
TYPE	H SERIES, OTHERS	
SET MASTER	MASTER, SLAVE	
DOOR CARD	--,INSERT, PULL OUT	

The referenced standard of the above normal range

Debugging parameter	Unit	Referenced standard
Compressor current	A	The current changes according to different frequency.
Discharge (top cabinet) temperature of compressor	°C	The discharge protection temperature of AC and DC inverter compressor is 118°C; the discharge temperature of intelligent inverter compressor is 125°C; the discharge temperature of digital compressor is 130°C. The normal temperature of R410A system when cooling is 70~85°C and it is over 10°C higher than the corresponding saturation temperature of system high pressure; its normal temperature during heating is 65~75°C and it is over 10°C higher than the corresponding saturation temperature of system high pressure. The normal temperature of R22 system during cooling is 85~100°C and it is over 10°C higher than the corresponding saturation temperature of system high pressure; its normal temperature during heating is 80~90°C and it is over 10°C higher than the corresponding saturation temperature of system high pressure.
Voltage of driver bus	V	As to the inverter system, the normal voltage of bus is 1.414 times of power voltage.
Driver module temperature	°C	The protection temperature is 115°C while the normal temperature is less than 85°C.
High pressure value of system	°C	The HP protection temperature of R410A is 65°C (42kgf/cm²); the HP protection temperature of R22 is 70°C (31kgf/cm²). The normal HP temperature of the system is 35°C~55°C. Based on the changes of ambient temperature and system running capacity, the HP temperature of the system is 10°C~40°C higher than the ambient temperature. Besides, the higher the ambient temperature, the lesser different the temperature head is.
Low pressure value of system	°C	The LP protection temperature for cooling is -33°C, while the LP protection temperature for heating is -40°C. The normal LP temperature for cooling is 0~12°C, about 15°C lower than indoor ambient temperature; the normal LP temperature for heating is -20°C~10°C, about 9°C lower than outdoor ambient temperature.
Oil temperature of compressor	°C	As to digital compressor system, its oil temperature is about 40°C lower than discharge temperature of compressor, and is over 10°C higher than low pressure temperature.
Inlet and outlet tube temperature of outdoor heat exchanger	°C	During cooling, the temperature of inlet tube is 20°C higher than that of outlet tube; during heating, the temperature of inlet tube is 1°C higher than that of outlet tube. If the temperature of inlet and outlet tube is similar with ambient temperature, check whether the temperature sensor has broken off.
Mid tube temperature of outdoor heat exchanger	°C	During cooling, the temperature of mid tube is 2°C~5°C higher than that of outlet tube; during heating, the temperature of mid tube deviates from that of outlet tube by 0°C~2°C. If the temperature of mid tube is similar with ambient temperature, check whether the temperature sensor has broken off.

Opening of outdoor electric valve	PLS	It keeps at 480PLS when cooling; it is between150~480PLS when heating.
Inlet and outlet tube temperature of indoor heat exchanger	°C	Based on the different ambient temperature, inlet tube temperature is 1°C~7°C lower than outlet tube temperature in the same indoor unit in cooling mode; inlet tube temperature is 10°C~20°C lower than outlet tube temperature in the same indoor unit in heating mode.
Mid tube temperature of indoor heat exchanger	°C	In cooling mode, mid tube temperature is 0°C~5°C lower than outlet tube temperature; in heating mode, mid tube temperature in between the temperature of inlet tube and outlet tube.
Opening of indoor electric valve	PLS	Opening is automatically adjusted between 120~480PLS.
Communication system	——	With monitoring software, main board and wired controller data of all indoor units will be detected in real time to check whether communication malfunction occurs.
Air supply system	——	Indoor air supply distance is 3m~4m; average fan speed is 1.5m~3.0m; as to the duct with multiple air inlet, the air supply capacity of each air inlet changes according to different loads.
Drainage system	——	Drainage of indoor unit is fluent and complete, and there is no drain trap in condensate pipe; drainage is discharged completely from the drain pipe, without direct drippage from the unit base.
Others	——	There is no abnormal noise from the compressor and outer fan of indoor unit. The unit operates without malfunction.

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