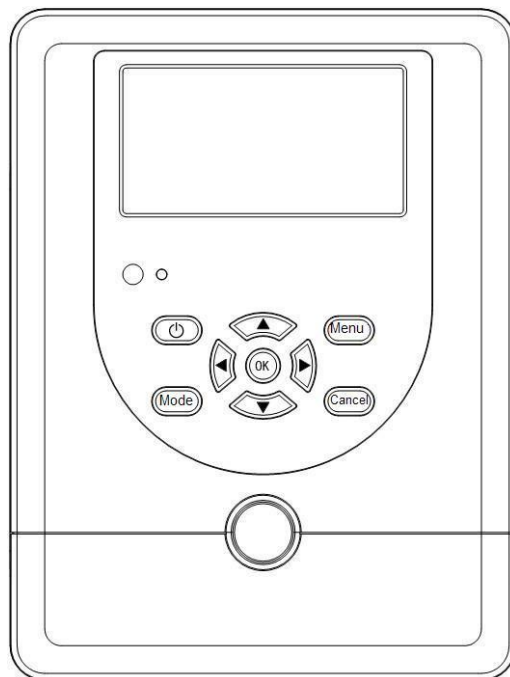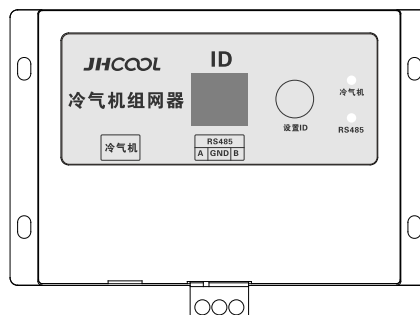# Group control system installation manual

Group control system, also known as central control system, which connect with all installed evaporative air coolers to centralized controller, to make individually controlled evaporative air cooler to a whole system, to achieve remote monitoring, information detection and function control through the centralized controller.

Centralized controller

Network linker

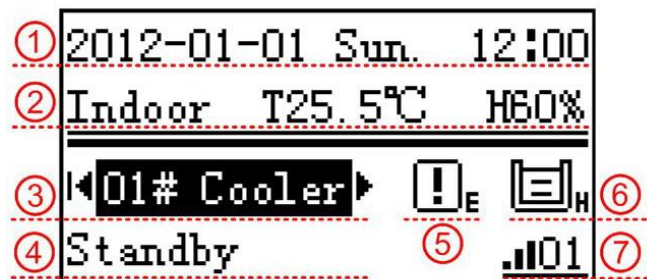
Content

Operation section

Installation section

Operation section

Centralized controller operation instruction

Features on centralized controller:
(1)Power-down data retention, all settings will be saved when power down;

(2)Can control single unit air cooler, or all air coolers;

(3)The configured air coolers, can be turned on/off through power button;

(4)Temperature and humidity control;

(5)With intelligent timing function, can be configured to work in workday only;

(6)Support shut down cleaning and pre-cooling function;

(7)Automatic cleaning cycle 0-999 hours, flexible configuration;

(8)Control air cooler numbers: 1-28 units;

(9)Automatically record environmental temperature and humidity in 24 hours;

(10)Record fault information, to identify failure happened time.

1. Standby interface:

① Date, Day of week, Time;

② Indoor temperature and humidity;

③ The selected evaporative air cooler;

④ Status of the selected evaporative air cooler, 01# Evaporative air cooler turned off. The status including "Shutdown", "Vent", "COOL", "AUTO", "CLEAN", "SWING", please refer to 3.1 Basic function setting;

⑤ Fault identification, suggesting occurred fault , fault flashing in the status area ④

⑥ The water level status of current evaporative air cooler, the icon means in HIGH water level. When evaporative air cooler with low water level, it shows ⊔L.

⑦ Indicates the fan speed on current evaporative air cooler, fan speed is in 01.

On the Standby interface, press the arrow key to switch evaporative air cooler.

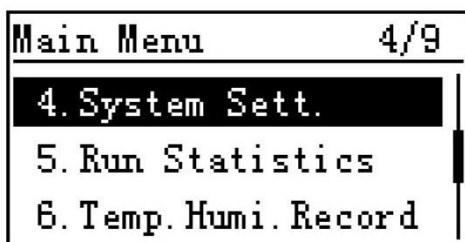On the Standby interface, Press the power button, suggesting turn off all evaporative air coolers, the controller is shutting down evaporative air coolers, do not disconnect the controller power supply.

```
┌─────────────────────────────┐
│ 2012-01-01 Sun.   12:00     │
│ Indoor   T25.5℃    H60%     │
│ ═══════════════════════════ │
│ Coolers Turn Off...         │
│        Press ON/OFF Key     │
└─────────────────────────────┘
```

2. Main menu

```
Main Menu          1/9
┌─────────────────────┐
│ 1.Basic Functions   │
│ 2.Temp.Humi.Sett.   │
│ 3.Timing Sett.      │
└─────────────────────┘
```

```
Main Menu          4/9
┌─────────────────────┐
│ 4.System Sett.      │
│ 5.Run Statistics    │
│ 6.Temp.Humi.Record  │
└─────────────────────┘
```

```
Main Menu          7/9
┌─────────────────────┐
│ 7.Error Record      │
│ 8.Bus Status        │
│ 9.About             │
└─────────────────────┘
```

On the Standby interface, press the Menu key, can enter the Main menu, the Main menu includes:

(1)Basic function setting
Control the working mode of the single or all evaporative air coolers, fan speed, swing and cleaning function.

(2) Temperature and humidity setting

Set all evaporative air coolers control mode, and temperature and humidity configuration parameters, please refer to temperature and humidity setting content.

(3)Timing setting
Set the timing function of evaporative air coolers, please refer to timing setting content.

(4) System setting
Modifying centralized controller date and time, interface language, and the advanced parameter settings , please refer to system parameter setting content.

(5) Run-time statistics
Accumulating centralized controller running time and evaporative air cooler running time.

(6) Temperature and humidity records

Checking the indoor temperature and humidity records within 24 hours.

(7) Error record
Inquiring evaporative air cooler error records.

(8) Bus status
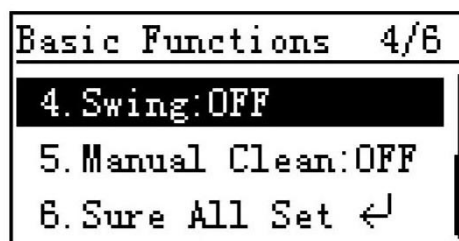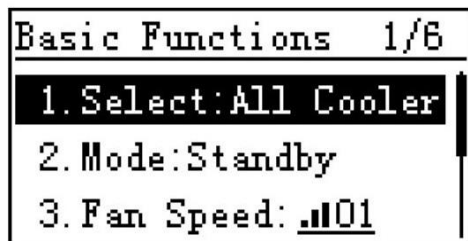Inquiring the control status of all evaporative air coolers.

(9) About
Shows version information

3.1 Basic function setting

In the Main menu, select "Basic functions setting", press the Enter key to enter the basic function setting.

In the standby interface, press the Enter key, can enter the basic function setting directly.

```
Basic Functions   1/6
1.Select:All Cooler
2.Mode:Standby
3.Fan Speed: ▁▃▅01
```
```
Basic Functions   4/6
4.Swing:OFF
5.Manual Clean:OFF
6.Sure All Set ↵
```

The basic function includes 6 options:

(1) Select evaporative air cooler

We can specify one unit or all evaporative air coolers to set the basic function, press the Enter key to enter the edit mode , adjust the left and right key to select evaporative air coolers, all evaporative air coolers→ 01 # evaporative air cooler→02 # evaporative air cooler → 03 # evaporative air cooler →... all evaporative air coolers;

(2) Mode
4 types of operating modes:

Shutdown: turn off evaporative air cooler.

VENT: Turn on the fan, blow the fresh air into indoor.

COOL: Turn on the fan and water pump, wet the cooling pad, blow the fresh air and cold air into indoor.

AUTO: According to the temperature and humidity setting, turn on/off evaporative air cooler.

In Standby interface, press the "Mode" key, you can switch the running mode quickly, the modified state will be saved automatically after 10 seconds.

(3) Fan speed
We can set the fan speed of specify evaporative air cooler.

The centralized controller can support multi-speed evaporative air cooler, but in addition to the 16-speed evaporative air coolers, other models of evaporative air coolers will be set to as follows:

● When evaporative air cooler with single-speed, the wind speed from 1~16 is for the same speed.
● When evaporative air cooler with two-speed, the wind speed from 1~7 is for low-speed, wind speed from 8~16 is for high-speed.
● When evaporative air cooler with 3-speed, the wind speed 1 is for low-speed, wind speed from 2~7 is for medium speed, wind speed from 8~16 is for high-speed.

(4) Swing
If evaporative air cooler with auto-swing function, the air outlet direction will be changed

circularly.

(5) Manual clean

Under Manual clean function, the electric drain valve will be turned on, drain out the dirty water in water tank, the electric drain valve will be closed automatically after 5 minutes.
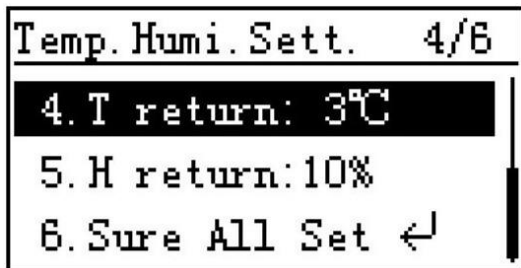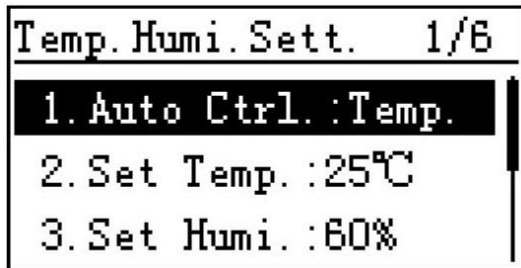
(6)Confirm all settings

After finishing all settings modification, must confirm "confirm all settings" to take into effect, and show " Modification completed!"

3.2 Temperature humidity setting

In the main menu interface, select "Temperature humidity setting" , press the Enter key to enter into the temperature humidity setting.

```
Temp.Humi.Sett.   1/6
1.Auto Ctrl.:Temp.
2.Set Temp.:25℃
3.Set Humi.:60%
```

```
Temp.Humi.Sett.   4/6
4.T return: 3℃
5.H return:10%
6.Sure All Set ↵
```

The Temperature and humidity control setting includes 6 options:

(1) Automatic control

When evaporative air cooler working mode selects to Automatic control, evaporative air cooler will be controlled automatically.
The Automatic control can choose to control temperature or control humidity.

- Control temperature**:**
    Turn on/off evaporative air cooler according to ambient temperature:
When the ambient temperature ≥ set temperature, turn on evaporative air cooler;
When the ambient temperature ≤ set temperature – temperature difference, turn off evaporative air cooler;

- Control humidity
    Turn on/off evaporative air cooler according to ambient humidity**:**
When the ambient humidity ≤ set humidity, turn on evaporative air cooler;
When the ambient humidity ≥ set humidity +humidity difference, turn off evaporative air cooler;

(2) Set temperature
    Refer to (1) Automatic control about temperature setting parameters

(3) Set humidity
    Refer to (1) Automatic control about humidity setting parameters.

(4) Temperature return
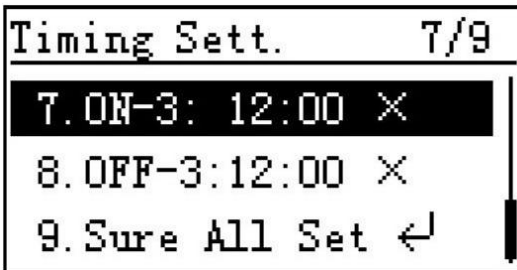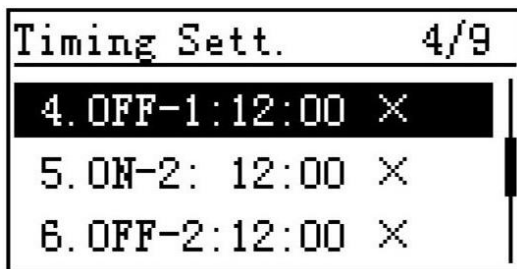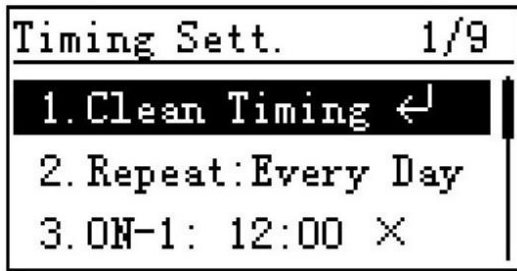   Refer to (1) Automatic control about temperature setting parameter.

(5) Humidity difference
    Refer to (1) Automatic control about humidity setting parameters.

(6) Confirm all settings
After finishing all settings modification, must confirm "confirm all settings" to take into effect, and show " Modification completed!"

3.3 Timing setting

```
Timing Sett.      1/9
1.Clean Timing  ↵
2.Repeat:Every Day
3.ON-1:  12:00   ×
```

```
Timing Sett.      4/9
4.OFF-1:12:00   ×
5.ON-2:  12:00   ×
6.OFF-2:12:00   ×
```

```
Timing Sett.      7/9
7.ON-3:  12:00   ×
8.OFF-3:12:00   ×
9.Sure All Set  ↵
```

In the main menu interface, select "Timing setting" , press the Enter key to enter into timer setting.

Timing setting function can control evaporative air cooler timing turn on/off through centralized controller.

When centralized controller turn off, all evaporative air coolers will be turned off. When centralized controller turn on, the evaporative air coolers set with starting status will be turned on automatically.

There are 3 groups of timing turn on/off to choose.

(1) Clean Timing

When clean timing setting, timer functions will be canceled, all timing turn on/off time will be identified as "×".

(2) Repeat timing setting

The repeat timing setting function can set the timing of "Daily " , "Monday – Friday" or "Monday – Saturday" .

When timing setting configured as "Monday – Friday", there is no timing on Saturday and Sunday.

When timing setting configured as "Monday – Saturday", there is no timing on Sunday.

(3) Power on-1

After setting timing turn on, suffix "×" means not enabled, suffix "√" means enabled.

(4) Power off-1

(5) Power on-2

(6) Power off-2

(7) Power on-3
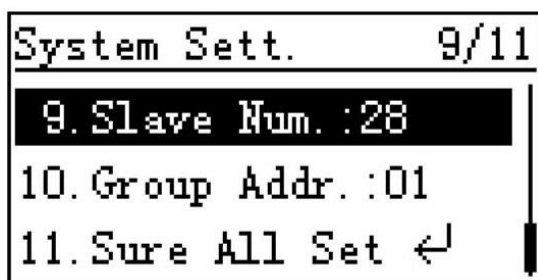
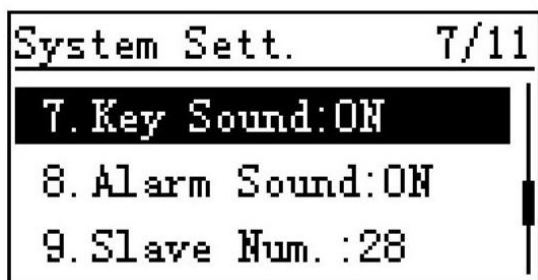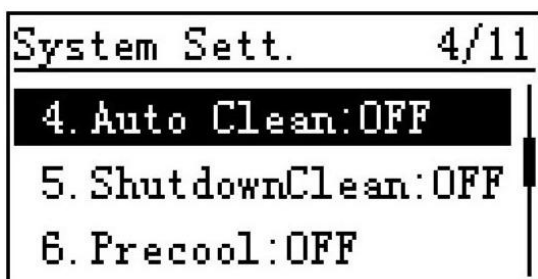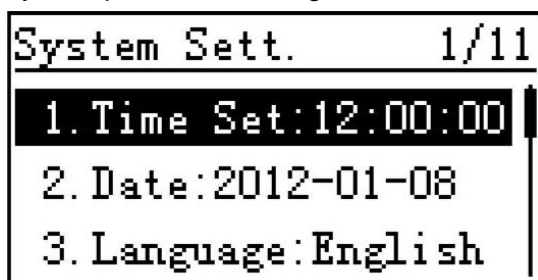### (8) Power off-3

Please refer to setting of (3) Power on 1.

(9) Confirm all settings

After finishing all settings modification, must confirm "confirm all settings" to take into effect, and show " Modification completed!"

3.4 System setting

In the main menu interface, select "System setting", press the Enter key to enter into System parameter setting.

```
System Sett.        1/11
  1.Time Set:12:00:00
  2.Date:2012-01-08
  3.Language:English
```

```
System Sett.        4/11
  4.Auto Clean:OFF
  5.ShutdownClean:OFF
  6.Precool:OFF
```

```
System Sett.        7/11
  7.Key Sound:ON
  8.Alarm Sound:ON
  9.Slave Num.:28
```

```
System Sett.        9/11
  9.Slave Num.:28
 10.Group Addr.:01
 11.Sure All Set  ↵
```

(1) Time Set

To modify the centralized controller display time.

(2) Date

To modify the centralized controller display date, according to the set date, the system will calculate the week time automatically.

(3) Language

To modify the language of operating interface, Chinese and English for optional .

(4) Auto clean

Automatic cleaning is for evaporative air cooler, to drain out dirty water automatically, and supply with fresh water. The maximum cleaning cycle can be set to 999 hours , automatic cleaning function can be turn off if not require it.

(5) Shutdown clean
When shutdown cleaning function is on, evaporative air cooler will activate the cleaning function when shutdown.

(6) Pre-cooling
Pre-cooling function means, before evaporative air cooler supply air, turn on water pump, to wet cooling pad, then evaporative air cooler blows fresh air to room.

(7) Key sound
  Turn on or turn off the key sound for 可以 option. 开启或关闭按键声音。

(8) Alarm sound

To choose turn on or turn off the alarm sound when centralized controller with malfunction.

(9) Slave number
To set the numbers of evaporative air coolers be controlled by centralized controller, **maximum is 28 units, minimum is 1 unit.**
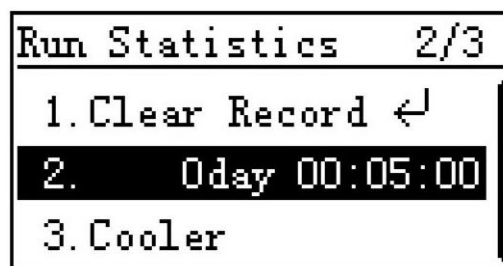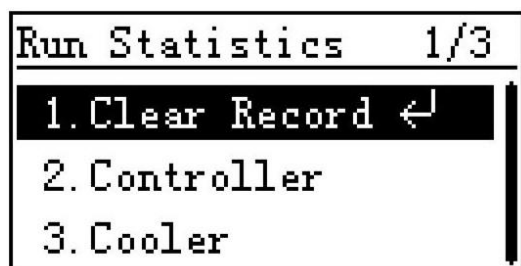
(10)   Group address
To set the address of centralized controller, for multi-controller network.

(11) Apply to all modifications
After finishing all settings modification, must confirm "Apply to all modifications" to take into effect, and show " Modification completed !"

3.5 Run-time Statistics

In the main menu interface, select "Run-time Statistics" , press the Enter key to enter into Run-time Statistics.

```
Run Statistics    1/3        Run Statistics    2/3
1.Clear Record  ↵            1.Clear Record  ↵
2.Controller                 2.        0day 00:05:00
3.Cooler                     3.Cooler
```

(1) Clear Record
To clear statistics time.

(2) Controller run-time
To select controller running time, press the Enter key, will show the cumulative running time.

(3) Evaporative air cooler run-time

To select evaporative air cooler run-time, press the Enter key , will show the cumulative running time.

3.6 Temperature humidity record

In the main menu interface, select "Temperature humidity record", press the Enter key to enter into temperature and humidity records inquiry.
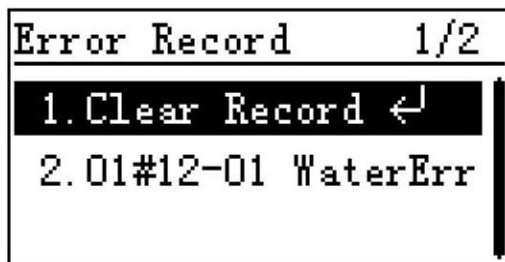
The centralized controller records environmental temperature and humidity per hour, can record environmental temperature and humidity in the last 24 hours.

To select temperature humidity record, press the Enter key, will show the temperature and humidity records.

```
Temp.Humi.Record 1/2          Temp.Humi.Record 2/2
 1.Clear Record ↵              1.Clear Record ↵
 2.12:00 28.9℃ H48%            2.         2012-01-01
```

3.7 Error Record

In the main menu interface, select "Error Record", press the Enter key to enter into Error records inquiry.

```
Error Record    1/2           Error Record    2/2
 1.Clear Record ↵              1.Clear Record ↵
 2.01#12-01 WaterErr          2. 2012-01-01 12:10
```

To select Error record, press the Enter key, will show the Error records.

Some malfunctions and reasons from centralized controller:

Malfunction	Reason
RJ11 Error	Network linker and 4-core communication wiring with bad connection
485 Error	Centralized controller communication wiring with bad connection, or evaporative air coolers are not powered.
Over-voltage	Power supply voltage is abnormal, over voltage
Over-current	Current is abnormal, or some parts damaged
Drainage failure	May drain valve damage or pipe blockage
Watering failure	Water flow is too small, or water inlet valve damaged
Thermostat sensor	Thermostat sensor damaged

3.8 Bus status

In the main menu interface, select "Bus status", press the Enter key to enter into Bus wiring status inquiry.

Bus wiring means all evaporative air coolers communication wiring, Bus wiring status means all network linkers status.

Select the status record, press the Enter key to inquire the data packet sent and received from centralized controller. When the transceiver quantity is equal, means good communication status, if sent > received, means the communication data packet loss.

```
Error Record      1/29
1.Clear Record  ↵
2.01#Cooler Normal
3.02#Cooler Normal
```

```
Error Record      2/29
1.Clear Record  ↵
2.Tx000030 Rx000030
3.02#Cooler Normal
```

4 types of Bus status:
● Testing : testing the state of the communication line;
● Normal : normal communication between centralized controller and evaporative air coolers;
● 485 failure: wiring between network linker and centralized controller abnormal or evaporative air coolers are not powered;
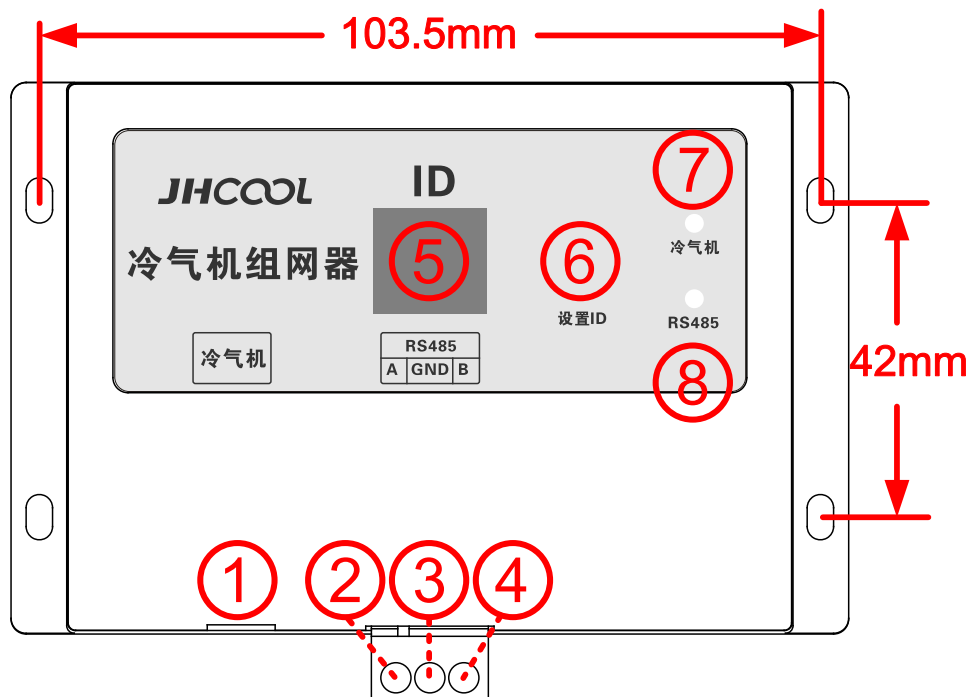
● The RJ11 failure: Network linker and evaporative air cooler wiring abnormal

3.9 About

Shows version information

```
About
        Concentrated
        Controller
     Version:V1.0.0
```

Network linker operation instruction

① Evaporative air cooler communication line interface (RJ11)
② RS485 communication A
③ Signal protective earth connection
④ RS485 communication B
⑤ ID display
⑥ ID settin7
⑦ Evaporative air cooler communication indicator
⑧ 485 communication indicator

Network device powered through evaporative air cooler with a four-core communication line, the four-core communication line monitor evaporative air cooler. It receives centralized controller information through 485 interface.

ID setting method:

Long Press ⑥ ID setting button, until ⑤ ID starts flashing , then release the setting key, then press shortly to choose 01 to 28 , wait for flashing end, the set ID is saved automatically. when ⑤ show "- -" indicates not set ID, the network linker on evaporative air cooler does not control. (Network linker ID must be unique)

⑦evaporative air cooler communication indicator : flashing indicates have received communication signal from evaporative air cooler, ①and evaporative air cooler is connected properly .

⑧ 485 communication indicator : flashing indicates have received communication signal from bus, ②④ and centralized controller connected properly.

Note: If the bus wiring with 2 units or more units network linkers with same ID, will lead to

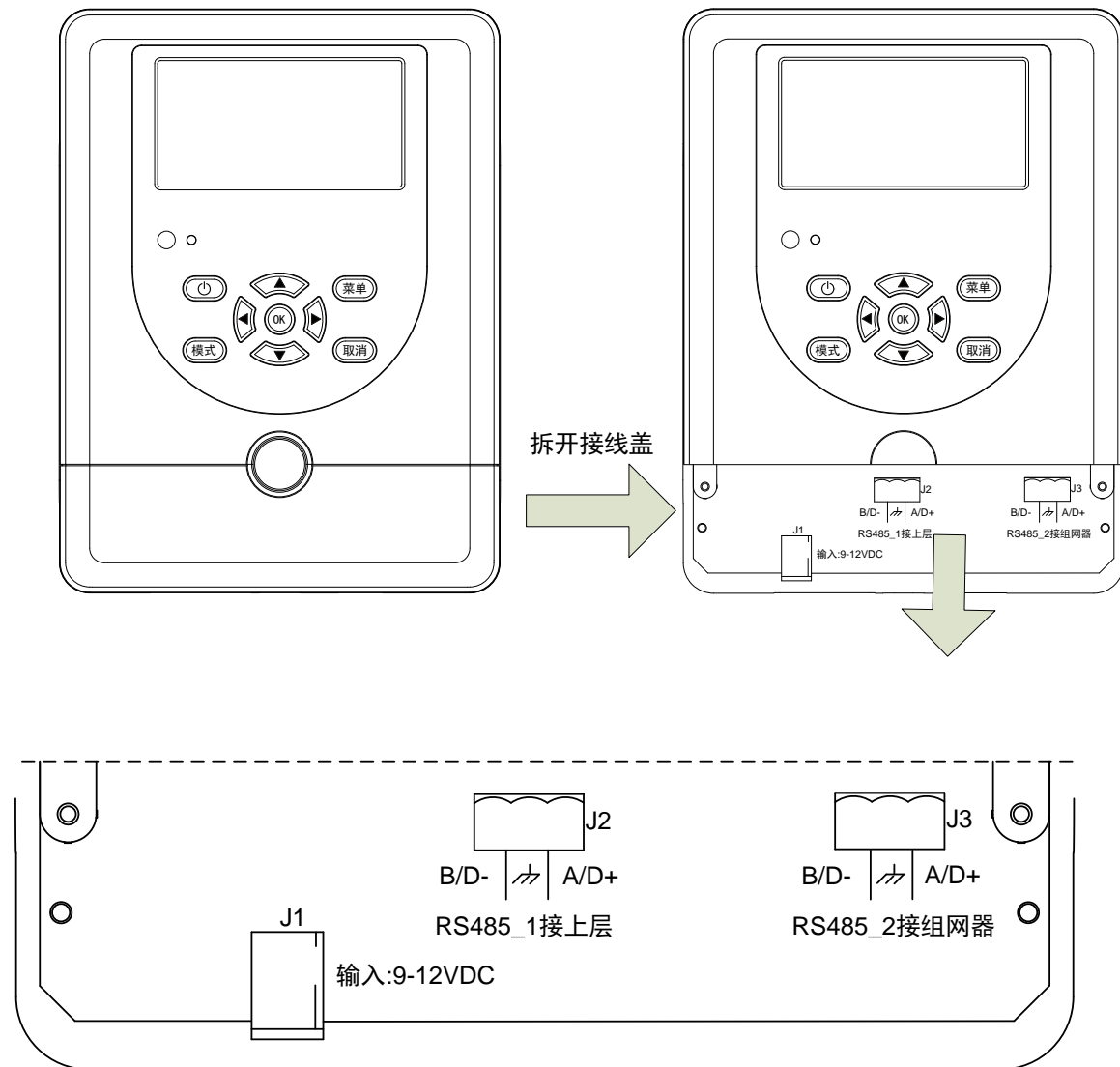485 failure, so make sure all network linkers ID are unique .

Installation section

1. Packing list

Name	QTY	
User manual	1	set
centralized controller	1	unit
12VDC Adapter	1	set
Network linker	Note1	set
shielded twisted pair cable RVSP2×0.3	Note1	Hectometre

Note 1: According to actual order configuration.

2. Interface

拆开接线盖

J2
B/D- ⊥ A/D+
RS485_1接上层

J3
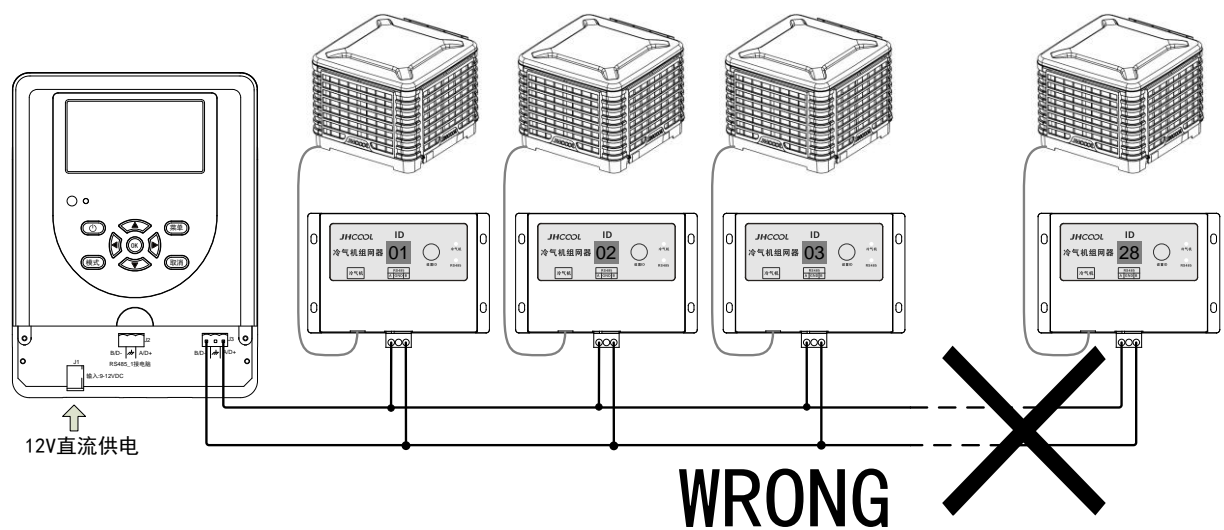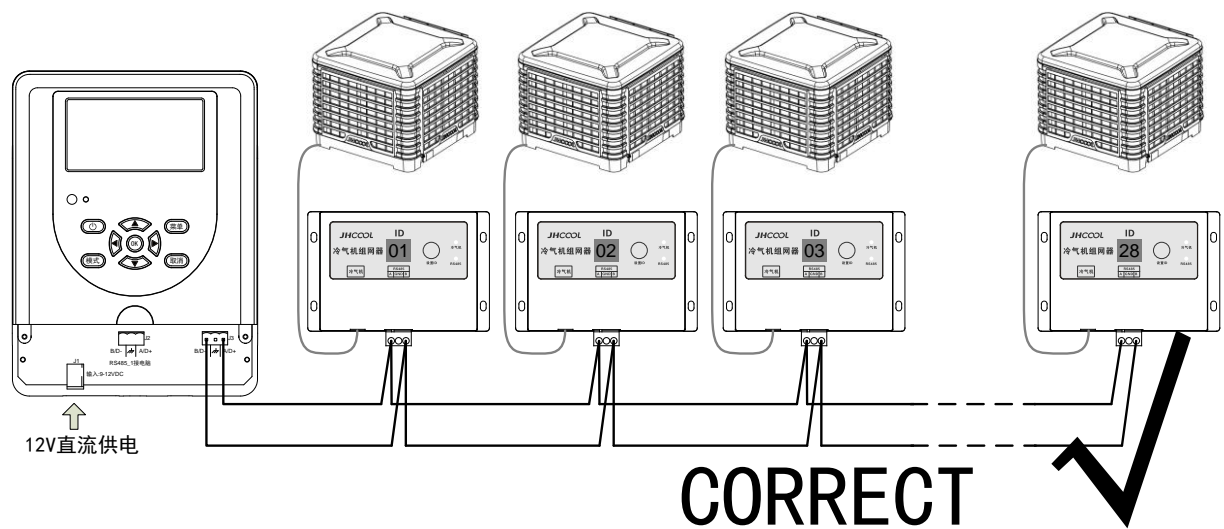B/D- ⊥ A/D+
RS485_2接组网器

J1
输入:9-12VDC

J1: DC power interface , connect to a 12V DC power adapter.

J2: upper RS485 interface is for PC control or multi- stage cascade centralized controller, currently it is a reserved interface.

J3: RS485 interface for network, through this interface, the network on control bus controls air cooler through network.

3. Installation wiring diagram and Notes

Important notes:

1. One set of centralized controller supports 28 units evaporative air coolers with network linkers, 485 communication A connect to 485 communication A, 485 communication B connect to 485 communication B.

2. Centralized controller should powered with original 12V DC power adapter.

3. The communication line must choose international common shielded twisted pair cable, A and B data lines must be twisted pair, wiring diameter over than 0.3mm2, one

end of shielded cable with earth connection. The suggested shielded twisted pair cable model is RVSP2 × 0.3 , ordinary network cable wiring is not allowed to use in this system.

4. 485 bus must be in "hand in hand" - bus architecture , star connection and bifurcation connection are not allowed.

正确 □ □ □ □ □

错误 □ □ □ □ □

错误 □ □ □ □ □