WUXI HUTEC

Functional Specification

Product： Dehumidifier Remote-Control
Type： HJ-CSJ63/64/65/66/81/82
Customer： W C Wood Company Limited
Rev: A
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Date： 26th Aug，2005

Warning:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

A. Brief

There are three parts of the Dehumidifier Remote-Control.

a. **Electrical source board** (Same as the normal dehumidifier: 4-75517-101，4-75517-102)
   - Voltage rage: 115VAC / 60Hz，220AC /50Hz

b. Receiving-Control(HJ-CSJ63/64/65/66)
   - Receiving-Control receives the instruction from the Transmitting-Control and controls the fan and compressor to be on or off.

c. Transmitting-Control(HJ-CSJ81/82)

- User sets the RH on Transmitting-Control, and the Transmitting-Control emits the instruction to Receiving-Control to open or close compressor according to the ambient RH and user's RH set-point.
- In order to save power, the transmitting-control sleeps 57s and wakes up 3s per minute normally. In sleep status, the transmitting-control does nothing , not tests the RH or temperature ,not emits instruction to Receiving-control, not changes the LCD. So the current is lower than 80uA in sleep status. You can wake up transmitting-control by pressing any key while it's in sleep status.
  While time reaches per minute or user presses any key , the transmitting-control wakes up. In wake up status, transmitting-control tests the RH and the temperature, then it decides what to do. The current is about 4mA in wake up status.
- The distance of the remote is about 15m indoors or above 20m outdoors.

B. Functional Specification

Part a Electrical source board

Same as the normal dehumidifier: 4-75517-101，4-75517-102,not described here.

Part b Receiving-Control

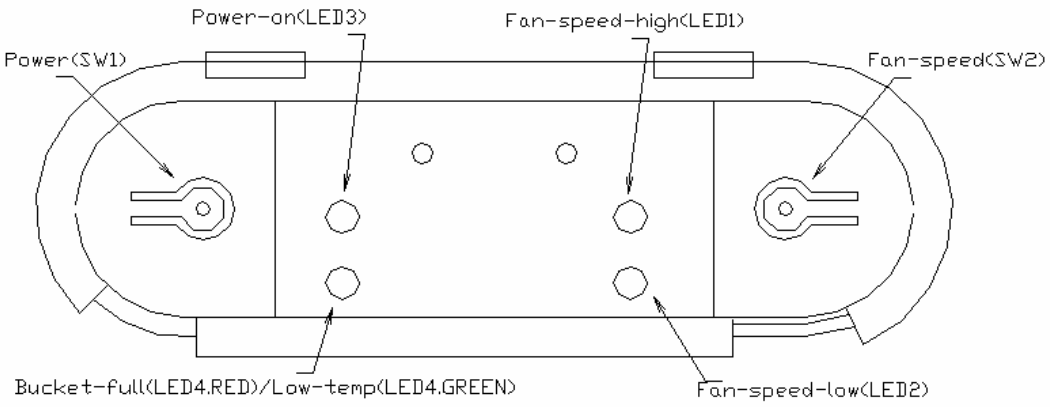
Four Led Lights: **Fan-speed-high** light (LED1),
Fan-speed-low light (LED2),
Power-on light (LED3),
Bucket-full light (LED4.RED)/**Low-temp light** (LED4.GREEN)

TWO Buttons: **Power** button(SW1), **Fan-speed** button(SW2)

TWO Temperature sensors: ambient-temperature sensor, coil-temperature sensor

ONE Buzzer: bucket-full alarm

Figure.1 Receiving-Control



1. Normal mode

1) When first time turning on power to the receiving-control, the receiving-control begin to work with the power-on light on according to the instruction from the transmitting-control. If the remote communicates error for 30 minutes, the power-on light flashes and the audible alarm (Bi-Bi) will be generated. After communicate error, you can press Power button and Fan-speed button at receiving-control. Fan will run at the speed according to your selection. Compressor will keep on for 52 minutes and keep off for 8 minutes.

2) When the fan speed is chosen high on the transmitting-control, the fan-speed-high light is on and the high-speed fan runs if it is enable.
When the fan speed is chosen low on the transmitting-control, the fan-speed-low light is on and the low-speed fan runs if it is enable

3) Compressor must lag behind fan for 4 minutes. Once the compressor quits running, it needs 4 minutes of interval if it should be turn on again.

4) When bucket full condition is detected for **2 seconds**, compressor & fan will be turned off sequentially. Then bucket-full light will be on and the audible alarm (1s on/1s off) will be generated every hour.

5) The buzzer is able to alarm only because being set enable from transmitting-control.

2. Very-Low-temp mode

If ambient temperature is below 4'C for 4mins, the control stops, the four LED lights flash until the ambient temp is above 5'C for 8mins.

3. Low-temp mode

When the ambient temperature is lower than 15'C and lasts over 10 minutes continuously, the receiving-control will automatically enter into the low-temp mode and the low-temp light begins flash.

In the low-temp mode, there are two conditions:

Condition A:

If humidity does not reach your set point, the compressor runs 52mins on/8mins off. At the end of the cycle, the receiving-control checks the coil-temp.

If the coil-temp is above 5'C, the compressor continues 52mins on until the humidity reach the Set-point.

If the coil-temp is below 5'C, the compressor keeps stopping and fan runs to defrost for 8mins again. At the end of the cycle, check the coil-temp again.

Condition B:

If humidity reaches the set point in 52mins, the compressor stops and the fan runs, the receiving-control runs defrost for 4mins. at the end of the 4mins, check the coil-temp.

If the coil-temp is above 5'C, the compressor and the fan keep stopping unless humidity increases to the set point again.

If the coil-temp is below 5'C, the receiving-control runs defrost for 4mins again, and then check the coil-temp.

Once the ambient temperature is above 18'C for 10mins, the remote enter the normal-mode.

4. Defrost mode:

When the coil temperature falls below **2'C** more than **10** minutes, the receiving-control will automatically enter 'Defrost mode'. In 'Defrost Mode', the compressor will be turned off, the fan will continue running with the selected fan speed. The compressor remains off until coil temperature rises to **9'c** or higher more than **10** minutes.

(Note: the defrost point is not decide, maybe is 2'C and 9'C, 4'C and 10'C, 6'C and 11'C.)

5. Fail-safe mode

If the coil temperature sensor and ambient temperature sensor fail to work properly, the control will run in a fail-safe mode. The fan will run at the speed you select and the compressor will cycle with **52** minutes on / **8** minutes off sequence.

6. Self-test mode

While power is off, press Fan-speed button and Power button at the same time for 3 seconds, you will see all LED light on and the buzzer alarms for 1 sec. It means the

receiving-control has entered the self-test mode. Then you can test the parts of the receiving-control one by one.

Press fan-speed button, fan-speed-high light is on and high speed fan runs.
Press fan-speed button, fan-speed-low light is on and low speed fan runs.
Press fan-speed button, power-on light is on and compressor & high speed fan run.
Press fan-speed button, bucket-full light is on or off if the bucket is full or not.
Press fan-speed button, test the ambient temperature, and the temp will be symbol by the 4 LED lights. (See table.1)
Press fan-speed button, test the coil temperature, and the temp will be symbol by the 4 LED Lights. (See table.1)
Press fan-speed button, you will quit the test mode and enter the power off status.
You can quit the self-test mode and enter the power off status at any time if you press power button.

Table.1 Table of the temp

Ambient temp ℃	Low Temp Led	Bucket Full Led	Power Led	Low Fan Led	High Fan Led	Coil Temp ℃	Low Temp Led	Bucket Full Led	Power Led	Low Fan Led	High Fan Led
-29- -26	0	0	0	1	1	-29- -25	0	0	0	1	1
-25- -21	0	0	1	0	0	-24- -21	0	0	1	0	0
-20- -18	0	0	1	0	1	-20- -17	0	0	1	0	1
-17- -14	0	0	1	1	0	-16- -14	0	0	1	1	0
-13 - -11	0	0	1	1	1	-13- -11	0	0	1	1	1
-10- -8	0	1	0	0	0	-10- -8	0	1	0	0	0
-7 - -6	0	1	0	0	1	-7- -5	0	1	0	0	1
-5 - -3	0	1	0	1	0	-4- -2	0	1	0	1	0
-2 - 0	0	1	0	1	1	-1- 1	0	1	0	1	1
1-2	0	1	1	0	0	2-3	0	1	1	0	0
3-5	0	1	1	0	1	4-6	0	1	1	0	1
6-7	0	1	1	1	0	7-9	0	1	1	1	0
8-10	0	1	1	1	1	10-12	0	1	1	1	1
11-12	1	0	0	0	0	13-15	1	0	0	0	0
13-15	1	0	0	0	1	16-18	1	0	0	0	1
16-17	1	0	0	1	0	19-21	1	0	0	1	0
18-20	1	0	0	1	1	22-24	1	0	0	1	1
21-23	1	0	1	0	0	25-28	1	0	1	0	0
24-27	1	0	1	0	1	29-32	1	0	1	0	1
28-30	1	0	1	1	0	33-37	1	0	1	1	0
31-34	1	0	1	1	1	38-42	1	0	1	1	1
35-38	1	1	0	0	0	43-49	1	1	0	0	0
39-43	1	1	0	0	1	50-53	1	1	0	0	1
44-48	1	1	0	1	0						

49-53	1	1	0	1	1						

1=on, 0=off.

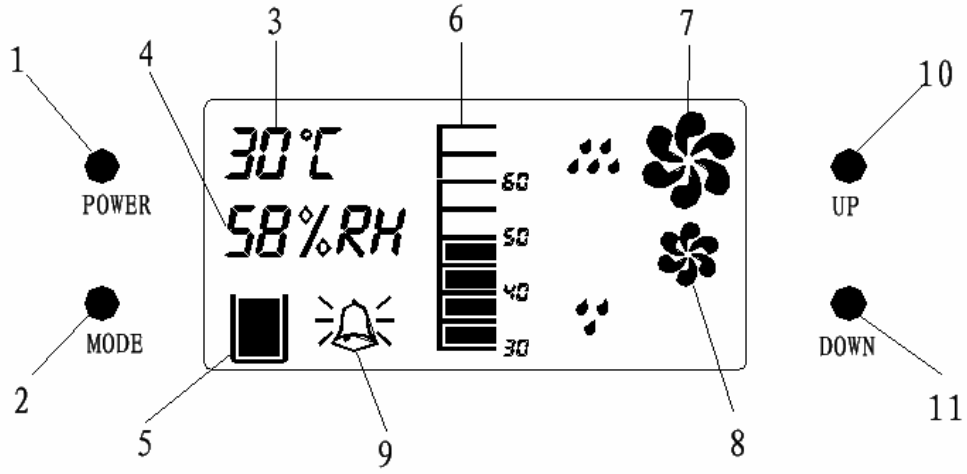
Part c Transmitting control

Four Buttons: **Power** button(1)
Mode button(2)
"UP" button (10)
"DOWN" button(11)

LCD: Fan speed high(7), Fan speed low(8), RH setting bar(6),ambient temperature(3), ambient RH(4),buzzer(9) and full-bucket(5).

Two Sensors: ambient temperature sensor, RH sensor

Figure .2 Transmitting-Control



1. Power-off mode

User can shut down the power at any time. When the power is shut, LCD will be off, and all displays & outputs on receiving-control will be shut down also.

2. Power-On Mode (Operating Mode)

LCD is on, ambient temp and ambient RH will be displayed. RH setting bar shows the user set-point, initial is 35%. Fan speed shows the previous set fan speed, initial is fan speed high.

Compressor & fan will be on if the ambient RH is **5%** higher than user set point.

Once the room RH reaches **3%** below the user set point, compressor & fan will be turned off sequentially.

3. Fail-safe mode

If either the humidity sensor or thermistor fails to work properly, the control will run in

fail-safe mode. The fan will run with user selected fan speed and the compressor will cycle with **52** minutes on / **8** minutes off sequence.

4. Setup mode

The control will automatically return to Operating Mode if the setup process is not completed within **2 minutes**.

All the changes made by user will be effective immediately. However, compressor on/off sequence MUST follow the Criteria of compressor control.

a. Fan speed setup

Setup Mode can be activated by pressing '**MODE**' button in Operating Mode. All icons on LCD display will be off except the icons of fan speed, the icon of selected fan speed will flash. '**UP**' & '**DOWN**' button can be used to change the fan speed.

b. RH setup

Pressing '**MODE**' button again, RH setting bar with numbers will be displayed. '**UP**' & '**DOWN**' button can be used to change the RH set point. RH blocks will be showed as solid & flash with selected RH set-point on LCD display.

Once the RH bar reaches the highest block, the control will switch to **Fan-Only Mode**, compressor will be turned off irrelevant to the ambient humidity.

Once the RH bar reaches the lowest block, the control will switch to **Continuous Mode**, compressor will be always on irrelevant to the ambient humidity.

c. Temperature Unit

Pressing '**MODE**' button again, temperature readout will be displayed with selected unit ('C or 'F). '**UP**' & '**DOWN**' button can be used to change the unit.

d. Buzzer setup

Pressing '**MODE**' button again will activate buzzer setup, **'UP' & 'DOWN**' button can be used to set buzzer on or off. .

e. Exit from Setup-Mode

Pressing '**MODE**' button again will bring the control back to **Operating Mode.**

5. Yard Mode

- ONE TO ONE :

  First, you keep the receiving-control and transmitting-control off. Then press '**UP**' & '**MODE**' at the same time on transmitting-control for 2 sec and the transmitting-control will emit "one to one" yard. Finally, you press fan-speed button on receiving-control. Now you will hear a "BI", it means the "one to one" is ok.

  In ONE TO ONE mode, one transmitting-control just controls one receiving-control.

- ONE TO ALL:

  First, keep the receiving-control and transmitting-control off. Then press **'UP'** & '**MODE**' at the same time and press "**POWER**" in succession. Now, the transmitting-control is on and emit "one to all" yard. All receiving-control beside the transmitting-control will receive the yard and be controlled by this transmitting-control. It means "ONE TO ALL" is ok.

  In ONE TO ALL mode, one transmitting-control just controls all receiving-control.

6. Self-test Mode

Keep the LCD off, press '**UP**' & '**DOWN**' at the same time and press "**POWER**" in succession. All symbol on LCD will light, it means the self-test mode.

1) Test LCD

Press '**UP**' ,all clear except "88° E" & "88%RH".
Press '**UP**', all clear except "BUCKET" & "BUZZER".
Press '**UP**', all clear except "RH setting bar".
Press '**UP**' ,all clear except "big fan" , "small fan" , "sun" and "compressor".
Press '**UP**', all light.
Press '**UP**', it recycle from "88° E" & "88%RH".
Press '**DOWN**' will recycle also.

2) test RH and temp

Press '**MODE',** all clear except RH and the ambient temp. It shows the ambient RH and ambient temperature.

3) quit self-test mode

Press '**MODE'**, will quit **Self-test Mode** and enter **Operating Mode**.

You can quit **Self-test Mode** and enter **Operating Mode** at any time if you press "**POWER**"