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Doc. No. 110091-010E Rev. 00

Date : May 28, 2009

FUNCTIONAL SPECIFICATION

For

AIR CONDITIONING CONTROLLER

Applied to

LCD 5004

SMALL BOARD COOL ONLY

1. INTRODUCTION

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The following describes the features and functional specifications of LCD 5004 Small Board Cool Only air conditioner controller.

Each set of controller consists of

- Main control unit
- cable
- Display unit
- Remote unit with mounting bracket

Section 6 shows the drawing of the above components on each model.

2. USER S'FEATURES

The following features can be operated by using the buttons on the Remote unit.

2.1 Power on/off

Press ① button will turn on/off the air conditioner. When turn on, it will operate according to the setting shown on the Remote unit.

2.2 Fan

Fan 🌀 button to select the fan speed (high, medium, low or auto mode). The display on the Remote unit will show the status.



Auto mode

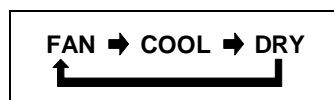
When the fan speed is put in auto mode, the speed will be adjusted automatically according to the difference between the room temperature and setting temperature.

- If the difference is 3°C or more, the speed is high.
- If the difference is 2°C, the speed is medium.
- If the difference is 1°C or less, the speed is low.

Note: The Fan 🌀 button can be used only in Fan and Cool mode, it can not be used in Dry mode.

2.3 Operating mode

Press MODE button on LCD remote to select mode of operation as in diagram below.



Fan : The LCD on the Remote unit will show FAN. The system will operate as the fan only. The SLEEP, TEMPΔ and TEMP▽ buttons are not used.


Cool : The LCD on the Remote unit will show COOL. The system will operate as the air conditioner. The compressor will

- operate if $T_{\text{room}} \geq T_{\text{set}} + 1$
- stop if $T_{\text{room}} \leq T_{\text{set}}$

However, the compressor is subjected to 3-minute delay protection each time it stops.

Dry : The LCD on the Remote unit will show DRY. The system will operate as the dehumidifier to reduce the humidity in the air.

2.4 Temperature setting

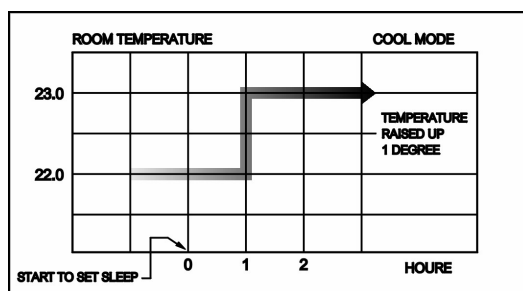
Press  button for temperature setting in a range of 18-30 °C.

2.5 Sweep (optional)


Press SWEEP button will turn on/off the sweep motor.

2.6 Sleep

Press the SLEEP button will start the sleep function. The LCD on the Remote unit will show the ★ symbol. The setting temperature will be automatically raised up 1°C after one hour.




Note:

- When the system is put in the sleep mode, press SLEEP button again will cancel the sleep function.
- When the system is put in the sleep mode and the TEMP  button is pressed, it will raise up the setting temperature 1°C from the last setting.
- When the system is put in the sleep mode and the air conditioner is stopped by the power failure or by turn off, it will cancel the sleep function.

2.7 Clock


To set the clock on the Remote unit is by

- Press ¹ button until the display shows ¹ in blinking,
- Press  button to set the time,
- Press SEND button.

Note : If there is no any buttons pressed within 10 seconds, LCD display will return to show setting temperature and no data is transmitted.

2.8 Auto start

The air conditioner can be programmed to turn on in advance.

- Press ¹ button until the display shows ON in blinking,
- Press  button to set the timer-on,
- Press SEND button.


To cancel this function

- Press ¹ button until the display shows ON in blinking,
- Press CANCEL button.

Note: If there is no any buttons pressed within 10 seconds, LCD display will return to show setting temperature and no data is transmitted.

2.9 Auto stop

The air conditioner can be programmed to turn off in advance.

- Press ¹ button until the display shows OFF in blinking,
- Press  button to set the timer-off,
- Press SEND button.

To cancel this function

- Press ¹ button until the display shows OFF in blinking,
- Press CANCEL button.

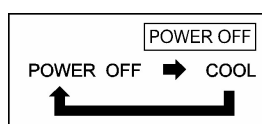
Note: If there is no any buttons pressed within 10 seconds, LCD display will return to show setting temperature and no data is transmitted.

2.10 Send

Press SEND button to transmit all parameters shown on the LCD to the main control board.

2.11 Emergency button

There is a emergency button on the Display unit to turn on/off the air condition.



3.1 Watchdog

There is a watchdog circuit to watch the operation of the microprocessor. If it is malfunctioned, this circuit will reset the microprocessor automatically.

3.2 Compressor delay protection

Each time the compressor is off, there will always be a 3 minute time delay before the compressor can restart. In case of power interruption, the system will delay the operation of the compressor in the range of 3-4 minutes in random order. This is to protect the compressors in the air conditioners of the whole building start at the same time.

3.3 Compressor minimum on time

Once the compress starts, it will operate at least 24 seconds.

3.4 Non-volatile memory

The system keeps the setting parameters such as on/off status, fan speed, etc. in its non-volatile memory. If there is a power interruption and back to normal, the control will automatically resume its operation with the same setting parameters (except the sleep and timer function which will be canceled).

If there is any change in the parameter, it will be saved in the non-volatile memory 5 seconds later.

3.5 Freeze function (optional)

In Cool or Dry mode, there is a feature to prevent the evaporator from freezing.

Enter into Freeze process	While in Freeze process	Exit from Freeze process
$T_{\text{indoor coil}} \leq 0^{\circ}\text{C}$, and Comp. runs continuously more than 10 min.	Comp. stops, and Indoor fan at low speed, and POWER LED blinks	$T_{\text{indoor coil}} \geq 7^{\circ}\text{C}$, or System OFF

3.6 Cooling Fail (optional)

In COOL or DRY mode if the compressor has been operating more than 3 minutes but the indoor coil temperature is still above 25°C , the compressor is supposed to be failed. There will be an alarm on the Display unit.

3.7 Filter cleaning

When the air conditioner operates more than 500 hours, the **Timer** LED will be blinking as the warning to clean the filter

To reset is by cutting off the power for a while.

3.8 Sensor Error

When the room sensor is failed (open/short circuit), the compressor will be turned on and off in 5 minutes cycle.

When the indoor coil sensor is failed (open/short circuit), the system will operate continuously.

3.9 Self diagnostic

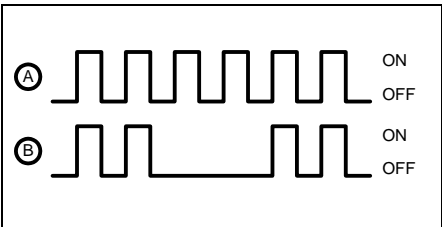
There are 2 LEDs ON the Display unit.

Power LED shows the ON/OFF status of the air conditioner.

- If the freeze (Clause 3.5) protection is active, the **Power** LED will be blinking with the signal as per figure A.
- If there is cooling fail (Clause 3.6), the **Power** LED will be blinking with the signal as per figure B.

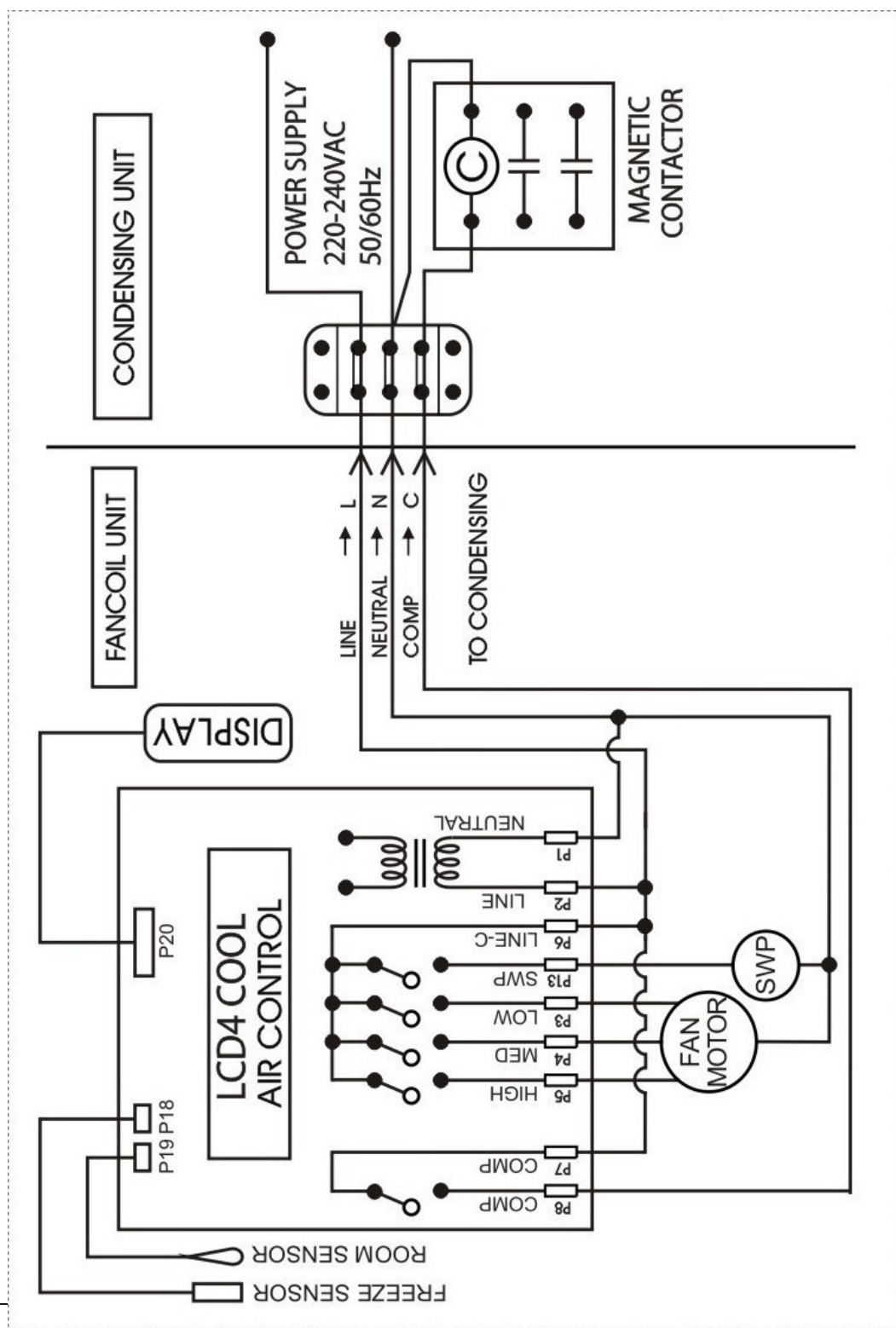
Timer LED shows the status of the auto start (Clause 2.8) and auto stop (Clause 2.9).

- If the sensor (room or freeze sensor) is failed due to open/short circuit, the **Timer** will be blinking with the signal as per figure A (Clause 3.8).
- If the **Timer** LED will be blinking with the signal as per figure B, it identifies the filter cleaning is required (Clause 3.7).



4. CONCLUSION OF FEATURES

5. WIRING DIAGRAM





7. ELECTRICAL CHARACTERISTICS

POWER SUPPLY	220-240 Vac, 50/60 Hz
POWER CONSUMPTION	Less than 8 VA.
TEMPERATURE:	
• Temperature accuracy	$\pm 1^{\circ}\text{C}$
• Storage temperature	0 to 70°C
• Ambient temperature	10 to 50°C
• Setting temperature range	18 to 30°C
• ON/OFF temperature different	1°C
LOAD CONTROL RELAY: (INDOOR FAN)	
Rating (resistive load)	
• <i>Max. switching power</i>	625 VA
LOAD CONTROL RELAY: (COMP, SWEEP)	
Rating (resistive load)	
• <i>Max. switching power</i>	1,250 VA