

2 air conditioner
controller

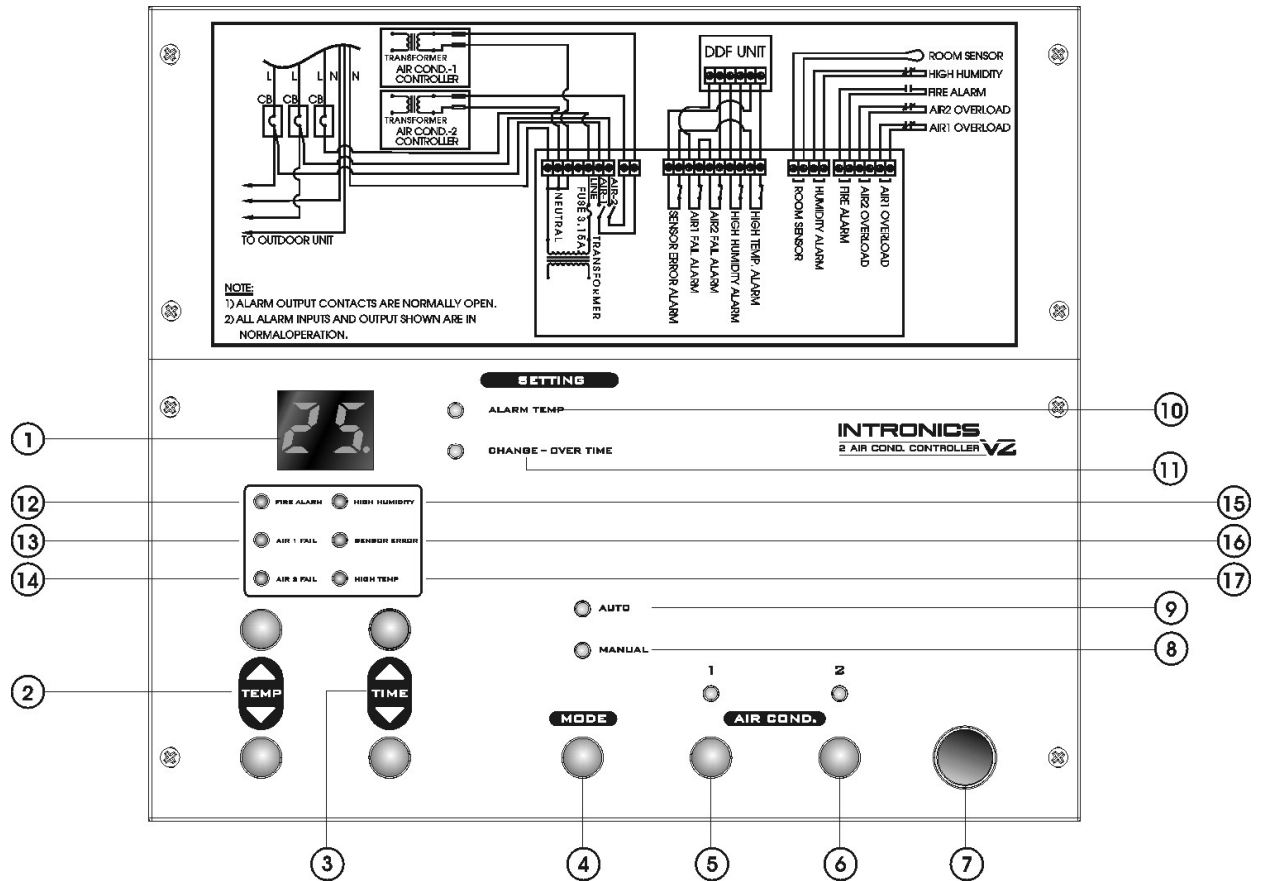
INSTRUCTION MANUAL



Document No. : 170076-040E (REV. 00)

INDEX

1. INTRODUCTION	6
2. OPERATION.....	7
2.1 Auto mode	7
2.2 Manual mode	7
2.3 High temperature setting	8
2.4 Change-over time setting	8
2.5 Alarm output	9
2.6 Fire alarm.....	9
2.7 Air 1 fail alarm.....	9
2.8 Air 2 fail alarm.....	10
2.9 High humidity alarm	10
2.10 Temperature sensor error alarm	11
2.11 High temperature alarm.....	11
2.12 Memory	12
2.13 Alarm table and LED indicator	12
2.14 Specification	13
3. Wiring diagram.....	14
4. Trouble shooting.....	15



Picture 1 : 2 Air cond controller V. 2

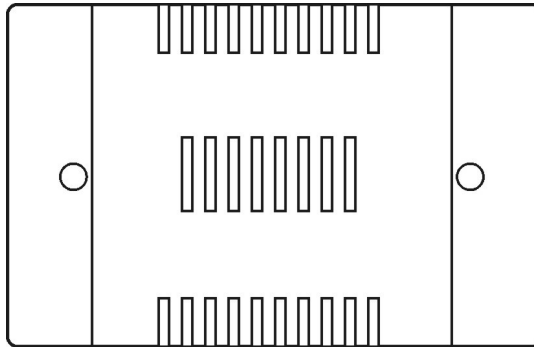
- ① 7 segment display room temperature or other setting parameters when the setting is done.
- ② Temp D / Ñ buttons for high temperature setting.
- ③ Time D / Ñ buttons for change-over time setting between two air conditioners.
- ④ Mode button to choose between auto and manual mode.
- ⑤ On/Off button for air 1 while in manual mode.
- ⑥ On/Off button for air 2 while in manual mode.
- ⑦ Fuse 3.15 A, 220 VAC for the controller.
- ⑧ LED indicator blinked to show manual mode status.
- ⑨ LED indicator to show auto mode status.
- ⑩ LED indicator to show high temperature alarm setting.
- ⑪ LED indicator to show change-over time setting.
- ⑫ LED indicator to show fire alarm.
- ⑬ LED indicator to show air 1 fail alarm.
- ⑭ LED indicator to show air 2 fail alarm.
- ⑮ LED indicator to show high humidity alarm.
- ⑯ LED indicator to show sensor error alarm.
- ⑰ LED indicator to show high temperature alarm.

1. INTRODUCTION

The primary objective of this controller is to control 2 air conditioners to operate alternatively. Each will operate for a specified change-over time period setting. The secondary objective is to detect any abnormality and show alarm signals. The controller will operate in co-operation with the following equipment.

- q 2 units of air conditioners with auto restart function
- q 1 unit of humidistat
- q 1 unit of fire detector

The system consists of the 2 air cond. controller (picture1), a high temperature sensor (picture 2) and humidistat each.



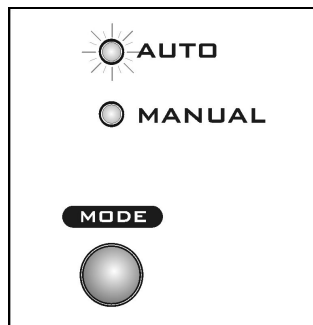
Picture 2 : High temperature sensor

2. OPERATION MODES

2.1 Auto mode

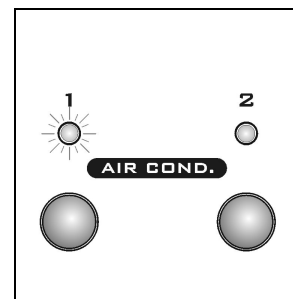
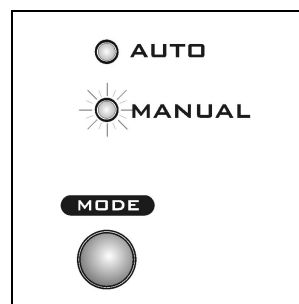
Press mode button to select the operating mode. While in auto mode, the LED indicator will be lit to show the status. The controller will switch the operation of the two air conditioners as per timer setting (clause 2.4) by

- q Supply AC power to the air conditioner which is programmed to be ON.
- q Cut AC power to the air conditioner which is programmed to be OFF.



2.2 Manual mode

When the system is put in manual mode, the LED indicator will be blink. In this mode, any air conditioner or both can be turned on/off manually.

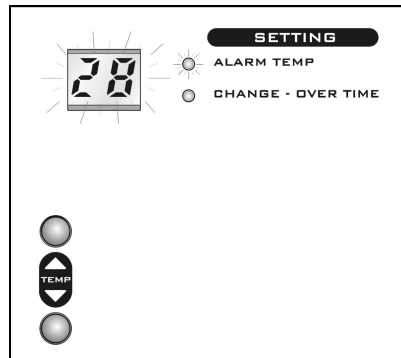


- q Press air cond. 1 or 2 button to turn on/off the air conditioner. The LED indicator of the relevant unit will be lit to show the status.

- NOTES:**
1. In manual mode, if there is a fire alarm, the user however can not turn on the air conditioners manually.
 2. In manual mode, if there is an alarm of any other condition (high temperature, sensor error, air 1 overload, air 2 overload, high humidity), the system will not respond to that alarm by turning on/off the air conditioners.

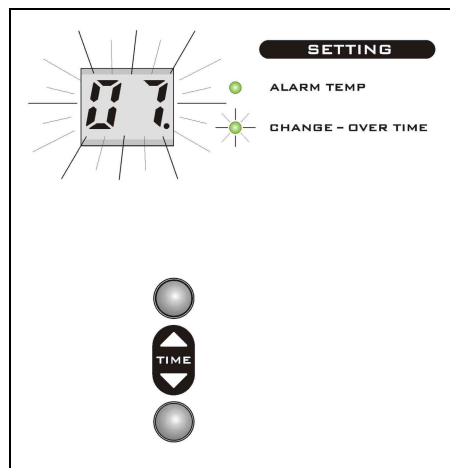
2.3 High temperature setting

When the controller is in auto mode, Press Temp D/Ñ buttons for setting high temperature alarm in a range of 25 40 °C. The LED indicator at alarm temp will be lit and the 7-segment display will blink and show the high temperature setting



2.4 Change-over time setting

When the controller is in auto mode, Press Time D/Ñ buttons to set the change-over timer for both air conditioners. The timer can be set from 1-12 hours. The LED indicator at the change-over time will be lit and the display will show the setting hour in blinking.

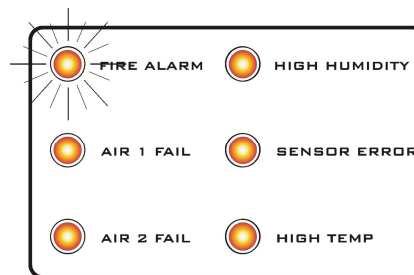


2.5 Alarm output

When the controller is in normal operation, every alarm output has the status of close circuit. If there is an alarm of any condition, the relevant alarm output is in open circuit. In case of power interruption, every alarm output will be opened circuit.

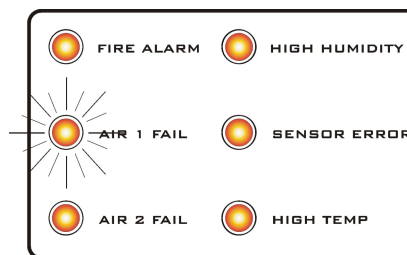
2.6 Fire alarm

If the controller receives alarm signal from fire detector in close circuit. The controller will turn off both air conditioners regardless of manual mode. The LED indicator of fire alarm will be lit. The controller will back to normal when fire alarm input has the status of open circuit.



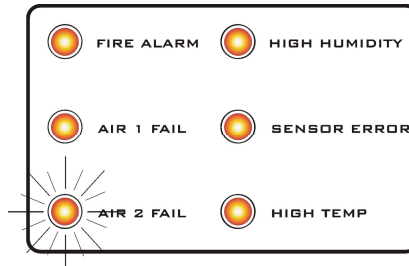
2.7 Air 1 fail alarm

If the controller receives air 1 overload signal from air cond. 1 in open circuit. The LED indicator of air 1 fail will be lit. When the controller is in auto mode, the controller will turn off air cond.1 and turn on air cond.2 and send alarm to DDF unit. The controller will back to normal when air1 fail alarm input has the status of close circuit.



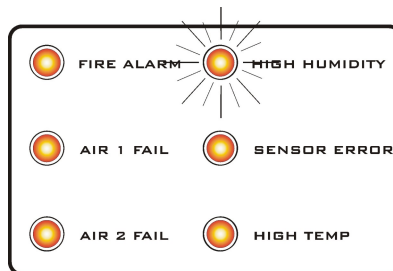
2.8 Air 2 fail alarm

If the controller receives air 2 overload signal from air cond. 2 in open circuit, the LED indicator of air 2 fail will be lit. When the controller is in auto mode, the controller will turn off air cond. 2 and turn on air cond. 1 and send alarm to DDF unit. The controller will back to normal when air 2 fail alarm input has the status of close circuit.



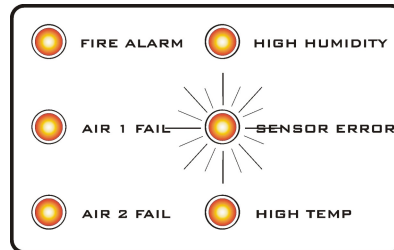
2.9 High humidity alarm

If the controller receives high humidity signal from humidistat in open circuit, it indicates high humidity problem. The LED indicator of high humidity will be lit. When the controller is in auto mode, the controller will turn on both air conditioners and send alarm to DDF unit. The controller will back to normal when high humidity alarm has the status of close circuit.



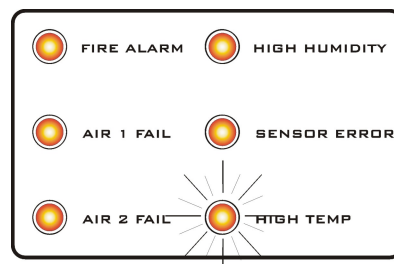
2.10 Temperature sensor error alarm

If the controller detects a problem with temperature sensor such as open circuit or other damages. The LED indicator of sensor error will be lit. The controller will cancel the operation of high temperature alarm. If the controller is in auto mode, the controller will turn on both air conditioners and send alarm to DDF unit.



2.11 High temperature alarm

If the controller detects room temperature is higher than the high temperature setting. The LED indicator of high temperature will be lit and the controller will send alarm to DDF unit. In auto mode, the controller will turn on both air conditioners. The alarm will be deactivated when the room temperature is lower than the high temperature setting or equivalent to 2°C.



2.12 Memory

The system keeps setting parameters in its memory. In case of power interruption and back to normal, the controller will automatically resumes its operation with the same parameters except timer. If there is any change in parameter, the new setting will be kept in the memory 5 seconds of after the setting is completed.

2.13 Alarm Table and LED indicator

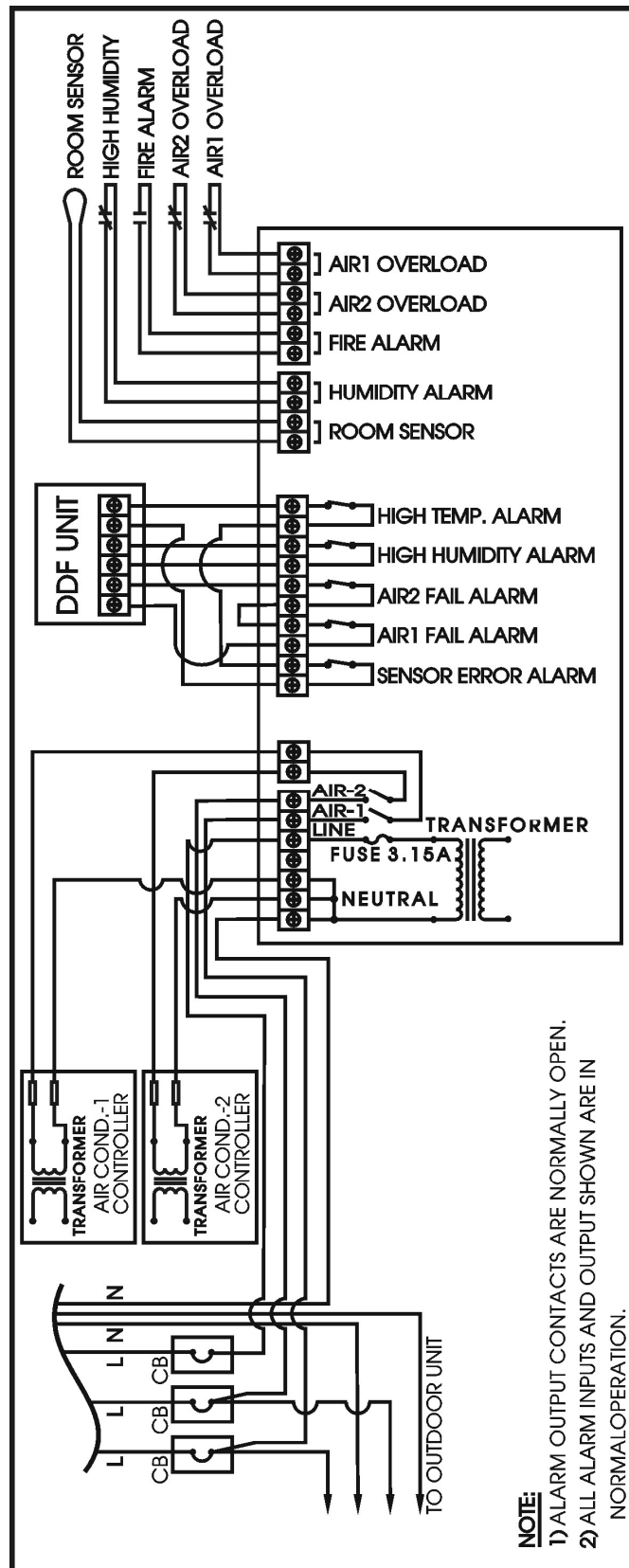
<i>PROBLEM CONDITIONS</i>		<i>THE OPERATION OF THE CONTROLLER</i>	<i>ALARM</i>	<i>LED INDICATOR</i>
1.	Fire alarm	q Turn off both air conditioners	-	Fire alarm
2.	Compressor Overload at air cond. 1	q Turn off air cond. 1 and turn on air cond. 2	Air fail alarm	Air 1 fail
3.	Compressor overload at air cond. 2	q Turn off air cond. 2 and Turn on air cond. 1	Air fail alarm	Air 2 fail
4.	High humidity alarm	q Turn on both air conditioners	High humidity alarm	High humidity
5.	Sensor error (open/short circuit)	q Turn on both air conditioners	Temperature alarm	Sensor error
6.	Room temp. > high temp. setting	q Turn on both air conditioners q The air conditioner will back to normal operation when room temp £ high temp 2-°C.	Temperature alarm	High temp

Note: The system will resume to normal operation when the alarm signal is gone or the problem has been fixed.

2.14 Specification

POWER SUPPLY	1 Phase 185 to 255 VAC, 50/60 Hz
POWER CONSUMPTION	Less than 8 VA.
TEMPERATURE:	
· Storage temperature	0 to 60°C
· Operating temperature	5 to 50°C
EXTERNAL ALARM OUTPUT:	Close contact at normal operation. Open contact at alarm.
CONTACT RATING:	
· Output To Air #1	220 V (AC), 1 A (AC)
· Output To Air #2	220 V (AC), 1 A (AC)
· Alarm Output (All Alarm Output)	5 A at 250 V (AC), 5 A at 30 V (DC)
DIMENSION	270 mm. X 375mm. X 60mm.
WEIGHT	4 kg.

3. Wiring Diagram



4. Trouble Shooting

Item	Problems	Reasons	Solutions
1.	LEDs are not working.	1. No input power. 2. Fuse broken. 3. Wiring is connected improperly. 4. The controller is out of order.	1. Check power at LINE and NEU of the controller. If no input power, check wiring connection or breaker status. 2. Replace new fuse. 3. Check wiring connection. 4. Replace new controller.
2.	Air cond. 1/2 LED is on but the air conditioner is not working.	1. No input power. 2. Relay fail. 3. Air condition as off.	1. Check power at N1/N2 and LI1/LI2 . If no power, check wiring connection or breaker status. 2. Check power at N1/N2 and LO1/LO2. If no power, replace new controller. 3. Turn on air conditioner.
3.	The air conditioners don t work according to the change-over time as specified	1. The system is in manual mode. 2. There is an alarm.	1. Change the system to auto mode. 2. Check if there is an alarm.
4.	Fire alarm and fire alarm LED is lit.	1. Fire alarm send alarm contact to the controller. 2. Signal cable from fire alarm is short circuited. 3. Signal cable from fire alarm is connected improperly.	1. Check the operation of fire alarm. 2. Check wiring connection. 3. Signal cable for fire alarm must be connected from NO. output of fire alarm.
5.	Air fail alarm and air 1 fail / air 2 fail LED is lit.	1. Air cond.1/ Air cond.2 is overloaded. 2. Signal cable from overload is broken. 3. Signal cable from overload is	1. Check air conditioner. 2. Check wiring connection. 3. Signal cable for overload must be connected from aux. contact

		connected improperly.	that is close circuited.
Item	Problems	Reasons	Solutions
6.	High humidity alarm and high humidity LED is lit.	<ol style="list-style-type: none"> 1. High humidity in the room. 2. Humidity value is set too low at humidity setting. 3. Signal cable for humidistat is broken. 4. Signal cable for humidistat is connected improperly. 	<ol style="list-style-type: none"> 1. Check the cause of high humidity. 2. Adjust humidity setting value at humidistat. 3. Check wiring connection. 4. Must connected from humidistat output that is close circuited. (Red/Blue of Honeywell humidistat model H600A)
7.	Temperature alarm and sensor error LED is lit.	<ol style="list-style-type: none"> 1. Temperature sensor that goes to the controller is broken or close circuited. 	<ol style="list-style-type: none"> 1. Check the sensor which should have a resistant value of 6.8 Kohm at 25 °C (Please disconnect the sensor cable from the controller before measuring the resistant value)
8.	Temperature alarm and high temp. LED is lit.	<ol style="list-style-type: none"> 1. Problem at the air conditioner. 2. The temperature is set too high at air conditioner. 3. Temperature is set too low at high temperature setting. 4. The sensor is installed at the incorrect position. 	<ol style="list-style-type: none"> 1. Check the operation of the air conditioner. 2. Adjust the temperature setting at the air conditioner (should be at least 3°C lesser than that of the high temp). 3. Adjust the high temp. Setting at the controller (should be at least 3°C higher than the temp at the air conditions. 4. Install the sensor at new location.

Remark:

1. If there is more than one alarm at a time, the controller will turn on/off the air conditioners in response to the alarm in the following order of the alarms priority.
FIRE ALARM ➡ AIR1 FAIL ➡ AIR2 FAIL ➡ HIGH HUMIDITY ➡ SENSOR ERROR ➡ HIGH TEMP
2. In manual mode, any air conditioner must be turned on and off manually. In case of fire alarm, both air conditioners will be turned off automatically.
3. The controller does not control the room temperature but control the operation of both air conditioners.
4. The power that goes to the air conditioner and the controller is supplied from different breaker. If turn off the breaker that supplies power to the air conditioners, the controller can not order the air conditioner to operate.
5. The thermostat supplied with air conditioner must be turned on at all time in order for the air conditions to operate.
6. In case of controller fail the power must be supplied to the conditioners directly to maintain their operation.
7. All alarm inputs such as fire alarm, air overload, and high humidity are dry contacts.

Note

Note

