TCL

FLOOR-STANDING AIR CONDITIONERS

SERVICE MANUAL

No.TE040720

Models

TAC-42CF TAC-42CHF

CONTENTS

IMPORTANT NOTICE

This service manual is intended for use by individuals possessing adequate backgrounds of electrical, electronic and mechanical experience. Any attempt to repair the appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

The information, specifications and parameter are subject to change due to technical modification or improvement without any prior notice. The accurate specifications are presented on the nameplate label.

How to order spare parts

To have your order filled promptly and correctly, please furnish the following information:

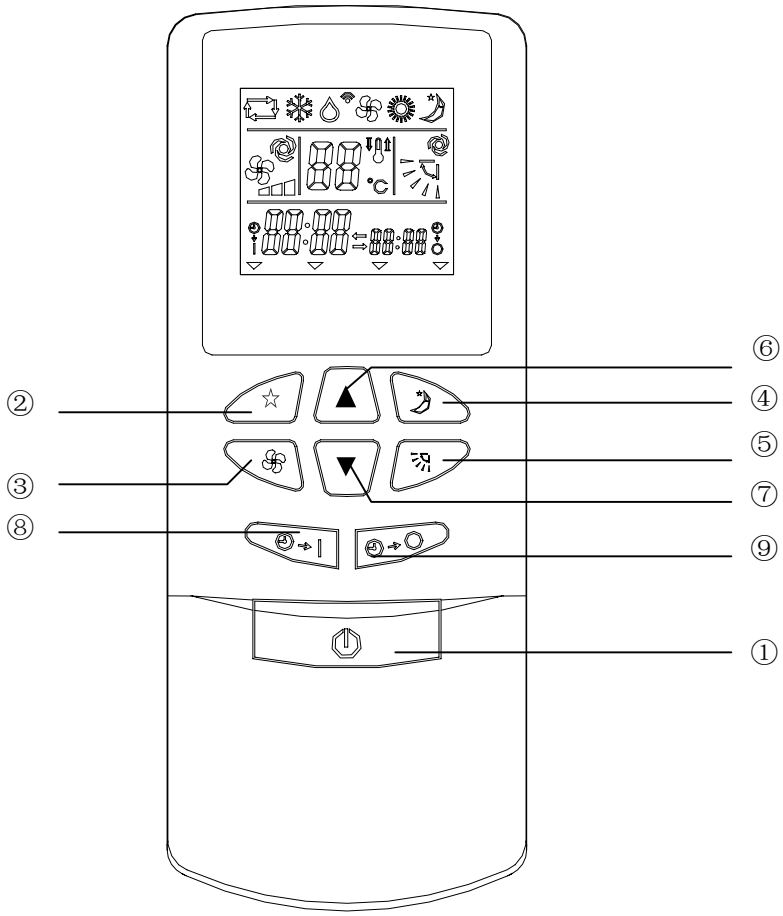
1. Model No. with Indoor or Outdoor
2. No. in the Explosion View
3. Part Name
4. The quantity you ordered

Technical Specifications

Model No.			**TAC-42CF**	**TAC-42CHF**		
Type			Cooling Only	Heating Pump		
Control type			Remote	Remote		
Rated cooling capacity		Btu/h	42000	42000		
Rated heating capacity		Btu/h	N/A	44,500+10,200		
EER for cooling		Btu/h.w	9.13	8.93		
COP for heating		W/W	N/A	10.3		
Moisture removal		Liters/h	8.0	8.0		
Indoor noise level at cooling	High	dB(A)	57	57		
	Med.	dB(A)	55	55		
	Low	dB(A)	53	53		
Outdoor noise level		dB(A)	64	64		
Electrical Data						
Power supply			380V~/50Hz /3P			
Voltage Range		V				
Rated current	Cooling	A	8.0	8.0		
	Heating	A	N/A	7.6		
Rated input	Cooling	W	4600	4700		
	Heating	W	N/A	4300+3000		
Refrigerating System						
Refrigerant/Charge		Gram	R22/3500g	R22/3500g		
Compressor	Type		Rotary	Rotary		
	Model		----------	----------		
	LRA	A	------	-------		
	MFG		----------	----------		
Evaporator			Louver fin and Grooved tube type (ϕ9.53)			
Condenser			Corrugated fin and Grooved tube type (ϕ9.53)			
Expansion device			Capillary tube			
Defrosting system			Microcomputer controlled reverse system			
Fan System						
Indoor air circulation		m^3/h	1000	1000		
Indoor fan type			Cross flow	Cross flow		
Indoor fan speed H/M/L	Cooling	rpm	550/480/380	550/480/380		
	Heating	rpm	N/A	550/480/380		
	Dry	rpm	380	380		
	Sleep	rpm	380	380		
Indoor fan motor output		W	160	160		
Outdoor air circulation		m^3/h	---	---		
Outdoor fan type			Propeller fan	Propeller fan		
Outdoor fan speed		rpm	720	720		
Outdoor fan motor output		W	200	200		
Connections						
Refrigerant coupling			Flare type			
Connecting Pipe	Gas	Inches	3/4	3/4		
	Liquid	Inches	1/2	1/2		
Connecting Wiring	Size × Core number					
Drainage Pipe			O.D 16mm			
Others						
Suitable area		m^2	48~60	48~60		
Net dimensions (W x H x D)	Indoor	mm	540×1765×380	540×1765×380		
	Outdoor	mm	990×340×960	990×340×960		
Net weight	Indoor	kg	47	47		
	Outdoor	kg	60	60		
Packing dimensions (W x H x D)	Indoor	mm	625×1875×460	625×1875×460		
	Outdoor	mm	1105×420×1005	1105×420×1005		
Gross weight	Indoor	kg	55	55		
	Outdoor	kg	66	66		
Loading Capacity	20'/40'/40'HQ		26/56/61	26/56/61		

Operation Details

Remote Controller



① ON/OFF Button

- Used to start and stop operation when pressed.

② OPERATION MODE Selection Button

- Used to select the type of operation mode: AUTO, Cooling, Dry, Fan(Only for Cooling Only) and Heating(Only for Heat Pump)

③ FAN SPEED CONTROL Button

- Used to select the indoor fan motor speed: Auto, High, Mid and Low.

④ SLEEP Button

- Used to set or cancel sleep mode operation.

⑤ VANE CONTROL Button

- Used to adjust airflow direction.

⑥ UP Button (TOO COOL Button)

- Used to increase the set room temperature and time.

⑦ DOWN Button (TOO WARM Button)

- Used to decrease the set room temperature and time.

⑧ ON TIMER Button

- Used to select ON TIMER operation.

⑨ OFF TIMER Button

- Used to select OFF TIMER operation.

The indication symbols on LCD:


A U T O Indicator


Sleep Mode Indicator


Clock Indicator


Cooling Indicator


Air Flow Direction Indicator


ON TIMER Indicator


Dry Indicator


Set Room Temp. Indicator


OFF TIMER Indicator


Fan Indicator


Fan Speed Indicator


Order of ON and OFF Timer


Heating Indicator

Elctronic Controller

1. Safety Control
   (1) Time Delay Safety Control
   - 3 minutes delay for compressor---The compressor is ceased for 3minutes to balance the pressure in the refrigeration cycle in order to protect the compressor.
   - 2 minutes delay for 4-way valve---The 4-way valve is ceased for 2 minutes to prevent the refrigerant-gas abnormal noise when the HEATING operation is OFF or switch to the other operation mode.
   - 20 seconds delay for indoor fan--- When the assistant thermistor turns off, the indoor fan operates in low speed for 20 seconds to release the heat of indoor unit.

   (2) Indoor Pipe Temperature Sensor Frost Prevention Control
   When the indoor pipe temperature sensor reads 0℃ or below for 5 minutes, the indoor pipe temperature sensor frost prevention control starts. The compressor and outdoor fan stop and indoor fan operates at high speed for 3 minutes. After that, if the indoor pipe temperature sensor reads less than 5℃ this control prolonged until the indoor pipe temperature sensor reads 5℃ or more.

   (3) High Temperature Protection Control
   During HEATING operation, the outdoor fan motor and compressor are controlled by the indoor pipe temperature to prevent the high temperature of compressor.
   Outdoor fan OFF: 56℃
   Outdoor fan ON:50℃
   Compressor OFF:60℃
   Compressor ON:50℃

2. "AUTO" Mode Operation
   (1) When the "AUTO" mode is selected, the operation mode and initial set temperature are determined by the initial room temperature at start-up of the operation except to turn off the air conditioner and operates it again.
   (2) If the mode is change to "AUTO" mode from other mode, the "AUTO" mode doesn't operate until compressor stop for more than 3 minutes.

Mode	Initial room temperature	Initial set temperature
COOLING	26℃ or more	24℃
DRY	20℃ to 25 ℃	18℃
HEATING for Heat Pump Type FAN for Cooling Only Type	Less than 20℃	23℃

   - In the "AUTO" mode , when the controller receives the up or down single of temperature, the set temperature can adjust by 1℃ upper or lower. The biggest you can adjust by 2℃ upper or lower.

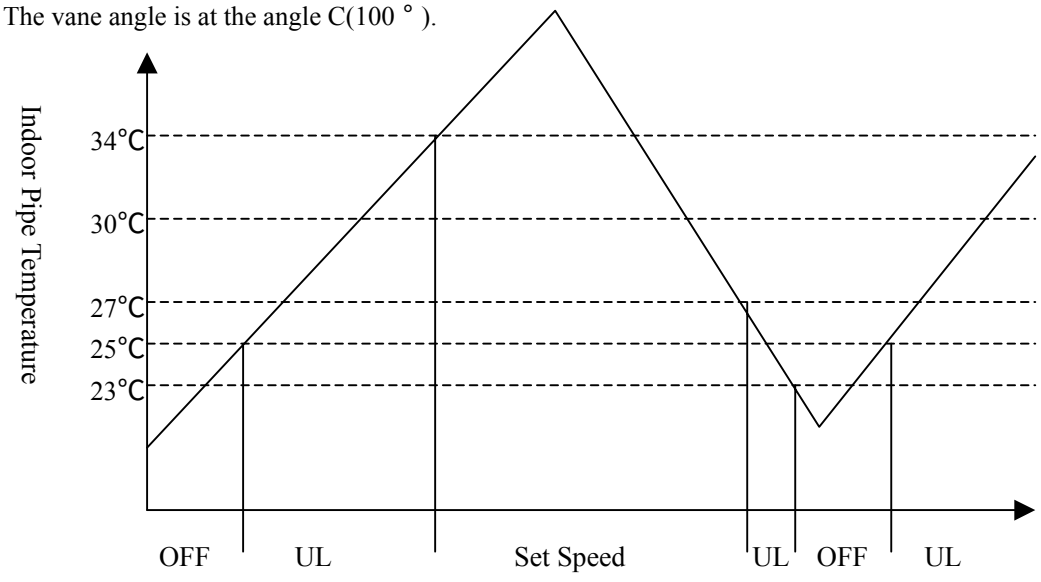
3. "COOLING" Mode Operation
   (1) When the COOLING mode is selected without setting temperature, the system will set the set temperature at 26℃ automatically with the AUTO FAN speed.
   (2) When selecting the COOLING mode operation, the system will operate according to the setting by the remote controller and the operation is as following:

Room Temp. Set TEMP. ＋1℃ Set TEMP. －1℃					
Time	More than 2 min	More than 2 min	More than 2 min	More than 2 min	More than 2 min
Indoor Fan	Set Speed	Set Speed	Set Speed	Set Speed	Set Speed
Compressor	ON	OFF	ON	OFF	ON
Outdoor Fan	ON	OFF	ON	OFF	ON

4. “DRY” Mode Operation
   (1) The system for DRY operation used the same refrigerant circle as the cooling circle.
   (2) When the system operates in DRY mode ,at first it operates in cooling mode at 18℃ for 3 minutes, and then, the system operates in cooling mode with low speed that regards the temperature of the room temperature sensor reads decrease 2℃ as the set temperature. During the course of this, the fan speed setted operation is failing but the vane motor can be controlled.
5. “HEATING” Mode Operation (Only available for Heat Pump)
   (1) When the HEATING mode is selected without setting temperature, the system will set the temperature at 23 ℃ automatically with the AUTO FAN speed.
   (2) When selecting the HEATING mode operation, the system will operate according to the setting by the remote controller and the operation is as following:

Set Temp. ＋1℃ Set Temp. －1℃ Room Temp.					
Time	More than 2 min	More than 2 min	More than 2 min	More than 2 min	More than 2 min
Compressor	ON	OFF	ON	OFF	ON
Outdoor fan	ON	OFF	ON	OFF	ON

   (3) In HEATING mode, the indoor fan motor is controlled by Cold Air Prevention Control.
   (4) Cold Air Prevention Control
   - The function is intend to prevent cold air from being discharged when the heating operation starts or when defrosting.
   - The indoor fan speed will be controlled as following:
   - The vane angle is at the angle C(100 °).



(5) Defrost

Defrosting of the outdoor heat exchange is controlled by the microprocessor with detection by the defrost sensor.

- Defrost starting conditions

  When the conditions of a) or b) is satisfy, the defrosting operation starts.

  a) Under the heating operation, the compressor cumulative operation time exceeds 40 minutes and the temperature of the outdoor defrost sensor reads lower than －6℃ continuously for 3minutes.

  b) Under the heating operation, the compressor cumulative operation time exceeds 40 minutes, if the indoor pipe temperature is lower than 32℃ continuously for 3minutes.

  Note: If haven't the outdoor pipe temperature sensor that use the condition b) to defrost, against use the condition a).

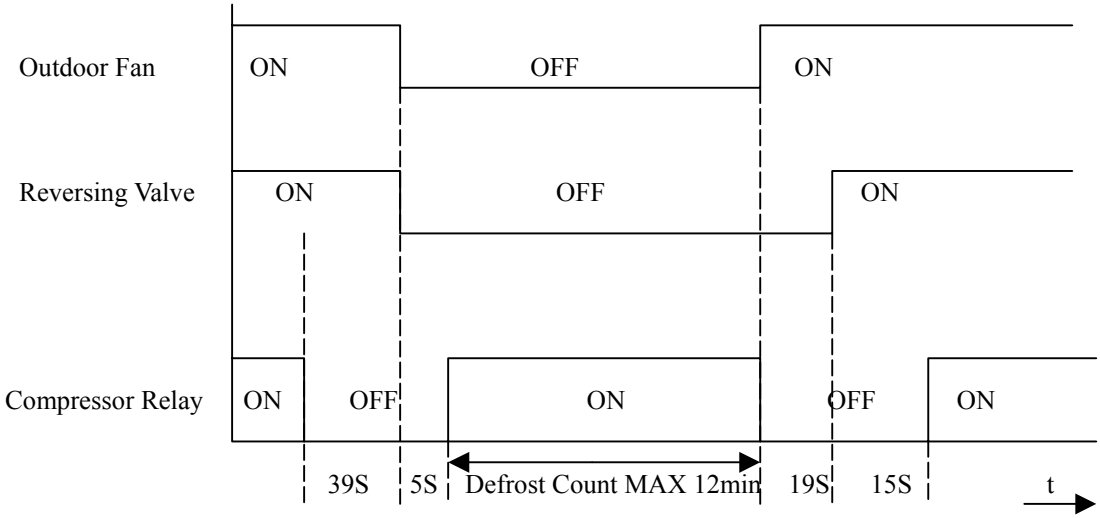
- Defrost terminating conditions

  When the condition c) or d) is satisfy, the defrosting operation stops.

  c) The outdoor pipe temperature is higher than 20℃.

  d) The defrosting time exceeds 10 minutes.

- Defrosting time chart



(6) Assistant Thermistor Function

Assistant thermistor is add the thermitor of the electricity to rise the heating capacity automatically not effected by the signal of the remote controller about assistant thermistor ON/OFF buttons.

1) When the condition all of A~G are satisfy, the assistant thermistor should be on.
   A. Under the heating operation, the compressor has been running over than 2 minutes.
   B. The indoor fan operates in normal.
   C. The system operates not in defrosting.
   D. The assistant thermistor has been off over than 10 seconds.
   E. The setted temperature is 3℃ higher than the room temperature and 15ºC<T1<25ºC.
   F. The room temperature is lower than 15℃.
   G. The indoor pipe temperature is lower than 45℃ .
2) When one of the conditions of A~E is satisfy, the assistant thermistor is off.
   A. The compressor is off.
   B. The room temperature higher than 25℃ .
   C. The indoor pipe temperature is higher than 50℃.
   D. The indoor fan is stopped.

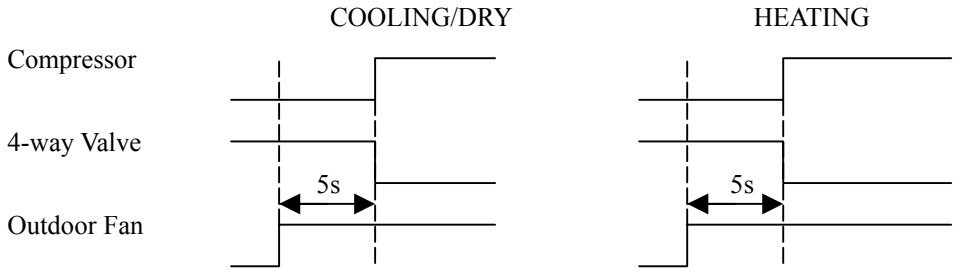
6. "FAN" mode operation

The indoor fan motor always turns on at the set speed and the vane motor turns on at the set fattle.

7. 4-way Valve contro

HEATING	ON
COOLING/DRY	OFF

The 4-way valve reverses for 5 seconds right before start-up of the compressor as following chart:



8. "SLEEP" mode

When the SLEEP button is pressed, the SLEEP mode is selected as following:

- The indoor fan speed is setted at the super low speed.
- When selecting COOLING/DRY operation with SLEEP mode, the set temperature will be raised by 1℃ 1 hour later and by 2℃ 2 hour later.
- When selecting HEATING operation with SLEEP mode, the set temperature will be dropped by 1℃ 1 hour later and 2℃ 2hour later.
- After the System operates in SLEEP mode for 8 hours, it will stop automatically.

9. Fan motor control

(1) Rotational frequency feedback control

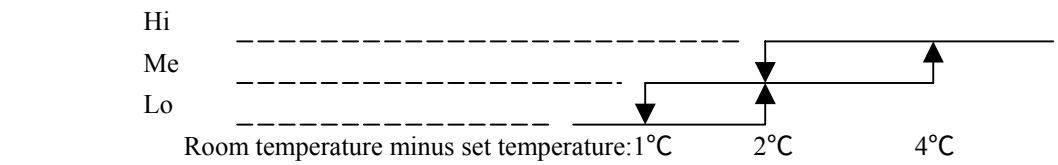
The indoor fan motor is equipped with a rotational frequency sensor, and outputs signal to the microprocessor to feedback the rotational frequency. Comparing the current rotational frequency with the target rotational frequency, the microprocessor adjusts fan motor electric to make the current rotational frequency close to the target rotational frequency. With this control, when the fan speed is switched, the rotational frequency changes smoothly.

(2) When the rotational frequency feedback signal has not output for 5 seconds (or when the microprocessor can't detect the signal for 5 seconds), the fan motor is regarded locked-up. Then the electric current to the fan motor is shut off. 10 seconds later, the electric current is applied to the fan motor again. During the fan motor lock-up, the POWER indicator lamp flashes on and off to show the fan motor abnormality.

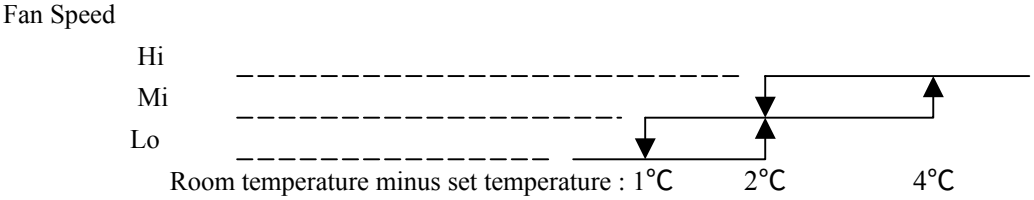
10. Auto Fan Speed Control

(1) When the auto fan speed is selected, the indoor fan motor speed is automatically controlled by the room temperature and the set temperature.

(2) In COOLING mode, the indoor fan motor operates as following:



(3) In HEATING mode, the indoor fan motor operates as following;



11. Auto Vane Operation control
    (1) Vane motor drive
    The unit is equipped with a stepping motor for the vane. The rotating direction, speed, and angle of the motor are controlled by pulse signal transmitted from indoor microprocessor.
    (2) Positioning
    The vane is once pressed to the vane stopper below to confirm the standard position and then set to the desired angle. The positioning is decided as follows:
    - When the ON/OFF button is pressed.
    - When the vane control is change from AUTO to MANUAL.
    - When the SWING is finished.
    - When the test run starts.
    - When the power supply turns ON.

    (3) The auto vane changes as follows by pressing the VANE CONTROL button.
    (4) VANE AUTO mode
    In vane auto mode, the microprocessor automatically determines the vane angle and operation to make the optimum room-temperature distribution.
    (5) SWING mode
    When presses the SWING button, the vane swings.
12. TIMER Operation
    (1) To activate the air conditioner at the desire time, follow the procedure specified below(the remote control and air conditioner are switched off):
    - Press the Timer button.
    - Select the desired mode by pressing the Mode button.
    - Select the desired temperature by pressing the ▲ ▼ button (only possible when the 'cool' or 'heat' mode is selected).
    - Select the ventilator speed (low, medium or high) or automatic mode (only possible when the feel, Cool or Heat mode is selected) by pressing the Fan button.
      The ventilator always operates in the Auto mode when the Dry mode is selected.
    - Select Swing or no Swing by pressing the Swing button.
    - Press the Timer button ('h' flashes).
    - Use the ▲▼ button to select the time at which the air conditioner must activate (between 0 and 10 hours can be set at every half hour-between 10 and 24 hours can be set at every hour).
    - Press the Timer button ('h' stops flashing) and the preset time appears in the display.
    - Press the Timer button again to delete the selected data from the memory.

    Note: If no buttons are pressed during the programming of the timer function, the remote control will switch off automatically are after 10 seconds.
    (2) To switch the air conditioner off at the desired time, follow the procedure specified below (the remote control and air conditioner are switched off):
    - Press the Timer button.
    - Use the ▲▼ button to select the time at which the air conditioner must deactivate (between 0 to 10 hours can be set at every half hour-between 10 to 24 hours can be set at every hour).
    - Press the Timer button ('h' stops flashing), and the preset time will appear in the display.
    - Press the Timer button again to delete the selected data from the memory.

    Note: If no buttons are pressed during the programming of the timer function, the remote control will switch off automatically after 10 seconds.

    Note: if 'h' is flashing and you press the ON/OFF/RUN button once, the preset temperature will appear in

the display. You can now adjust the temperature with the ▲▼ button. Press the Timer button again to display the time, which can now also be adjusted☆. If the Timer button is pressed again, the data is stored and the remaining time(that the air conditioner will be in operation) will appear in the display.

☆ Pressing the ON/OFF/RUN button instead of the Timer button deactivates the remote control.

Note: check that the TIMER INDICATOR on the indoor unit lights up after the timer has been set.

Press the Timer function to check the settings in the display.

13. EMERGENCY-TEST Operation

When the EMERGENCY Operation switch is pressed once, COOLING mode is selected and if in 3 seconds the EMERGENCY Operation switch is pressed again, HEATING mode is selected. Then pressed once again, the unit is switch off.

When the remote controller is missing, has failed or the batteries run down, press the EMERGENCY Operation switch on the front of the indoor unit. The unit will start.

The first 30 minutes of operation will be the test run operation. The operation is for servicing. The indoor fan runs at high speed and the system is in continuous operation. The thermostat is ON and the timer is reset to normal.

After 30 minutes of test run operation the system shifts to AUTO COOLING/HEATING mode, and the indoor fan runs in automatic speed. The operation continues unit the EMERGENCY operation switch is pressed or a button on the remote controller is pressed, the normal operation will start.

NOTE: Do not press the EMERGEMCY Operation switch during normal operation.

14.AUTO RESTART Function (Option)

When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor electric control PCB. The AUTO RESTART function sets to work the moment power has restored after power failure. Then, the unit will restart automatically.

15. Failure Display and Handling

a) The failure of the resistance of heat sensitive:

When the resistance of heat sensitive reads the temperature is lower than －50℃ or over than 110℃ that judge the heat sensitive is bad.

b) The Outdoor Protection Control

When the system checks the signal from outdoor of the voltage is 0V, the system delay 1second to start for check the signal again, if checks the signal of the voltage is 0V too, that the system not to star, or operates on normal.

c) Failure Display

When the controller is failure, the buzzer will voice long for three times, and displays the failure from the failure lamp.

d) Failure code

The failure of room temperature sensor	E3
The failure of indoor pipe temperature sensor	E4
Outdoor protection function	E5
The failure of out unit protection	P6

e) Failure Handling

- When the room temperature sensor or the indoor pipe temperature sensor is failure, the system will be shut off, the compressor will be OFF, and the outdoor fan and the indoor fan will be OFF. The system doesn't receive the signal of remoter controller except the signal of shut off it. When the failure

system, and it will operate in COOLING or HEATING for 30 minutes, and follows shut off. During

this, it displays the failure and the protection is failing. You must be give the electric again to operate it. In the failure, you can operate the FAN mode.

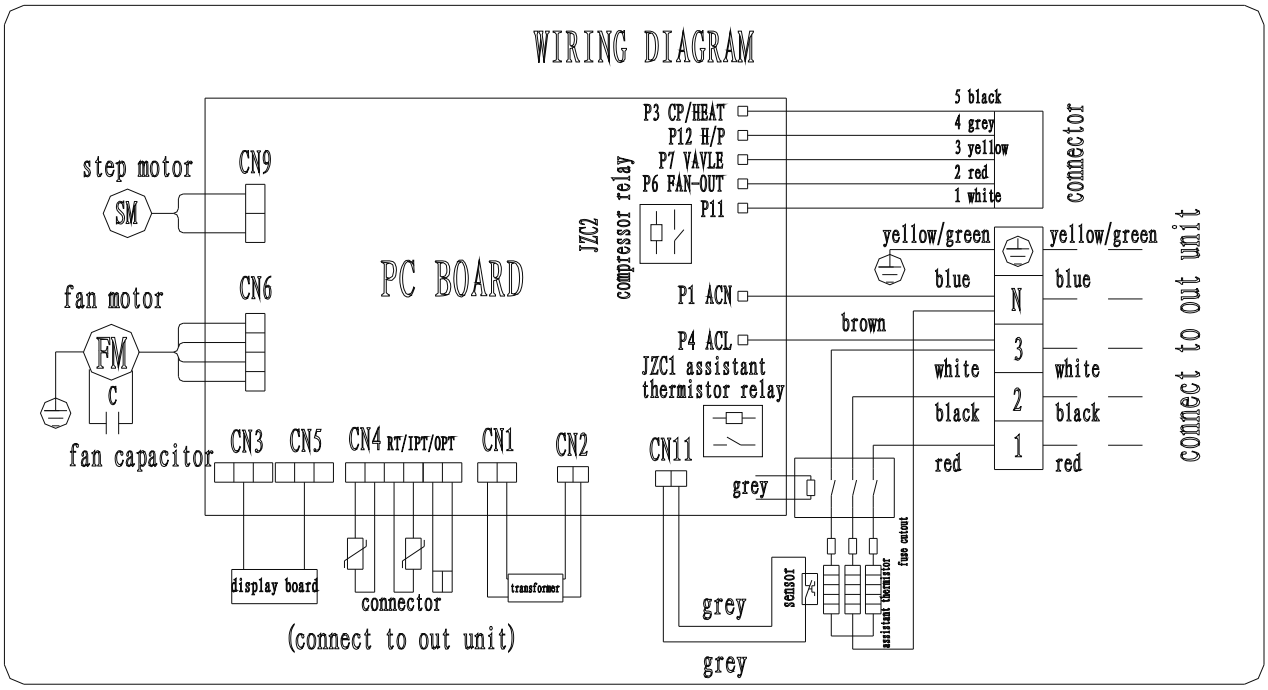
- When the outdoor protects in the COOLING or DRY, the outdoor unit stops, the indoor fan operates in set speed ; and in the HEATING, the outdoor unit stops, the assistant thermistor stops, the indoor fan operates in cold air prevention control. The system doesn't receive the signal of remoter controller except the signal of shut off it. When the system check the voltage is 220V and the delay control is finished, it operates at normal again.
- When the indoor fan motor is failure, the compressor is stopped, the outdoor fan and indoor fan is stopped and display the failure. The system doesn't receive the signal of remoter controller except the signal of shut off it.

(6) When gives the control electric, the buzzer voices a long for 0.3 second per cycle.

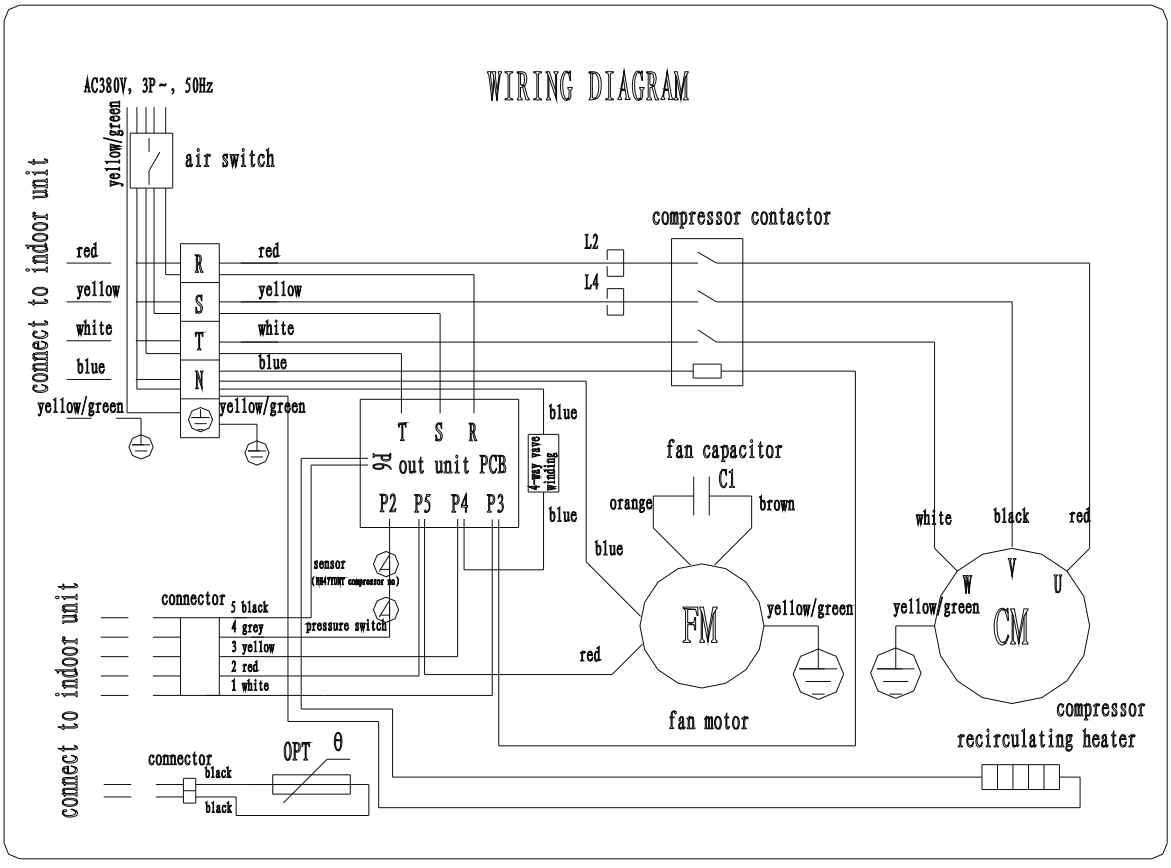
WIRING DISGRAM

MODEL:TAC-42CHF

INDOOR UNIT:

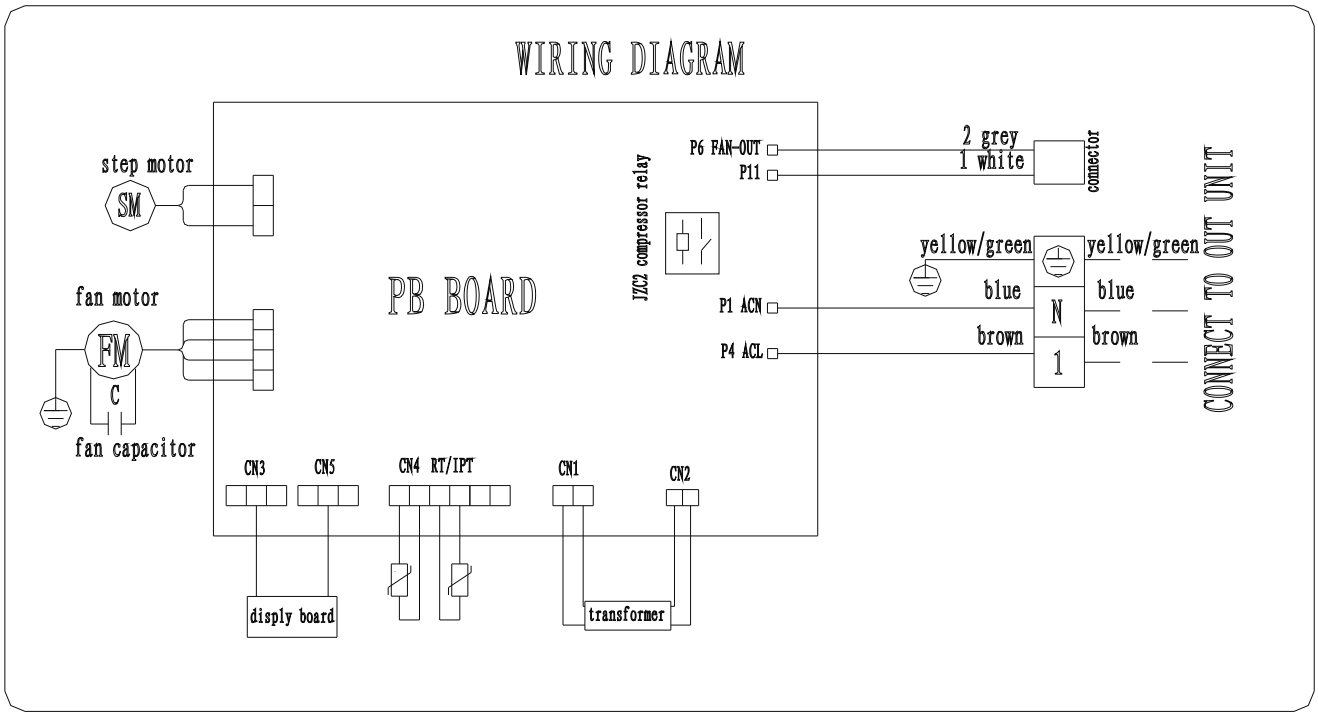


OUTDOOR UNIT:

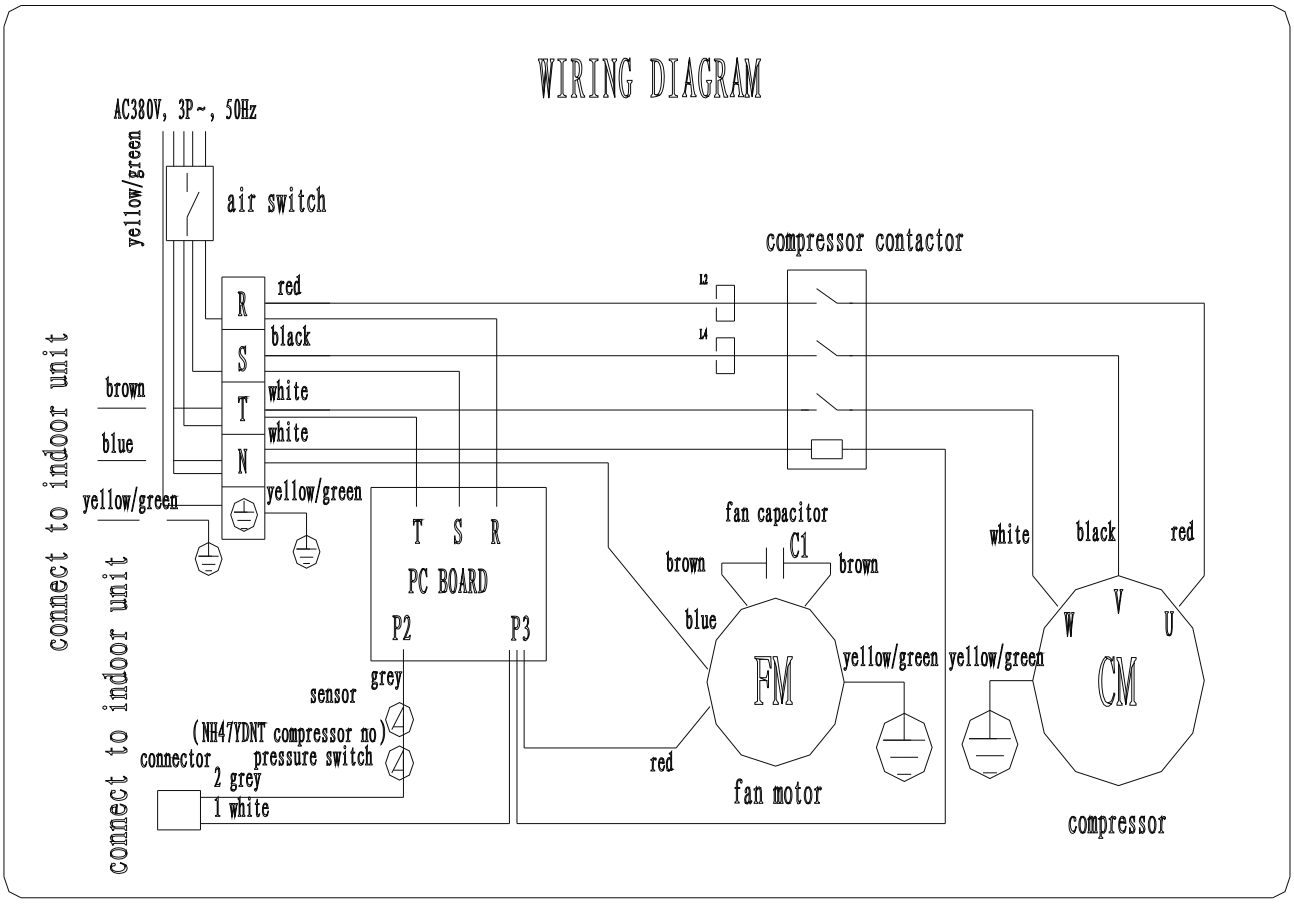


MODEL: TAC-42CF

INDOOR UNIT:



OUTDOOR UINT:



TAC---42C(H)F OUTDOOR UNIT EXPLOSION VIEW

TAC---42C(H)F INDOOR UNIT EXPLOSION VIEW

1170010004 SWING MOTOR

1074090110
VERTICAL VANE

1094090202 OPERATION PCB(for heating&cooling)
1094090404 OPERATION PCB (for only cooling)

back view

1074090122 AIR FILLTER

1074090121 GRILLE

back view

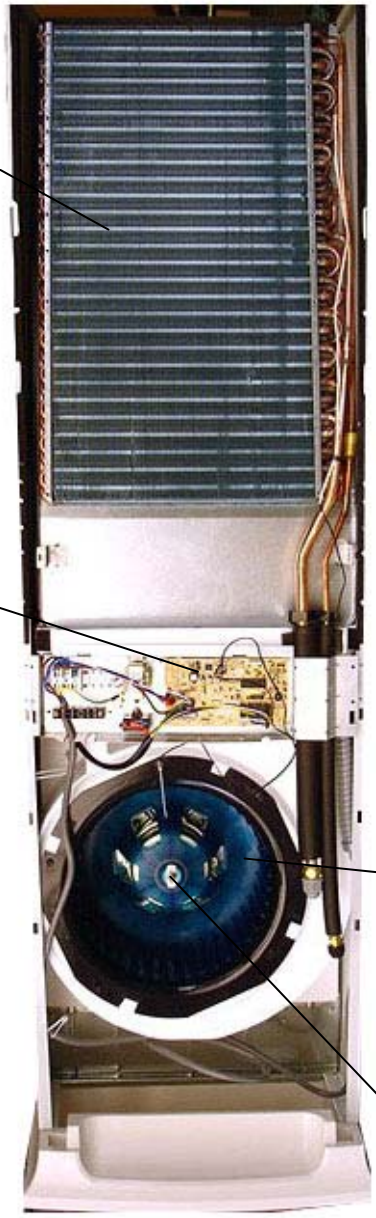
1214090210 OPERATION PANEL

1214090116 MIDLLE PANEL

1074090121 INDOOR GRILLE

1074090108 HORIZONTAL VANE

1074090103 BASE


1214090121 EVAPORATOR ASSEMBLY
1094090301 MAIN PCB
(for heating&cooling)
1094091102 MAIN
PCB(for only cooling)
1070010004 INDOOR FAN
1170030010 INDOOR MOTOR