

Room Air Conditioner

Technical & service manual

Portable F Series Mechanical type

[Models]

APD-9AM

APD-12AM

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1. Precaution

1.1 Safety Precaution

1.1.1 To prevent injury to the user or other people and property damage, the following instructions must be followed.

1.1.2 Incorrect operation due to ignoring instruction will cause harm or damage.

1.1.3 Before service unit, be sure to read this service manual at first.

1.2 Warning

Installation

1.2.1 Do not use damaged power cords, plugs, or a loose socket.

1.2.2 Always use the power plug and socket with the ground terminal

1.2.3 Do not modify or extend the power cord

1.2.4 Do not turn the air-conditioner ON or OFF by plugging or unplugging the power plug

1.2.5 Use a dedicated outlet for this appliance

1.2.6 Grasp the plug to remove the cord from the outlet. Do not touch it with wet hands.

1.2.7 Do not place a heater or other appliance near the power cable

1.2.8 Do not allow water to run into electrical parts

1.2.9 Do not store or use flammable gas or combustibles near the air conditioner

1.2.10 Unplugging the unit if strange sounds, odors, or smoke comes from it

1.2.11 Be caution that water could not enter the product

1.3 Caution

Installation

1.3.1 Keep level even when installing the product

1.3.2 Use two or more people to lift and transport the air conditioner

Operation

1.3.3 Use a soft cloth to clean. Do not use harsh detergents, solvents, etc

1.3.4 Do not touch the metal parts of the product when removing the air filter. They are very sharp

1.3.5 Do not step on or put anything on the product

1.3.6 Do not insert hands or other objects through the air inlet or outlet while the air conditioner is plugged in

2. Characteristics

2.1 Structural characteristics

2.1.1 There are four casters on the bottom for easy movement.

2.1.2 There is only one exhaust pipe(the length is from 0.5 to 2m), which makes the A/C easier to use.

2.1.3 The condensate is received by large volume container, which is convenient to use.

2.2 Performance characteristics

2.2.1 Compressors of famous brands are adopted for reliability and low noise.

2.2.2 The products have multiple uses: dehumidifying and cloth drying.

2.2.3 There is no need for special installation; they can be moved around for simple and convenient use.

2.2.4 The heating system uses PTC electrical heater and will not be affected by ambient temperature, which saves energy.

2.2.5 They are suitable for local cooling and heating.

3. Dimension



Dimension Mode	W	H	D
Net Dimension	465	830	387
Packing Dimension	667	887	460

All the models here have the same dimension.

4. Specification

Model		APD 9 AM
Control Method		Remote
Nameplate marking		
Power supply	Ph-V-Hz	1φ,220-240V~,50Hz
Capacity ¹	Btu/h	9000
Power consumption ¹	W	1090
Rated current ¹	A	4.9
EER ¹	W/W	2.41
EEC ²		C
Electrical heater	W	-----
System data		
Refrigerant type	g	R407C/500
Design pressure (Hi/Lo)	Mpa	2.6
Moisture Removal	L/h	1.8
Water tank volume	L	inner water tank 3.5L
Indoor air flow (Hi/Mi/Lo)	m3/h	340/270/210
Noise level (Hi/Mi/Lo)	dB(A)	53/51/49
Dimension&Weight		
Dimension (W*H*D)	mm	480×840×400
Packing (W*H*D)	mm	655×875×445
Net/Gross weight	Kg	37/41
Applicable ambient		
Operation temp	℃	17-30
Ambient temp	℃	10-35
Application area	m2	12-20
Water Pump		
Current	mA	90
Input	W	16
Water flow	ml/min	70
Height lift	m	4
Compressor		
Model		PG150X1C-4DZDE2
Type		Rotary
Brand		GMCC
Capacity	W	2575/2610
Input	W	840/880
Rated current(RLA)	A	3.9/3.8
Locked rotor Amp(LRA)	A	21.7/23.7
Thermal protector		B160-135-241E/MRA13430-9087
Capacitor	uF	25uF/ 370V
Refrigerant oil	cc	400
Fan Motor		
Model		YDK80-4M

Service manual

Input	W	181/151/107/93
Capacitor	uF	6uF/450V
Speed(hi/mi/lo)	r/min	1230/1110/880/800
Evap.		
a.Number of rows		2
b.Tube pitch(a)x row pitch(b)	mm	21X13.37
c.Fin spacing	mm	1.4
d.Fin type (code)		Hydrophilic aluminium
e.Tube outside dia.and type	mm	Φ7×0.25×0.18, innergroove tube
f.Coil length x height x width	mm	335x294x26.74
g.Number of circuits		2
Cond.		
a.Number of rows		2
b.Tube pitch(a)x row pitch(b)	mm	21X13.37
c.Fin spacing	mm	1.4
d.Fin type (code)		Unhydrophilic aluminium
e.Tube outside dia.and type	mm	Φ7×0.25×0.18, innergroove tube
f.Coil length x height x width	mm	542x294x13.37 519x294x13.37
g.Number of circuits		2
Stuffing Quantity		
20'40'40'HQ	set	86/176/269

1 The test condition is according to EN14511 standard at application rating conditions.

2 EEC (Energy efficiency class). The test condition is according to EN14511 standard at standard condition.

Model		APD 12 AM
Control Method		Remote
Nameplate marking		
Power supply	Ph-V-Hz	1φ,220-240V~,50Hz
Capacity ¹	Btu/h	11500
Power consumption ¹	W	1380
Rated current ¹	A	5.4
EER ¹	W/W	2.42
EEC ²		C
Electrical heater	W	-----
System data		
Refrigerant type	g	R407C/560
Design pressure (Hi/Lo)	Mpa	2.6
Moisture Removal	L/h	2
Water tank volume	L	inner water tank 3.5L
Indoor air flow (Hi/Mi/Lo)	m3/h	340/270/210
Noise level (Hi/Mi/Lo)	dB(A)	53/51/49

Dimension&Weight		
Dimension (W*H*D)	mm	480×840×400
Packing (W*H*D)	mm	655×875×445
Net/Gross weight	Kg	34/44
Applicable ambient		
Operation temp	°C	17-30
Ambient temp	°C	10-35
Application area	m2	15-22
Water Pump		
Current	mA	90
Input	W	16
Water flow	ml/min	70
Height lift	m	4
Compressor		
Model		PG180X1C-4DZDE3
Type		Rotary
Brand		GMCC
Capacity	W	3120/3150
Input	W	995/1030
Rated current(RLA)	A	4.6/4.4
Locked rotor Amp(LRA)	A	19.8
Thermal protector		B160-135-141E
Capacitor	uF	30uF/ 370V
Refrigerant oil	cc	400
Compressor(alternative)		
Model		CG633PB1-C
Type		Rotary
Brand		Hitachi
Capacity	W	2850
Input	W	970
Rated current(RLA)	A	4.6
Locked rotor Amp(LRA)	A	17.4
Thermal protector		
Capacitor	uF	35uF/ 400V
Refrigerant oil	cc	400
Fan Motor		
Model		YDK80-4M
Input	W	181/151/107/93
Capacitor	uF	6uF/450V
Speed(hi/mi/lo)	r/min	1230/1110/880/800
Evap.		
a.Number of rows		2
b.Tube pitch(a)x row pitch(b)	mm	21X13.37
c.Fin spacing	mm	1.4

d.Fin type (code)		Hydrophilic aluminium
e.Tube outside dia.and type	mm	Φ7×0.25×0.18, innergroove tube
f.Coil length x height x width	mm	380x294x26.74
g.Number of circuits		2
Cond.		
a.Number of rows		2
b.Tube pitch(a)x row pitch(b)	mm	21X13.37
c.Fin spacing	mm	1.4
d.Fin type (code)		Unhydrophilic aluminium
e.Tube outside dia.and type	mm	Φ7×0.25×0.18, innergroove tube
f.Coil length x height x width	mm	704x294x13.37 660x294x13.37
g.Number of circuits		2
Stuffing Quantity		
20'40'40'HQ	set	86/176/269

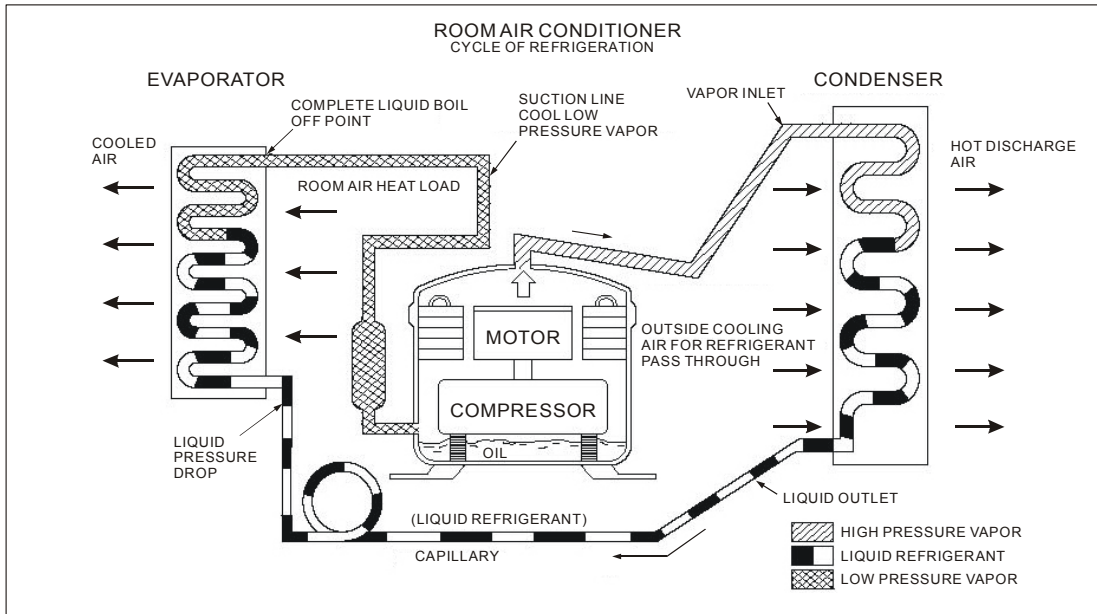
1 The test condition is according to EN14511 standard at application rating conditions.

2 EEC (Energy efficiency class). The test condition is according to EN14511 standard at standard condition.

5. Refrigerant cycle diagram

The figure below is a brief description of the important components and their function in what is called the refrigeration system.

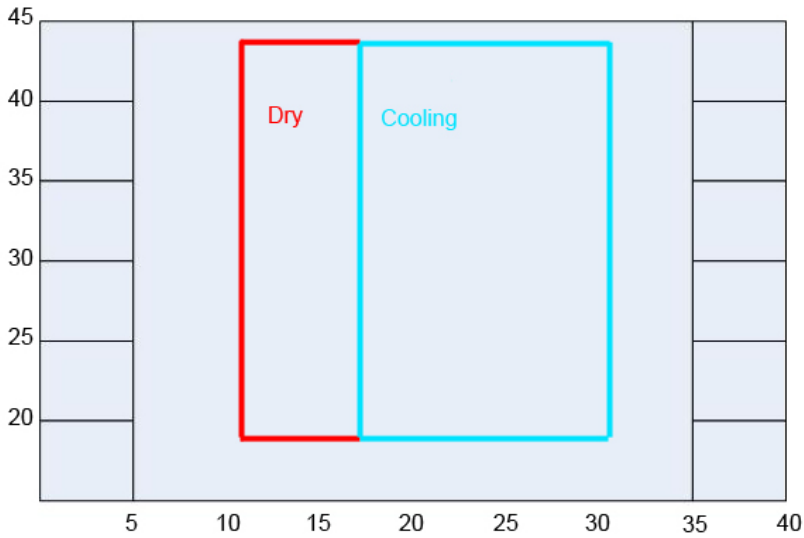
This will help to understand the refrigeration cycle and the flow of the refrigerant in the cooling cycle.



6. Operation limits

6.1 Cooling operation

Outdoor unit air temp. °C DB

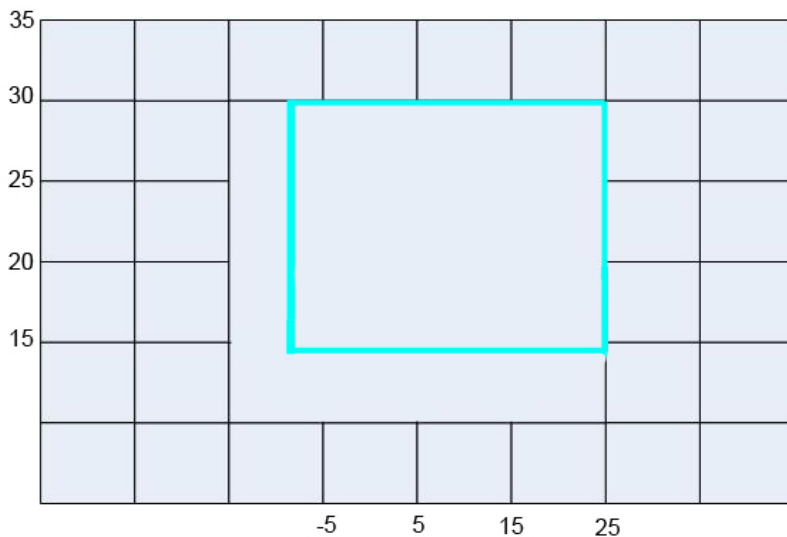


Indoor air temp. °C DB

Note: The chart is the result from the continuous operation under constant air temperature conditions. However, excludes the initial pull-down stage.

6.2 Heating operation

Indoor air temp. °C DB

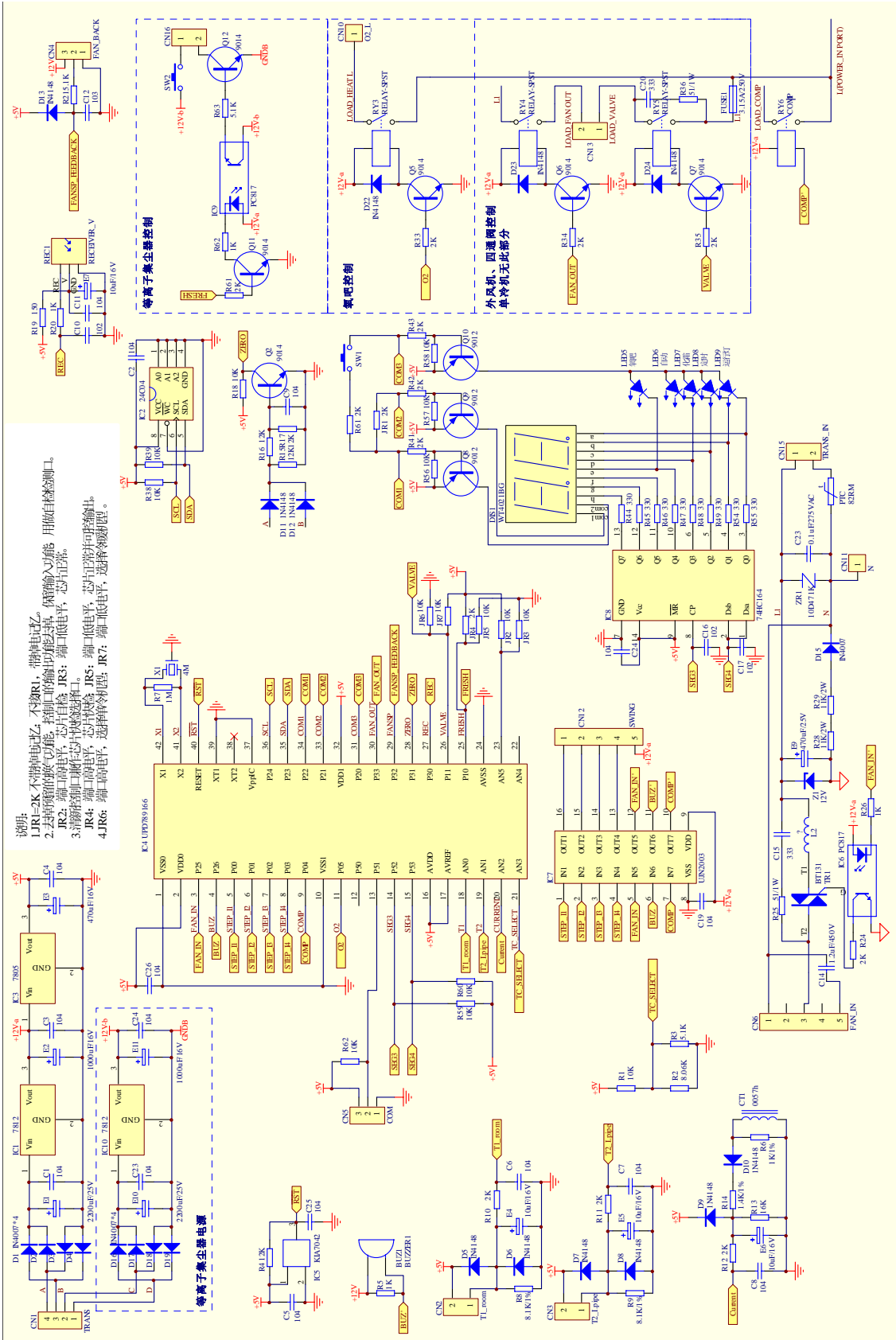


Outdoor unit air temp. °C DB

Note: The chart is the result from the continuous operation under constant air temperature conditions. However, excludes the initial pull-down stage.

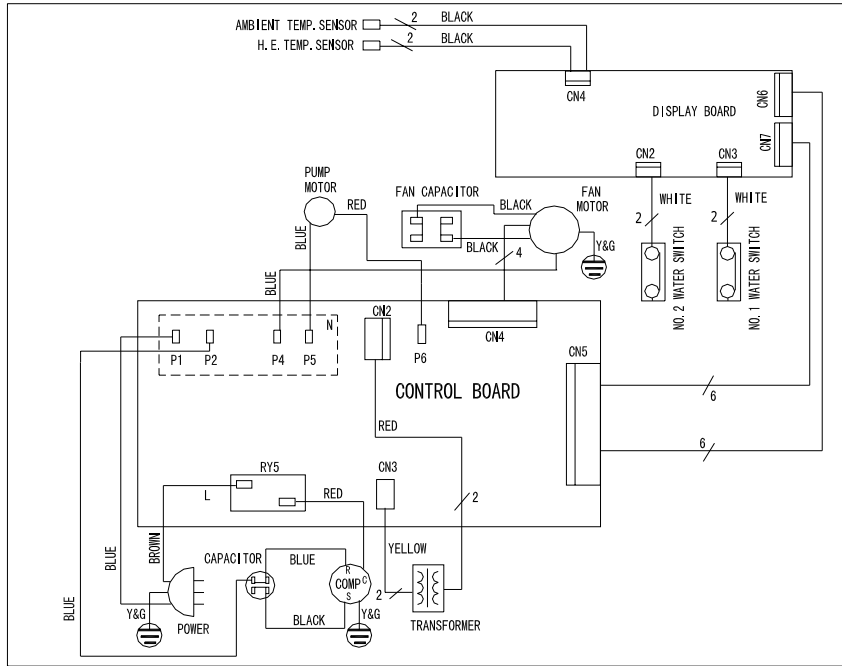
7. Schematic diagram and Wiring diagram

7.1. Schematic diagram



7.2. Wiring diagram

APD 9 AM, APD 12 AM



8. Electronic function

8.1 Cooling mode

The air flow speed can be set at high, medium and low.

The temperature can be set from 17°C~30°C.

The action of the compressor

	Condition	Compressor
Temp. up	$T > T_s + 1$	On
	$T < T_s + 1$	Off
Temp. down	$T > T_s$	On
	$T < T_s$	Off

8.2 Heating mode

The air flow speed can be set at high or low;

The temperature can be set from 17°C~30°C.

The action of the PTC heater:

	Condition	PTC heater
Temp. up	$T > T_s + 1$	Off
	$T < T_s + 1$	On
Temp. down	$T > T_s$	Off
	$T < T_s$	On

8.3 Dehumidifying mode

The fan works at High speed.

The action of the compressor

	Condition	Compressor
	Ta: room temp.	
Temp. up	$T_a > 15^\circ\text{C}$	On
	$T < 15^\circ\text{C}$	Off
Temp. down	$T_a > 13^\circ\text{C}$	On
	$T < 13^\circ\text{C}$	Off

8.4 Air blowing mode

The fan can run at high, medium or low speed.

8.5 Timer

8.5.1 Timer On

Push the **Timer On** button to start the timer;

Time is relative time, from

0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-0.0;

8.5.2 Timer Off

Push the **Timer On** button to start the timer;

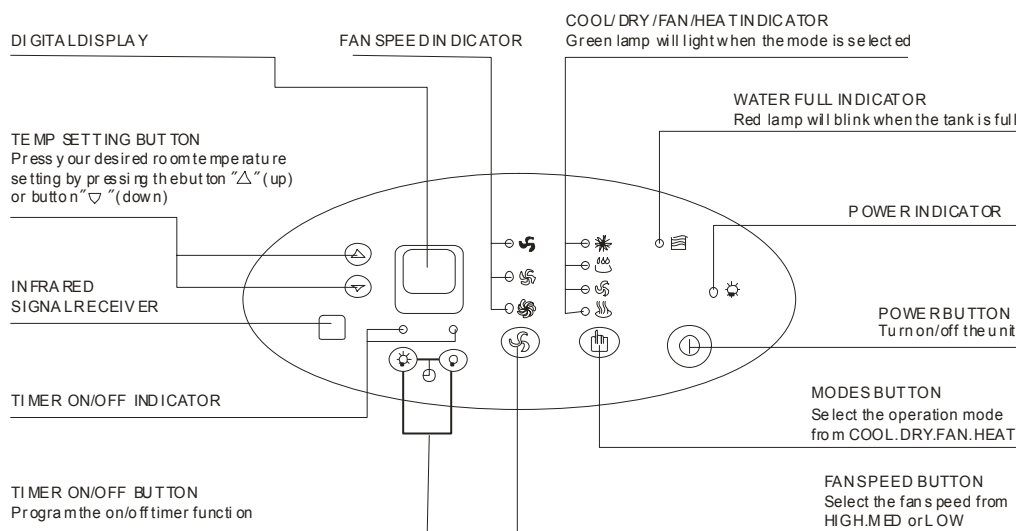
Time is relative time, from

0.5-1.0-1.5-2.0-2.5-3.0-3.5-4.0-4.5-5.0-5.5-6.0-6.5-7.0-7.5-8.0-8.5-9.0-9.5-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-0.0;

8.6 Operation panel

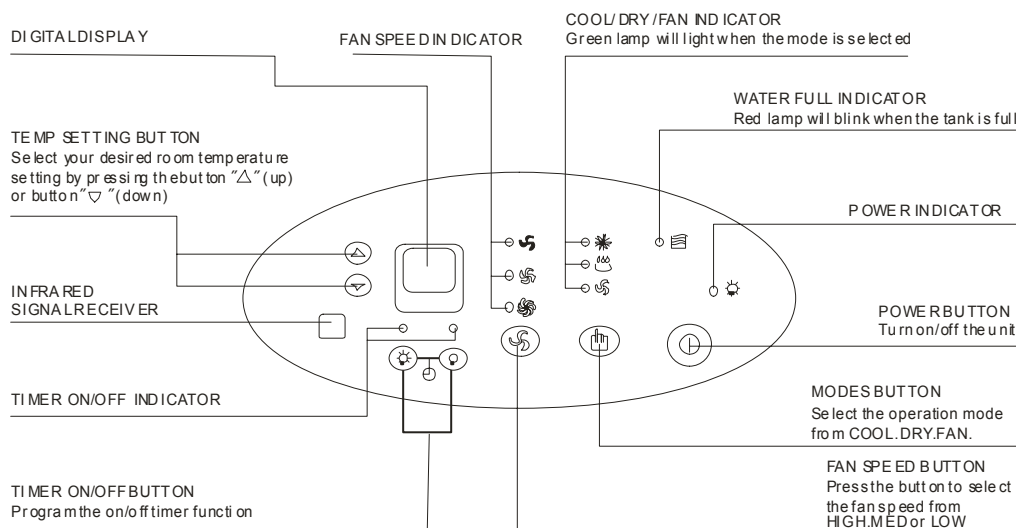
8.6.1 With PTC model

OPERATION PANEL OF THE AIR CONDITIONER(COOLING AND HEATING)



8.6.2 Without PTC model

OPERATION PANEL OF THE AIR CONDITIONER(COOLING ONLYTYPE)



8.7 Protective function

8.7.1 Alarm on water level

At any mode, when the water level is up to the limit, the LED display 'P1', the alarm lamp flashes at 2 Hz, and the machine enters into air blowing mode.

8.7.2 Low temperature protection for the evaporator

At cooling and dehumidifying modes, if the pipe temperature is lower than 2°C after compressor runs for 3 minutes, the compressor will be shut down instantly. When the pipe temperature goes up to 10°C, the compressor runs again.

8.7.3 High temperature protection

At heating mode, when the temperature at air outlet is more 75°C, the PTC will be turned off; the lamp of heating will flash at 2Hz, when the temperature lowers to 55°C, the PTC returns to work.

At heating mode, when the temperature at air outlet is more 90°C, the fuse of PTC will be broken.

8.7.4 The delayed protection for compressor

When the power is on for the first time, the compressor starts without waiting for 3 minutes; re-starting the machine after the compressor is stopped needs to wait for 3 minutes.

8.7.5 Sensor defective protection

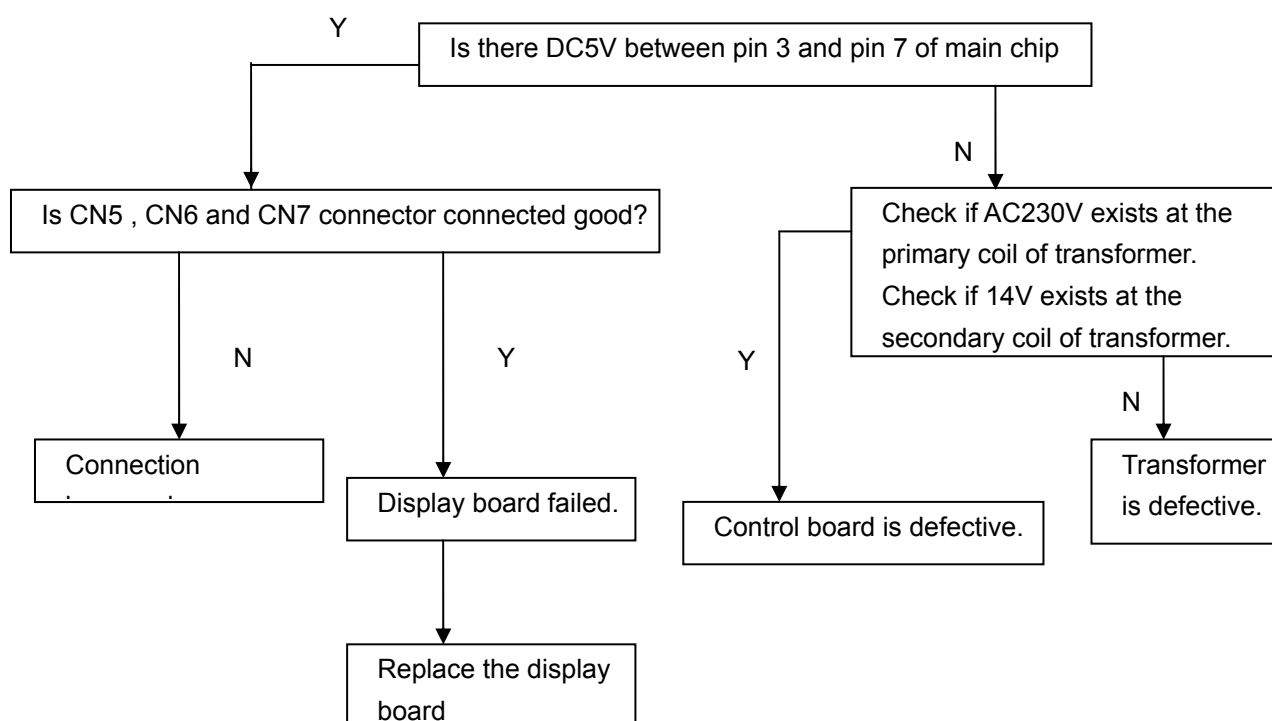
When the sensor is defective, the unit will display the error.

Pipe temp. sensor error code: E1

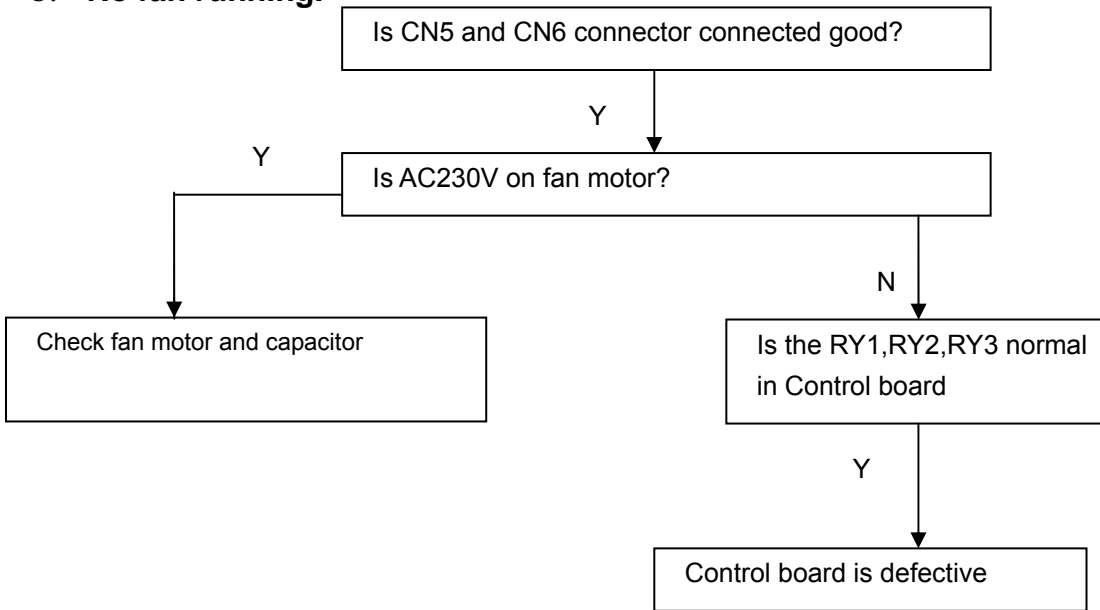
Room temp. sensor error code: E2

9. Malfunction and troubleshooting

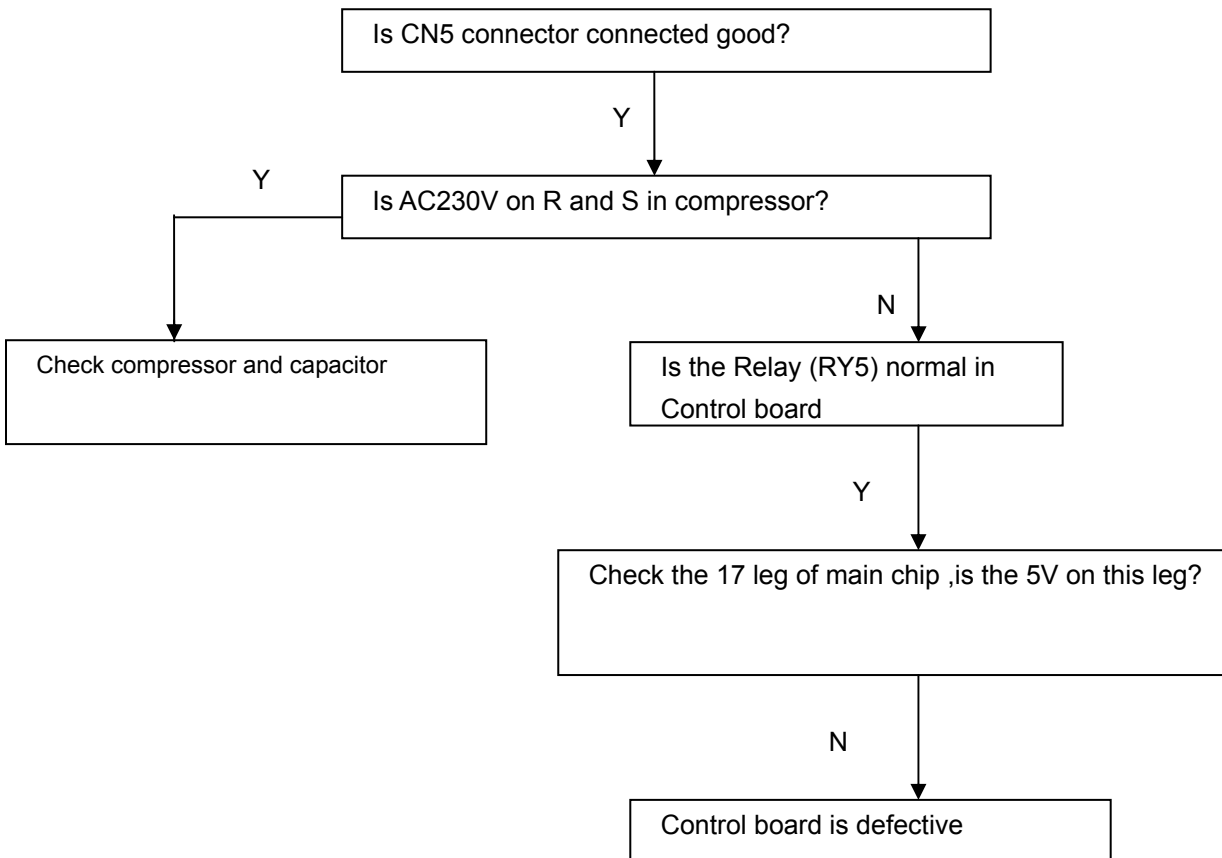
a. No display or no response to remote controller or no response to button ..

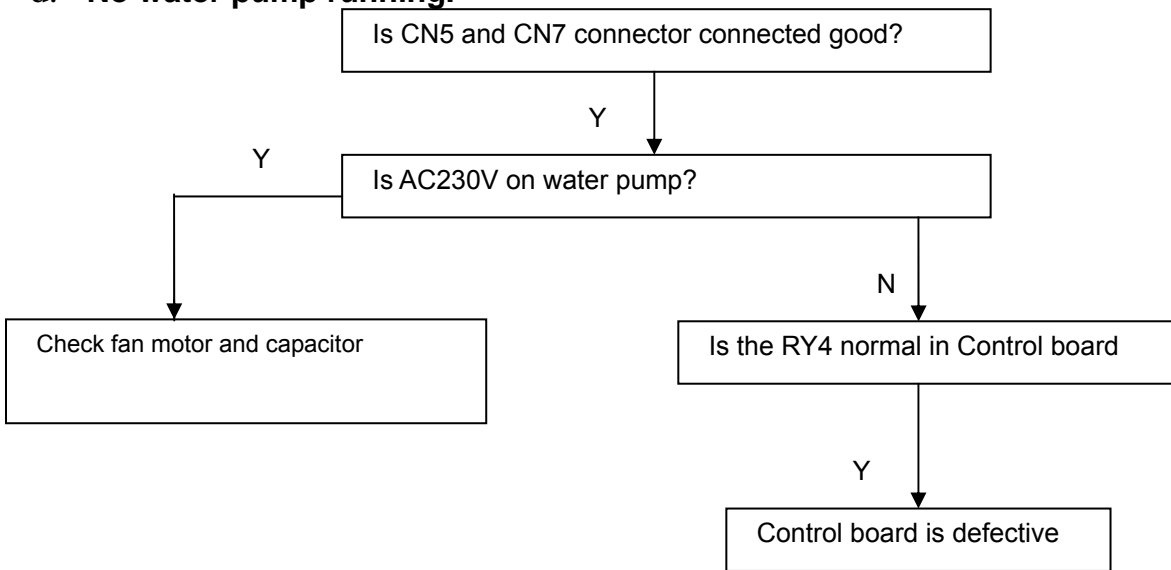


b. No fan running.



c. No compressor working.



d. No water pump running.**e. No PTC working(only for with PTC heater model).**

Set temperature at 32°C and make sure the room temperature is below 30°C.

