



PORTABLE PD SERIES SERVICE MANUAL



Models:

Cooling-only

MPPD-12CRN1-BH9

MPPD-14CRN1-BH9

MPPD-12CRN1-BI0(small body)

Heat pump

MPPD-12HRN1-BH9

MPPD-14HRN1-BH9

Electronic heater

MPPD-12ER-NB4

Dual-hose

MYPD-12CRN1-QB6



PD1



PD3



PD
(standard panel)

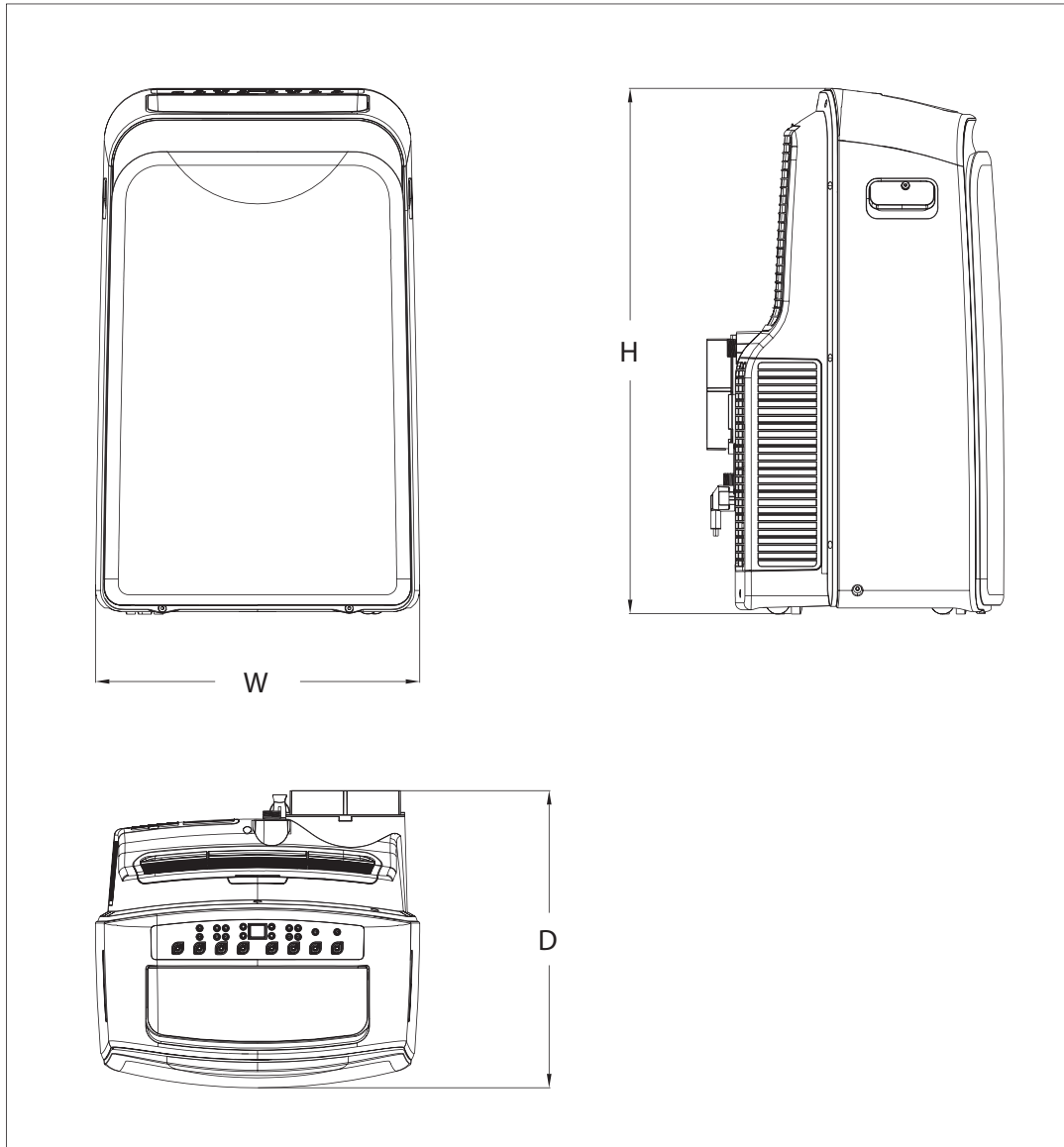


PDA



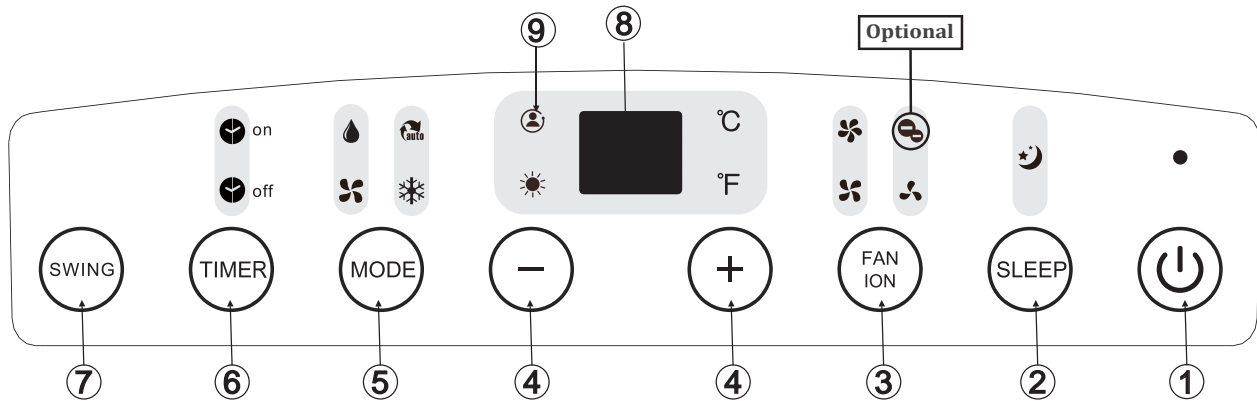
PDB(panel used for small body)

1. DIMENSION



Unit Dimension	W	H	D
	mm(inch)		
Single-hose (small body)	454(17.9)	700(27.6)	365(14.4)
Single-hose	467(18.4)	765(30.1)	397(15.6)
Double-hose	467(18.4)	765(30.1)	478(18.8)

2. OPERATION MODES AND INSTRUCTIONS



2.1 OPERATION MODES

POWER BUTTON ①

Power switch on/off.

SLEEP/ECO BUTTON ②

Used to initiate the SLEEP/ECO operation.

NOTE: On some models SLEEP button is instead of ECO button.

FAN/ION BUTTON (ION is optional) ③

Control the fan speed. Press to select the fan speed in four steps-LOW, MED, HI and AUTO. The fan speed indicator light illuminates under different fan settings except AUTO speed. When select AUTO fan speed, all the fan indicator lights turn dark.

NOTE: Press this button for 3 seconds to initiate ION feature. The ion generator is energized and will help to remove pollen and impurities from the air, and trap them in the filter. Press it for 3 seconds again to stop the ION feature.

UP(+) AND DOWN(-) BUTTON ④

Used to adjust (increasing/decreasing) temperature settings (2 °F / 1 °C increments) in a range of 62 °F (17 °C) to 88 °F (30 °C) or the TIMER setting in a range of 0~24hrs.

NOTE:

The control is capable of displaying temperature in degrees Fahrenheit or degrees Celsius. To convert from one to the other, press and hold the Up and Down buttons at the same time, for 3 seconds.

MODE SELECT BUTTON ⑤

Selects the appropriate operating mode. Each time you press the button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN and HEAT (cooling only models without).

The mode indicator light illuminates under the different mode settings..

TIMER BUTTON ⑥

Used to initiate the AUTO ON start time and AUTO OFF stop time program, in conjunction with the (+) & (-) buttons. The timer on/off indicator light illuminates under the timer on/off settings.

SWING BUTTON ⑦

(Applicable to the models with auto swing feature only)

Used to initiate the Auto swing feature. When the operation is ON, press the SWING button can stop the louver at the desired angle.

LED DISPLAY ⑧

Shows the set temperature in " °C " or " °F " and the Auto-timer settings. While on DRY and FAN modes, it shows the room temperature.

FOLLOW ME/TEMP SENSING (OPTIONAL) ⑨

NOTE: This feature can be activated from the remote control ONLY. The remote control serves as a remote thermostat allowing for the precise temperature control at its location. To activate the Follow Me/Temp Sensing feature, point the remote control towards the unit and press the Follow Me/Temp Sensing button. The remote display is actual temperature at its location. The remote control will send this signal to the air conditioner every 3 minutes interval until press the Follow Me/Temp Sensing button again. If the unit does not receive the Follow Me/Temp Sensing signal during any 7 minutes interval, the unit will beep to indicate the Follow Me/Temp Sensing mode has ended.

2.2 OPERATION INSTRUCTIONS

COOL OPERATION

- Press the "MODE" button until the "COOL" indicator light comes on.
- Press the ADJUST buttons "+" or "-" to select your desired room temperature. The temperature can be set within a range of 62 °F -88 °F /17 °C -30 °C.
- Press the "FAN SPEED" button to choose the fan speed.

FAN OPERATION

- Press the "MODE" button until the "FAN " indicator light comes on.
- Press the "FAN SPEED" button to choose the fan speed. The temperature cannot be adjusted
- Do not put the duct to window.

HEAT OPERATION

(cooling only models without)

- Press the "MODE" button until the "HEAT" indicator light comes on.
- Press the ADJUST buttons "+" or "-" to select your desired room temperature. The temperature can be set within a range of 62 °F -88 °F /17 °C -30 °C .
- Press the "FAN SPEED" button to choose the fan speed. For some models, the fan speed can not be adjusted under HEAT mode.
- Press the "MODE" button until the "DRY" indicator light comes on.
- Under this mode, you cannot select a fan speed or adjust the temperature. The fan motor operates at LOW speed.
- Keep windows and doors closed for the best dehumidifying effect.
- Do not put the duct to window.

AUTO OPERATION

- When you set the air conditioner in AUTO mode, it will automatically select cooling, heating(cooling only models without), or fan only operation depending on what temperature you have selected.
- and the room temperature.
The air conditioner will control room temperature automatically round the temperature point set by you.
Under AUTO mode, you can not select the fan speed

TIMER OPERATION

- When the unit is on, press the Timer button will initiate the Auto-off stop program, the TIMER OFF indicator light illuminates. Press the UP or down button to select the desired time. Press the TIMER button again within 5 seconds, the Auto-on start program is initiated. And the TIMER ON indicator light illuminates. Press the up or down button to select the desired Auto-on start time.
- When the unit is off, press the Timer button to initiate the Auto-on start program, press it again within five seconds will initiate the Auto-off stop program.
- Press or hold the UP or DOWN button to change the Auto time by 0.5 hour increments, up to 10 hours, then at 1 hour increments up to 24 hours. The control will count down the time remaining until start.
- The system will automatically revert back to display the previous temperature setting if there is no operation in a five seconds period.
- Turning the unit ON or OFF at any time or adjusting the timer setting to 0.0 will cancel the Auto Start/ Stop timer program.
- When the malfunction (E1,E2,E3 or E4) occurs, the Auto Start/Stop timed program will also be cancelled.

SLEEP OPERATION

Press this button, the selected temperature will increase (cooling) or decrease (heating) by $2^{\circ}\text{F} / 1^{\circ}\text{C}$ 30 minutes. The temperature will then increase (cooling) or decrease (heating) by another $2^{\circ}\text{F} / 1^{\circ}\text{C}$ after an additional 30 minutes. This new temperature will be maintained for 7 hours before it returns to the originally selected temperature. This ends the Sleep mode and the unit will continue to operate as originally programmed.

NOTE: This feature is unavailable under FAN or DRY mode.

3. ELECTRONIC FUNCTION

3.1 Abbreviation

T1: Indoor room temperature.

T2: Temperature of evaporator.

T3: Temperature of condenser.

TS: The setting temperature.

S1: Water level switch

3.2 Main Protection

3.2.1 The compressor functions protection with a delay of three minutes. Compressor will restart with a delay of three minutes once it stops operation. But it is four minutes delay for Heat pump model's restarting.

3.2.2 Sensor protection at open or short circuit.

$A/D \leq 2\ \Omega$, Sensor protection at open circuit;

$A/D \geq 253\ \Omega$, Sensor protection at short circuit.

(Table A in next page show you the relation between temperature and resistance of sensor.)

3.2.3 Auto defrosting at cooling mode or drying mode.

At cooling or drying mode, when $T2 \leq 2^{\circ}\text{C}$ for 3 minutes continuously, it enters into Auto defrosting function with compressor turning off.

If water level is below S1, outdoor fan motor turns off with three minutes delay. Auto defrosting function relieves when $T2 \geq 10^{\circ}\text{C}$ or T2 malfunction or changing for other operation modes.

TABLE A:**CHARACTERISTIC OF TEMPERATURE SENSOR**

Temp. °F/°C	Resistance KΩ	Temp. °F/°C	Resistance KΩ	Temp. °F/°C	Resistance KΩ
-	-	62.6/17	14.6181	111.2/44	4.3874
15.8/-9	58.7079	64.4/18	13.918	113/45	4.2126
17.6/-8	56.3694	66.2/19	13.2631	114.8/46	4.0459
19.4/-7	52.2438	68/20	12.6431	116.6/47	3.8867
21.2/-6	49.3161	69.8/21	12.0561	118.4/48	3.7348
23/-5	46.5725	71.6/22	11.5	120.2/49	3.5896
24.8/-4	44	73.4/23	10.9731	122/50	3.451
26.6/-3	41.5878	75.2/24	10.4736	123.8/51	3.3185
28.4/-2	39.8239	77/25	10	125.6/52	3.1918
30.2/-1	37.1988	78.8/26	9.5507	127.4/53	3.0707
32/0	35.2024	80.6/27	9.1245	129.2/54	2.959
33.8/1	33.3269	82.4/28	8.7198	131/55	2.8442
35.6/2	31.5635	84.2/29	8.3357	132.8/56	2.7382
37.4/3	29.9058	86/30	7.9708	134.6/57	2.6368
39.2/4	28.3459	87.8/31	7.6241	136.4/58	2.5397
41/5	26.8778	89.6/32	7.2946	138.2/59	2.4468
42.8/6	25.4954	91.4/33	6.9814	140/60	2.3577
44.6/7	24.1932	93.2/34	6.6835	141.8/61	2.2725
46.4/8	22.5662	95/35	6.4002	143.6/62	2.1907
48.2/9	21.8094	96.8/36	6.1306	145.4/63	2.1124
50/10	20.7184	98.6/37	5.8736	147.2/64	2.0373
51.8/11	19.6891	100.4/38	5.6296	149/65	1.9653
53.6/12	18.7177	102.2/39	5.3969	150.8/66	1.8963
55.4/13	17.8005	104/40	5.1752	152.6/67	1.83
57.2/14	16.9341	105.8/41	4.9639	154.4/68	1.7665
59/15	16.1156	107.6/42	4.7625	156.2/69	1.7055
60.8/16	15.3418	109.4/43	4.5705	-	-

3.3 Operation Modes and Functions

3.3.1 Auto mode function requirement

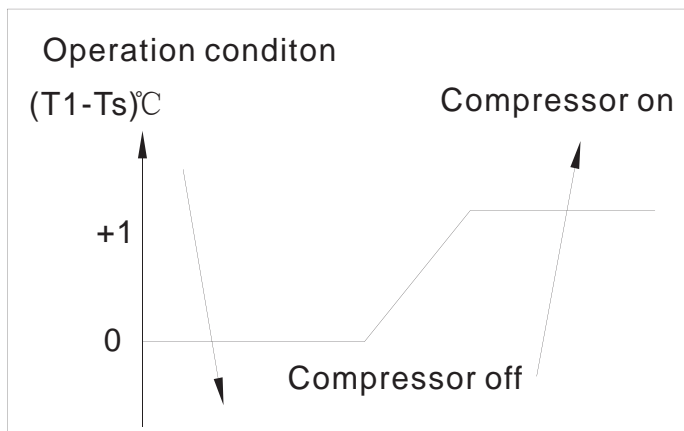
- TS range is 62 °F ~88 °F (17 °C ~30 °C).
When $T_1 < TS - 1$, select the setting temperature of TS-1 for Heating operation's temperature.
- When $TS + 2 \geq T_1 \geq TS - 1$, select the Fan-only mode.
- When $T_1 > TS + 2$, select the setting temperature (TS) for Cooling operation's temperature.
- The indoor fan motor operates at Auto-fan mode with speed uncontrolled and not changed.

3.3.2 Fan-only mode function requirement

- The compressor and outdoor fan are OFF at Fan-only mode (except P1 protection).
- The speed of indoor fan can be optionally chosen as High/Mid/Low.
- The TS can't be controlled because of the LED displaying as T1.
- The ION/TIMER functions are valid at the fan-only mode.

3.3.3 Cooling mode function requirement

- The speed of indoor fan can be optionally selected as High/Mid/Low.
- The outdoor fan will be turned on as soon as the unit being on cooling mode. The operation of outdoor fan is according to the compare of T1 and TS when the water level is below to switch 1.
If not, the outdoor fan doesn't work.
- The compressor operates as below:



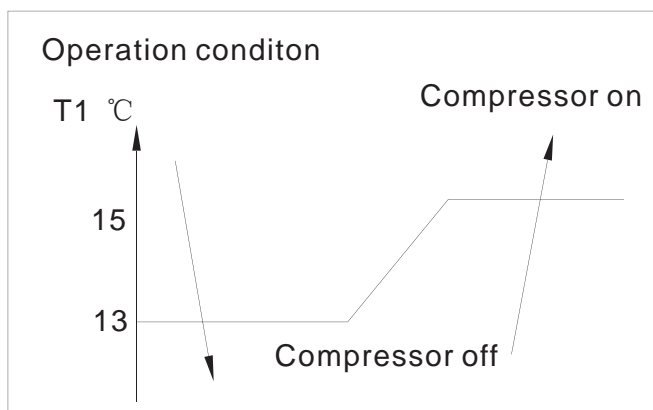
a) If $T_1 > TS + 1^\circ\text{C}$, outdoor fan operates. After 15 seconds, compressor operates.

b) The compressor is on, if $T_1 \leq TS$, this compressor will stop. If outdoor fan operates for 3 minutes at least, it will stop for a delay for 5 seconds.

- When the unit is off, the compressor stops at first, and the indoor/outdoor fan will stop for a delay of 5seconds. (If it operates at heating mode, the outdoor fan will be off for a delay of 30 seconds).
- The ION/TIMER functions are valid at the cooling mode.

3.3.4 Drying mode function requirement

- At Drying mode, TS can't be controlled by display panel, and LED display as T1.
- The unit operates at drying mode. If $T1 > 55.4\text{ }^{\circ}\text{F}$ ($13\text{ }^{\circ}\text{C}$), outdoor fan turns on, and then the compressor operates after 15 seconds later.

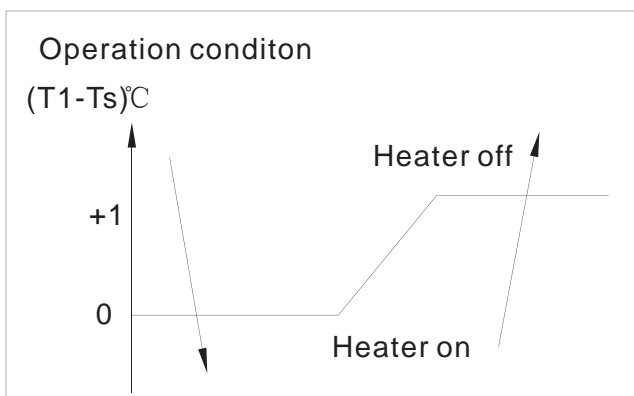


- When $T1 < 55.4\text{ }^{\circ}\text{F}$ ($13\text{ }^{\circ}\text{C}$), compressor stops working. And outdoor fan will stop for a delay of 5 seconds.
- When $T1 \geq 59\text{ }^{\circ}\text{F}$ ($15\text{ }^{\circ}\text{C}$), outdoor fan operates, and compressor will restart operation after 15seconds.

- The speed can't be controlled at drying mode, and indoor fan motor operates at low speed.
- The ION/TIMER functions are valid at the drying mode.

3.3.5 Heating mode function requirement(for Electronic Heater)

- TS range is $62\text{ }^{\circ}\text{F} \sim 88\text{ }^{\circ}\text{F}$ ($17\text{ }^{\circ}\text{C} \sim 30\text{ }^{\circ}\text{C}$).
The speed of indoor fan can be optionally chosen as Auto/High/Mid/Low.
- At heating mode, the heater will operate according to the difference between T1 and TS. Electronic heater operates as below:



- When $T1 < TS$, indoor fan operates firstly, then heater operates after 4 seconds.
- If $T1 > TS + 1\text{ }^{\circ}\text{C}$, turn off heater. Then turn off indoor fan motor for a delay of 10 seconds..

- The ION/TIMER functions are valid at the heating mode.

3.4.6 Heating mode function requirement(for Heat Pump)

- TS range is 62 °F ~88 °F (17 °C ~30 °C).
- $T_1 \leq TS + 41$ °F (5 °C), compressor operates;
 $T_1 > TS + 42.8$ °F (6 °C), compressor stops;
 $T_1 < 41$ °F (5 °C), heat pump mode is invalid; Water pump, fan motor, compressor and shaded pole motor stop operation;
 $T_1 \geq 42.8$ °F (6 °C), heat pump mode resume.
- When four-way valve open(on non-defrost situation), shaded pole motor is always off.
 When compressor operates, outdoor fan motor is at high speed.
 When compressor stops, outdoor fan motor stops for a delay of 30seconds.
 If unit changes for other operation modes, four-way valve closes for a delay of 2 minutes than compressor.
- When compressor is on, $T_2 < 86$ °F (30 °C), fan motor stops;
 When $T_2 \geq 86$ °F (30 °C) or compressor deing on operation for 30 seconds, indoor fan motor is on operation for 3 minutes at first, then according to the temperture T2 to choose speed.
 If $T_2 \geq 100.4$ °F (38 °C), unit operates at setting speed.
 When compressor stops, indoor fan motor also stops, the unit can be set at high/mid/low/auto speed. Indoor fan motor will be off for a delay of 20 seconds becaues of compressor being off by change of temperature or power off.
- Water pump control:
 - a) At Heat pump mode, when LED displays as P1, or S1 disconnets continuously for 5 seconds, water pump starts to drain.
 - b) If S1 closes continuously over 5 seconds, it means that the water level of chassis is below to S1. After it lasts working for 100 seconds, it will stop.
 - c) If unit changes for other operation mode or power off, water pump closes immidiately.
- Defrosting function:
 1. Defrosting condition: $T_3 \leq 35.6$ °F (2 °C), and operation time is up to 40 minutes.
 2. Defrosting action:
 - a) Compressor operates, four-way valve and indoor/outdoor fan are off.
 - b) When time is over 7 minutes or temperatrue is over 40 °C, the outdoor fan is on and continuously working till the defrosting over.
 3. Defrosting over: Defrosting time is up to 10 minutes; $T_3 \geq 122$ °F (50 °C)
 4. Outdoor fan works, and compressor stops. After 35 seconds, four-way valve opens, 3 seconds later, the compressor operates.

- It's invalid for compressor's delay operation protection when unit is at defrosting function mode.
- On defrosting process, if malfunction occur, or power off, or change for non-heating mode, unit will esc defrosting function mode.
- At Heat pump mode, if P1 occurs, compressor, indoor/outdoor fan stop immidiately. Four-way valve keeps open.
- The ION/TIMER functions are valid at Heat pump mode.

4. MALFUNCTION

4.1 Error codes and Solution.

E1---Room temperature sensor error.
 E2---Evaporator temperature sensor error.
 E3---Condenser temperature sensor error.

Causation:

- a) Port of temperature sensor is loose.
- b) Temperature sensor is bad.
- c) Circuit component is bad.

Solution:

- a) Check the connection between temperature sensor and adaptor is ok, if not, please make sure the port plugs into the adaptor hard.
- b) Restart the unit. If it can not resume. Please use another good temperature sensor instead.
- c) Restart the unit. If it also can not resume. Please replace the PCB.

E4---Display panel communication error.

Causation:

Communication failure for 2 minutes consecutive between indoor and outdoor.

- a) Wire port is loose.
- b) Circuit component of display panel is bad.

- c) Circuit component of PCB is bad.

Solution:

- a) Check the wire between display panel and PCB, make sure the connection is ok.
- b) Restart the unit. If it can not resume after 2 minutes, please replace the display panel.
- c) Restart the unit. If it can not resume after 2 minutes, please replace the PCB.

4.2 Protection code and Solution.

P1---Water full protection.

Causation: Water in tank is full.

Solution:

Connect the drain hose and drain the collected water away.

4.3 Others malfunction.

Unit does not operate when pressing on/off button

Causation:

- a) LED display as P1.
- b) Room temperature is lower than TS (Cooling mode).

Solution:

- a) Drain the water in the tank.
- b) Reset the temperature.

Not cool enough

Causation:

- a) The windows or doors in the room are open.
- b) There are heat sources inside the room.
- c) Exhaust air duct is not connected or blocked.
- d) TS is too high.
- e) Air filter is blocked by dust.

Solution:

- a) Make sure all the windows or doors are closed.
- b) Remove the heat sources if possible.
- c) Connect the duct and make sure it can function properly.
- d) Decrease the TS.
- e) Clean the air filter.

Noisy or vibration

Causation:

The ground is not level or not flat enough.

Solution:

Place the unit on a flat, level ground if possible.

Power shut off at Heating mode

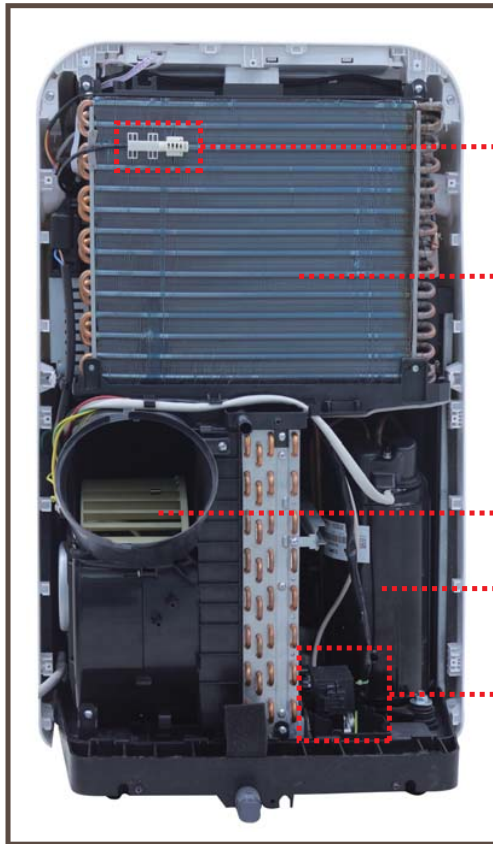
Causation:

The automatic over heat protection function.
When the temperature at the air outlet exceed 158 °F /70 °C,
the unit will stop.

Solution:

Restart the unit after it has cooled down.

5. INTERNAL STRUCTURE



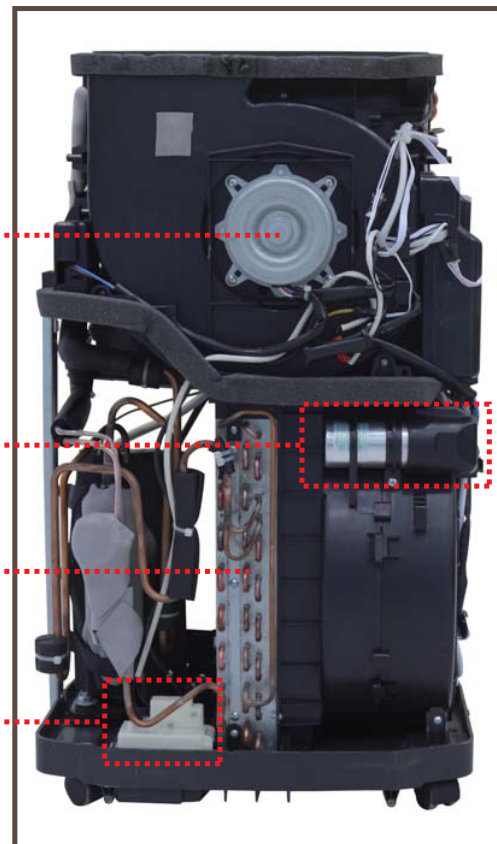
Temperature sensor

Evaporator

Centrifugal fan

Compressor

Water pump

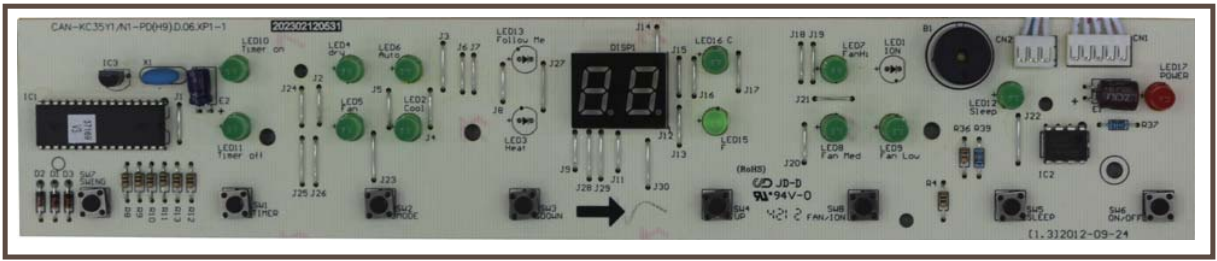


Indoor fan motor

Capacitor of compressor

Condenser

Water level sensor



Display board

Temperature sensor

Display board

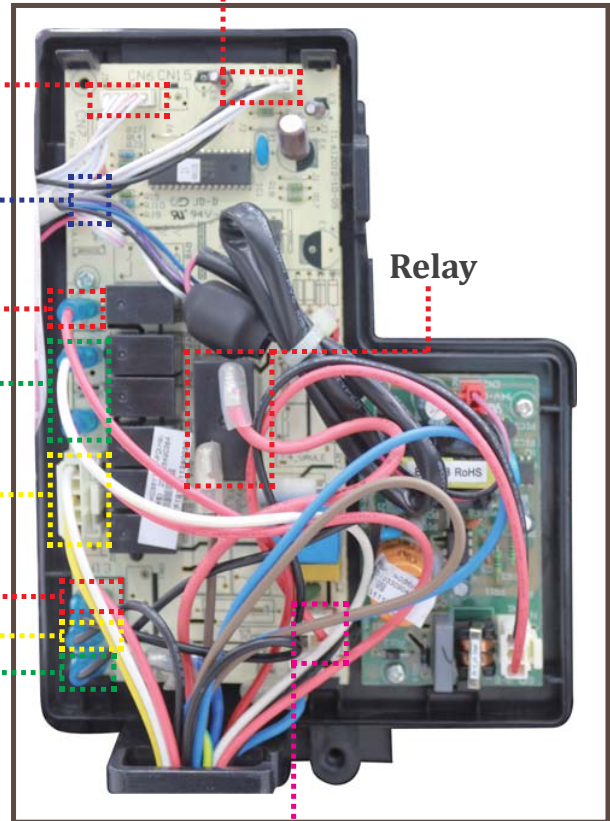
Water level switch

Louver motor

Outdoor motor

Indoor motor

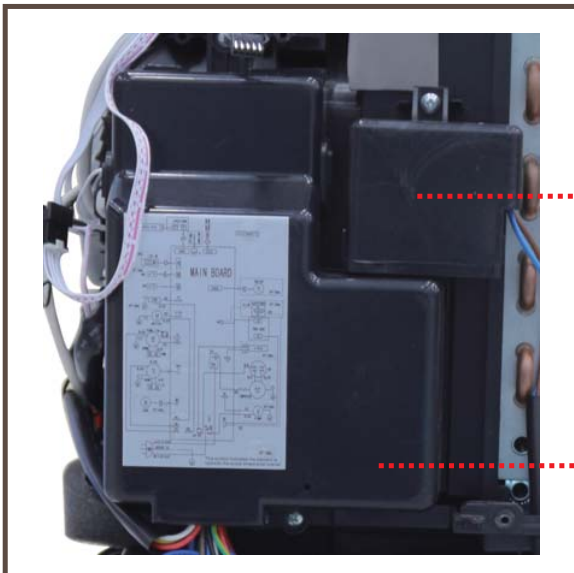
Relay



Power on/off

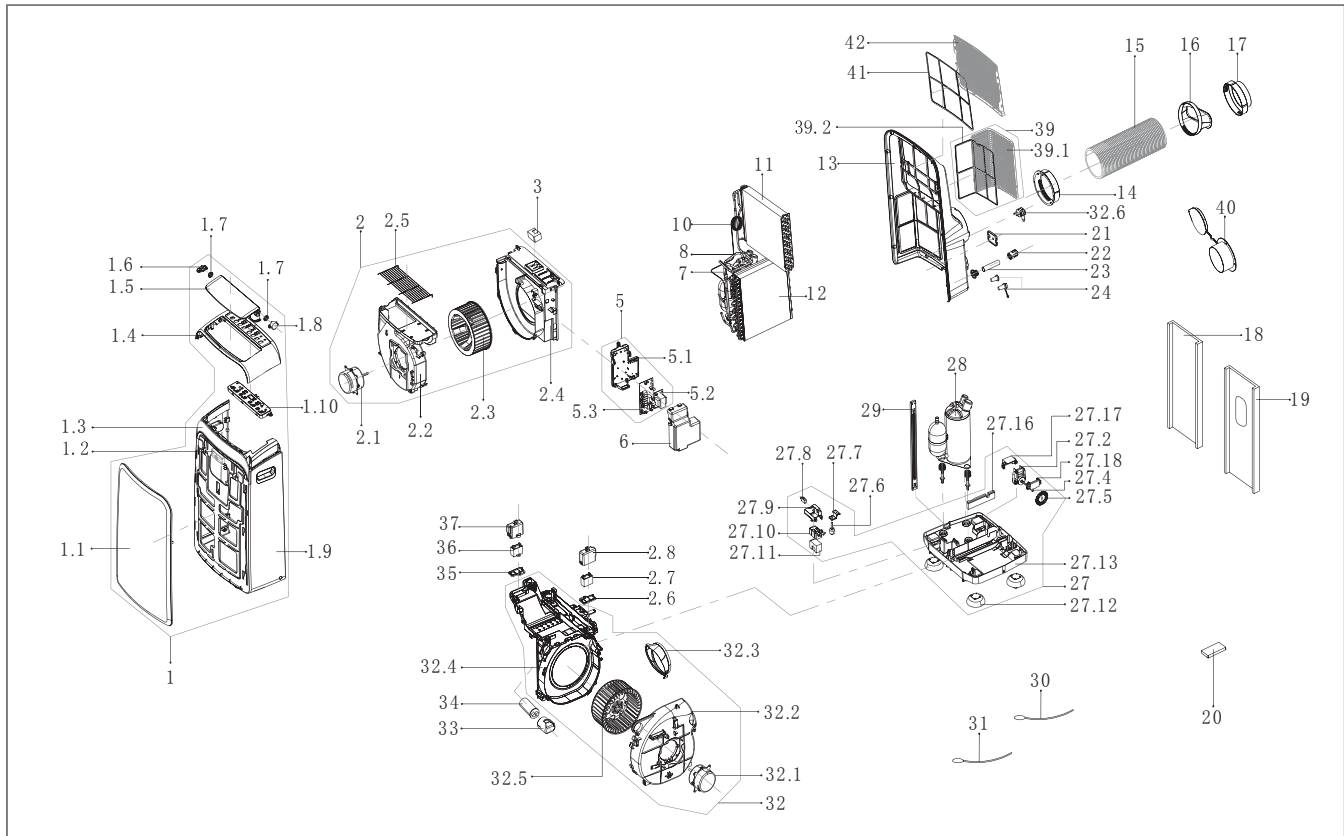
Capacitor of fan motor

Electronic control box



6. EXPLODED VIEW

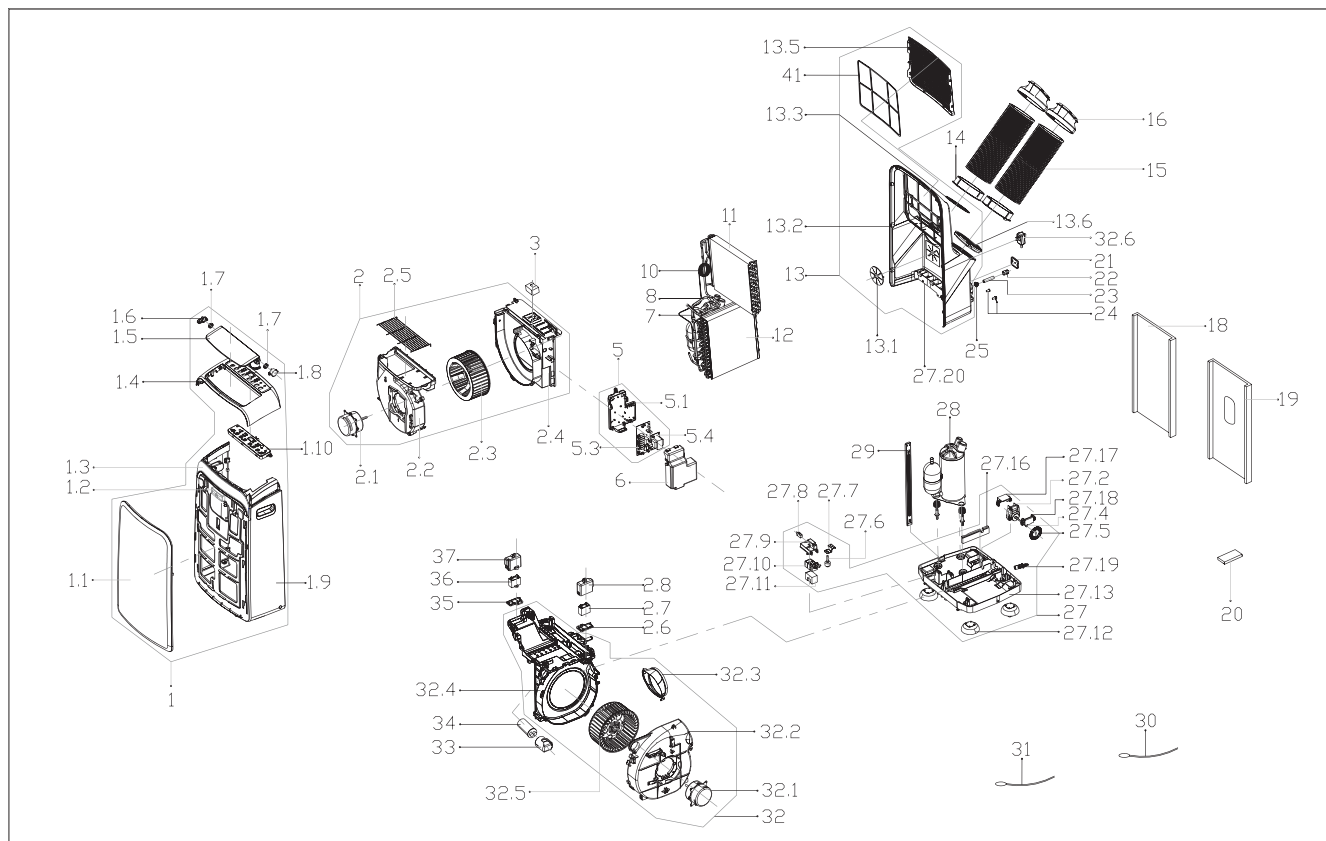
6.1 Single-hose model



NO.	Part name	NO.	Part name
1	Front panel assembly	3	Dobber
1.1	Front panel	5	Electronic control box assembly
1.2	Signal receiving board assembly	5.1	Electronic control box
1.3	Adorn board	5.2	Power module assembly
1.4	Upper panel	5.3	Main control board assembly
1.5	Horizontal louver	6	Cover of electronic control box
1.6	Bracket	7	Suction pipe assembly
1.7	Gear wheel	8	Discharge pipe assembly
1.7	Gear wheel	10	Capillary assembly
1.8	Louver motor	11	Evaporator coil assembly
1.9	Mid panel	12	Condenser assembly
1.10	Display box assembly	13	Rear panel assembly
2	Air outlet volute shell assembly	14	Connector of air exhaust duct
2.1	Asynchronous motor	15	Flexible air exhaust hose
2.2	Air outlet volute shell	16	Air exhaust passage
2.3	Centrifugal fan	17	Air exhaust passage
2.4	Cover of Air outlet volute shell	18	Window sealing board I
2.5	Air outlet grille	19	Window sealing board II
2.6	Fasten board of Capacitor	20	Remote controller
2.7	Capacitor of fan motor	21	Power cord cover
2.8	Capacitor box	22	Cover of drain connector

23	Drain pipe	30	Pipe temperature sensor assembly
24	Drain stopper	31	Indoor temperature sensor assembly
24	Drain stopper	32	Air exhaust volute shell assembly
27	Chassis assembly	32.1	Asynchronous motor
27.2	Shaded pole motor	32.2	Cover of air exhaust volute shell
27.4	Spring	32.3	Connector of air exhaust duct
27.5	Water wheel	32.4	Middle partition board
27.6	Water level sensor	32.5	Centrifugal fan
27.7	Bracket of water level sensor	32.6	Power cord
27.8	Micro switch	33	Capacitor box
27.9	Bracket of Micro switch	34	Capacitor of compressor
27.10	Dobber case	35	Fasten board of Capacitor
27.11	Dobber	36	Capacitor of fan motor
27.12	Universal wheel	37	Capacitor box
27.13	Chassis	39	Outdoor air inlet grille assembly
27.16	Waterproof foam	39.1	Outdoor air inlet grille
27.17	Top cover of Shaded pole motor	39.2	filter
27.18	Bottom cover of Shaded pole motor	40	Connector, air exhaust duct
28	Compressor	41	Top filter
29	Supporting bar	42	Indoor air inlet grille

6.2 Dual-hose model



NO.	Part name	NO.	Part name
1	Front panel assembly	19	Window sealing board II
1.1	Front panel	20	Remote controller
1.2	Signal receiving board assembly	21	Power cord cover
1.3	Adorn board	22	Cover of drain connector
1.4	Upper panel	23	Drain pipe
1.5	Horizontal louver	24	Drain stopper
1.6	Bracket	24	Drain stopper
1.7	Gear wheel	27	Chassis assembly
1.7	Gear wheel	27.2	Shaded pole motor
1.8	Louver motor	27.4	Spring
1.9	Mid panel	27.5	Water wheel
1.10	Display box assembly	27.6	Water level sensor
2	Air outlet volute shell assembly	27.7	Bracket of water level sensor
2.1	Asynchronous motor	27.8	Micro switch
2.2	Air outlet volute shell	27.9	Bracket of Micro switch
2.3	Centrifugal fan	27.10	Dobber case
2.4	Cover of Air outlet volute shell	27.11	Dobber
2.5	Air outlet grille	27.12	Universal wheel
2.6	Fasten board of Capacitor	27.13	Chassis
2.7	Capacitor of fan motor	27.16	Waterproof foam
2.8	Capacitor box	27.17	Top cover of Shaded pole motor
3	Dobber	27.18	Bottom cover of Shaded pole motor
5	Electronic control box assembly	27.19	Drain Connector
5.1	Electronic control box	27.20	Connecting board of chassis
5.2	Power module assembly	28	Compressor
5.3	Main control board assembly	29	Supporting bar
6	Cover of electronic control box	30	Pipe temperature sensor assembly
7	Suction pipe assembly	31	Indoor temperature sensor assembly
8	Discharge pipe assembly	32	Air exhaust volute shell assembly
10	Capillary assembly	32.1	Asynchronous motor
11	Evaporator coil assembly	32.2	Cover of air exhaust volute shell
12	Condenser assembly	32.3	Connector of air exhaust duct
13	Rear panel assembly	32.4	Middle partition board
13.1	Cover for exhaust	32.5	Centrifugal fan
13.2	Rear panel	32.6	Power cord
13.3	Down filter	33	Capacitor box
13.6	Protective grille	34	Capacitor of compressor
14	Connector of air exhaust duct	35	Fasten board of Capacitor
15	Flexible air exhaust hose	36	Capacitor of fan motor
16	Air exhaust passage	37	Capacitor box
18	Window sealing board I	41	Top filter



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