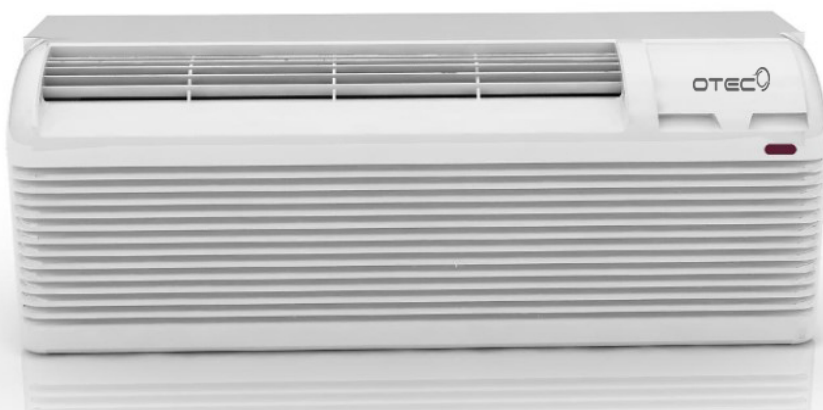


PTJA Series

DC - Inverter Packaged Terminal Air Conditioner/Heat Pump Service Manual

208~230V/1/60Hz



Packaged Terminal Air Conditioner/Heat Pump Service Manual

INVERTER SERIES

I Summary and Features

Features of PTAC:

Location of installation: The unit is installed in the hole pre-embedded in the wall, which is different from traditional installation and prettifies the room, without occupying the space.

Easy installation: Install the drainage pipe at first, and then push the unit into the installed cabinet assy. At last, turn the safety clamp for 90 degrees to finish.

Easy cleaning: Pull the unit out and unscrew the 6 screws used for fixing the cover plate to remove it. In this case, condenser can be cleaned with water. At last, lift the unit slightly to drain the water.



Mode	Remarks
PTJA-009H2A-G3D028 PTJA-012H2A-G3D035 PTJA-015H2A-G5D042	1PH 230/208V 60Hz R410A

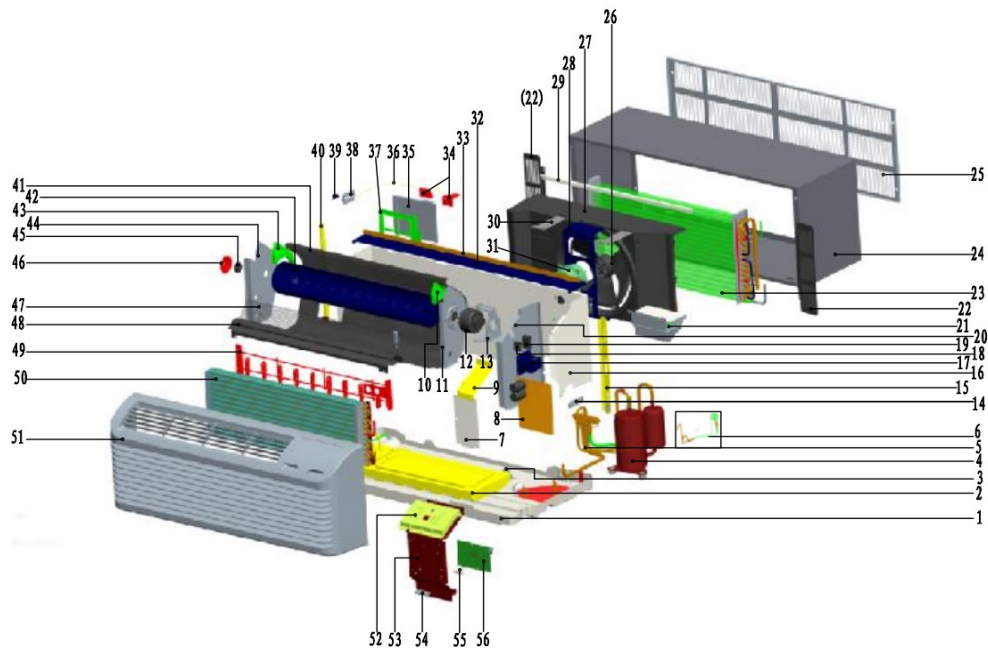
II Specification and Technical Parameter

R410A 208-230V 60Hz Heat Pump with E-heater

Model			PTJA-009H2A-G3D028	PTJA-012H2A-G3D035	PTJA-015H2A-G5D042
Power supply		V-Ph-Hz	230/208V/1Ph/60Hz	230/208V/1Ph/60Hz	230/208V/1Ph/60Hz
Code			821020500063	821020800074	821021100060
Cooling	Capacity	Btu/h	9600/9400	12200/12000	15200/15000
	Input	W	820/800	1065/1045	1400/1380
	EER	Btu/h.W	11.7/11.7	11.5/11.5	10.8/10.8
	SEER	Btu/h.W	16	15	14
	IEER	Btu/h.W	18.64	17.74	18.09
	Capacity range	Btu/h	5250-11900	5300-14300	7000-17140
Heating	Capacity	Btu/h	8800/8500	11900/11800	13800/13600
	Input	W	720/695	970/960	1170/1160
	COP	W/W	3.58/3.58	3.60/3.60	3.48/3.48
	Capacity range	Btu/h	4070-11570	4140-13100	6600-14800
Electric heater	Capacity	Btu/h	12200/10000	12200/10000	17000/13900
	Input (230/208V)	W	3650/2990	3650/2990	5050/4135
Cooling power factor			95.6%/96.4%	97.1%/97.5%	98.1%/98.4%
Heating power factor			94.3%/96.3%	96.5%/97.1%	97.2%/97.8%
Max. input consumption (excluding ele. Heater)		W	1020	1020	1463
Max. current (excluding ele. Heater)		A	5.1	5.1	7.6
Max. input consumption (ele. heater mode, compressor off)		W	3650	3650	5050
Max. current (ele. heater mode, compressor off)		A	15.7	15.7	22.3
Minimum current amperage		A	19.8	19.8	27.9
Maximum HVAC type circuit breaker		A	20	20	30
LCDI Cord		A	20	20	30
Compressor	Model		KNB092FEEMC	KNB092FEEMC	SNB130FGAMC
	Type		Twin-Rotary	Twin-Rotary	Twin-Rotary
	Brand		Mitsubishi Electric	Mitsubishi Electric	Mitsubishi Electric
	Supplier		Guangzhou Mitsubishi	Guangzhou Mitsubishi	Guangzhou Mitsubishi
	Capacity	Btu/h	9485 ±5%	9485 ±5%	13989 ±5%
	Input	W	855 ±5%	855 ±5%	1200 ±5%
	Rated current(RLA)	A	3.2 ±5%	3.2 ±5%	4.1 ±5%
	Locked rotor Amp(LRA)	A	24.3	24.3	15.6
	Thermal protector	°C	130	130	115
Refrigerant oil	ml	270	270	350	
Indoor fan motor	Model		YDK-25-4P2	YDK-30-4P2	YDK-30-4P2
	Type		Single-axis	Single-axis	Single-axis
	Brand		Chigo	Chigo	Chigo
	Insulation class		A	A	A
	Input	W	55	64	64
	Output	W	25	30	30
	Rated current	A	0.25	0.29	0.29
	Capacitor	uF	1.5	1.5	1.5
	Speed(hi/lo)	r/min	900/650	1050/850	1050/850
Indoor fan	material		Aluminum	Aluminum	Aluminum
	Type		Cross-flow fan blade	Cross-flow fan blade	Cross-flow fan blade
	Diameter	mm	120	120	120
	Height	mm	706	706	706
Indoor coil	a.Number of rows		2	3	3
	b.Tube pitch(a)x row pitch(b)	mm	21*13.37	21*13.37	21*13.37
	c.Fin spacing	mm	1.4	1.6	1.6
	d.Fin type (code)		Hydrophilic Window fin	Hydrophilic Window fin	Hydrophilic Window fin
	e.Tube outside dia.and type	mm	φ7	φ7	φ7
			φ7×0.24+0.18×C	φ7×0.24+0.18×C	φ7×0.24+0.18×C
	f.Coil length x height	mm	26.74x252x705.4	40.11x252x705.4	40.11x252x705.4
	g.Number of circuits		2 in 2 out	2 in 4 out	2 in 4 out
Indoor air flow (Hi/Lo)		cfm	400/290	470/360	470/360
Indoor external static pressure (Hi)		Pa	0	0	0
Indoor sound level (sound pressure level)		dB(A)	50/42	52/46	52/46
Outdoor fan motor	Model		YDK-45-4P2-3	YDK-65-4P2-2	YDK-65-4P2-2
	Type		Single-axis iron motor	Single-axis iron motor	Single-axis iron motor
	Brand		Chigo/Kaibang	Chigo/Kaibang	Chigo/Kaibang
	Insulation class		A	A	A
	Input	W	95	98	98
	Output	W	45	65	65
	Rated current	A	0.37	0.43	0.43
	Capacitor	uF	3	3	3
Speed(hi/lo)	r/min	1600/1450	1680/1450	1680/1450	
Outdoor fan	material		ABS+G15	ABS+G15	ABS+G15
	Type		Axial-flow fan blade	Axial-flow fan blade	Axial-flow fan blade
	Diameter	mm	348	348	348
	Height	mm	104	104	104
Outdoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	21*13.37	21*13.37	21*13.37
	Fin spacing	mm	1.6	1.6	1.6
	Fin type (code)		Hydrophilic Window fin	Hydrophilic Window fin	Hydrophilic Window fin
	Tube outside dia.and type	mm	φ7	φ7	φ7
			φ7×0.24+0.18×C	φ7×0.24+0.18×C	φ7×0.24+0.18×C
	Coil length x height	mm	40.11x335x679.4	40.11x335x679.4	40.11x335x679.4
Number of circuits		4 in 4 out	4 in 4 out	4 in 4 out	
Outdoor air flow		m3/h	1200	1280	1280

Outdoor sound level(sound pressure level)		dB(A)	67	68	68
Unit	Dimension(W*H*D)	mm	1066.2*405*543	1066.2*405*543	1066.2*405*543
			42 * 16 *21 3/8	42 * 16 *21 3/8	42 * 16 *21 3/8
	Packing (W*H*D)	mm	1150*480*630	1150*480*630	1150*480*630
			45 1/2 *19 * 24 3/4	45 1/2 *19 * 24 3/4	45 1/2 *19 * 24 3/4
Net/Gross weight	Kg	59/49	62/52.5	62/52.5	
		130/108	137/116	137/116	
Charged refrigerant type	R410A	g	840	910	970
		oz	29.6	32.1	34.2
Throttle type			Capillary	Capillary	Capillary
Design pressure		MPa	3.1/1.6	3.1/1.6	3.1/1.6
Connection wiring	Power wiring	mm2	3.332	3.332	3.332
	Signal wiring	mm2	0.128	0.128	0.128
Controller			Button control/ Remote control /24V wired control		
Operation temp		°C	16-32	16-32	16-32
Ambient temp		°C	≤46.1	≤46.1	≤46.1
Outdoor Operation temp. range	Cooling	°C	12-52	12-52	12-52
		°F	53.6-122	53.6-122	53.6-122
	Heat pump	°C	0-30	0-30	0-30
		°F	32-86	32-86	32-86

III Parts' Name



Wall sleeve: all our sleeves have industry standard dimensions of 42" wide x 16" high. The 14" depth is the industry standard. Sleeves may be shipped separately to allow for installation during construction.

Outdoor grill: available in stamped aluminum louvered for application with wall sleeve.

Condensate drain kit: attaches to the wall sleeve base pan for controlled internal or external disposal of condensate.

IV Controller Function Manual and Operating Method

Controller Function Manual

This function manual is applicable to PTAC. The unit for temperature is centigrade. If there's Fahrenheit, their transition relations is $T \text{ Fahrenheit} = T \text{ centigrade} * 1.8 + 32$.

1. Temperature Parameter

- ◆ Indoor setting temperature (T_{preset})
- ◆ Indoor ambient temperature (T_{amb})

2. System Basic Function

In any circumstances, the compressor will delay 3 mins for protection once it's started up. Once the compressor is started up, the compressor won't stop with the change of the indoor temperature. While once the compressor is stopped, it can be started up only after 3mins delayed. (The compressor can be stopped immediately at the time of mode switchover, turning off the unit, adjusting setting temperature and turning to protection functions.)

(1) Cooling Mode

Working conditions and process for cooling:

When $T_{\text{amb}} \geq T_{\text{preset}} + 2^{\circ}\text{F}$ (1°C), the unit is running in cooling mode. Meanwhile, the compressor is running and the fan is running at the setting fan speed;

When $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$ (1°C), the unit is turn to OFF status. Meanwhile, the compressor will stop, while the fan will run at the setting fan speed for 15s delay;

When $T_{\text{preset}} - 2^{\circ}\text{F}$ (1°C) $< T_{\text{amb}} < T_{\text{preset}} + 2^{\circ}\text{F}$ (1°C), the unit keeps previous running status.

◇ In this mode, the dual 8 nixietube displays the setting temperature and the cooling LED is bright. The setting temperature range is $60 \sim 90^{\circ}\text{F}$ ($16 \sim 32^{\circ}\text{C}$).

(2) Fan Mode

In this mode, the compressor won't run and the temperature can't be adjusted (UP and DOWN are invalid). The fan can select high, medium and low fan speed to run. The dual 8 nixietube displays ambient temperature ($32 \sim 99^{\circ}\text{F}$, when ambient temperature is higher than 99°F , it will display 99; when ambient temperature is lower than 32°F , it will display 32), and the fan LED is bright.

(3) Auto Mode

Working conditions and process is auto adjusted by the indoor ambient temperature.

When $T_{\text{amb}} > 78^{\circ}\text{F}$ (26°C), the unit is running in cooling mode. Meanwhile, the compressor is running and the fan is running at the setting fan speed.

When $T_{\text{amb}} < 70^{\circ}\text{F}$ (21°C), the unit is running in heating mode; If 70°F (21°C) $\leq T_{\text{amb}} \leq 78^{\circ}\text{F}$ (26°C), the unit is running in fan mode.

If the unit is cooling only unit, it will run in fan mode when $T_{\text{amb}} \leq 78^{\circ}\text{F}$ (26°C).

(4) Heating Mode

Working condition and process for heating:

When $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{F}$ (1°C), the unit is running in heating mode. Meanwhile, the compressor is running and the fan is running at the setting fan speed;

When $T_{amb} \geq T_{preset} + 2^{\circ}\text{F}$ (1°C), the unit is turn to OFF status. Meanwhile, the compressor will stop, while the fan will run at the setting fan speed for 15s delay;

When $T_{preset} - 2^{\circ}\text{F}$ (1°C) $< T_{amb} < T_{preset} + 2^{\circ}\text{F}$ (1°C), the unit keeps previous running status.

Electric-heater can't work with compressor at the same time. When $T_{amb} < 44^{\circ}\text{F}$ (7°C), unit will run with Electric-heater, when $T_{amb} \geq 44^{\circ}\text{F}$ (7°C), unit will run with compressor.

(5) Low Temperature Resistant Protection

This is valid in standby cooling and fan mode.

Entry condition: If dial-up chooses the low temperature resistant protection and it's detected that the indoor ambient temperature is lower than 50°F (10°C) for 3mins successively .

Quitting condition: When the indoor ambient temperature is raising more than 55°F (13°C), the low temperature resistant protection will be stopped. After entering into the low temperature resistant protection, it can't be quitted by pressing any buttons ;

(except the heating mode) others: In the low temperature resistant protection, the dual 8 displays "LO".

(6) Open circuit and short circuit of temperature sensor

If the temperature sensor is open circuit or short circuit, it must send the error signal. The error signal is displayed by the displayer " dual 8" (it won't display when turning off the unit, while the malfunction LED will display it).

If the malfunction of temperature sensor is detected in continuous 30s, unit will turn off.

(7) Press the remote control "sleep" button, the air conditioner goes to sleep mode, the indoor fan will turn low. Keep the room quiet, low noise.

① The unit turn into "sleep" mode: All of the lights will be turn off except running light, help you fall asleep.

② Cooling mode: Set sleep, $T_s + 1^{\circ}\text{C}$ after 1 hour, $T_s + 2^{\circ}\text{C}$ after 2 hours Then maintaining the temperature constant

③ Heating mode: Set sleep, $T_s - 1^{\circ}\text{C}$ after 1 hour, $T_s - 2^{\circ}\text{C}$ after 2 hours , Then maintaining the temperature constant

④ Ventilation mode: Set sleep, the temperature constant, the screen will be turned off.

(8) DC-inverter compressor-Manufactured by MITSUBISHI, due to its higher efficiency, energy saving up can be up to 30% to 80%. Operation voltage range is wider from 160VAC~270VAC, make sure unit operation more stable under wide voltage range power input. For its soft start feature, power surge can be avoided, and also lower the noise level. Without frequently start-stop makes the room temperature more stable, so more comfortable.

(9) High performance IPM-Containing PFC module, under heavy loading, PF can be up to 99%, thus decreases EMI pollution to power supply system, and also decreases power surge. Compressor driver chip is manufactured by FAIRCHILD, famous brand and high performance, making the compressor running more reliable and more stable.

(10) LCDI Cords-Underwriters Laboratories and the National Electric Code (NEC) now require power cords that sense current leakage and can open the electrical circuit to the unit on units rated at 250 volts or less. In the event that unit does not operate, check the reset button located on or near the head of the power cord as part of the normal troubleshooting procedure.

(11) Automatic 3-minute compressor lockout-After the compressor cycles off, it will not restart for three minutes.

(12) Random restart delay-To help eliminate power surges after a power outage, the unit is equipped with a two to four minute random restart delay feature. Whenever the unit is plugged in with the master switch turned on and the mode switch set in the cool or heat mode, a random restart will occur. A random restart condition can be avoided by setting the mode switch in the fan only or off position before applying power to the unit.

(13) Indication LEDs-The control panel has LEDs that correspond to fan operation and to indicating unit status. The LEDs next to the selections ON/OFF, FAN, COOL, and HEAT indicate which operational mode is active.

(14) Intelligent control-CPU will adjust the compressor operating frequency according to the energy demand, making the room temperature more stable and more comfortable and more energy saving.

(15) Two-speed outdoor fan HIGH/LOW-When outdoor ambient temperature becomes lower (for example, during the night), outdoor fan will operate in low speed, so to lower the noise and also more energy saving.

(16) Standard Physical Dimensions-The series PTAC is with the same dimensions 42" wide x 16" high x 13-3/4" deep replacement of older units is made easy.

(17) Weather-Protected Electrical Components-Vital electrical components are protected from the weather by locating them on the indoor side of the weather barrier.

(18) Highly Featured Microprocessor Controls-Microprocessor controls are programmed to interface with the temperature sensors to maximize comfort conditions for the room occupant and provide outstanding features. Thermistors are used to sense small changes in temperature to give excellent room control and allow the microprocessor to monitor and react to changing conditions.

(19) Automatic Emergency Heat on Heat Pump Units-Automatically uses electric resistance heat if the heat pump fails.

(20) Fan Motors Permanently Lubricated-All units have two fan motors for quiet operation and maximum operating efficiency. Motors are permanently lubricated to reduce maintenance and totally enclosed to keep dirt and water out of the motor winding.

(21) Indoor Fan Speed Selections LOW /HIGH-Unit may be operated in low fan speed or high fan speed. Some speed may not be present based on unit capacities.

(22) LS Control (front-desk control)-The unit can be turned ON/OFF by front-desk control switch. The control wire, colored purple, locates in the wall mounted thermostat interface.

3. Buttons and Display

(1) Buttons

There are ON/OFF, UP, DOWN, HEAT, COOL, FAN and FAN SPEED seven buttons in all... In ON status, all the buttons are in valid.

- ① ON/OFF: After pressing the ON/OFF button, the unit can be switched between ON and OFF.
- ② COOL, HEAT, FAN: In ON status, after pressing the any one of the three buttons, the unit can be running in the mode you have choice; In standby mode, after pressing the MODE button, the controller will run at the running status.
- ③ FAN SPEED: In ON status, after pressing the FAN SPEED button, you can select the high, low and auto fan speed.
- ④ UP, DOWN: Adjust the setting temperature (60-90°F)(16~32°C) by pressing the UP and FAN SPEED buttons and you can also select other setting temperature range through configuration.

(2) Dual 8 Display and LED Display

Two 8 segment nixitube and 7 LEDs (ON/OFF, HIGH, LOW, AUTO, HEAT, COOL, FAN).

- ① Mode LED display: when the A/C is running in a certain kind of mode, the corresponding LED is bight.
- ② ON/OFF LED: In ON status, the controller is in green color.
- ③ Fan speed display: when the A/C is running at high, low and auto fan speed, the corresponding LED is bright.
- ④ Dual 8 displays: In cooling and heating mode, it is default to the display the indoor ambient temperature.
- ⑤ Malfunction Display

After energization, STATUS LED is bright, while when there's malfunction or protection, STATUS LED will display in any circumstances. The details are as below:

1	Indoor ambient temp sensor is open circuit and short circuit	Dual displays "F2 "
2	Indoor tube temp sensor is open circuit and short circuit	Dual displays "F3"
3	Outdoor tube temp sensor is open circuit and short circuit	Dual displays "F7"
4	Indoor ambient temp sensor is open circuit and short circuit	Dual displays "F5"
5	DC compressor starting failure, compressor driving fault (no feedback)	Dual displays "FC"
6	Communication failure between indoor unit and outdoor unit	Dual displays "F1"
7	IPM protection, include heat sink over heat protection	Dual displays "F5"

8	Compressor discharge temperature fault	Dual displays "F9"
9	Indoor EEPROM fault, include EEPROM communication fault or data verification error	Dual displays "FH"

4. Especial Functions

(1) Configuration that is easy for hotel personnel to repair (8 DIP switch, the configuration is valid only after power failure).

- ① Heat with water
ON- heat with water; OFF--normal heating mode;
default--OFF, this function is only applicable to unit with hot water coil.
- ② Heat pump
ON- Heat pump function is valid; OFF-other heat function
- ③ E-heater
ON-electric heater is valid; OFF- other heat function
- ④ Heat with gas
ON-gas heat is valid; OFF-other heat function
Remarks: IF A、 B、 C、 D above are all OFF, the unit is cooling only.
- ⑤ Low temperature resistant is prohibited
ON- valid; OFF- invalid; default—ON
- ⑥ Auto-restart
ON- it's valid. OFF- it's invalid. Default-ON
- ⑦ FAN CYCLE/CONTINUOUS FOR HEAT
ON-fan is constantly running; OFF-fan will be stopped according to the loads (HEAT. COMP); Default-OFF.
- ⑧ FAN CYCLE/CONTINUOUS FOR COOL
ON- fan will be stopped according to the loads (HEAT. COMP); OFF- fan is constantly running; default-OFF.

(2) Configuration mode

After the unit is turned on, we could change the modes blow by pressing different buttons:

- ① **Mode one:** Fahrenheit / Centigrade display mode
Fahrenheit and Centigrade display mode can be switched by pressing Set point up or Set point down button for 3s.
- ② **Mode two:** Display switchover between setting temperature and ambient temperature in heating and cooling mode.

Press the Set point up button or Set point down button to display the set temperature, after finish setting, the dual 8 will flash for 5s, then display back to indoor ambient temperature.

- ③ **Mode three:** Display switch for different temperature set range.
Press up and Fan Speed button at the same time, dual 8 will circulatory display R1—R8, default is R8.
- ④ **Mode four:** exchange between 24V universal wire controller and control board.

Press the "HEAT" and "+" buttons for 5 seconds at the same time, the digital display tube will display "r" and buzzer will ring twice when it changes to 24V universal wire controller; it will display "p" and buzzer will ring once when it changes to control board.

(3) Memory Function

Energizing after power failure, the controller is running according to the status before power failure.

Restore factory settings: Change the dipswitch 6 to OFF status, and then cut off the power supply, and then switch on the power supply, the unit will come back the default status except that temperature setting range.

5. Protection Functions

System safety protections-To ensure the system running safely, electric control has the following protections, for problem solving, please refer to diagnostic codes & solutions and troubleshooting sections.

(1) Outdoor unit overload protection in COOLING mode

When condenser coil temperature exceeds the presetting point, compressor decreases the operating frequency to 30Hz. If this protection is inactive and condenser coil temperature reaches the shut down point, compressor will be turned off. Thus provide double protections.

(2) Evaporator over cold protection (will not display error code)

When evaporator coil temperature drops to 1°C and lasts for 5 minutes, compressor and outdoor fan will stop, indoor fan keeps on running.

(3) Compressor discharge over heat protection

When compressor discharge temperature reaches protection point, compressor will decrease operating frequency to 30Hz. If this protection is inactive and discharge temperature reaches the shut down point, compressor will be turned off. Thus provide double protections.

(4) Evaporator overload protection in HEAT PUMP mode

When evaporator coil temperature exceeds the presetting point, compressor decreases the operating frequency to 30Hz. If this protection is inactive and evaporator coil temperature reaches the shut down point, compressor will be turned off. Thus provide double protections. This time the back up electric heater will be turned on.

(5) Input over current protection

When input current exceeds the presetting point, compressor will decrease the operating frequency to 30Hz. If this protection is inactive and current reaches the shut down point, compressor will be turned off.

(6) Compressor over current protection

When compressor operating current exceeds the shut down point, compressor will be shut down.

(7) IPM fault protection

When IPM faults, include over heat, unit will be shut down, all outputs are terminated, and control panel displays the error code.

(8) Temperature sensor fault protection

Any temperature sensor faults, unit stops and display the error code.

(9) Communication fault protection

For continuously 2 minutes communication faults between indoor unit and outdoor unit, unit will shut down and displays error code.

(10) Compressor starting fault

If compressor starting fails, 3 minutes later, it will try to start again. It will not display error code at the first 3 times fault. If the 4th fail again, it will not start any more and display the error code.

(11) DC-BUS over voltage/under voltage protection

Once monitors the DC-BUS is over or under voltage, unit stops and display error code.

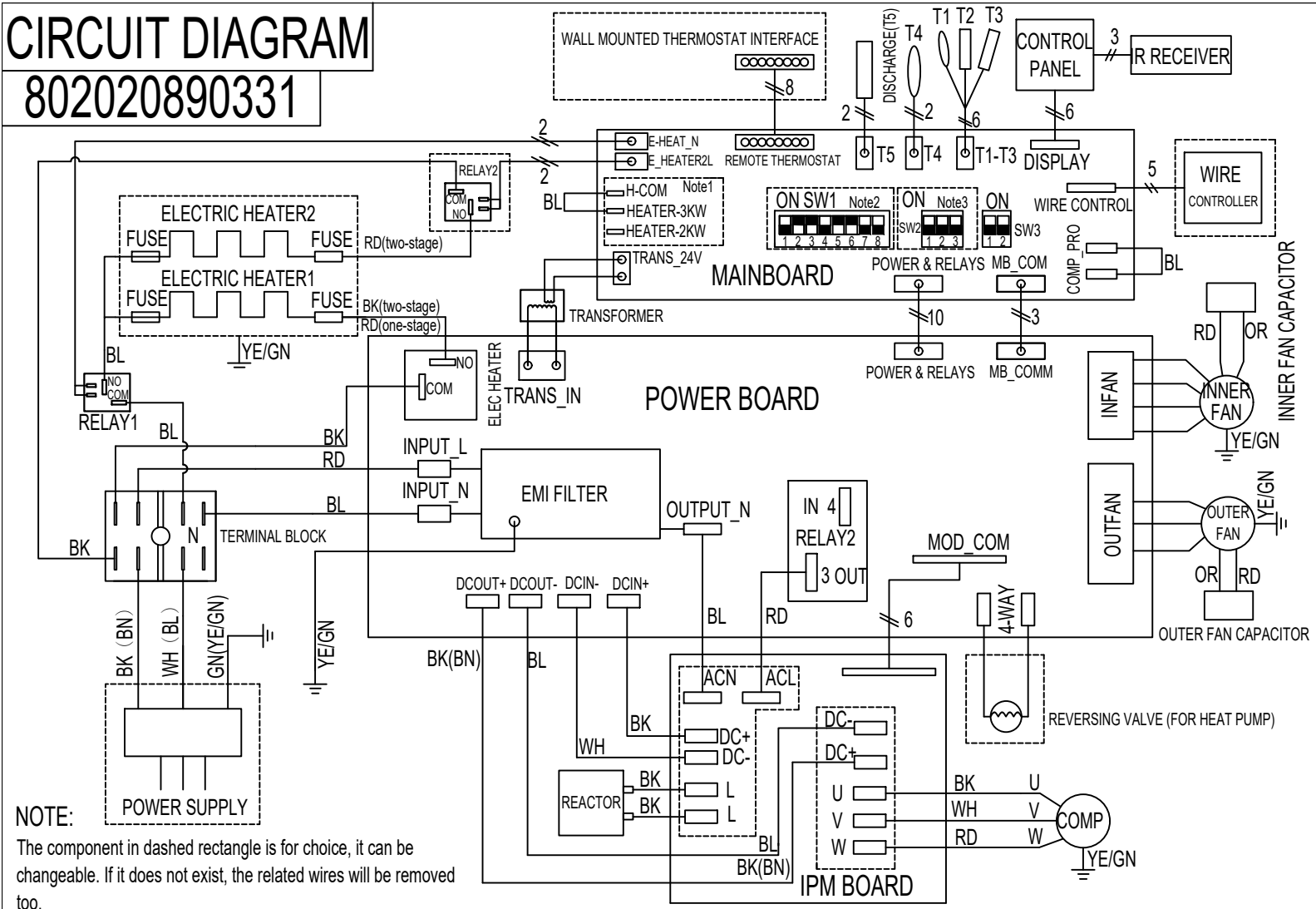
(12) EEPROM fault

When the unit is powered up, if system monitors the EEPROM fault, displays error code and will not operate any more.

V Electric Circuit Diagram

CIRCUIT DIAGRAM

802020890331



NOTE:
The component in dashed rectangle is for choice, it can be changeable. If it does not exist, the related wires will be removed too.

COLOR CODE	Note1ELECTRIC HEATER FUNCTION	Note2SW1 FUNCTION GUIDANCE	Note3 SW2 MODEL TYPE SWITCH	WARNING:	
BK-BLACK WH-WHITE BN-BROWN OR-ORANGE RD-RED YE/GN-YELLOW/GREEN BL-BLUE GN-GREEN	FOR 5KW ELECTRIC HEATER, USE 30A POWER CORD, CONNECT H-COM & HEATER-3KW & HEATER-2KW 3 TERMINALS TOGETHER. FOR HEATER UNDER 4KW, USE 20A POWER CORD, ONLY CONNECT H-COM & HEATER-3KW.	1-Reserved 2-Heat pump 3-Electric heater 4-Reserved 5-Freeze protect	6-Auto restart 7-Fan CON/CYC for heating 8-Fan CYC/CON for cooling	9K 12K 15K SW2 ON SW2 ON SW2 ON 1 ON,2 OFF,3 OFF 1 OFF,2 ON,3 OFF 1 ON,2 ON,3 OFF	SWITCHES SW3 ARE FOBBIDEN TO CHANGE, OTHERWISE UNIT WILL FAIL TO WORK AND MAY BE DAMAGED! DATE DWG.NO. NO. 2018-01-08

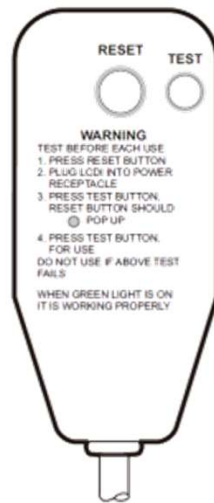
If the above electric circuit diagram has changed, please refer to it on the body.

Remarks: LS agreement: It's a switching signal that when terminal "R" and "LS" close-break-close or break-close-break; **five seconds is a cycle:** if the switching signal appears once in one cycle, the unit will start. If the switching signal appears twice in one cycle, the unit will stop. If "LS" and "R" closing has lasted for about five second, the unit will be forced to stop. And this function can't be stored.

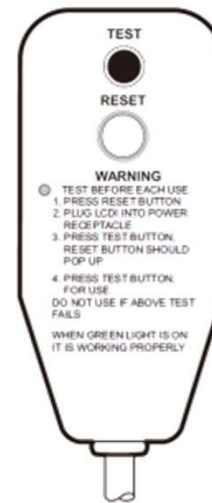
Capacity	7K/9K/12K	15K
Power cord	240V/20A	240V/30A

Power cord

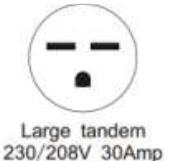
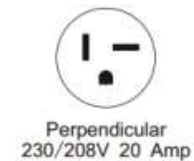
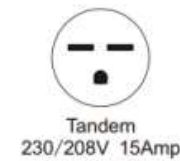
- The power cord used by PTAC is North American Standard LCDI power cord with UL certification
- The size of power cord is generally divided into three specifications : 15A / 20A / 30A



15/20A LCDI Device



30A LCDI Device



Plug and socket

- Power plug with reset function and test function (to prevent leakage)
- The plug and socket shall be used in combination .

VII Malfunction Analysis

Malfunction	Reasons	Solve
Start Failure	power line bad, units don't have power supply	Check the voltage on the output side, push the RESET button, if it still don't have voltage, but power grid has output, you need to change the power line.
	Power line isn't fixed well	Check that whether power line is fixed well
	PCB/power line fuse break	exchange the PCB fuse/power line
	Bad contact between PCB and control board	Check the contact, make sure that contact well
	Compressor delay start	It's normal, compressor will start after 3 mins
	Power cut	When power on, because of auto-restart, unit will start in 120~240s.
	Power line protection trip	Check the wires that whether it comes cross plate or other metal, push the RESET button on the power line.
	Unit in protection mode	Please check the code in the manuals
PCB or Control board is bad	Replace the PCB or control board	
Control board/remote control not function	Connect wire controller, control board and remote controller, unit not function.	If you need to use control board and remote controller, you need to unplug the wire controller.
remote controller is not sensitive	Battery has been used for a long time; control board signal receiver is not assembled well; remote controller signal is blocked.	Replace new battery; check the signal receiver is well assembled, and no things block the remote controller.
Indoor fan/outdoor fan not function or run slowly	fan is locked by something or the connection wire is not fixed well、fan capacitor is not fixed well; fan capacitor is out of service life.	Check that whether fan can run normal, whether motor wire is fixed well; for the slowly running speed, you could change a new capacitor.
Not well cooling/heating	Something is blocked at the indoor air outlet.	Make sure that there is not anything at the indoor air outlet.
	Something is blocked at the outdoor air outlet.	Make sure that the grill is suitable for the unit, wrong grill will cause the compressor being protected; make sure that the grill has more than 70% turnover.
	Set not suitable temperature	Set higher/lower temperature by the control board, remark: temperature setting restriction will restrict the setting temperature.
	Indoor air return filter is blocked.	Should clean the filter every month at least
	Room is hot/cold	Let unit run a little longer that room temperature will

		be lower/higher.
	Heat leakage between indoor and outdoor	Block the leakage place
	Indoor coil not cold/heat	Charge the refrigerant
Unit has noise	Fan blow to plate or something in the air flue	Make sure that all the fan assembly are fixed well, and nothing is in the air flue.
Bad smell when heating	The dust on the E-heater is heating	The bad smell will disappear a little later
Outlet temperature is not always cooling/heating	Outlet temperature is not high enough when heating by compressor	It is normal phenomenon, it blows comfortable air when heating.
	Fan stops when cooling/heating.	It's normal phenomenon that fan stops when get to setting temperature(In new control board, could choice the different running status by the dipswitch)
Air outlet temperature is not high enough when heating.	Air outlet temperature is not high enough.	Change to E-heater mode.
Outdoor is dripping water.	Not install the drain pipe assembly.	Install the drain pipe assembly.
Indoor is dripping water.	Wall sleeve is installed incorrectly.	Install the wall sleeve according to the installation manual.
Indoor coil freeze.	Outdoor temperature is too low.	When outdoor temperature is low to 12.8°C (55°F) or lower than this point, it will cause that indoor coil freeze, open the fresh air, and running at fan mode.
	Filter is blocked.	Clean the filter

Digital display at fault state	Fault	Solutions
E1	Communication failure between indoor unit and outdoor unit	Check the communication cables make sure they are firmly connected. If the cables are broken, replace them.
E2	Indoor ambient temperature sensor fault	Check whether the sensor's plug is firmly connected. If the sensor is broken, replace it.
E3	Indoor coil temperature sensor fault	Check whether the sensor's plug is firmly connected. If the sensor is broken, replace it.
E5	Indoor outlet temperature sensor failure or Indoor outlet air over heat protection in Electric heating mode	Check if the indoor fan is running good and make sure no obstacle that blocks the air circulation. Check the sensor's plug is firmly connected. If the sensor is broken, replace it.
E5	IPM protection, include heat sink over heat protection	Make sure indoor and outdoor units vents are not blocked, indoor fan and outdoor fan are running well and compressor will not overload. After removing any fault, power the unit on again for rest.
E6	Outdoor ambient temperature sensor fault	Check the sensor's plug is firmly connected. If the sensor is broken, replace it.
E7	Outdoor coil temperature sensor fault	Check the sensor's plug is firmly connected. If the sensor is

		broken, replace it.
E9	Compressor discharge temperature fault	Check the sensor's plug is firmly connected. If the sensor is broken, replace it.
EC	DC compressor starting failure, compressor driving fault (no feedback)	Check the DIP switches on the main board (3-position, in red color) is correct, it must match the wiring diagram to ensure that the compressor power cord is firmly connected.
EH	Indoor EEPROM fault, include EEPROM communication fault or data verification error	Check the EEPROM chip is firmly plugged. If still not solve, replace the main board.
P1	Over heat at indoor coil protection in HEATING (overload in heating). Over heat at outdoor coil protection in COOLING (overload at cooling)	After long-term use, clean the air filter and condenser to ensure that the air vents of indoor and outdoor units are not blocked, and the indoor and outdoor fans work normally.
P2	DC inverter module overheat, over current protection	Make sure indoor and outdoor unit vents are not blocked and indoor fan and outdoor fan are both working well. Check the DIP switch on the main board (3-position, in red color) is correct, it must matches the wiring diagram. Make sure the compressor power wires is firmly connected.
P4	Compressor discharge overheat protection (or compressor overheat)	Make sure indoor and outdoor unit vents are not blocked and indoor fan and outdoor fan are both working well. Check the DIP switch on the main board (3-position, in red color) is correct, it must matches the wiring diagram.
P7	Over voltage or under voltage protection	Make sure the power supply is within the requirement (AC208/230V -15%+10%). If power supply is OK, but still not solved, replace the inverter IPM.



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