

SERVICE MANUAL

Koldfront Window Air Conditioner with Supplemental Heat Function

MODEL:

WAC8001W

WAC12001W

WAC18001W

WAC25001W

**CAUTION: READ ALL SAFETY PRECAUTIONS IN THIS
MANUAL BEFORE SERVICING THE UNIT**

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SAFETY PRECAUTIONS

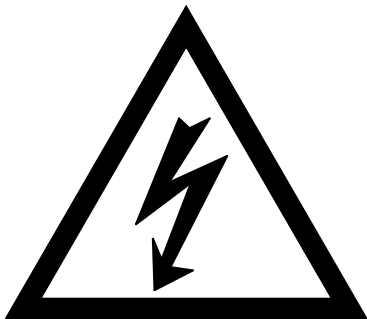
WARNING: This manual and the information contained herein is intended for use by certified technicians. The manufacturer or seller is not responsible for the interpretation or misuse of the information provided, nor does it assume any liability in connection with its use.

The safeguards and warnings indicated in this manual do not cover all possible conditions which may occur. Common sense, caution, and care must be exercised.

- To prevent electric shock, always unplug an appliance from the power supply before attempting any service.
- Disconnect the power cord by grasping the plug, not the cord.
- Do not bypass, cut, or remove the grounding plug.
- Prevent water from spilling onto electric elements or the machine parts.
- Always refer to the rating label on the appliance for rated current and voltage.
- Always check line voltage and amperage.
- Always use exact replacement parts.
- Any attempt to repair a major appliance may result in personal injury and property damage.

Electrical Safety

- Do not exceed the power outlet ratings.
- It is recommended that the unit be connected to its own circuit.
- A standard electrical supply that is properly grounded in accordance with the National Electrical Code and all state and local codes and ordinances is required.
- Do not use outlets that can be turned off by a switch or pull chain.
- Always turn the unit off and unplug it from the outlet when cleaning.
- Unplug the unit if it is not going to be used for an extended period of time.
- Do not operate the unit with a power plug missing the ground plug, a damaged cord, or a loose socket.
- Be sure the appliance is properly grounded.
- Do not bypass, cut, or remove the grounding plug.
- If the power cord is damaged, it must be replaced by the manufacturer or a qualified technician.
- Do not use extension cords or power strips with this unit. You may need to contact an electrician if it is necessary to use a longer cord or if you do not have a properly grounded outlet. Do not modify the power cord's length or share the outlet with other appliances.
- Do not start or stop the unit by switching the electrical circuit's power on and off.
- Immediately unplug the unit if it makes strange sounds, emits an odor or smoke and contact customer service.
- Do not remove any part of the casing unless instructed by an authorized technician.
- Before the appliance is removed from service or discarded, remove any doors and cut off the power cord.

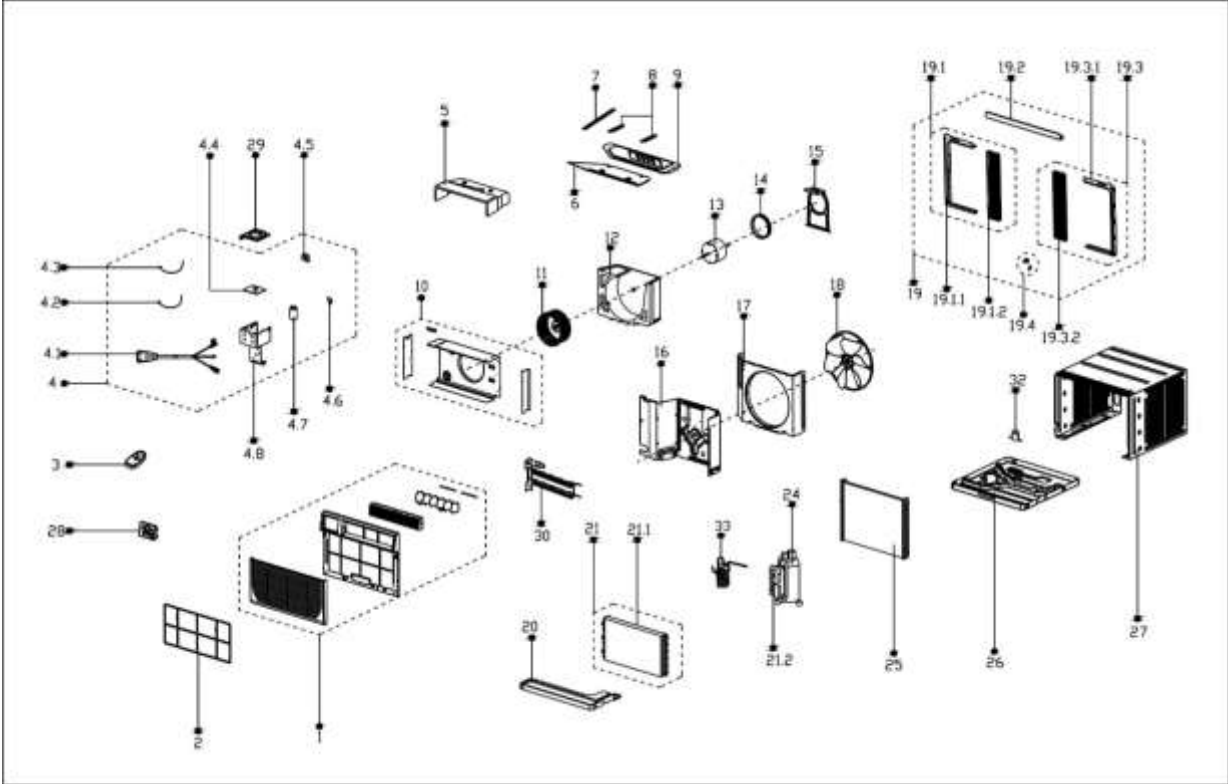


General Safety

- Always unplug an appliance from the power supply before attempting any service. Disconnect the power cord by grasping the plug, not the cord.
- Do not allow children or pets to play on or in the appliance.
- This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the machine by a person responsible for their safety.
- Do not install or store this appliance where it will be exposed to the weather.
- Disconnect from the power socket before cleaning or maintenance.
- If the plug (power cord) is damaged, it must be replaced by the manufacturer or an authorized service representative.
- This machine shall be repaired only by an authorized service representative. Only genuine replacement parts should be used.
- If connected to a circuit protected by fuses, use time-delay fuses with this appliance.
- Do not lean items against the glass door.
- Please do not close the door with excessive force. If it is found difficult to close the door, please check for obstruction.
- When you plan to dispose of this unit in the future, please comply with the local waste disposal regulations. Remove any doors so that children and pets will not be trapped in the unit.

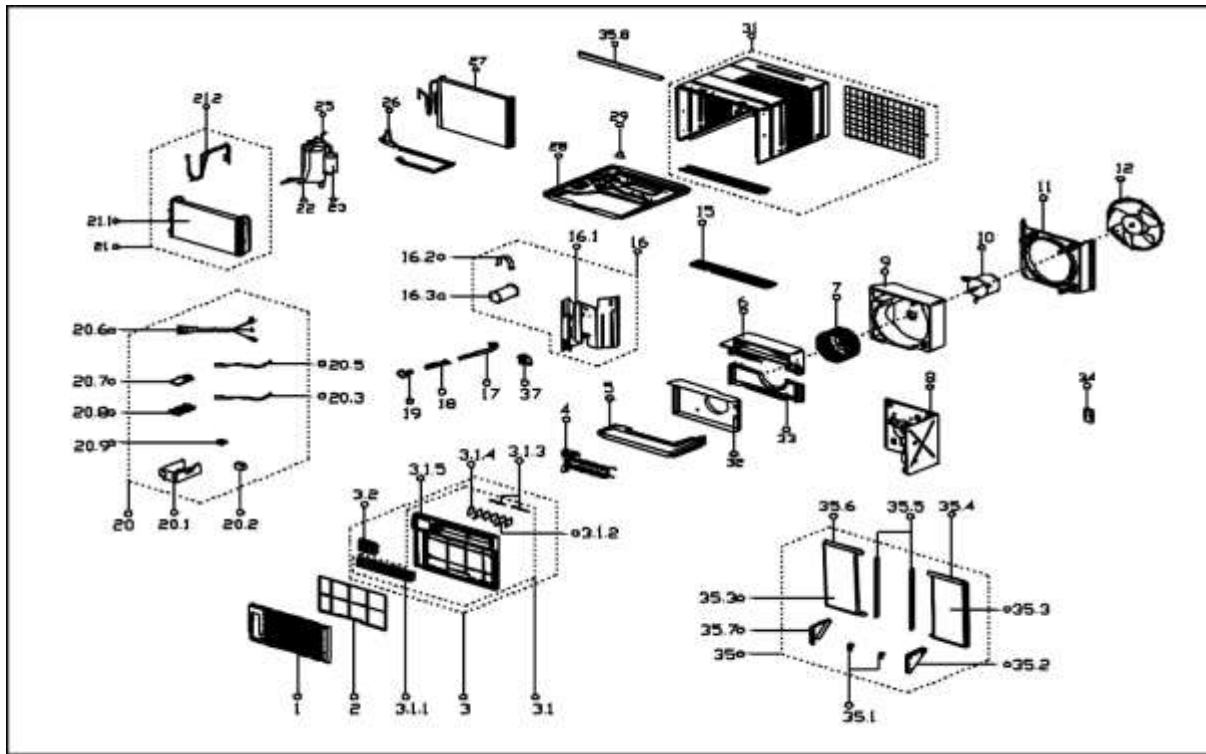
1 Exploded Diagrams and Part Lists

1.1 WAC8001W and WAC12001W



No.	Part Name	No.	Part Name
1	Panel assembly	19.2	Top shutter frame
2	Air filter	19.3	Right shutter assembly
3	Remote control	19.3.1	Right shutter frame
4	Electronic control box parts	19.3.2	Shutter
4.1	Power cord	19.4	Screw bag
4.2	Ambient temperature sensor assembly	20	Condenser water tray
4.3	Pipe temperature sensor assembly	21	Evaporator coil parts
4.4	Main control board assembly	21.1	Evaporator coil
4.5	Transformer	21.2	Capillary assembly
4.7	Capacitor for compressor	22	Suction pipe assembly
4.8	Electronic control box	23	Discharge pipe assembly
6	Front cover	24	Compressor
10	Air-inlet board	25	Condenser assembly
11	Centrifugal fan	26	Chassis assembly
12	Volute Shell	27	Cabinet assembly
13	Asynchronous motor	28	Display box assembly
16	Front separating board	30	Electric heater
17	Rear separating	31	Discharge temperature sensor assembly
18	Axial flow fan	32	Drain valve
19	Installation accessories	34	Front left barrier board assembly
19.1	Left shutter assembly	35	Foam, air outlet
19.1.1	Left shutter frame	36	Discharge temperature sensor assembly
19.1.2	Shutter		

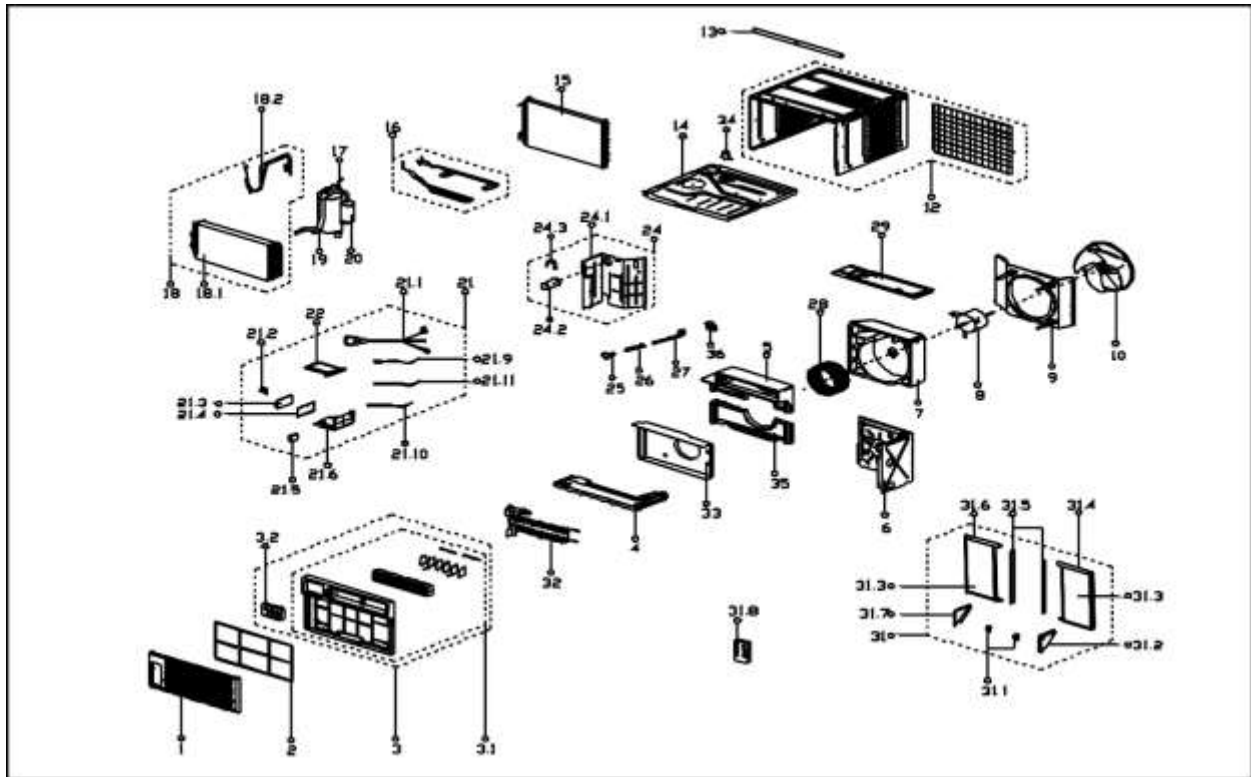
1.2 WAC18001W



No.	Part Name	No.	Part Name
1	Front panel	20.4	Ambient temperature sensor assembly
2	Air filter	20.5	Discharge temperature sensor assembly
3	Panel frame parts	20.6	Power cord
3.1	Panel frame	20.7	Main control board assembly
3.1.1	Air outlet assembly	20.8	Bracket for main control board
3.1.2	Horizontal louver	20.9	transformer
3.1.3	Connecting rod of louver	21	Evaporator coil parts
3.1.4	Horizontal louver	21.1	Evaporator coil
3.1.5	Panel frame	21.2	Capillary assembly
3.2	Display box assembly	22	Suction pipe assembly
4	Electric heater	23	Compressor

No.	Part Name	No.	Part Name
5	Condenser water tray	25	Discharge pipe assembly
6	Upper volute shell	26	Super-cooling pipe
7	Centrifugal fan	27	Condenser assembly
8	Front right barrier	28	Chassis assembly
9	Rear volute shell assembly	29	Drain valve
10	Asynchronous motor	31	Cabinet assembly
11	Rear separating	32	Box for Electronic heater
12	Axial flow fan	33	Volute shell base
15	Front cover	34	Remote controller
16	Front left barrier parts	35	Installation accessories
16.1	Front left barrier	35.1	Locking bar
16.2	Capacitor for compressor	35.2	Right bracket
16.3	Capacitor clip	35.3	Shutter
17	Fresh air door	35.4	Right shutter frame
18	Bracket for fresh air door	35.5	Connecting bar for cabinet
19	Connecting rod for fresh air door	35.6	Left shutter frame
20	Electronic control box parts	35.7	Left supporter
20.1	Electronic control box	35.8	Top shutter frame
20.2	Capacitor for fan motor	37	Bracket for fresh air door
20.3	Pipe temperature sensor assembly		

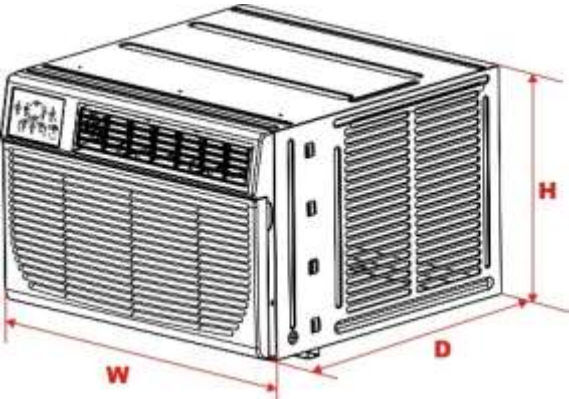
1.3 WAC25001W



No.	Part Name	No.	Part Name
1	Front panel	21.5	Capacitor for fan motor
2	Air filter	21.6	Electronic control box
3	Front panel and Panel frame parts	21.9	Room temperature sensor assembly
3.1	Front panel and Panel frame assembly	21.10	Discharge/Heat sensor assembly
3.2	Display box assembly	21.11	Defrost sensor assembly
4	Water collector	24	Front left barrier board assembly
5	Front volute shell	24.1	Front left barrier board assembly
6	Front right barrier board assembly	24.2	Capacitor for compressor
7	Rear volute shell	24.3	Capacitor clip
8	Asynchronous motor	25	Connecting rod for fresh air door
9	Rear barrier board assembly	26	Bracket for fresh air door
10	Axial flow fan	27	Fresh air door
12	Cabinet assembly	28	Centrifugal fan

No.	Part Name	No.	Part Name
13	Top shutter frame	29	Front cover
14	Chassis assembly	31	Installation accessory
15	Condenser assembly	31.1	Locking bar
16	Cooling coil	31.2	Right bracket
17	Discharge pipe	31.3	Shutter
18	Evaporator assembly	31.4	Right shutter frame
18.1	Evaporator assembly	31.5	Connecting bar for cabinet
18.2	Capillary assembly	31.6	Left shutter frame
19	Suction pipe assembly	31.7	Left supporter
20	Compressor	31.8	Remote controller
21	Electronic control box parts	32	Electric heater
21.1	Power cord	33	Installation plate for Electric heater
21.2	Transformer	34	Drain valve
21.3	Main control board assembly	35	Front volute shell (bottom)
21.4	Bracket for main control board	36	Bracket for fresh air

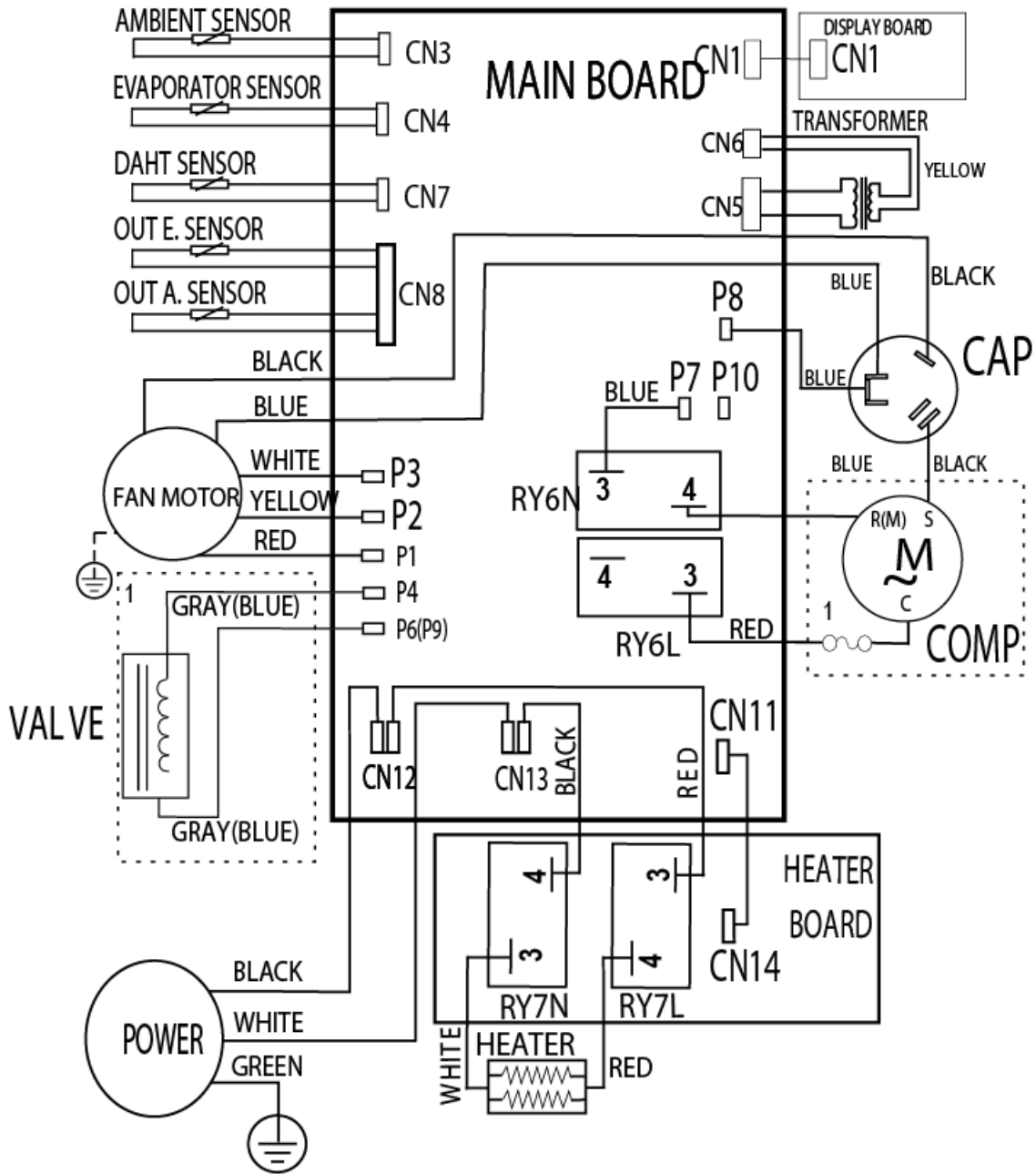
1.4 Dimensions



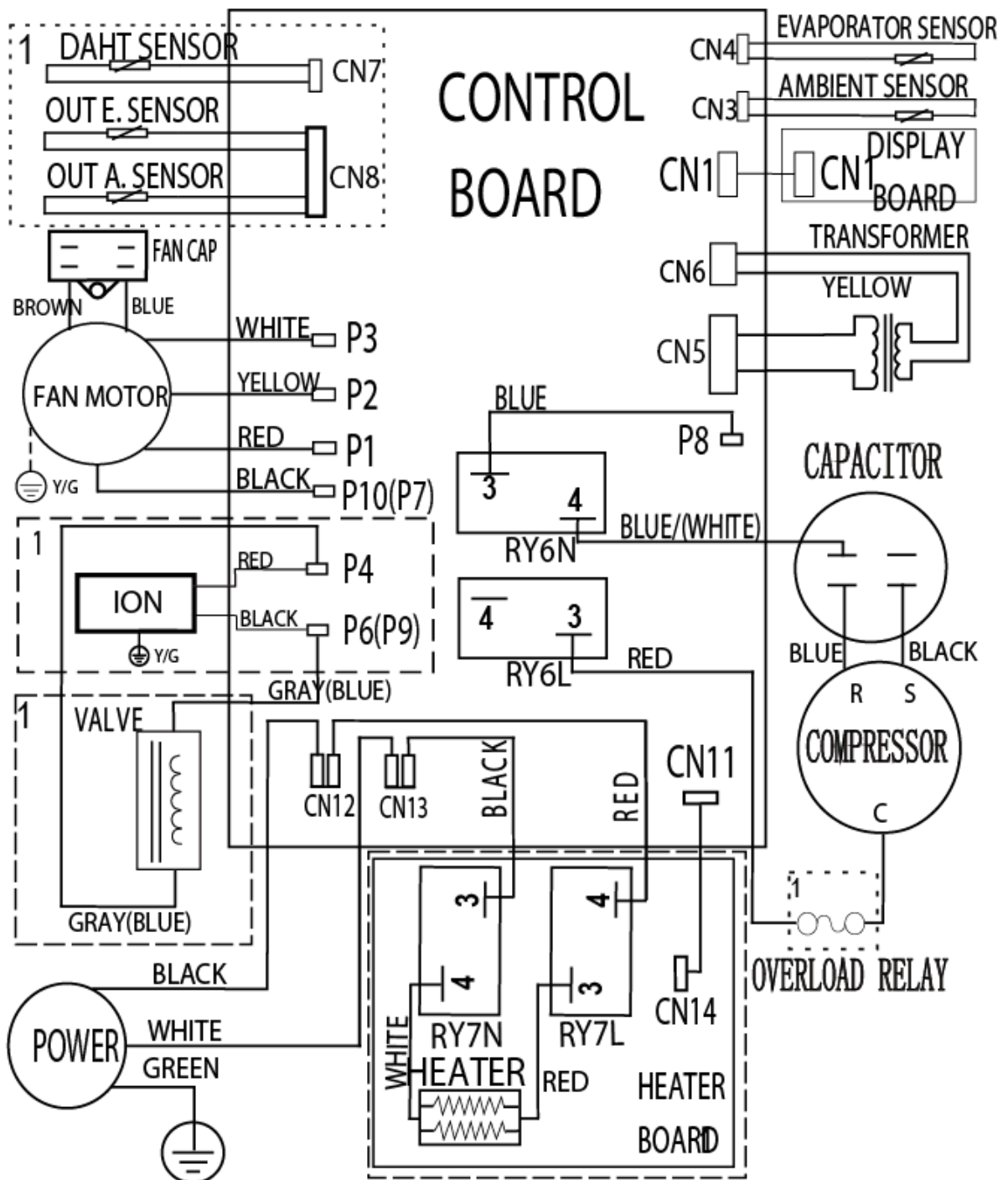
	Width	Height	Depth
WAC8001W WAC12001W	22-3/4" (575 mm)	16-1/8" (410 mm)	23" (584 mm)
WAC18001W	23-5/8" (600 mm)	17-7/8" (455 mm)	25-3/8" (645 mm)
WAC25001W	26-1/2" (673 mm)	18-5/8" (473 mm)	25-1/2" (647 mm)

2 Wiring Diagrams

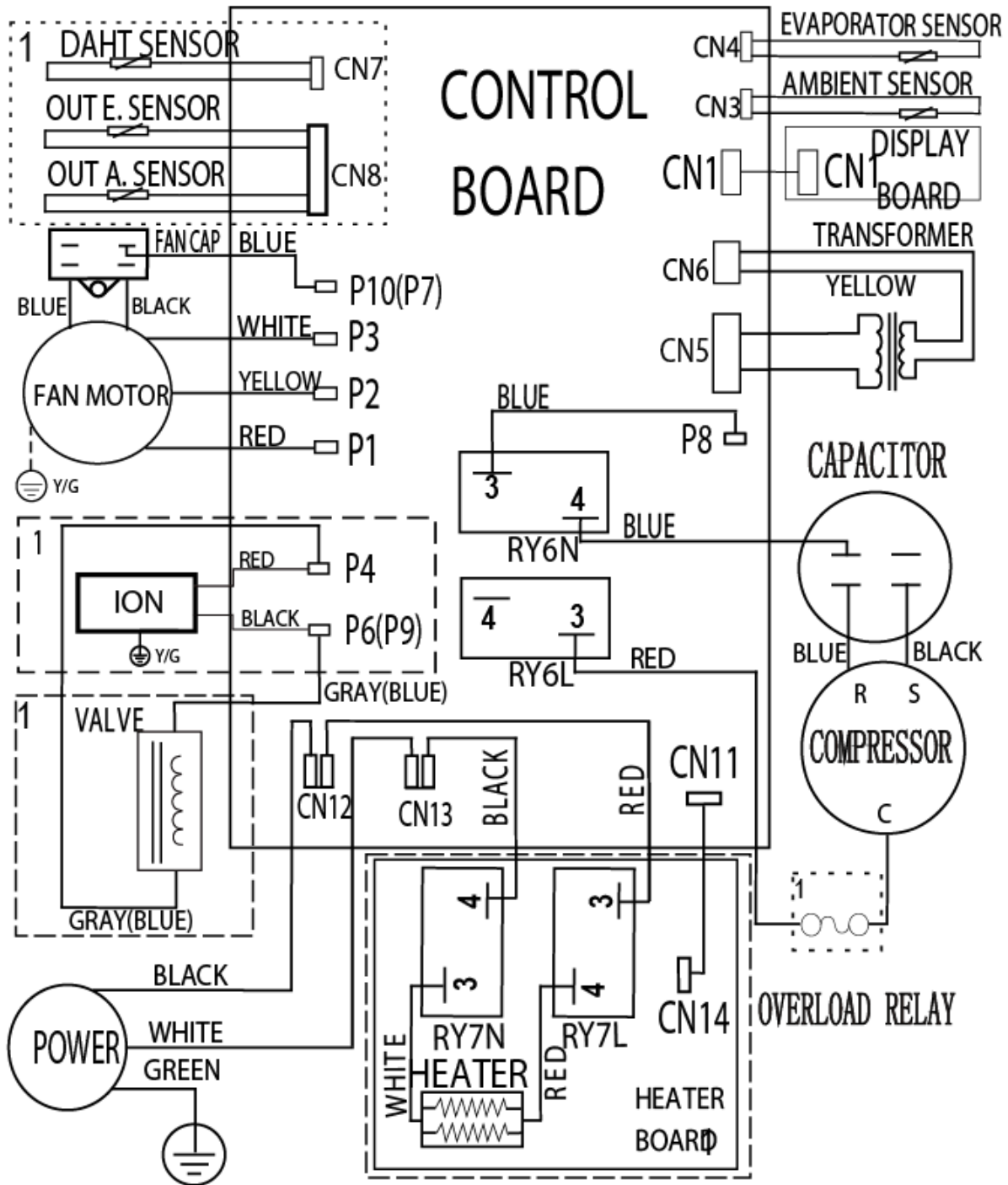
2.1 WAC8001W



2.2 WAC12001W and WAC18001W

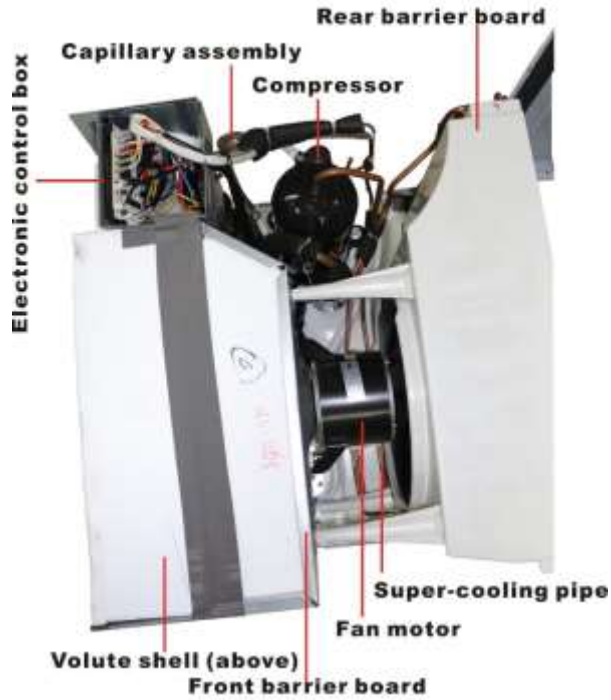


2.3 WAC25001W

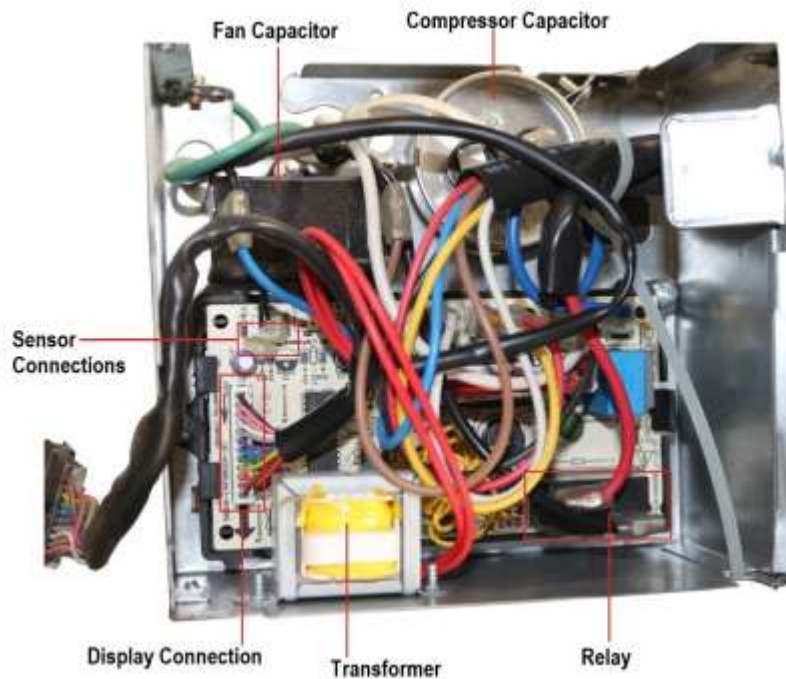


3 Main Components

3.1 Major Parts

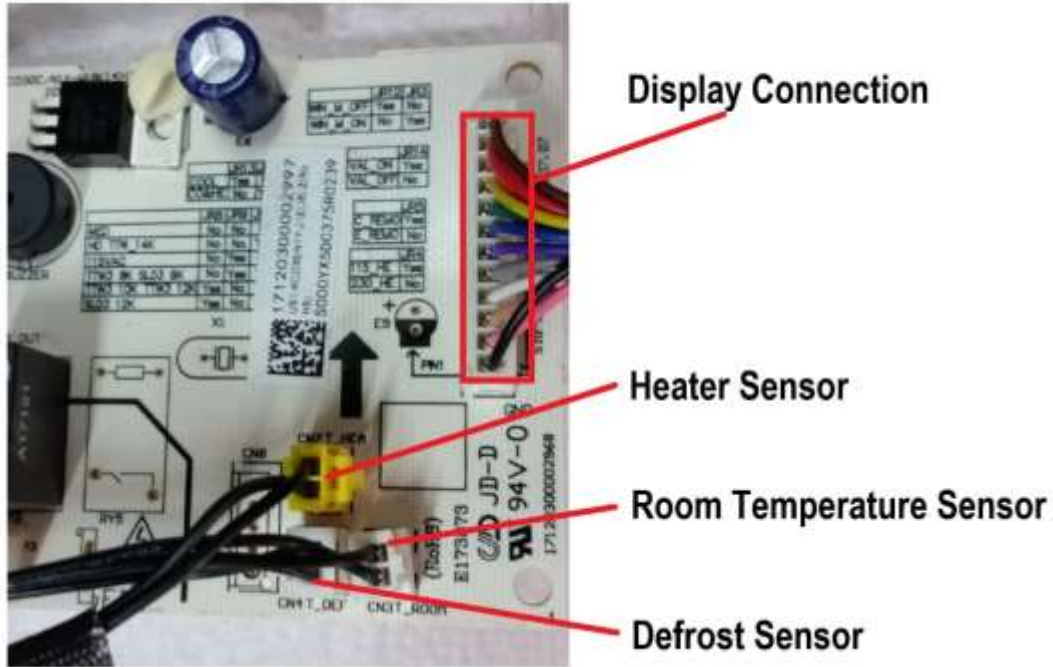


3.2 Electronic Control Box and Main PCB



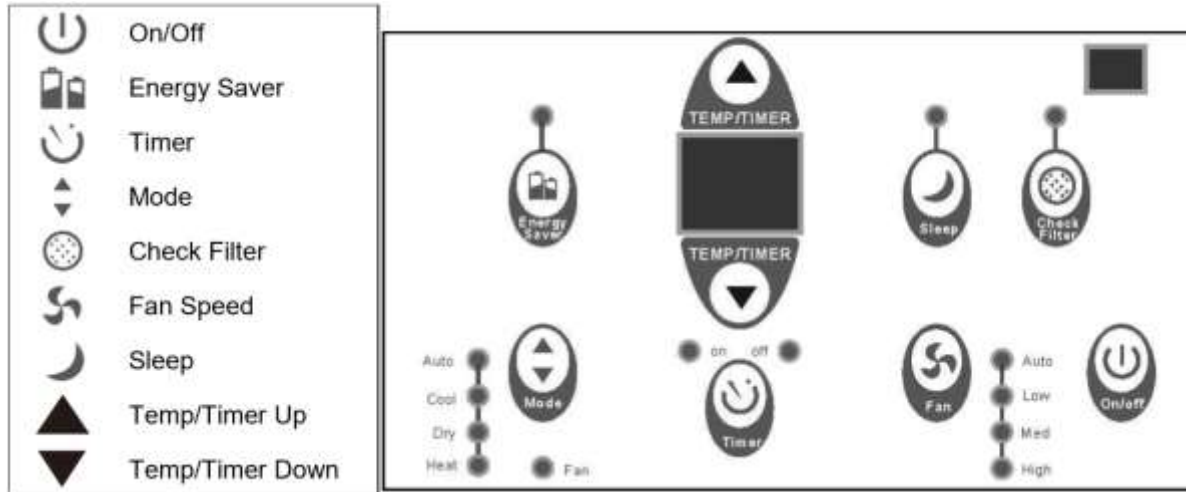
3.3 Sensor and Display Connections on Main PCB


All sensor connections are clearly marked on the PCB (Heat, Room, Def) and are located near the display ribbon cable connection. Refer to this diagram when troubleshooting unit display issues or sensor error codes.



4 Operating Instructions



4.1 Display Panel Controls




Press  to turn on or off the unit.

NOTE: The Energy Saver feature will automatically turn on in Cool, Dry, and Auto mode.

Up and Down Button


Press or hold either Up  or Down  button until desired temperature is seen on the digital display. This temperature will be automatically maintained anywhere between 62 °F (17° C) and 86° F (30° C). Pressing and holding both Up and Down buttons for 3 seconds, will change the display from °F to °C.

Mode select Button

To choose the operating mode press Mode . Each time you press the button a mode is selected in a sequence that goes from Auto, Cool, Heat, Dry, to Fan. The indicator light beside the mode button will be illuminated and remain on once the mode is selected.





NOTE: The unit will automatically turn on the Energy Saver function under Cool, Dry, Auto (only Auto-Cooling and Auto Fan) modes per Energy Stars' requirement.

Fan speed Button


To select the speed of the fan press Fan Speed  which cycles through four steps- Auto, Low, Medium, or High. Each time the button is pressed the fan speed mode is shifted.

NOTE: The fan speed can't be adjusted in certain modes (Dry, and Heat on some models.)


Timer Button

- When the unit is on or off, press the Timer  button and the “Timer On” indicator light illuminates. It indicates that the Auto Start/Stop program is initiated.
- To switch to off press the Timer  button again and the “Timer Off” indicator light illuminates. It indicates that the Auto Stop program is initiated.
- Press or hold the Up  or Down  button to change the Auto Time by ½ hour increments up to 10 hours or 1 hour increments up to 24 hours. The control will count down the time remaining until start.
- The selected time will display for five (5) seconds and then will automatically revert back to display the previous temperature setting or room temperature when the unit is on.
- Turning the unit ON or OFF at any time or adjusting the timer setting to 0.0 will cancel the Auto Start/Stop program.
- The timer is not a permanent setting. The user must set the timer each they wish to use it.


Sleep Button

To initiate, press the Sleep  button. In this mode the selected temperature will increase (cooling) or decrease (heating) by 2°F (1°C) 30 minutes after the mode is selected. The temperature will then increase (cooling) or decrease (heating) by another 2°F (1°C) after an additional 30 minutes. This new temperature will be maintained for 6 hours before it returns to the originally selected temperature. This ends the Sleep mode and the unit will continue to operate as originally programmed. The Sleep Mode program can be cancelled at any time during operation by again pressing the Sleep button.

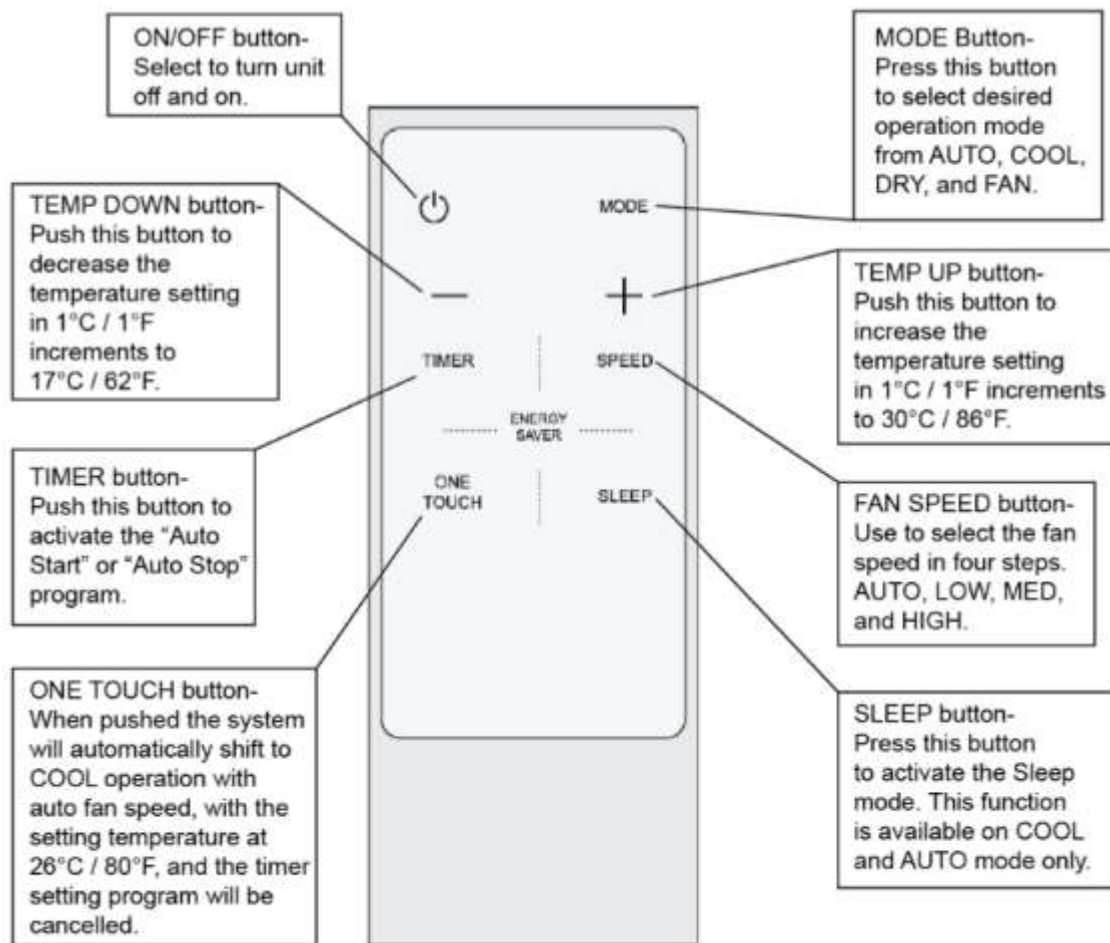
Energy Saver Button

To start the Energy Saver feature, press the Energy Saver  button. This feature is available on Cool, Dry, and Auto. The fan continues to run for 3 minutes after the compressor shuts off. The fan then cycles on for 2 minutes at 10 minute intervals until the room temperature is above the set temperature, at which point the compressor turns back on and cooling starts.

Check Filter Button

This feature is a reminder to clean the Air Filter for more efficient operation. The LED light will illuminate after 250 hours of operation. To reset after cleaning the filter, simply press the Check Filter  button and the light will go off.

4.2 Remote Controls



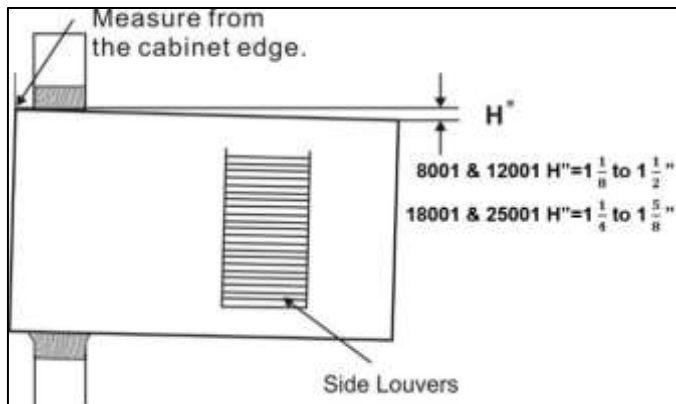
- The remote signal receiver/sensor is located on the control panel of the air conditioner.
- Reception of signal commands is confirmed by an audible beep.
- Direct sunlight can interfere with the infrared signal.
- To replace batteries, remove the back cover by pressing where indicated and sliding off the battery cover.

5 Installation and Cleaning

5.1 Proper Installation and Drainage

Older Koldfront window air conditioners included a drain plug that could be removed to assist with water drainage in excessively humid operating environments. Current models DO NOT use drain plugs. WAC series air conditioners were modified to increase unit operating efficiency and as a result the drain hole and plug have been removed.

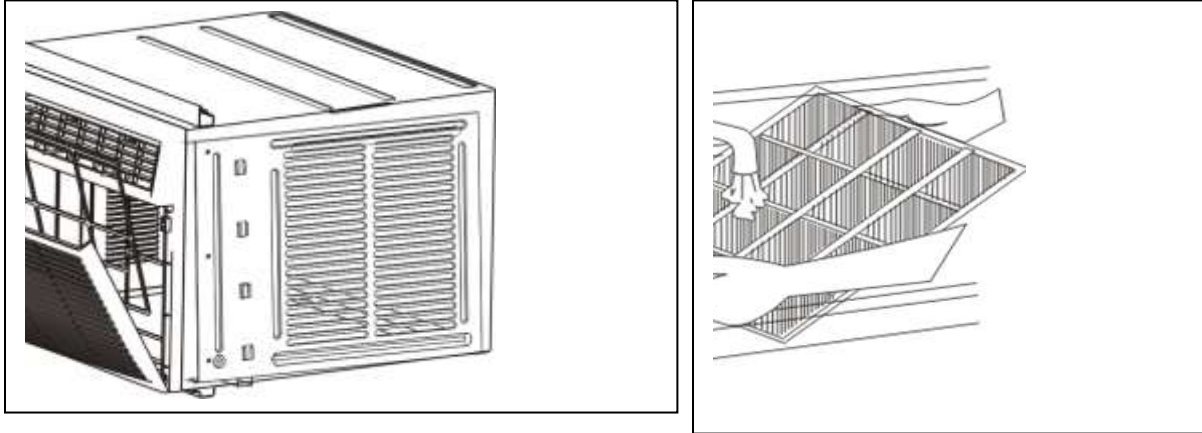
As water builds up towards the rear / back of the unit the fan blade will begin to splash and disperse that water over the condenser coils which significantly aids in cooling the internal components and increases the overall efficiency of the unit. If there is an over-accumulation of water, it will simply drain out of the lower back edge of the unit onto the exterior ground. Provided that the unit has been installed properly with a slight rearward slope as indicated below, there will not be drainage issues with the unit.



Service Note: Check that the air conditioner is tilted about 3° to 4° (degrees) downward toward the outside. After proper installation, water from the coils should not drain from the unit during normal use. Correct the slope if necessary.

5.2 Cleaning the Filter

In order to maintain energy efficiency and prolong the life of the unit the air filter should be checked at least once a month to see if cleaning is necessary. In addition, trapped particles in the filter can quickly build up and cause frost on the evaporator.



- Open the front panel.
- Take the filter by the center and pull up and out.
- Wash the filter using liquid dishwashing detergent and warm water. Rinse filter thoroughly. Gently shake excess water from the filter. Be sure the filter is thoroughly dry before replacing.
- You may also gently use a vacuum to clean the filter.
- Reinstall the air filter once it's clean and dry.

Service Note:

- Never use hot water over 104°F(40°C) to clean the air filter.
- Never attempt to operate the unit without the air filter.
- The air filter should be checked at least once a month to see if cleaning is necessary.
- When the check filter light comes on clean the filter. It will be prolong the life of the unit and save energy.
- When the AC has not used for a for a prolonged period of time clean the filter before re-use.

6 Modes and Operating Conditions

6.1 Terms and Definitions

- TA: Temperature of indoor ambient.
- TE: Temperature of evaporator.
- TS: The set temperature.
- DAHT: Heater sensor.

6.2 Protection Functions

- The compressor restart protection has a delay of 3 minutes.
- 5 minute operation for compressor in cooling mode.
- Sensor protection against an open or short circuit.

6.3 Auto Mode

- AUTO Mode is a setting that allows the unit to automatically switch between COOL, FAN and HEAT in order to achieve and maintain the desired set temperature.
- In Auto mode the unit will choose cooling, heating or fan-only mode based on $\Delta T (\Delta T = TA - TS)$

$\Delta T = TA - TS$	Running mode
$\Delta T > 4^{\circ}F$	Cooling
$-2^{\circ}F \leq \Delta T \leq 4^{\circ}F$	Fan-only
$\Delta T < -2^{\circ}F$	Heating (Setting temperature is $TS - 1^{\circ}F$)

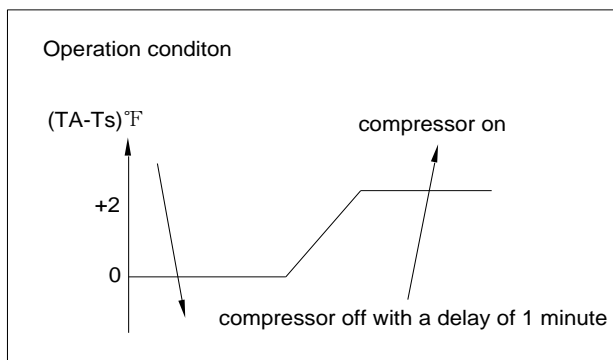
- The unit will default to running mode when in auto mode under the following circumstances:
 - Powering on, changing mode to auto mode or adjusting temperature in auto mode will cause the unit to default to running mode again.
 - A: In auto mode, if the compressor does not run for 15 minutes check condition B.
 - B: If $\Delta T < -8^{\circ}F$ or $\Delta T > 2^{\circ}F$, the unit will default to running mode again according to ΔT until the compressor stops.

6.4 Fan-Only Mode

- If the temperature can't be controlled by the selected mode and the room ambient temperature is shown on the display the unit will default to fan only mode.
- The readout can only display a temperature of 32 to 99 °F (0 to 37°C.) If the temperature is out of that range the display will show LO or HI.
- The Timer function works in fan-only mode.
- The follow me function (on some models) does not work in fan-only mode.

6.5 Cooling Mode

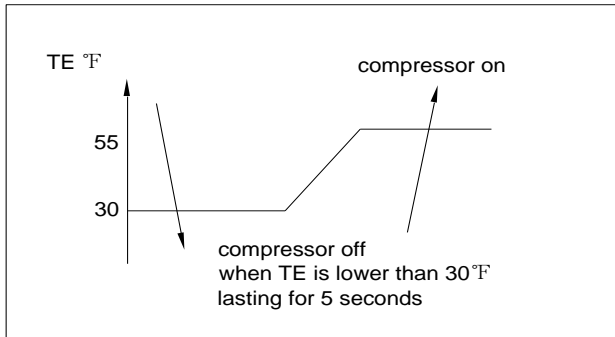
- The cooling temperature can be set from 62 to 86°F (17 to 30°C.)
- Sleep, Timer and Energy Saver functions work in cooling mode.
- The compressor will run when the difference between the set temperature and the actual ambient room temperature conforms to the chart below:



- When $T_A \leq T_S$ (for 1 minute) the compressor turns off.
- When $T_1 > T_S + 2^\circ F$ the compressor turns on.

6.6 Auto-Defrost Function

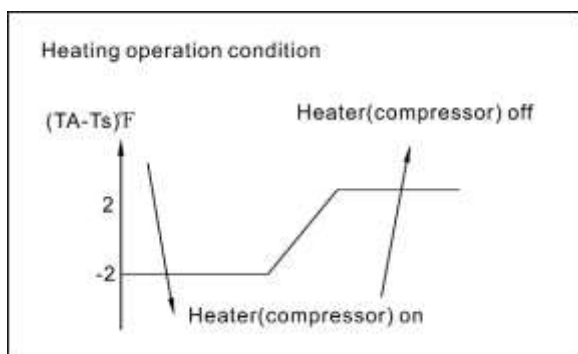
- The Auto-defrost function operates according to the chart below:



- When TE is below 30°F the evaporator will frost. As the unit defrosts the indoor fan will continue to operate.
- When the temperature is up over 55°F the unit will stop defrosting.

6.7 Heating Mode

- The heating temperature can be set from 62~86°F (17~30°C.)
- In heating mode any fan speed (Low/Med/High/Auto) can be chosen unless it uses a 115V heater in which case:
 - It will operate at Low speed by default and can't be controlled.
 - It will operate at Low speed in Auto heat mode no matter that the LED displays as the Auto speed.
- In heating mode the Sleep and Timer functions work normally.
- Heating operates based on the difference between TS and TA as defined in the chart below:



Service Note: The Heat function is intended to provide supplemental heating in addition to an existing heat source. The heat function has a lower BTU rating than the cool mode and therefore does not treat the same square footage. The maximum heating capacity of the unit is 15°F above the ambient room temperature.

6.8 Dry Mode

- In this mode, the air conditioner will operate as a dehumidifier. Because the conditioned space is closed or sealed, some degree of cooling will continue to occur.
- The dry mode temperature can be set from 62 to 86°F (17 to 30°C.)
- The fan speed is Low and can't be controlled.
- Sleep function works in dry mode.

6.9 Sleep Mode

- This mode has a duration of 7 hours and can be used in Cool, Dry and Heat mode.
- In sleep mode the fan speed will default to Auto.
- In the first 60 minutes, the set temp will rise (or lower for heating mode) 2°F (1°C) each half hour. Then it will keep a steady temperature for 6 hours until the mode stops.
- If you change any settings after sleep mode starts, the function will stop. Press sleep button again or use the remote control to start it again.



7 Troubleshooting

Generally, problems are classified in three ways. The first is Starting Failure which is caused by an electrical defect. The second is an Air Conditioning failure caused by a defect in the refrigeration system or improper air circulation. The last is Structural Damage.

7.1 Troubleshooting Guide

Problem	Possible Cause	Solution
Air conditioner does not function at all.	Wall plug is disconnected.	Insert plug firmly into proper wall outlet.
	House fuse blown or circuit breaker tripped.	Replace fuse with time delay type or reset circuit breaker.
	Power cord is tripped.	Press the RESET button on the power cord.
	Unit is turned OFF.	Turn unit ON and set to desired setting.
	Ribbon cable to control panel is disconnected.	Remove front grill and reconnect cable.
	Loose or disconnected wiring on main PCB.	Remove front grill and outer shell. Check all connections to the PCB and reconnect any loose or disconnected leads.
Air from unit does not feel cold enough.	Room temperature is below 62°F (17°C).	Cooling will not occur until room temperature rises above 62°F (17°C).
	Temperature sensor behind the front grill and air filter is touching the cold evaporator.	Realign sensor so it does not touch the evaporator coil. It should only be sensing the air temperature leaving the evaporator.
	Set temperature is too high.	Set to a Lower temperature.
	Compressor is shut-off by changing modes.	Wait approximately 3 minutes and listen for compressor to restart when set in COOL mode.
Air conditioner cooling, but room is too warm - ice forming on cooling coil behind front grill.	Outdoor temperature below 62°F (17°C).	To defrost the coil, set to FAN ONLY mode.
	Air filter may be dirty.	Clean filter. Refer to Installation and Cleaning section. To defrost, set to FAN ONLY mode.
	Thermostat set too cold for night-time cooling.	To defrost the coil, set to FAN ONLY mode. Then set temperature to a Higher setting.

Problem	Possible Cause	Solution
Air conditioner cooling, but room is too warm - NO ice forming on cooling coil behind front grill.	Dirty air filter- air restricted.	Clean air filter. Refer to Installation and Cleaning section.
	Temperature is set too High.	Set to a Lower temperature.
	The directional louvers on the front are positioned improperly.	Position louvers for better air distribution.
	Front of unit is blocked by drapes, blinds, furniture, etc. and is restricting air distribution.	Clear blockage in front of unit.
	Doors, windows, registers, etc. are open and cold air is escaping.	Close doors, windows, registers.
	Unit recently turned on in hot room.	Allow additional time for unit to remove stored heat from walls, ceiling, floor and furniture.
Air conditioner turns on and off frequently.	Dirty air filter- air restricted.	Clean air filter.
	Outside temperature is extremely hot.	Set FAN speed to a Higher setting to push more air through the coils.
Noise when unit is cooling.	Air movement sound.	This is normal. If too loud, set to a slower FAN setting.
	Window vibration - poor installation.	Refer to installation instructions or check with installer.
Water dripping INSIDE when unit is cooling.	Improper installation.	Tilt air conditioner slightly downward toward the outside to allow water drainage. Refer to installation instructions - check with installer.
Water dripping OUTSIDE when unit is cooling.	Unit removing large quantity of moisture from humid room.	This is normal during very humid days.
Room too cold	Set temperature is too low.	Increase the set temperature.

7.2 Error Codes and Sensor Malfunctions

Display	Error	Solution
AS	Room temperature sensor error.*	1) Check sensor connection to main PCB and secure any detached or loose connections. 2) Check sensor wire for damage and repair if possible. 3) Test sensor (see table 7.3) Replace sensor if defective.
LO	Room sensor is an open circuit.*	
HI	Room sensor is a short circuit.*	
HS	Electronic heating sensor error.	
ES or ●	Defrost sensor is open or short circuit.	

* If display indicates an AS error, use the mode button to select "Fan" and LO or HI will be displayed to indicate the underlying condition. See section 7.3 for additional information.

7.3 Temperature Sensor Resistance Test Table

Temp.°C	Temp.°F	Resistance KΩ	Temp.°C	Temp.°F	Resistance KΩ	Temp.°C	Temp.°F	Resistance KΩ
-10	14	62.2756	17	62.6	14.6181	44	111.2	4.3874
-9	15.8	58.7079	18	64.4	13.918	45	113	4.2126
-8	17.6	56.3694	19	66.2	13.2631	46	114.8	4.0459
-7	19.4	52.2438	20	68	12.6431	47	116.6	3.8867
-6	21.2	49.3161	21	69.8	12.0561	48	118.4	3.7348
-5	23	46.5725	22	71.6	11.5	49	120.2	3.5896
-4	24.8	44	23	73.4	10.9731	50	122	3.451
-3	26.6	41.5878	24	75.2	10.4736	51	123.8	3.3185
-2	28.4	39.8239	25	77	10	52	125.6	3.1918
-1	30.2	37.1988	26	78.8	9.5507	53	127.4	3.0707
0	32	35.2024	27	80.6	9.1245	54	129.2	2.959
1	33.8	33.3269	28	82.4	8.7198	55	131	2.8442
2	35.6	31.5635	29	84.2	8.3357	56	132.8	2.7382
3	37.4	29.9058	30	86	7.9708	57	134.6	2.6368
4	39.2	28.3459	31	87.8	7.6241	58	136.4	2.5397
5	41	26.8778	32	89.6	7.2946	59	138.2	2.4468
6	42.8	25.4954	33	91.4	6.9814	60	140	2.3577
7	44.6	24.1932	34	93.2	6.6835	61	141.8	2.2725
8	46.4	22.5662	35	95	6.4002	62	143.6	2.1907
9	48.2	21.8094	36	96.8	6.1306	63	145.4	2.1124
10	50	20.7184	37	98.6	5.8736	64	147.2	2.0373
11	51.8	19.6891	38	100.4	5.6296	65	149	1.9653
12	53.6	18.7177	39	102.2	5.3969	66	150.8	1.8963
13	55.4	17.8005	40	104	5.1752	67	152.6	1.83
14	57.2	16.9341	41	105.8	4.9639	68	154.4	1.7665
15	59	16.1156	42	107.6	4.7625	69	156.2	1.7055
16	60.8	15.3418	43	109.4	4.5705	70	158	1.6469

DATE	REVISION NOTES
04/11/2018	INITIAL DOCUMENT