



User and Installer's Manual



**SMART -Breeze DC Models:
(9000/ 12000 / 16000 BTU)**

Table Of Contents

1. Product description
 - a. DC product introduction
2. Safety information
 - a. Safety precautions
 - b. Handling precautions
3. Product information
 - a. Product structure diagram
 - b. Dimension per model
 - c. Freon type & Quantity Per Model
4. Installation
 - a. Installation example diagram
 - b. Installation location selection
 - c. Install the mounting brackets
 - d. Install the condensate drain hoses
 - e. Air duct system installation
5. Electrical connection
 - a. Warning
 - b. Precautions
 - c. Installation Steps
 - d. "DC Current" Control Board
 - e. "AC Current" Control Board
6. Controller instruction
 - a. DC Wired Controller
 - b. DC Remote Controller
 - c. DC Fault Code Query
7. Troubleshooting
8. Routine Maintenance
 - a. Four-way Valve
 - b. Seawater Strainer
 - c. Water Pipes and Fittings
 - d. Flushing the condenser coil
 - e. Return Air Filter
 - f. Winter Treatment

Product description

DC product introduction

- Fast cooling: the ambient temperature can be lowered to the comfort point required by the user in a short time.
- Intelligent frequency conversion, nine protection functions:
- Battery voltage too high/too low protection
- An-reverse connection protection for power supply
- Whole machine electrical overload protection
- Compressor short-circuit, phase-loss and lock-rotor protection
- Electronic temperature control, overcurrent protection
- Motor short-circuit, phase-loss, locked-rotor protection
- Anti-freeze protection
- Exhaust protection.
- Refrigerant leakage protection
- Low noise operation
- Delayed automatic start: After the air conditioner is suddenly powered off and then quickly powered on, the delay module automatically starts the compressor with a delay of 3 minutes to protect the compressor from damage.
- Module memory function: After the power is turned off and the power is turned on quickly in the power-on state, the unit will automatically keep the last power-on state to avoid the tediousness of repeated adjustment.

Model selection rules

Make sure that the cooling capacity of the selected model is not too large for the application area. Over cooling may damage electrical components and/or power supply due to frequent starting and stopping. An over cooling air conditioner cannot effectively remove moisture and may cause high humidity and encourage mildew in the cabin. It may also lead to high energy consumption. Slightly less cooling capacity may be applicable, but significant under-sizing air conditioning will cause discomfort when you need it the most.

Tips: a general rule for determining appropriate cooling capacity is 14 BTU/cubic feet. Use the 16 to 19 BTU/cubic feet formula to calculate suitable cooling capacity For areas that get a lot of sunlight during the day (such as cab), especially if the roof is not shaded or well insulated. For below-deck areas that are primarily used after sunset (such as cabin), use the formula for 10-12 BTU/cubic feet to get a appropriate cooling capacity.

Safety information

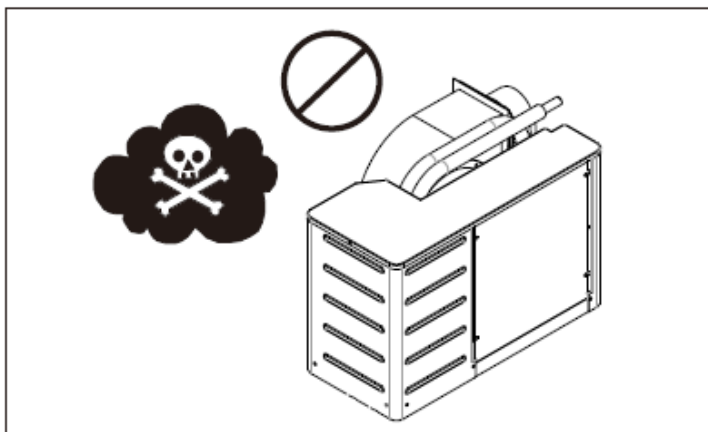
Safety precautions

WARNING

During installation, each unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground.

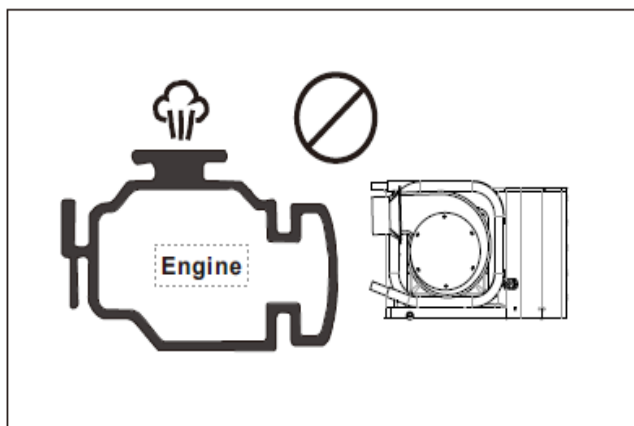
Carbon monoxide hazard, failure to follow the warnings below could result in death or serious injury.

- Do not install air conditioners in bilge or engine room areas or near internal combustion engines. Make sure the installation location is sealed from bilge or engine room steam.



WARNING

Electric shock, fire and/ or explosion hazard. Failure to follow these precautions could result in death or serious injury.



- Do not install air conditioners in locations where may cause carbon monoxide, fuel vapors or other toxic fumes enter the living space on board
- Verify that the condensate drain hose is properly installed and sealed. Do not terminate the hose opening within 3 feet (0.91 m) of any outlet from the engine or generator exhaust system (in the compartment or bilge containing the engine or generator) unless the hose is properly connected to a sealed condensate or shower sump pump. If the hose is not properly installed, dangerous and harmful fumes may travel up the drain hose and contaminate living areas.



WARNING

Explosion hazard

Failure to obey the following warnings could result in death or serious injury.

Do not install the air conditioning unit in a location containing gasoline engines, fuel tanks, LPG/CPG cylinders, regulators, valves or fuel line connections. This air conditioner unit does not meet the requirements for ignition protection.



WARNING

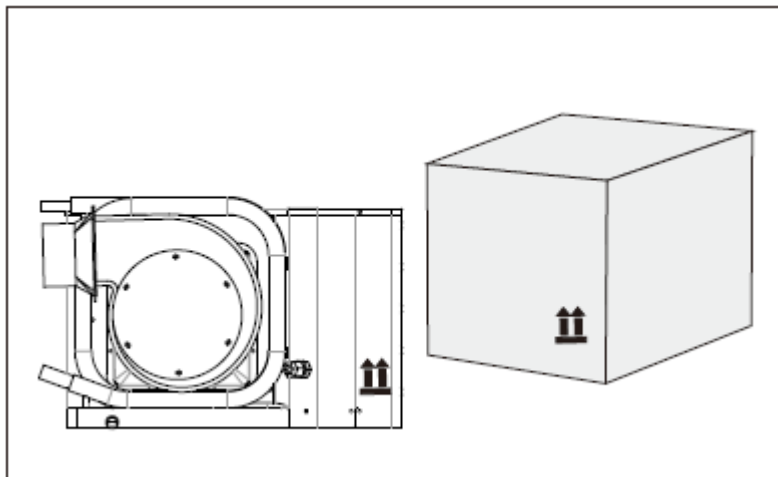
Electric shock hazard

Failure to obey the following warnings could result in death or serious injury.

- Always ground the air conditioner unit effectively to minimize the risk of electric shock.
- Use a dedicated circuit breaker for each air conditioning unit installed. If only one air conditioning is installed, the sea water pump does not need a circuit breaker. If two or more air conditioning units use the same sea water pump, the pump wiring will be connected to the pump relay panel (PRP), which will have its own dedicated circuit breaker sized for the pump (20A max). Refer to the wiring diagram provided with the PRP. Electrical connections below the bilge and/or the waterline should use heat shrink butt joints.
- The power supply to the device must be within the operating voltage range indicated on the nameplate. Properly sized fuses or HACR circuit breakers must be installed to protect branch circuits. See data plate for maximum fuse/circuit breaker size (mfs) and minimum circuit capacity (mca).

Handling precautions

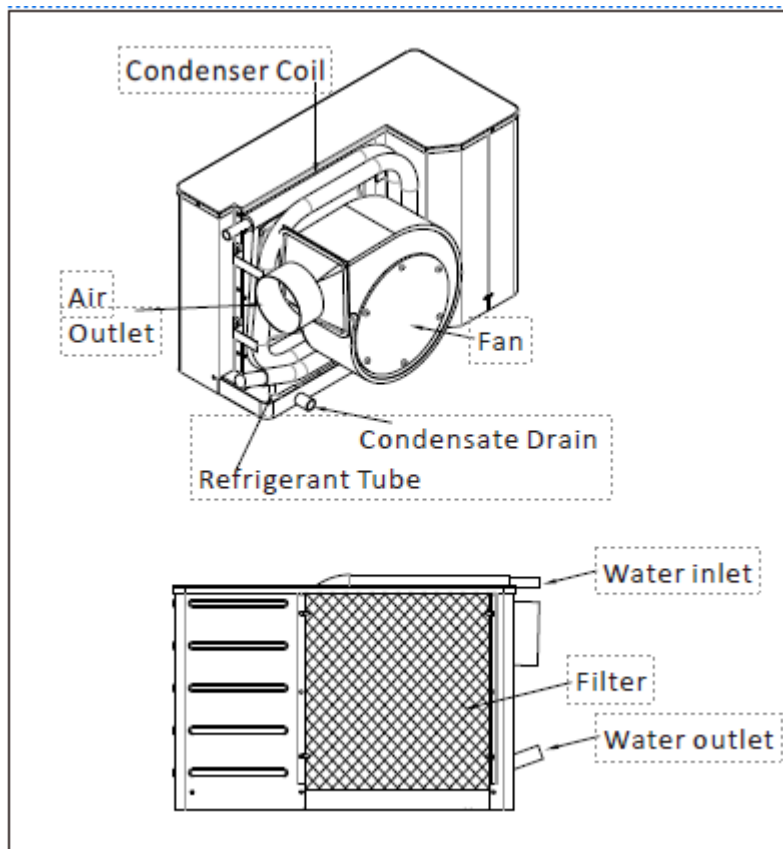
Please be sure to carry the unit in the direction indicated on the package and the product. Do not put it upside down or sideways. The wrong direction may cause damage to the unit.



Product information

Read these instructions in full, then plan the connections that must be made to the air conditioning unit (including pipes, condensate drain, seawater inlet and outlet hoses, power connections, wired controller location, and seawater pump placement) to ensure that the piping system is easily accessible for viewing, which is convenient for future maintenance services.

Product structure diagram



Dimensions Per Model

Smart Breeze Model	Unit Dimensions W x H x D (inches)
9k BTU	19 x 13 x 13
12k BTU	24.5 x 14 x 14
16k BTU	24 x 14 x 14

Freon Type and Quantity

Contract with a professional to properly vacuum and fill unit(s) with freon.

Smart Breeze Model	Freon Type	Capacity
9k BTU	R134A	450g
12k BTU	R410A	560g
16k BTU	R410A	650g

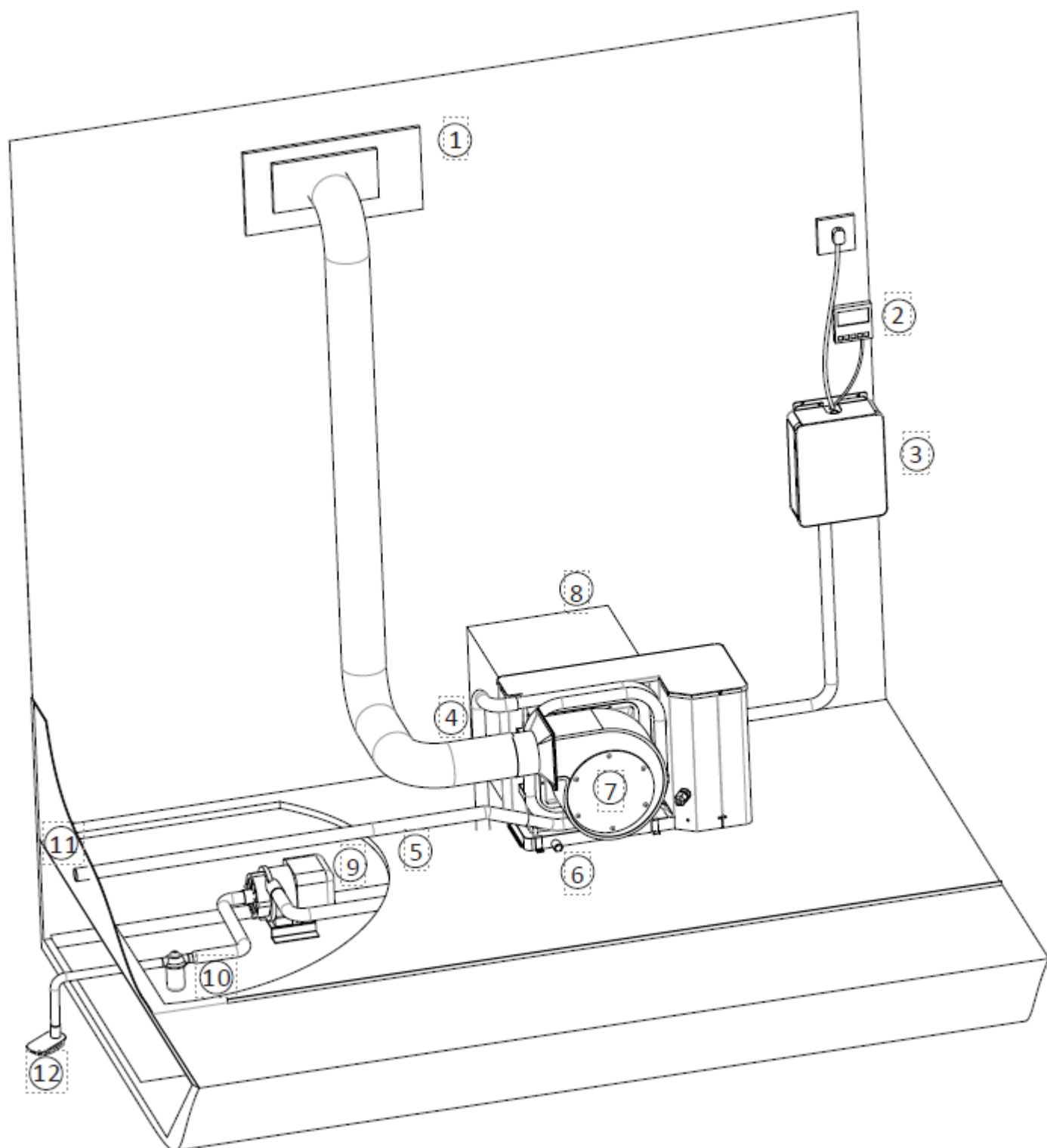
Description of possible situations

This manual is applicable to the installation of air conditioning systems. Improper installation procedures can result in sub-optimal performance or premature failure of these air conditioning units. Installation can usually be performed by one person with brief assistance from another person. The manufacturer is not responsible for damage in the following cases:

- Wrong assembly or connection
- Product damaged due to mechanical influences and over-voltages
- Changes to products not expressly approved by the manufacturer
- For use not described in the operating manual
- We reserve the right to modify appearance and specifications without notice

Installation

Installation example diagram



1. Supply air grille and transition box
2. Wired Controller
3. Electric box
4. Seawater inlet hose
5. Seawater outlet hose
6. Condensate Drainage
7. Blower
8. Return air Grill and aire filter
9. Seawater pump
10. Seawater Strainer
11. Overboard discharger

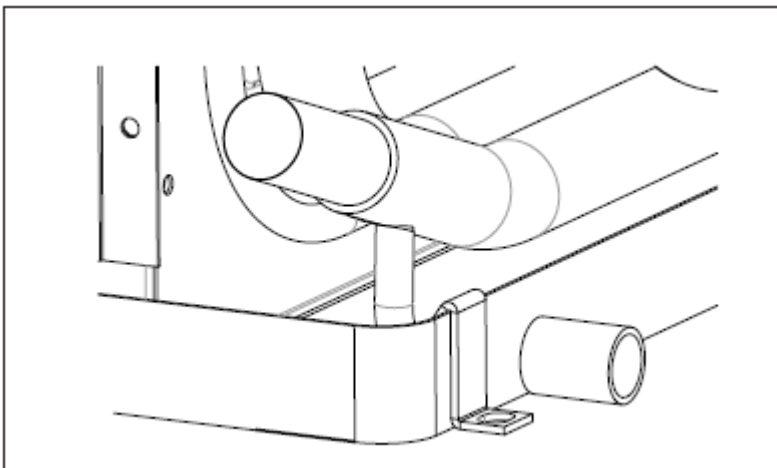
- 12. Scoop thru-hull
- 13. Grounding Wire to unit Housing

Installation location selection

The air conditioning unit must be installed on a low, flat, flat surface, such as under a v-berth, in a cloakroom, under a pantry seat, in a cupboard, in a bunk bed or below the a deck in drying compartments and locker booms . If you cannot find a location that fits the size of the air conditioner base, you must build a mounting bracket or platform. Typically, bulkheads can be made from 3/4 inch marine grade plywood, which can be fiberglass or mechanically attached to the boom or superstructure, not screwed directly into the hull. Do not place the distribution box under the air conditioning unit. Learn about standard installation configurations. It is highly recommended that you place the return air grille as low as possible and the supply air grille as high as possible, which will provide better airflow. Carefully plan all connections, including the location of pipes, diverters, grilles, condensate drain hoses, inlet and outlet filters, water circulation pumps, electrical connections and wall control units. The installation location must allow a minimum clearance of 2.99inch (76mm) in front of the evaporator coil and a minimum of 4 inch (102mm) in front of the return air grill.

Install the mounting brackets

Install two mounting brackets each on the front and back of the unit to fix the unit on a flat surface. See Figure.



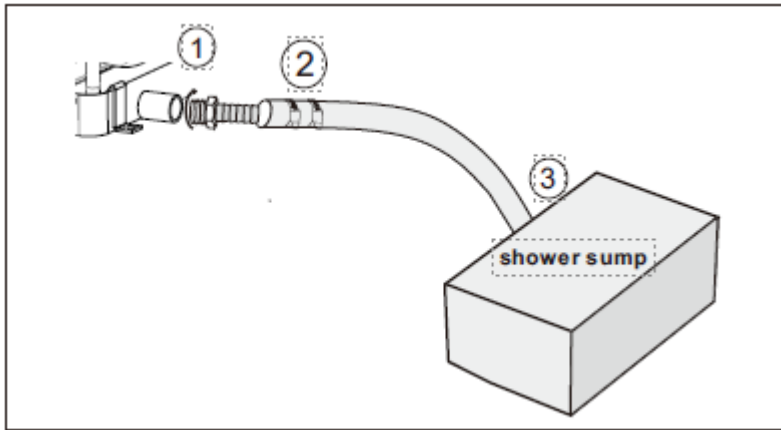
Install the condensate drain hoses

When running in cooling or dehumidifying mode, the air conditioner may generate up to 1 gallon (3L) of condensate per hour. It is important that the condensate drain flows down with a continuous slope so that no rising air can create an airflow lock. If the boat pitches or rolls, there must be a catchment to catch the water. Connect the condensate drain to a dedicated sump. Although not recommended, if a functional bilge pump is installed, it is possible to connect the condensate pipe to the bilge (severe damage and flooding can occur if the bilge pump fails). The drain can also be connected to the condensate pump. Determine best option for you situation and system.

NOTE: The condensate drain line should run down the slope from the unit to the appropriate drain location. This drain works by gravity.

Install on steps: (Sump Pump Example)

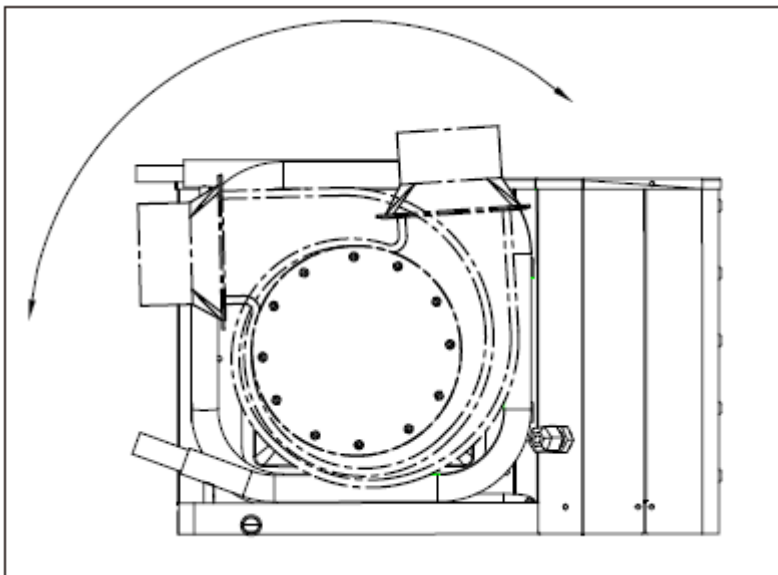
- 1) Rotate the connector into the condensate drain until it is fixed.
- 2) Connect the hose, and clamp the connection with two stainless steel hose clamps.
- 3) Lead the drain hose to a safe and suitable waste water collection point.



Air duct system installation

Blower installation

The product design allows the blower to be easily rotated 360° for the best angle, or disassembled for maintenance. Just loosen the metal clamp, rotate the air outlet to the desired angle, and then tighten the metal clamp. Don't let the clamps come loose and don't over-tighten them, as it may put too much tension on the guard and cause it to break.



Air duct system:

Notice:

The area size of the pipe must be suitable for your application. Install at least one ventilation within a distance of 4 to 5 feet of the unit. Install the return air grilles as low as possible, make sure the air flow is not flowing back towards the return grille, and as close to the air conditioning unit as possible to ensure air flow to the evaporator. Install the supply air grille as high as possible to provide even air distribution throughout the cabin. Turn the grille shutters up. Do not direct the supply air vents towards the return air grille as this will shorten the circulation of the system. Allow sufficient clearance behind the supply air grille for transition box and duct connections.

Supply Air Vent(s): *Installation rule of thumb*

6000 - 8000 BTU units: 2 or 3 pieces of 4" ducts and supply air grilles.

9000 - 11000 BTU units: 3 or 4 pieces of 4" supply air grilles.

12,000 - 14,000 BTU units: 3 or more pieces of 4" supply air grilles or one piece of 6" supply air grilles and 2 or more pieces of 4" supply air grilles.

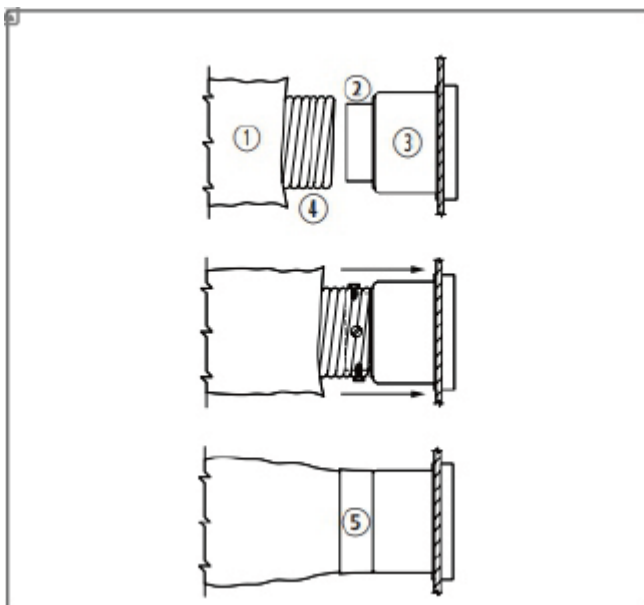
16000 BTU unit: One piece of 6" supply air grille and 2 or more pieces of 4" supply air grilles.

Other considerations

- An air splitter is required if more than one air supply grille is used. The splitter can be installed directly on the unit output, or, where space is limited, the splitter can be placed closer to the unit. A piece of 4" round grille requires a 4.5" diameter holes. Wooden or plastic rectangular grilles require a rectangular cutout of the same nominal size as the grille. In order to be able to connect the pipes to the grille, a transition box of about 4 inches deep is required behind the grille on the other side of the partition or bulkhead.
- If a transition box is used, the total area of supply air ducts going out of the box should be at least equal to the total area of the supply ducts going into the box.
- Make the ducting as straight, smooth and tight as possible, minimize the number of 90° bends and loops, each 90° bend can reduce the airflow by 15% to 20%.
- Ducts should be properly tied to permanent structures to eliminate sagging.
- Do not flatten or kink the ducting.
- Trim excess duct length after installation.
- If the ducts pass through high temperature and humid areas, thermal insulation ducting should be used. Non-insulated ducting can be used if the duct is done in an air conditioned area. Using non-insulated ducts may cause water condensation. Insulated ducting is generally recommended to eliminate condensation.
- Make sure the ducts are properly protected from damage as they pass through open areas.
- Do not run ducts through cabins or any areas that may be exposed to dangerous vapors or exhaust gasses.

Installation steps

- Slide the inner Mylar duct hose around the mounting ring onto the transition box.
- Screw three or four stainless steel screws through the Mylar duct hose into the mount ring, capturing two or three wires with screw heads.



1. Fiberglass Insulation
2. Mounting Ring
3. Transition Box
4. Inner Mylar Duct Hose
5. Duct Tape

Return air grille installation: Installation rule of thumb:

- 6000 BTU to 9000 BTU requires 80-100 square inches (8X10" to 10X10") of return air area.
- 11000 BTU/h to 16000 BTU/h requires 120-150 square inches (10X12" to 10X15") return air area.

Other considerations:

- Use a return grill with a filter. Make sure the air returning to the air conditioning unit is properly filtered. Make sure that no air is returned to the unit from elsewhere . Unfiltered air contains dust, dirt and debris that can lead to reduced performance and potential fault
- Do not place anything to block the return grille. For best performance, the evaporator side of the unit should face the return grille.
- If installed sideways, the evaporator should be at least 3 inches from the wall. Do not place survival equipment, bedding, or other such items between the evaporator and the return grille.

Indoor temperature sensing head

The location of the indoor temperature sensor should avoid direct sunlight, near the door, or near the cold vent.

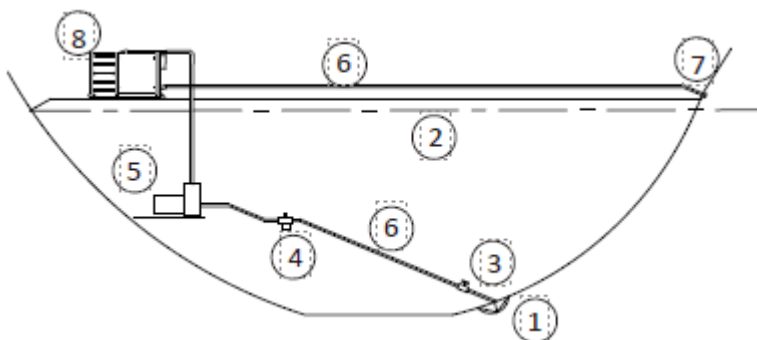
Water channel installation

Water from the pump enters the condenser (water coil) on the **lower fitting** and exits from the higher one. If the water connection is not straight it is recommended to use a hose barb 90 degrees fitting to eliminate any kinking.

- Select appropriate water pump. Using a water pump with too small flow may affect the cooling/heating performance. Long-term use of a water pump with too large flow may cause damage to the condenser coil. Failure to follow this procedure will void the warranty.

Pay attention to the following matters when setting up the seawater system:

- The strainer must be located under the water pump
- The hose must be fastened with two stainless steel hose clamps.
- The hose must not have kinks, loops or high points that could trap air.
- The water pump and filter must be installed below the water line.
- The through-hull inlet, ball valve, hose and filter should not be smaller than the pump inlet.
- Install through-hull joints as far below the waterline as possible.
- The water pump must have a dedicated thru hull.
- Avoid using 90° elbow joints as much as possible.
- Make sure the pump head rotates in the direction of water flow.
- Use thread sealing tape on all threaded



1. Scoop Thru-Hull
2. Water Line
3. Ball Valve
4. Strainer
5. Seawater Pump

6. Marine Grade Hose
7. Overboard Discharge
8. Air Conditioner

Installation steps:

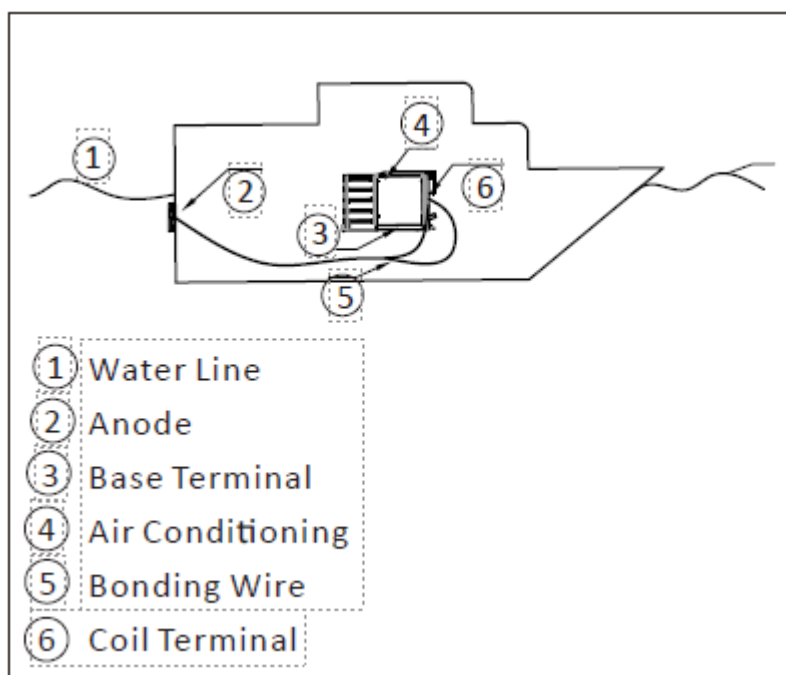
1. Install a seawater scoop thru-hull inlet close to the keel and as far below the waterline as possible. Secure the scoop thru-hull entry with a marine sealant designed for underwater use.
2. Install a bronze, full flow ball valve at the seawater scoop thru-hull inlet.
3. Install a seawater strainer below the level of the pump and have good access for cleaning.
4. Install the pump above the strainer and at least one foot below the waterline.
5. Connect the ball valve and strainer to the uphill reinforced marine grade hose.
6. Use an inner diameter of (15.9 mm) 5/8" reinforced marine grade hose to connect the pump uphill discharge to the boom inlet (water inlet) of the air conditioner condenser coil.
7. Use an inner diameter of (15.9 mm) 5/8" reinforced marine grade hose to connect the condenser coil's discharge (water outlet) to the conditioner.
8. Avoid loops, high spots or using 90° elbows with seawater hoses. Each 90 ° elbow is equivalent to 2.5 in. (0.762 m) of hose, and a 90°elbow on the pump outlet is equivalent to 20.0 in. (61 m) of hose.
9. Use two stainless steel clamps to clamp all hose fittings, invert the clamps if necessary.
10. **Attach all metal parts in contact with seawater to the ship's bonding system.**

Electrochemical corrosion protection

Electrolysis may occur any time an air conditioner is connected to a shore power that is shared by other boats in a marina. This is when the general corrosion problems start. It will first attack the weaker or less noble metals such as zinc and aluminum until they disappear. Therefore, cathodic protection is extremely important so that the sacrificial metals (zinc and/or aluminum) will be corroded instead of the air conditioner.

Cathodic Protection is the practice of connecting an air conditioner to an external sacrificial anode(s) that is usually a zinc plate or an aluminum plate mounted outside the hull. Make sure all connections are good quality. If you have a bonding circuit, tie it into the cathodic circuit for extra protection. There are two bonding points on the air conditioners. One at the coaxial coil (BW1) (upper installation leg) and one at the drain pan (BW2). Both points needed to be connected to the sacrificial metal

* During installation, each unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground.



Electrical connections



WARNING

Electric shock hazard

Failure to properly ground and connect the system will void the warranty

Before opening the electrical box, be sure to turn off the power circuit breaker. Failure to follow this warning could result in death or serious injury.

Both the air conditioner and pump require the same voltage. Make sure the power source is correct for the equipment. (DC 24V /48V) Power is obtained from the master power source in the boat. Power cables run from this source to the air conditioner. The air conditioner will then supply power to the pump as required.

Use appropriate AWG marine cable to power the air conditioning unit and sea water pump. Use ring or fixed fork terminals for all connections.

Please pay attention to the following when making electrical connections:

- Ensure that the ground of the air conditioning unit is properly connected to the ground of the boat.

Installations steps:

1. Connect the live wire of the power supply to input wires.
 - Positive DC input must be connected to the Large red wire
 - Negative DC Input must be connected to the Large black wire.
 - Ensure input voltage matches the proper operating voltage of the DC Air Conditioner
 - (CHART)
 -

Model	Operating Voltage Range
12v Model	11v - 16v

24v Model	23v - 28.3v
48v Model	46v - 56.6v

-
- Proper gauge wire will need to be determined by professional installer using proper method to calculate gauge based on distance of wire run and peak amperage.

2. Connect the water pump wiring to "Pump Terminal Block" inside the control box as shown in the physical diagram below.

- Pump draw must not exceed 6 amps. (If using a larger pump, a higher amp relay may need to be used)

3. The unit must be electrically grounded to prevent damage. Use a grounding wire to connect the unit frame to the appropriate neutral ground of the vessel. Remove a structural bolt from the drip pan and fix an independent ground wire with proper terminal to bolt. Run wire and connect the other end to an appropriate ground on the vessel. (Consult a professional for proper grounding/Neutral for your application/Vessel.)

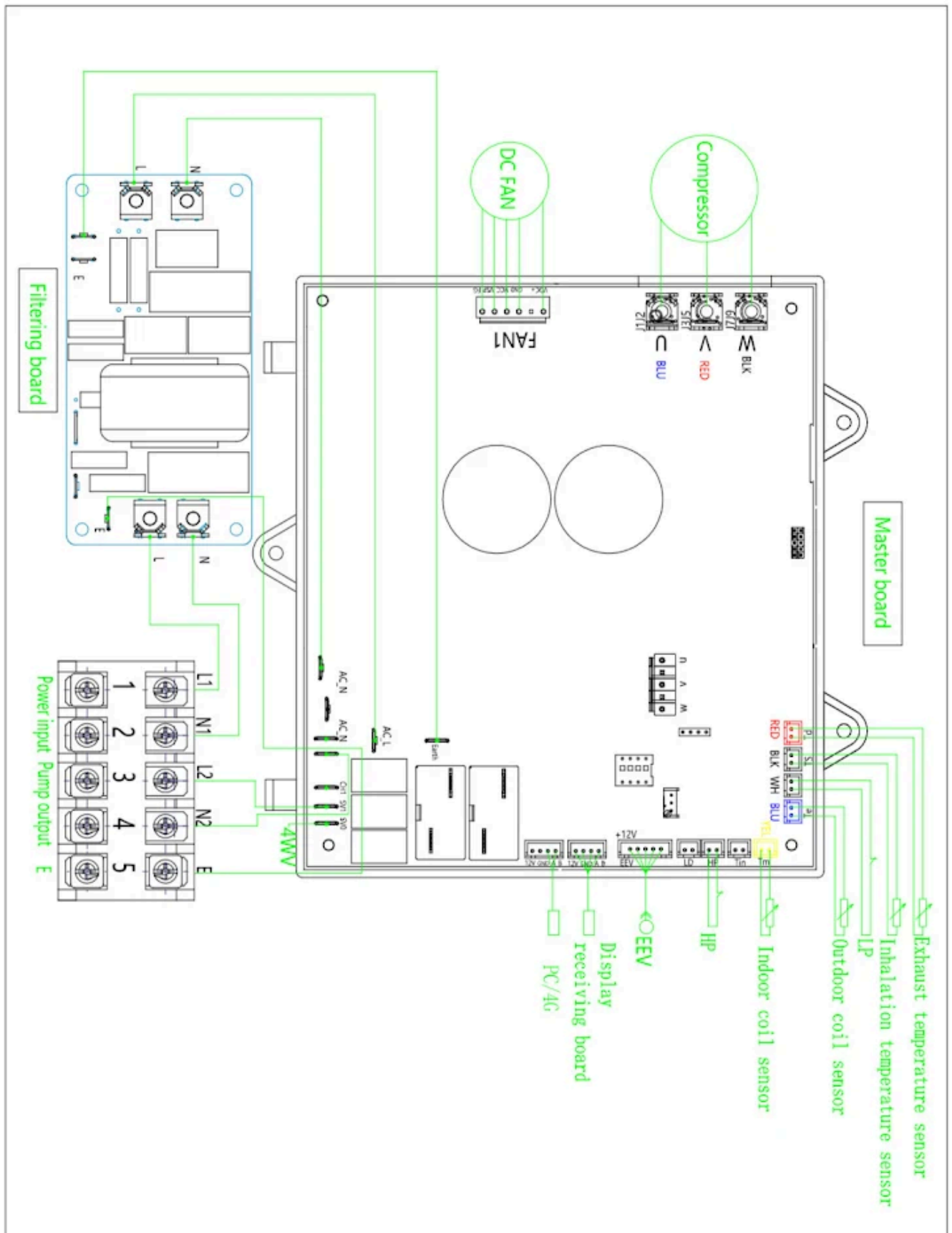
Neutral/Grounding Location for Smart Breeze air conditioner located in picture below.
(Recommended to use the screw location with no paint applied)



DC unit Circuit Board Layout



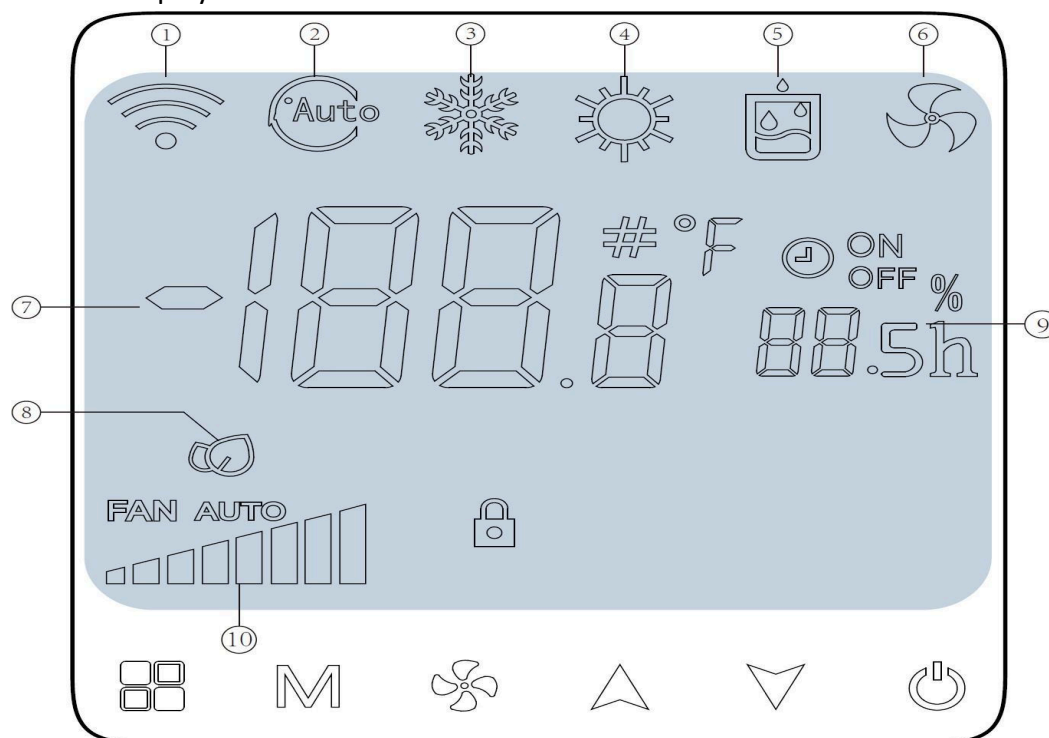
220v AC unit Circuit Board Layout



*Main power neutral and Pump neutral share a “common neutral” connection(E).

DC Controller instruction (V2 Display)

Display Function description : *If this display does not match your, read further pages of emmanuel to fin the “V1 Display”



Number	Name	Number	Name
1	WIFI	2	Auto (Heat/Cool)
3	Cooling	4	Heating
5	Dehumidify	6	Fan
7	Temperature (Set/Ambient)	8	ECO
9	Timing	10	Fan speed

Key icon description :

Number	Icon	Key function
1	▲	- Operating temperature setting : 16~32℃; - Timing settings - Parameter setting
2	▼	
3	⋈	
4	⏸	- Parameter query; - Hold down for 3s to set the timing.
5	⏻	Product on and off
6	M	Set running mode: Auto、Cooling、Heating、Dry、Fan cycle
7	⏸ + ⏻	Hold down for 3s, Bring up the WIFI icon.
8	▲ + ▼	Hold down for 3s to unlock.

Operation instruction

A. On and off:

Push“  ”The LCD screen is on, the air conditioning. is running; Push again“  ”LCD off, Displays the current set temperature, air conditioner Off.

B. MODE selection:

Push“  ”, Cycle operation modes:
Auto → Cool → Heat → Dry → Fan

C. Temperature setting:

Push“  ”and“  ” adju st the set room temperature: 60F ~ 90F / 16~32°C.

D. Wind speed setting:

Push“  ”Regulating wind speed. Flashing = Auto Fan

E. Parameter query and Time setting

a. Parameter query:

Push “  ” Parameter query, push“  ”or“  ” query parameter
Push“  ” Exit parameter query.

b. Timing function:

Power-on state, push“  ” for 3s, enter the time shutdown settings.
push“   ” adjust timing, push again“  ” enter; Shutdown state,
The same operation can be set to time boot. Timing range : 0.5~24h;
push“  ”or“  ” Add or subtract 0.5 hours.

c. Toggle to display °F or °C

Power-on the unit, push“  ” parameter query; push“  ”or“  ”
Select “12” items, push“  ”3s, “12” Digital flicker, push again“  ”
Left Digital flicker, push“  ”or“  ” Tuning parameter: “1” °C , “0”
°F , push“  ” Exit setting.

d. Parameter setting

Power-on state, push“  ” parameter query, push“  ”or“  ”
Select the location of each parameter, push“  ”3s, digital flicker, push
again“  ” digital flicker, push“  ”or“  ” tuning parameter,
push“  ” Exit setting.

WARNING !

- ※The timing function is cancelled after a power failure;
- ※After time setting, re-execute open, Shutdown action, timing function cancellation

✕The timing function is valid once, the timing function is cancelled after one execution
Parameter setting table : (AC Series: All; DC Series:12~20)

parameter	meaning	meaning	Default value	definition
0	Reserved	Reserved	1	adjustable
1	Reserved	Reserved	1	adjustable
2	Startup temperature difference	Startup temperature difference	2	adjustable
3	Heating temperature correction	Heating temperature correction	3	adjustable
4	Heating defrost Time Cycle	Heating defrost Time Cycle	40Min	adjustable
5	Heating target degree of superhea	Heating target degree of superhea	3℃	adjustable
6	Cooling target degree of superhea	Cooling target degree of superhea	1℃	adjustable
7	End defrosting condition	End defrosting condition	12Min	adjustable
8	Compressor protection temperature	Compressor protection temperature value	105℃	adjustable
9	Set the maximum temperature value	Set the maximum temperature value	32	adjustable
10	EV Regulation cycle	EV Regulation cycle	10	adjustable
11	Temperature reached pump stop	Temperature reached pump stop time	15	adjustable
12	Temperature Unit Selection	0-- °F/1-- °C	1	adjustable
13	Model selection	0(Single cold)\1 (Cold and heat) \2 (Single heat)	1	adjustable
14	Room temperature sensor	Room temperature sensor		Measured
15	Coil temperature sensor	Coil temperature sensor		Measured
16	Pressure value	Pressure value	Mpa	Measured
17	Exhaust temperature sensor	Exhaust temperature sensor		Measured
18	Reserved	Reserved		Measured
19	Suction temperature sensor	Suction temperature sensor		Measured
20	EV Number of steps	EV Number of steps	1P	Measured

Fault Code (V2 Display)

Display character	Fault description
E0	Display board and mainboard communication failure
E1	Indoor room temperature sensor failure
E2	Indoor coil sensor failure
E3	Indoor DC fan failure
E5	Fluorine deficiency protection, (After 15 minutes, the inner coil will have a temperature difference of at least two degrees, the cooling is minus two degrees, and the heating is plus two degrees)
0E	Outdoor ambient temperature sensor failure
1E	Outdoor coil sensor failure
2E	Outdoor exhaust sensor failure
3E	Suction temperature sensor failure
4E	Outdoor DC fan failure
5E	DC voltage overvoltage protection
6E	DC voltage under voltage protection
7E	Compressor Stall Protection
8E	Compressor locked-rotor protection
9E	Compressor phase current software current protection
AE	compressor phase current hardware current protection
BE	Communication failure between external main board and compressor driver board
L0	Low voltage alarm (alarm below 21.5VDC, reset above 23VDC)
P1	High voltage fault
P2	Water flow meter

Wifi networking : (V2 Display)

1. Wifi on :

- Power-on state, push“  ”+“  ” hold down for 3s, bring up the “  ” icon.

2. Network operation :

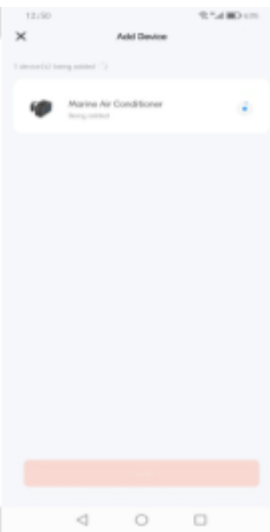


①



⑤

②



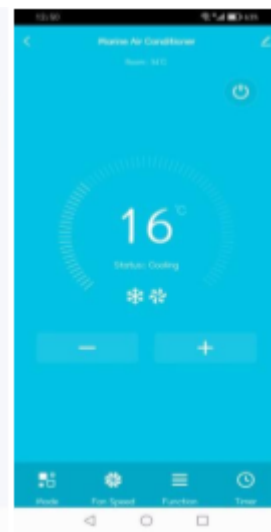
⑥

③



⑦

④



DC Controller instruction (V1 Display Discontinued)



Buttons descriptions



ON/OFF button

Press the button to turn on or turn off the air conditioner.



MODE button

In the power-on state, on the main interface, press this button to switch the modes : automatic, cooling, dehumidification, heating, ventilation



Auto Fan: Off when Compressor is not engaged. Fan turns on 20 seconds before the compressor engages. When the compressor disengages, the fan stays running for 1 minute then turns off unless on manual mode.



Air Conditioner Mode: Unit will engage and disengage as needed based on set temperature and cabin ambient temperature.

Pump and fan turn on 20 seconds before the compressor. When set temp reaches and the compressor shuts off, the pump is to cycle off after 20 seconds. Auto Fan stays running for 1 minute then turns off unless on manual mode.



Heater Mode: Unit will engage and disengage as needed based on set temperature and cabin ambient temperature.

The pump and fan turn on 20 seconds before the compressor. When set temp reached and the compressor shuts off, the pump is to cycle off after 20 seconds. Auto Fan stays running for 1 minute then turns off unless on manual mode.



Auto Heat Or Air Conditioner Mode: Unit will engage and disengage as needed based on set temperature and cabin ambient temperature.

Pump and fan turn on 20 seconds before the compressor. When set temp reaches and the compressor shuts off, the pump is to cycle off after 20 seconds. Auto Fan stays running for 1 minute then turns off unless on manual mode.



To switch between Fahrenheit and Celsius: Hold ON/OFF button

Pressing the button for to turn on or turn off the air conditioner.

Smart Breeze DC: fault code query sheet:

Display character	Code failure
E0	Display board and mainboard communication failure
E1	Indoor room temperature sensor failure
E2	Indoor coil sensor failure
E3	Indoor DC fan failure
	Fluorine deficiency protection
E5	(After 15 minutes, the inner coil will have a temperature difference of at least two degrees, the cooling is minus two degrees, and the heating is plus

	two degrees)
0E	Outdoor ambient temperature sensor failure
1E	Outdoor coil sensor failure
2E	Outdoor exhaust sensor failure
4E	Outdoor DC fan failure
5E	DC voltage overvoltage protection
6E	DC voltage under voltage protection
7E	Compressor Stall Protection
8E	Compressor locked-rotor protection
9E	Compressor phase current software current protection
AE	compressor phase current hardware current protection
bE	Communication failure between external main board and compressor driver board
Lo	Low voltage alarm (alarm below 21.5VDC, reset above 23VDC)

*Note, Error code may result from indirect issues being perceived as one of the below items.

NOTE: A double fault flashes alternately.

Troubleshooting

Error Code	Symptom	Solution
No cooling	1. the compressor is not working properly	The power supply voltage is too high or too low
	2. not a dedicated power cable	The wire size should meet the requirements
	3. serious leakage of fluorine in the system	repair
	4. controller fails	Replace the controller
	5. improper temperature setting	Adjust the temperature adjustment switch to the

		appropriate position. See the operating
	6. compressor overload protection	repair
	7. capillary blockage	repair
Poor cooling performance	1. the condenser is dirty and blocked	Clean the condenser
	2. indoor doors and windows are opened too frequently	Reduce the number of door openings
	3. the indoor heat load is too large	Install an air conditioner with a large cooling capacity
	4. partial blockage of capillary	Repair
	5. refrigeration system leakage	repair
No heating	1. the compressor is not working properly	The power supply voltage is too high or too low
	2. not a dedicated wire	The power cable should meet the requirements
	3. whether the coil of the four-way valve is electrified	Whether the four-way valve is disconnected
	4. serious leaking fluorine	repair
	5. capillary blockage	Repair
Poor heating performance	1. the condenser is dirty and blocked	Clean the condenser
	2. indoor doors and windows are opened too frequently	Reduce the number of door openings
	3. the indoor cooling load is too large	Install an air conditioner with a large heating capacity
	4. partial blockage of capillary	rework
	5. refrigeration system leakage	Repair
The fan motor does not run	1. check whether the fan motor wire is powered or not	Check whether the fan motor wire is disconnected
	2. the fan motor is damage	Replace the fan motor
Abnormal sound or large vibration	1. the air conditioner is installed too inclined	Install as required
	2. the fan touches other parts	Adjust the position of the fan
	3. connecting pipes and pipes collide	Adjust the space position of the pipes
	4. loose parts in the unit	Fasten screws
Blowing water from the air outlet	1.the drain hole is dirty and blocked	Clean the drain hole

No power to wired controller

If your control panel doesn't light up, then this could indicate a lack of power to the panel. Make sure that there is a power supply (DC24V /48V depending on the model) between the L terminal and the N terminal. If there is power and the panel still does not turn on, please check the fuse

on the circuit board with the blue plastic cover, fuse 5x20mm, 5amp. If the fuse continues to blow another replacement, check your pump and pump wiring. If you checked the fuse and the control panel still did not light up, then check the transformer. There are four cables coming out (two on each end) that plug into the board. Unplug both headers and check continuity between the two pins with a multimeter. If the checked transformer has no continuity, please call customer service to purchase a replacement transformer. If the transformer has continuity and you have replaced the fuse and checked the transformer, call customer service.

Routine maintenance

Four-way valve

Air conditioning units are equipped with four way valves. The valves must be energized periodically to keep internal parts running smoothly. Do this once a month and turn the air conditioner to heating mode for a few seconds.

Seawater strainer

Clean the strainer regularly. Frequently check the discharge for sufficient steady water flow. Check the seawater inlet for obstructions. Water pipes and fittings

Make sure there are no leaks at the hose connections, and that the hose isn't looped, kinked, or flatten. The hose attached to the unit is a braided marine grade hose with an internal diameter of 5/8 inch (1.59cm).

Flushing the condenser (coil)

1. Turn off the circuit breaker. Disconnect water hoses of the water inlet and outlet.
2. Use chemically resistant pumps and hoses to connect the water inlet and outlet of the condenser coil.
3. Use 20-25 gallon container for the circulating cleaning solution.
4. Flush the coil with 5% hydrochloric acid or appropriate flushing solution.

Return air filter

Check and clean the return air filter if necessary.

Winter Treatment

The unit should not operate in any mode (cooling, dehumidifying or automac) when the ambient temperature (air temperature) is below 35°F (2°C). The air-conditioning unit should be subjected to antifreeze treatment immediately. In order to avoid freezing in winter, antifreeze treatment is necessary. Do not leave sea water, fresh water or air in the system. Fill with antifreeze through the water inlet, strainer, pump, coil and outlet (entire system).

NOTE: Collect all discharged fluids and recycle or dispose of in an appropriate manner.